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Consensus and compromise - the rise and fall of Britain's post-war high-rise housing initiative.

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Abstract

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Modernism heralded the flat as an exciting new paradigm in twentieth century housing provision. A new generation of post-war architects, energised by the task of reconstruction explored how it might add variety to their developments, provide accommodation for a specific demographic and deliver higher densities. The appeal of the mixed-development neighbourhood unit, introduced by Abercrombie and Forshaw in their County of London plan (1944) would quickly find favour throughout the country. In the post-war world, new technology held the promise of factory based manufacture offering faster and more economic construction. System build, pioneered largely on the Continent, offered a tantalising opportunity to modernise the building industry and streamline construction. The need to meet ever increasing demand necessitated higher densities and technology promised faster construction and enabled higher, more economic building. Following the 1968 Ronan Point disaster, widespread tenant opposition to the high-rise block would finally find its voice and contribute to the demise of government sponsored social housing provision. Today many high blocks have been demolished or have succumbed to questionable refurbishment, those that remain and the estates on which they stand face an uncertain future.

This study examines the background and development of the high-rise movement and the motivations and objectives of a range of actors that enabled it. Although only 20 per cent of twentieth century social housing can be attributed to high-rise it has come to symbolise the problems associated with social housing provision in Britain.

Research draws upon original archive material and records from central and local government, publications from the architectural and structural engineering professions as well as contractors' technical and promotional publications. These provide new insights into how high-rise became an important component of social housing provision, the rationale behind System build, what it promised, who was involved in its promotion, what it delivered and how ultimately it fell short. The study will include a case study focussing on Birmingham's implementation of high-rise and the City Architects and politicians that shaped strategy that will shed new light on the development of the movement and the sometimes conflicting objectives of those involved in its implementation.

Abbreviations

A. R. *Architectural Review*.
A. J. *Architects' Journal*.
B.C.C. Birmingham City Council.
B. R. S. Building Research Station.
B.O. Board of Education.
B.V.T. Bournville Village Trust.
C.C.A. Cement and Concrete Association.
C.C.E. *Concrete and Constructional Engineering*.
C.H.A.C. Central Housing Advisory Committee.
C.I.A.M. Congres Internationale d'Architecture Moderne
C.I.H.A (Coal Industry Housing Association
C. I. S.P. H. Council for the Industrial and Scientific Provision of Housing.
C. L. A. S. P. Consortium of Local Authorities Special Project.
D.C.L.G. Department for Communities and Local Government.
D. O. E. Department of the Environment.
D.I.C.E. Design Improvement Controlled Experiment
D.L.O. Direct Labour Organisation
E.H. English Heritage.
E.R.C.F. Estate Renewal Challenge Fund
G. L. C. Greater London Council.
G.P.C. General Purposes Committee (BCC).
H.A.T. Housing Action Trust.
H.B.C. House Building Committee (BCC).
H.C. Housing Committee (BCC)
H. C. M. Housing Committee Minutes (LCC).
H. C. P. Housing Committee Papers (LCC).
H.E. Historic England.
H.O.R.S.A. Hutting Operation for Raising the School Leaving Age
H. S. G. B. Housing Statistics Great Britain.
I.A.A.S. Incorporated Association of Architects and Surveyors.
L. C. C. London County Council.
M.A.R.S. Modern Architecture Research Group
M.E. Ministry of Education.
M.H. Ministry of Health.
M. H. C. F. O. C. O. Midland Housing Consortium, Board of Chief Officers.
M. H. L. G. Ministry of Housing and Local Government.
M.J. *Municipal Journal.*
M.L. Ministry of Labour.
M.W. Ministry of Works.
M. P. B. W. Ministry of Public Buildings and Works.
M. R. *Municipal Review*.
N.A. National Archives.
N. B. *National Builder*.
N. B. A. National Building Agency.
N.B.S.R. National Building Studies Report
N. F. B. T. E. National Federation of Building Trades Employers.
N. F. B. T. O. National Federation of Building Trades Operatives.

N.F.R.H. National Federation of Registered Housebuilders.
N. U. C. U. A. National Union of Conservative and Unionist Associations.
PPA Persons per acre
P. R. O. Public Records Office.
R. I. A. I. Royal Institute of Architects of Ireland.
R. I. B. A. Royal Institute of British Architects.
R. I. B. A. J. *Royal Institute of British Architects' Journal.*
S.A.R. National Association of Swedish Architects
S.H.A.P.E. Supreme Headquarters Allied Powers (Europe)
S.C.O.L.A. Second Consortium of Local Authorities
S.P.C. Special Purposes Committee.
S.R.B. Single Regeneration Budget
T.U.C. Trades Unions Congress
U. N. United Nations.

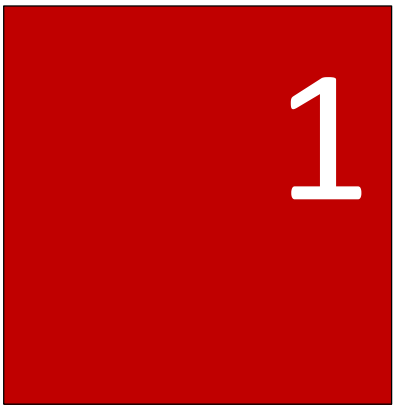
COVID STATEMENT

The majority of my primary and secondary research occurred prior to lockdown although a return to the archives had been scheduled to research original estate plans. Unfortunately at the time of submission access to libraries and archives was not permitted preventing the wider investigation of records and access to better reprographic facilities for existing images. A preference for the use of contemporary rather than modern images has therefore necessitated the use of images of varying quality.

Contents

Figures

Introduction



1.0 Introduction

The post-Second World War social housing initiative would look to modernist architects and planners to re-define the form and function of the home and city. The 1932 Modern Architecture International Exhibition organised by Johnson and Hitchcock had introduced Le Corbusier, Walter Gropius, Mies van der Rohe and JJP Oud to the world and introduced a new aesthetic. A year later the fourth Congres Internationaux d'Architecture (CIAM) had published the Athens Charter that articulated a new approach to urban planning. The Modern movement espoused the concept of form over function, a rational use of materials and a dedication to structural innovation. Le Corbusier had ensured that high-rise was the central image in Modernist Architecture (Dunleavy, 1981) and the implementation of a practical form of Modernism was enabled when the desire to build new forms of housing coincided with the post-war social and political imperative that promised new homes for all those that desired them. The opportunity presented to the profession may not have been to build Le Corbusier's 'la ville radieuse' (Gold, 2007) but it did nevertheless offer an enticing opportunity for a new generation of architects and planners who would be tasked with reconstruction.

> *'Architectural history is more than just the study of buildings. Architecture of the past and present remains an essential emblem of a distinctive social system and set of cultural values'.* (Arnold, 2002:8)

Architectural history is the disciplinary focus of this research although it should be an interdisciplinary activity, one that doesn't limit the study to the type of building, the materials with which it is built and its aesthetic style but takes into account the social, economic and political conditions that prevailed when it was built. A Hegelian appreciation that buildings should be studied within their cultural and social context rather than in isolation enables the historian to explore the influence of modernism in the case of this work, whilst taking into account the prevailing zeitgeist that supported a social and political imperative to house the populace after the tribulations of war and articulated a commitment to build something better.

The study whilst primarily focussing upon the development of high-rise in Britain recognises and considers its wider influences and developments in Europe and the United States. The study acknowledges the relevance of European and United States thinking in the development of Modernism. The influence of Scandinavia is particularly relevant to the development of the mixed-development, mixed-community ideal and progress in Sweden, Denmark and France greatly influenced the adoption of System build in Britain. Criticism of the high-rise movement that surfaced from the late 1960s is examined extensively linking narratives that appeared in the United States

with later criticism that found political favour in Britain. Ultimately examination of the repudiation of the Pruitt Igoe myth in the United States will consider Jenck's (1977) contention that demolition of this development marked the end of Modernism.

1.1 Aims and objectives

The primary aim of the research is to better understand the influences and actions that led to the large-scale adoption of high-rise social housing in England from 1950 to 1970 and the respective roles of architects, politicians and contractors in its development. In order to achieve this aim the research will have two subsidiary but supporting aims. The first will be to understand the place of the system build movement in the development of high-rise housing. The second supporting aim will be to investigate the implementation of high-rise in Britain's second city to specifically inform the role of the public architect and their relationship with local politician and gain a practical example of high-rise development in Birmingham. This will inform an understanding of the motivations of each group and to what extent conflicting priorities may have affected the implementation of high-rise in Birmingham and elsewhere:-

- There is a tendency to view the high-rise phenomenon as a single heterogeneous movement, the product and responsibility of the same Modernist-inspired architects (Glendinning and Muthesius, 1994). Research will test this contention by establishing the antecedents of the high-rise flat, its emergence firstly as a product of influential modernist architects actively promoted by the architectural press and teaching at the architectural schools. It will demonstrate how modernist ideals met a political and social imperative to build back better after the tribulations of war and how high-rise ultimately came to occupy such an emblematic place in the provision of post-war social housing. It will consider how the working class flat initially emerged as a less costly alternative to the house, primarily in inner-city locations, before adoption in the neighbourhood unit concept promoted by Abercrombie and Forshaw and the mixed-development estate that formed a significant part of the post-war architectural vocabulary. It will consider how high-rise became attractive architecturally and socially in mixed development estates, not only to add aesthetic variety, but also to cater for a specific demographic and then, in a later period, become the preferred option for the delivery of high-density housing and as an antidote to the inner city slum. Research on this later phase will include an in-depth study of system build, tracing the development from non-traditional housing, the relative success of the pre-fabricated schools initiative and the continental antecedents that influenced its adoption.

- An in-depth study of System build will investigate how it emerged in the early 1960s as a panacea to a challenged and backward construction industry and, as a solution for central and local government pressured to maintain production volumes. A detailed study of contemporary records will explore the motivations of a wide range of stakeholders and demonstrate how a broad consensus was reached that embraced the potential of System build to provide a viable alternative to traditional construction. The research will then examine how ultimately the broad consensus achieved would lead to lead to compromises in implementation. This examination will include an appraisal of many of the leading systems offered in Britain with a study of their antecedents and each contractor's methods of deployment. This will investigate the range of manufacturing options that contractors could employ and examine the potential benefits of both the dedicated factory and the in-situ manufacturing facility, and how contractors exploited the emergence of a range of new equipment to realise their aims. A detailed study of many of the leading providers will illustrate how System build was adopted and deployed in Britain and how implementation was challenged by insufficient appreciation of continental experience. Despite an initial broad consensus in favour of system build the study will demonstrate how the architectural profession lost faith in the initiative and how oversupply, a lack of sustainable volume, insufficient quality standards and the absence of collaboration between stakeholders would ultimately seal its fate. An explanation of Closed and Open systems and modular construction will examine how the utopian government vision of the eventual emergence of Open Systems ran counter to the interests of individual contractors and was therefore destined to fail.

- The research will explore how early efforts to introduce flat living in Birmingham were thwarted, how high-rise eventually gained acceptance and how it became an important component of Birmingham's mixed development estates. Birmingham was initially reluctant to adopt the flat but became an enthusiastic advocate, building 464 blocks in excess of five-storeys in the period studied. The growth of high-rise development in Birmingham will be explored, firstly as a cost effective method of achieving high densities, its transition into a component of the preferred mixed development estates and then as an important constituent of city's high- density slum clearance programme and as a means of responding to an ever-growing housing deficit. The study will illustrate the reasons why Birmingham embraced non-traditional forms of construction and how it approached the potential of system build to alleviate the pressure on its housing list. This episode will illustrate how the

primacy of a design-led philosophy was compromised by the need to deliver volume until it was ultimately replaced with one focussed almost purely on volume production. In doing so this will emphasise the respective roles of central and local government politicians, contractors and the changing priorities of the City Architect (Alwyn Sheppard Fidler). This will demonstrate the delineation in the development of high-rise construction that occurred in Britain.

- Research into the role of the City Architect in Birmingham will examine the priorities of design professionals and local politicians and how these affected and to what extent compromised high-rise implementation. The study of Birmingham will also highlight that city's decisions relating to System build and the impact that the initiative had on flat development in the city. This will specifically shed light on the motivations behind its adoption, the nature of its implementation, the long-term success of the movement and ultimately the reasons for its failure. In depth examination of the House Building Committee minutes will examine Sheppard Fidler's influences, his motivations and efforts to impose a design-led rather than a production-led ethos on housing development in Birmingham. This will examine Birmingham's early experiments with mixed-development estates and how high-rise became an increasingly important component of the city's housing strategy.
- The study will examine how celebrated new estates, often the product of private architects, influenced a new generation of public architects. It will study how the London County Council (LCC) Architects Department exerted an influence far beyond the confines of the city, not least in encouraging the appointment of City Architects in the provinces. Research into the pattern of high-rise development in Birmingham will provide a practical example of the growth of in high-rise construction as well as provide valuable insight into the role of the public architect in this period. The City Architect represents an under-investigated and often under-appreciated role, certainly when compared to a cadre of their more frequently celebrated private colleagues, many of whom have subsequently earned the sobriquet of star architects or 'starchitects' (Gold, 2007:51). This research will provide new insight into the role of the public architect outside London and suggest how experience in Birmingham might allow better understanding of the constraints and achievements of public architects in the provinces and encourage further investigation in Britain's other major cities.
- Considering the demise of the high-rise movement, the study will consider the negative narrative that developed after the Ronan Point disaster (1968) and how a combination of a professional, media, tenant and academic discourse adversely affected the reputation of

high-rise and more widely, by association, the perception of post-war social housing provision. With a tendency towards further demolition, those examples that remain seem destined to be replaced by the more palatable 'affordable' housing; with the exception of a small number of celebrated examples that have gained recognition and benefitted from expensive refurbishment. The study concludes with an examination of the enduring legacy of high-rise housing, its place in the state sponsored housing movement, its characterisation as a modernist mistake both in Britain and the United States but also its emergence as something to be appreciated at arms-length in exhibitions rather than at first-hand as Council tenants.

1.2 The flat tradition

Flats were a relatively new development in post-war England, where there was little tradition of flat dwelling in most cities with the exception of a scattering of upper and working class examples principally in the capital (Sutcliffe, 1974; Pepper, 1981). In Europe, and even in Scotland with its tenement tradition, flat living enjoyed a longer history, where city dwellers were more used to this form of accommodation. Despite this early aversion, in the twenty-five years following 1950 some 6,500 high-rise blocks providing 400,000 homes were constructed in Britain. Despite the boom in high-rise, actual construction figures represented only 7.4 per cent of the total number of homes completed in the frenzy of home building that occurred in this period (Glendinning and Muthesius, 1994).

The inclusion of flats in social housing schemes was initially limited to low-rise blocks up to six-storeys accessible by stairs and balconies, selected for their relatively low cost and ability to accommodate higher densities than was possible with traditional housing forms. Widely criticised for a lack of amenity and their monotonous appearance, they found less favour as Modernist ideas about mixed-development gained ground in the immediate post-war period. With post-war construction the responsibility of the local authority, a new generation of public architect emerged, keen to capitalise on the opportunity to create new ways of living that bore little resemblance to what had gone before. Building higher became more viable with the introduction of the tower crane and more affordable internal lift, and both slab and point blocks began to appear as visually exciting, novel components of new estates. The ability of the high-rise flat (those above six-storeys) to help deliver high-density housing ensured that it became a favourite of local authority Housing Committees which were constantly challenged by the shortage of available building land. The commitment of successive Governments to build, full employment and a construction industry that had largely failed to evolve, ensured that industrialised building or system build represented an

attractive proposition to enable quicker and cheaper construction. The opportunity to harness new ideas about architecture with new technology, and to build higher quality housing more efficiently in the factory promised to revolutionise social housing provision. But on 16 May 1968, when Ivy Hodge lit a match in her flat on the 18th floor of Ronan Point in Newham, resulting in a sudden structural failure and four deaths, Modernism's Utopian high-rise ideal suffered the aftershock. What had, until that point, been a lesser-reported aversion to the high-rise experiment transformed into a vociferous media and tenant campaign against it. In the quest to identify a culprit, particular criticism focussed on system build; a method of proprietary pre-fabricated construction, the contractors involved in its implementation and the architectural profession inextricably linked to the inclusion of high-rise in post-war development (Smith, 2020). What ultimately resulted was the total repudiation of the modernist ideals that had spawned the high flat. Although at the height of its popularity, between 1963-7, high-rise had represented only 20 per cent of total housing allocation (Finnemore, 1989), criticism post- Ronan Point ensured that it quickly became the negative symbol of the Welfare State's post-war social housing initiative.

Despite having very little say in the form of their housing, the tenant dissatisfaction that gained a wide audience post-Ronan Point has formed an influential part of the accepted dialogue around high-rise and may even have unwittingly contributed to the demise of social housing (Smith, 2020). As successive Governments and local authorities have sought to distance themselves from housing provision, remaining estates that incorporate high-rise have increasingly succumbed to a commercial imperative that favours redevelopment. Demolition, the displacement of tenants and redevelopment increasingly triumphs over any notion of the provision of homes as envisaged in the early welfare state.

In a small number of instances, for those examples deemed to represent the 'best of breed', listing has enabled retention; but costly conservation programmes have generated the same outcome. Original tenants have been displaced, to be replaced by a new generation of private tenants, with only a smaller population continuing to inhabit high-rise blocks that have undergone questionable refurbishment programmes and remain for the moment in local authority or housing association control.

New developments of affordable housing largely forsake the striking and dominating visual appearance of high-rise blocks and the terraced house with small garden has, from the 1970s, regained its pre-war dominance. Despite its previous vilification todays inner city development extensively features modern new-build high-rise blocks that appear popular with a new generation of well-heeled urban professionals.

1.3 Methodology and Sources

This study is based upon an investigation of the historical narrative related to the development and subsequent demise of high-rise social housing, with a detailed case study of Birmingham during the tenure of the first city architect, and an exploration of the motivations and implementation behind the system build initiative of the early 1960s. It will explore the historiography of the phenomenon commencing with the largely celebratory writing of modernist architects, planners and commentators, considers the critical commentary both in Britain and the United States and concludes with more recent work that urges a more holistic appreciation of the high-rise initiative. Ultimately the research presents an empirical study based upon the qualitative assessment of two propositions. The results will offer new insight into the role of the public architect, specifically in Birmingham and a greater understanding of the ultimate failure of the system build initiative.

The first proposition concerns the system build initiative investigating the soundness of the premise given the extent of the immediate post-war home building challenge and the state of the construction industry. It will explore how, despite a successful campaign to ensure widespread acceptance the Ministry failed to exert as much control over its implementation. It suggests that the free market ideology that resulted in over-supply and poor quality failed to fully appreciate the economic factors, adherence to which may have resulted in the success of the initiative and contributed to the industrialisation of the industry and the Open systems that the Ministry desired.

The second proposition is based upon the tendency to celebrate the 'star architect' (Gold, 2007), those in private practice who received contemporary critical acclaim to the exclusion of the Official or Public architect, whose work is more usually undervalued or largely ignored. This will utilise a case study of Birmingham and explore the work of the first city architect charting his quest to introduce a design-led philosophy rather than the production-led policy preferred by the majority of elected officials. This will seek to demonstrate that the salaried architect shared the wider values of their more celebrated colleagues, could be both progressive and pragmatic and produced innovative work albeit tempered with a need to work within wider practical and political constraints.

This study will consider the historiography related to the growth of high-rise social housing and will include a detailed appraisal of the construction and architectural press from the immediate post-war period to 1970. It will consider contemporary articles, particularly from the professional press, commentary and correspondence related to the development of high-rise housing and the introduction and implementation of system build.

The primary research will centre upon archival research from two sources. Investigation of the Birmingham City Archive will include a detailed study of proceedings, minutes and reports of the Committees involved in the provision of social housing and specifically the implementation of high-rise. This will largely centre upon the Public Works Committee and the House Building Committee from the end of the Second World War to the early 1970s, although the latter changed its identity and focus towards the end of this period. The Birmingham Corporation archives have provided a comprehensive narrative on the development of high-rise in Birmingham derived primarily from the perspective of the housing committees in the form of minutes and reports from councillors, the City Engineer, City Architect and Housing Manager. The case study of Birmingham records how a city that professed an aversion to the flat would increasingly come to regard the high-rise flat as a key component of its social housing strategy. This experience whilst in no way presented as typical, does throw light on the changing motivations and priorities of stakeholders responsible for the inclusion of high-rise in housing developments in the city and provides a counterpoint to the more widely reported experience in the capital. The experience in Birmingham has proved particularly useful in understanding how national priorities and influence affected provincial cities. A clearer picture of the motivations of individual stakeholders has been evident due largely to the detailed minutes of the House Building Committee and the tendency for the first City Architect to provide copious records of his motivations, preferences and priorities throughout his tenure. This evidence has been particularly illuminating due to Sheppard Fidler's responsibilities and reputation within the architectural profession. Not only was he responsible for design and the implementation of housing policy in Birmingham, but he enjoyed a position as a consultant to the MHLG, was often called upon as a speaker for the RIBA and was widely appreciated as a commentator in the architectural press. The case study as a primary research methodology has incorporated a range of data collection methods and has involved review of primary documents together with interviews with a small number of contemporary personnel to provide a validation for conclusions. A wider use of interviews has not been adopted as a primary methodology for a number of reasons. First-hand experience of the period is now limited and the opportunity to canvas a significant number of individuals in order to derive meaningful conclusions is increasingly difficult. Secondly, a number of relevant interviews with architectural professionals already exist, enabling this work to be set in a wider context: these have been identified and reviewed. Thirdly, there are problems with expert interviews particularly dealing with a period decades in the past, where interviewees' memories may be fallible or they may be - consciously or unconsciously - rewriting the past (Bogner, Littig and Menz, 2009). Instead this study has focussed on contemporary reports rather than reflective observations that might have been

tempered by later experience or reflect an attempt to escape criticism in the light of the negative press surrounding the initiative.

The previously little used archive of the Concrete Society in Surrey has also been investigated to learn more of the development of industrialised building methods and ultimately the promotion of system build. The Concrete Society, formerly the Cement and Concrete Association, was instrumental in the promotion of new methods of building involving Concrete and their '*Housing from the Factory*' conference (1961) played an important role in ensuring the successful adoption of system build. The Cement and Concrete Association was an independent membership organisation dedicated to supporting the use of concrete in building and as such represented sponsors and contractors, engineering firms and architects and promoted the use of concrete via a range of publications. Today, as the Concrete Society, it has a similar remit but its primary focus is as an advisory body. It still maintains its archive that contains copies of all its publications from the period studied, as well as a range of material related to individual contractors. This is particularly valuable as few, if any contractor archives remain or are accessible following company closure, mergers or take-overs. Research at the Concrete Society Archive in Surrey has allowed an in-depth study of System build development, focussed on many of the leading players including but not limited to Wimpey, Reema, Camus, Taylor Woodrow Anglian, Bison, Wates, Bovis, Crudens, Costain and Laing. This has incorporated analysis of documentation including original specifications, brochures and marketing materials. This archive has contributed a wide range of original material on the development and promotion of high-rise building techniques but, more specifically, the adoption of System build. Central to this effort were multiple publications including professional periodicals, directories, conference proceedings, reports and promotional materials in the form of press releases and images as well as details related to the organisation of study tours and conferences.

Records at the Concrete Society Archive are largely either technical or promotional and, therefore could be considered to present a one-sided perspective of the development of new building techniques related to high-rise. This might pose a methodological issues and whilst there are documents that present a critical judgement of systems, the overriding characteristic of the archive's materials is supportive and positive. To counter this potential bias, an analysis of the construction and architectural press has allowed a synthesis of available evidence and a more accurate judgement to be achieved.

The National Archives has provided valuable evidence of government perspectives in the form of political manifestos, Hansard transcripts, and Ministry guidance in the form of major reports, housing manuals and specifications as well as the machinery of implementation including legislation,

specification, approval and subsidy. These records have been augmented by records of contemporary speeches reported primarily in the professional architectural and construction press. This has been particularly useful bearing in mind the selectivity of retention of material within the National Archive. The fact that Ministry interventions were widely reported in the period proves useful because it is possible to derive practical examples of how politicians and civil servants presented and promoted government policy. The London Metropolitan Archives have provided informative detail about post-war development in the capital and the emerging role and influence of the LCC Architect's department through the records of the Housing and other committees with influence on post-war construction.

Government sponsored reports from the Building Research Establishment have proved valuable in highlighting some of the design and construction limitations of systems although a definitive qualitative assessment of the various systems has never been commissioned.

Desk-based research of the large volume of secondary sources has been particularly useful to gauge the polarisation of opinion and review the sources and methods used in previous research for this thesis to identify issues, gaps and bias and allow an objective re-evaluation. Secondary research has also proved valuable in validating a range of primary sources. Work by Dunleavy (1981) and Glendinning and Muthesius (1994) in particular provided a wide range of quantitative data that has helped narrow down and focus avenues of investigation. Secondary research has involved a synthesis of work derived from an interdisciplinary literature survey across architecture, geography, planning, conservation, politics and social science disciplines. Recent work related to the appreciation and conservation of twentieth century architecture and work on gentrification and tenant protest has also been informative.

1.4 Developing a narrative around Modernism and high-rise social housing

A study of the historiography of high-rise in Britain suggests that it can be broadly divided into a number of thematic if not strictly chronological, phases. The first features the writings of influential architects and contemporary commentators who celebrated the influences and various forms of Modernism as a new approach to building and the promotion of the flat as a viable alternative to the traditional house. The second could broadly include writers who articulated a preference for the traditional cottage and began to explore and explain the potential failings of high-rise, chart its decline and apportion blame and responsibility for its inclusion in the social housing vocabulary. In the United States where high-rise public housing has suffered a comparable history, a similar

trajectory of promotion followed by blame has occurred. Much of the early sources of criticism of the Modernist implementation of high-rise social housing originated in the United States before crossing the ocean to motivate a group of enthusiastic critics. The common perception that the Modernist architect bears the responsibility for high-rise's ills has though been more robustly repudiated.

A range of research more focussed on understanding the history of high-rise, whether from a political perspective or as a form of construction, has also been published. Most of these types of study have resisted the temptation to make qualitative judgements. Whilst critical commentaries have continued to be produced, more recently a range of research has appeared that has urged a re-appraisal and has begun to contemplate the wider appreciation of the significance of the social housing drive. Whilst accepting the undeniable issues that accompany high-rise developments, these studies have sought to highlight the positive aspects and consider the wider causes of the problems. Unlike some publications that have considered the recognition and conservation of twentieth century assets, they have championed the retention of more high-rise social housing (Grindrod, 2013; Boughton 2018). This exhortation has also been re-iterated by those studying the effects of gentrification that features extensive tenant displacement (Lees and Ferreri, 2018).

Pevsner (1960) traces the influence of the emergence of the Modernist mixed-development ideal that featured a community comprising individual houses as well as low and high-rise development back to William Morris and John Ruskin. In rejecting Elizabethan and Jacobean mannerism and Baroque and Palladian classicism in favour of a style more aligned to the late middle ages, Morris eschewed Industrialisation to praise simplicity and honesty, a rough and rustic style that favoured cultivation and craft (Pevsner, 1960). Ebenezer Howard (1902) appropriated many of these values when establishing the blueprint for the Garden City later taken up by Unwin and Lethaby, which heavily influenced Abercrombie and Forshaw (1944) in their vision for much of the post-war mixed-development planned by the London County Council and its imitators elsewhere in the country.

The Modernist movement embraced the opportunity for architecture to transform lives and deliver new forms of building (Gold, 2007). Le Corbusier celebrated *'the machine for living in'* (Le Corbusier, 1927) and influenced a generation which would go on to champion high-rise development (Jensen, 1966; Smithson, 1970) and the contemporary commentators who would disseminate the doctrine (Banham, 1966, 1975). Le Corbusier's (1927) emphasis on form and function celebrated the virtues of industrialisation and the machine, and pre-empted other influencers' exhortations to industrialise construction (Gropius, 1933). His mantra responded to the challenges of space, transport and traffic and championed the benefits of new technologies such as steel, reinforced concrete, plate glass and standardised units that challenged *'a timid Art and Crafts movement that denies the values of mass*

production' (Le Corbusier, 1926). The idealism described by the Modernists and exemplified in such projects as L'Unité d'Habitation in Marseilles (1947-52) may rarely have been realised in Britain (Gold, 2007) due to the compromising constraints of space and budget but nonetheless new architectural styles and forms of buildings would emerge.

Responding to criticism from Garden City adherents, Jensen (1966) passionately advocated the value of design, amenity and space in providing a practical solution to eliminate overspill, enable clearance whilst maintaining locality. Perhaps ironically, the issues he cites as being commonly associated with the terraced slums, namely poor design, poor structural standards, lack of maintenance and unsatisfactory occupancy (Jensen, 1966) were characteristics cited by critics and attributed to high-rise (Coleman, 1985).

Studies of the social housing and high-rise phenomenon has embraced the political history of the drive for housing, stressing the influence of the *Beveridge Report* of 1942 to set the political agenda, and views the social housing drive as a cross-party endeavour equally supported by both sides of the wartime coalition government (Dunleavy, 1981; Harwood, 2015). Whilst a key component of each party's manifestos this conclusion undervalues the idealism of the incoming 1945 Labour administration that transferred responsibility for construction to the local authority and, in turn, witnessed the emergence of the public architect while supporting a wider Education, Health and Welfare agenda.

The respective roles of the public and private architect in this movement have enjoyed great attention in recent studies of Modernist architecture, with most commentators singling out private practitioners whilst accepting the role and influence of the London County Council (LCC) Architect's Department (Day, 1988; MacDonald, 1996; Beech, 2015; Harwood, 2015). Harwood (2015) maintains that the implementation of the Welfare State enabled a reassertion of the South that provided a balance to the previously-dominant industrial North and restored the dominance of the capital and its architects. The role of the Architectural Association (Bor and Korn, 1968), and the LCC as a 'training camp' for post-war Modernist Architects is deserving of attention particularly in light of the migration of LCC architects into key roles in government and the regions. The apparent motivations of the LCC architects are well rehearsed, from the alleged political radicalism that Day convincingly attributes as superficial to the more conservative product of New Humanism, Empiricism and Brutalism ideologies (Day, 1988). The further development of the mixed development estate and the role the high flat played in it have also featured in numerous studies (Bullock, 1987; Pepper, 2014). A preference for the benefits of the mixed-development is clear, whilst a defining style is harder to identify. Certainly the Dudley Report of 1944 influenced policy (albeit from 1949) and favoured

mixed-development and the later Parker Morris Report of 1961; *'Homes for Today and Tomorrow'* influenced the introduction of new standards that had implications on form that could be seen to have engendered an enthusiasm for System build.

The publication of *Tower Blocks* (1994) by Glendinning and Muthesius represents the most comprehensive history of the development of UK high-rise public housing, but by their own admission it represents a '*history of housing'* limited to the period up to construction. Devoid of any qualitative assessment, this impressively-researched work concludes that there were both good and bad developments without being specific, but laments the polarisation of opinion as a barrier to fair assessment. A later volume (Muthesius and Glendinning, 2017) charts the growth and design of high-rise as it developed to solve the problems of urban congestion and outer sprawl but still falls short of making a qualitative assessment of individual types of construction.

Responsibility for the rapid growth of high-rise is widely considered (Dunleavy, 1981; Coleman, 1995; Ravetz, 2001) and alternates between architect and politician. The local authority emerges as the primary actor in the implementation of high-rise for Glendinning and Muthesius, who cite extensive regional studies and focus on key individuals such as Harry Watton in Birmingham and T. Dan Smith in Newcastle. The role of key central government figures such as Keith Joseph in overcoming initial contractor reluctance to invest in System build, supported by dynamic local politicians, goes some way to explain how high-rise came to dominate the national public housing landscape. Few appreciate that the emergence of System build, that fuelled a major expansion of high-rise construction resulted from a consensus achieved by government that involved convincing all stakeholders. How consensus ultimately resulted in compromise is no better exemplified by the approach of the major contractors in either licencing existing systems or developing their own and the way that they chose to implement them.

The failure of government policy is taken up to castigate the state provision of public housing, referred to in *The Politics of Mass Housing in Britain 1945-75* as '*part of the standard folklore of policy failures*' and a '*blunder masterminded by our political elite'* (Dunleavy, 1981). Dunleavy provides an impressive range of empirical data and a detailed examination of the political processes that influenced the provision of mass public housing. His adoption of the Neo-Marxist model suggests that economic and political authority can co-exist, challenging the traditional Marxist view of the power of capital. Whilst accepting central and local political influence, Dunleavy's (1981) assertion of construction-industry responsibility for the growth of the high-rise initiative remains only part of the story. Others have discussed the initial reluctance of contractors to invest in systems build (Crossman, 1975). Finnemore (1989) is more convincing in recognising central government's role in

encouraging developers and *'inventing the mechanisms for its proliferation'* (Jones, 2003) is a welcome addition to the study of the period in that it provides a more comprehensive study of the causes of discontent, highlighting a lack of maintenance, management, security and tenant allocation as issues that resulted in the poor perception of high-rise.

The extreme polarisation of opinion regarding high-rise has been explored by a number of commentators, ranging from those who have sought to explain the support for, and condemnation of, the experiment into strict Marxist and Monetarist ideologies (Bacon, 1982) to those who adopt a simpler view, suggesting that historians view the phenomenon from their own perspective utilising values specific to their own time (Glendinning and Muthesius, 1994). Bacon's (1982) assertion that high-rise represented the failure of the Marxist socialist ideal, an end of Modernism and a transfer of control of housing to free market monetarists motivated by capitalist ideology and enthusiasm for individual freedom has some merit but may be an oversimplification. It assumes a consistency of motivation and intention within and between the architects, politicians and contractors involved in the movement and a concerted orchestrated movement from inception to demise.

To some extent the extreme polarisation of views obscures an objective assessment of the initiative. Advocates champion the high-rise movement (Jensen, 1966) while critics highlight poor quality, tenant dissatisfaction, crime and vandalism (Coleman, 1995). Initially-positive responses have been eclipsed by a period of later vociferous negativity that has continued to prevail, despite a resurgence of appreciation for the best of the genre (Moss, 2016; Boughton, 2018). Le Corbusier's (1926) prescient assertion that man would adapt to the '*new and strange forms'* is overshadowed for some by the enduring preference for the traditional English cottage or villa so enthusiastically championed by Cooney (1974), Ravetz (1974), Sutcliffe (1974) and Coleman (1985). Sutcliffe is particularly adamant in his condemnation, highlighting the inferiority of the flat in terms of accommodation, noise, storage space and isolation, whilst reluctantly accepting location as the only compensating advantage. A more balanced conclusion apportions blame equally to architects, local government and developers (Cooney, 1974; Ravetz, 1974). The most prejudiced condemnation of the design of modern housing estates emerges in Coleman's *Utopia on Trial,* with particular criticism levelled at high-rise '*which has already attracted so much revulsion that the pressure of public opinion has largely brought about its cessation'* (Coleman, 1985: 11). As an advocate of Oscar Newman's (1972) theories, developed in the US, Coleman expounds the theory that litter, graffiti, vandalism, pollution by excrement and family breakdown can all be attributed to poor design emanating from the negligent role of officialdom evidenced by successive Government design guidelines and subsidies that favoured high-rise development. A significant volume of empirical data, albeit within a narrow range, is provided to prosecute Coleman's theories at the exclusion of almost all other credible

explanation; and the fact that her doctrine enjoyed such enthusiastic prime ministerial support at the time help to support later criticism of her work and its influence.

In *The Language of Post-Modern Architecture* (1977) the architectural critic Charles Jencks times the end of Modernism to 3.32pm on 15 July 1972, when the Pruitt Igoe project in St Louis, one of the most iconic public housing developments of the period, was demolished just sixteen years after its completion. In the United Kingdom, opposition to Modernism's Utopian high-rise ideal was energised by the Ronan Point explosion on 16 May 1968. The disaster in Newham drew attention to the high-rise experiment and proved a catalyst for a negative commentary that switched between the architectural profession and politicians and recognised, for the first time, the voice of dissatisfied tenants (Smith, 2020). That the profession in the form of the *Architectural Review* felt ready to criticise Modernist-inspired social housing would fuel the argument and launch '*a critical onslaught on modernist housing'* (Gold, 2007: 276) that would ultimately play a large part in its demise.

The development of high-rise social housing in Britain has been widely discussed from a number of perspectives. The enduring theme remains that high-rise development was primarily the product of modernist architects with the 1968 Ronan Point disaster variously marking the demise of modernism (Dunleavy, 1981; Ravetz, 2001; Bullock, 2002; Gold, 2007). Glendinning and Muthesius (1994) have recognised that there were essentially two phases of high-rise construction, the first being attributable to modernist architects but the second phase, that featured system build, being the responsibility of a wider range of stakeholders but principally central and local government politicians.

As production slowed and problems emerged, critics increasingly sought to identify a culprit responsible for the failure of the high-rise initiative. An intervention the previous year in the *Architectural Review* had certainly energised a dialogue within the profession. The sight of the profession appearing to turn on itself in 1967 focussed wider press, and in turn public, attention on the criticism of Modernism and perceptions about the design of Council estates. In many ways the arguments put forward had more than a passing resemblance to those explored in Jane Jacobs' work *The Death and Life of Great American Cities* (1961). Widely discussed, it had directed criticism towards contemporary urban renewal projects in the United States and the resultant displacement and destruction of traditional communities. These new estates identified as the 'projects' emanated from modernist architects and planners. The *Architectural Review*'s edition on Housing and the Environment (1967) contained an editorial by JM Richards that lamented the Government's apparent obsession with quantity rather than quality, and shared Jacobs' views on community. Whilst modern estates might have succeeded in providing housing, Richards felt they had failed to deliver

communities and were, therefore, likely to become modern slums. For the *Architectural Review* the perpetrator of this crime was identified as the Modernist architect. Although not wholly surprising considering the conservatism of the publication, the *'salvo was instrumental in launching a critical onslaught on modernist housing'* (Gold, 2007: 276) and, by default, the practitioners who had enabled its implementation. The resultant backlash certainly drew attention to the public architect, widely held responsible for the type and design of housing that had proliferated since the war. The criticism went further by suggesting that, whilst new tenants often celebrated their new homes, this euphoria quickly dissipated with experience. This level of introspection certainly focussed attention but failed to express any wider concerns that might negatively impact social housing such as lack of maintenance, management, security and questionable allocation. These issues would appear much later, but the Ronan Point disaster marked a much more significant turning-point with the national press taking an active interest in architecture. The reputation of the profession was further affected as the Tribunal tasked with investigating the disaster heaped blame upon poor design, poor workmanship and inadequate project management and supervision and architects and structural engineers would come in for particular criticism (Griffiths et al, 1968). Although architects played a very small part overall in the implementation of system build high-rise, the fact that the Ministry and its Chief Architect, Cleeve Barr, had so vocally promoted it was enough for politicians to conveniently focus attention on the profession and its role in promoting the initiative. By 1972 the media was actively involved in the denigration of modernist architecture and its practitioners, representing them as '*manipulative social engineers'* and marking the end of a '*remarkable flowering of hope and opportunity'* (Gold, 2007: 12). Conveniently this onslaught failed to apportion any blame to the politicians who had so enthusiastically promoted it, or the contractors who successfully resisted attempts by the profession to shape the product. The later emergence of allegations relating to corruption amongst design professionals, most prominently in Newcastle and Birmingham, would further stoke the fire and convince a willing audience that architects had been more motivated by personal gain than the pursuit of quality housing. As the dialogue developed, Oscar Newman's concepts of defensible space (1972) would find renewed favour with Alice Coleman (1985) developing the charge sheet condemning the design professional. Her verdict (announced before she had presented her evidence), proved particularly attractive to the then premier, Margaret Thatcher. Certainly the denigration of social housing played well to Thatcher's political agenda and it was convenient to overplay the role of the architectural profession rather than risk pointing fingers at contemporary government ministers.

Jencks' announcement of the death of modernism has attracted greater scrutiny in the United States. Writers suggest that Jencks' allocation of blame for the failure of high-rise public housing has become

the accepted myth, conveniently shifting responsibility away from the institutional or structural issues (Bristol, 1991). Bristol analyses the background history of the Pruitt Igoe development, detailing the constraints imposed upon the architects. Meehan (1979) and Montgomery (1985) analyse the occupancy rates for the development and illustrate how a rise in vacant properties exacerbated vandalism and rising crime. Rainwater in *Behind Ghetto Walls* (1970) argued that violence and vandalism was understandable due to poverty and discrimination of the wholly Black population of the development, and architecture had nothing to do with its problems. Nevertheless when the Architectural Forum (1965) in the United States had joined the early condemnation, the profession was widely seen to have legitimised the contention that architecture was to blame for Pruitt Igoe's problems and so the myth has gained credibility even though Bailey (1965) had conceded that chronically inadequate maintenance and the increasing poverty of tenants were just as significant concerns as design.

The more enthusiastic recent appreciation for some of the landmark developments (Harwood, 2015) aligned with a reappraisal, and increasing acceptance of the significance of some key examples of post-war development prompts a wider study of all forms of post-war housing provision. The marked indifference toward System build, for instance, has tended to illustrate a condemnation of this form of construction and, whilst Glendinning and Muthesius (1994) acknowledge the importance of System build and Dunleavy (1981) and Finnemore (1989) provide high quality empirical data to demonstrate its scope, there is still a need to better understand the design influences, personnel and range of Industrialised Building alongside some qualitative assessment. Finnemore's (1989) assertion that System build did not exist in its truest form due to the minor modifications imposed by local architects tends toward over-simplification. That it represented a second politically-led, phase of high-rise development following a primarily Architect-led first phase (Glendinning and Muthesius, 1994) is an important observation that challenges those who view the movement as a single heterogeneous endeavour.

Many of the developments that have been recognised today were also the recipients of period appreciation in the form of either published reports in the architectural press or formal awards (RIBA etc). It is noteworthy that those studies that have sought to re-consider the significance of high-rise public housing developments have largely rehearsed these contemporary conclusions (Day, 1988; Harwood, 2015) and failed to make any retrospective appraisal. Coincidently the buildings featured in such reappraisals are invariably the products of the architectural elite, most commonly private architects commissioned by the public sector, with only a token acknowledgement of the work of the public architect of the period. The dismissal of the significance of the second phase of high-rise (System build) as of no interest to the conservation movement with seemingly little chance this is

likely to change (Harwood, 2001) seems to contradict Historic England's (the successor to English Heritage) own prescriptive guidelines on assessing heritage (originally published as English Heritage, 2008). This tendency suggests that commentators are more likely to rehearse accepted period opinion than provide a genuine re-appraisal in the light of current experience or prevailing contextual considerations. The result is starkly in contrast to the near blanket appreciation of earlier periods, and risks jeopardising significant important development as buildings age and commercial redevelopment becomes a priority.

Larkham (1996) presciently explains the predicament albeit in the context of conservation linked more widely to urban planning, but his observations and conclusions are equally pertinent to the recognition and protection of post-war high-rise public housing. That certain key high-rise developments are in danger, particularly in the light of a changing political policy relating to social housing provision, can be attributed to a capitalist order. Larkham (1996) summarises the dilemma when classifying the city as a product of the capitalist order with investment fuelling the economy. He suggests that capitalism *'runs counter to the sets of values based on aesthetic, environmental, non-quantitative criteria'* (Larkham, 1996: 3) developing an argument for the conservation of assets by quoting Binney (1981) in concluding that listed buildings are a burden for both the developer and the administrator. In this circumstance the developer sees the asset or building as an obstacle to redevelopment and resultant financial gain and the administrator or public official laments the time, effort and money required to maintain it. In a period when a substantial number of buildings are the responsibility of Housing Associations or Social Landlords, it is easy to understand the financial imperative of removing a potential heritage asset before it becomes too great a burden. Nowhere is this more evident than in the decision to demolish the Smithsons' Robin Hood Gardens in Poplar and the acquiescence of Historic England in granting a Certificate of Immunity (2009) thus supporting the developer's position (Powers, 2011; Thoburn, 2018; Holden and Willink, 2020).

The emerging trend related to the conservation of social housing and the *'colonisation and improvement of properties'* (Larkham, 1996: 12), suggests that the gentrification of post-war public housing offers a lifeline for certain heritage assets. But, as Larkham points out, the improvement of properties *'by professional classes with time and money to conserve' or more likely large commercial developers in the case of high-rise has the same effect, inevitably displacing 'populations of a lower social class and lower income'* (Larkham, 1996: 12). These arguments are taken up by Pendlebury (2007) commenting on conservation in a planning context, who suggests that privileging some element of the past requires a socially-constructed process of selection and what constitutes heritage is *'contingent on prevailing cultural, political and economic mores'* (Pendlebury, 2007: 52). Guidance that features in the ICOMOS Washington Charter (1987) and the Nairobi Statement (1976)

that establishes that conservation in principle should not lead to the displacement of people through gentrification does not seem to be a current consideration in UK heritage decision-making. Clearly the potential recognition and protection of significant high-rise assets poses important questions about ownership, tenancy and ongoing management.

Glendinning and Muthesius (1994) recognise that good and bad high-rise exists, without offering a qualitative assessment. More recent research (Jones, 2003; Moss, 2016) has shed more light on the high-rise movement post-build, explored the multiplicity of reasons for its perceived failure and has advocated the need for the recognition and protection of some of the best examples. The identification of the best examples needs to go beyond those that attracted contemporary plaudits, and a qualitative assessment of System build is clearly required. Moss (2016) has produced a thought-provoking study of the issues relating to the listing and conservation of post-war social housing, drawing many of the same conclusions through the use of some landmark case studies. What is evident is the inconsistent treatment of potential heritage assets, and Moss highlights the treatment of Park Hill in Sheffield with Robin Hood Gardens in London in support of her argument. Moss (2016) calls upon Historic England to develop a more prescriptive, coherent and consistent policy relating to the protection and conservation of assets. She also highlights the need for resident involvement in developing this policy, perhaps as a result of the absence of any tenant participation during the planning, design or occupation phases in the history of high-rise. That the phenomenon was the product of variously paternalist or altruistic participants to the exclusion of the tenant suggests that, in forming opinion, an assessment of significance will be less appreciative. When the treatment of existing examples by the conservation movement seems inconsistent, a qualitative assessment of the movement in all its forms could inform the significance of assets and identify those deserving of protection. How the conservation movement perceives high-rise and the policies it adopts for its conservation also needs clarification. Whether architecturally and socially-significant assets can continue to provide housing in the form originally intended or whether gentrification is an unavoidable consequence of conservation.

1.5 Structure

Following the introduction Chapter 2 begins by examining the development of the flat in Britain and how early examples were largely limited to homes for either the upper or working classes in the capital. Despite the prevalence of Garden City ideals it will explore the influence of landmark modernist examples that introduced the flat as a new paradigm in urban living. The influence of continental experience and style to promote the adoption of mixed development estates as a

compelling solution to the challenge of developing neighbourhood communities will be examined. Successive chapters will explore how modernist inspired architects working both in the private and public sector energised and emboldened by the task of reconstruction would embrace the flat as a vital component of their plans. Taking advantage of new building materials and advances in both technique and technology these architects will increasingly develop a palette of styles that incorporate slab and point blocks and a trend to build progressively higher.

Chapter 3 will examine the political commitment to provide good quality housing for the population following the hardship of war will be explored and how this imperative witnessed a drive to find new forms of construction that promised to provide homes more quickly and cost effectively. With a growing demand for new homes into the late 1950s and a re-energised commitment to eradicate the slum the study will examine the trend to embrace high-rise flats to counter the challenges of a shortage of building land and the need to maintain high densities in urban areas.

Chapter 4 will examine the growth of non-traditional building methods immediately after the war motivated by a shortage of materials and labour. It will then consider the relative success and influence of the Schools building programme in promoting pre-fabrication before appraising the introduction of System build.

Chapter 5 will study the support for system build, a method of modernising and bringing industrialisation to the building industry together with its emergence as a form of building considered particularly appropriate for the construction of high-rise flats. In charting the promotion of system build the study will explore the roles, motivations and priorities of a range of stakeholders including government ministers, civil servants, contractors, architects, local politicians and trade unions. Despite each group having different priorities it will show how the Ministry, ably assisted by the Cement and Concrete Association managed to achieve a consensus that ensured the rapid adoption and take-up of this new form of building.

Chapter 6 will explore the implementation of System build including an in-depth appraisal of the leading contractors' systems, their antecedents and each vendors' methods of deployment. This will explore the range of manufacturing options that contractors could employ. It will examine the potential benefits of both the dedicated factory and the in-situ manufacturing facility and how contractors exploited the emergence of a range of new equipment to realise their aims. The study will demonstrate how each group of stakeholders were ultimately convinced of the feasibility of System build and its potential collective and individual benefits. In concluding the study will consider the overall success of the initiative, its viability as a method of delivering cost effective and faster construction without the need for skilled labour and a means of achieving Open systems. Ultimately

the Chapter will consider how largely avoidable compromise adversely effected implementation and ensured industrialisation failed to achieve its promise.

Chapter 7 will feature a case study of Birmingham that will expand on two themes of relevance to the development of the high-rise flat, the first will examine the role of the public architect in championing modernist ideals and advancing high-rise development and the second the role of the local politician in adopting the form to meet their home building objectives. This study will feature, in the form of Birmingham's first City Architect, a vocal practitioner and representative of his profession and an individual motivated by the pursuit of good design and a commitment to the mixed development ethos. The case study will record the development of high-rise flats in Birmingham, the advent of system build and the impact it had on policy and the compromises the City Architect had to make when faced with the production-led priorities of local councillors.

Chapter 8 will chart the demise of high-rise construction from the late 1960s and consider successive governments' treatment of social housing provision. This will demonstrate how a once common political commitment to provide socially managed housing was ultimately replaced by the ascendancy of private provision that has and continues to impact remaining high-rise development and result in the demolition and replacement of much of the remaining high-rise stock.

Chapter 9 will review the history of high-rise flat provision and summarise the role of individual groups of stakeholders. It will demonstrate that the consensus that enabled the adoption of the high-rise flat as an exciting means of providing housing for a limited demographic in mixed development communities was ultimately compromised by wider adoption and the extension of its use to a wider a range of tenant. Similarly, compromises and mistakes in the adoption of system build will be shown to have jeopardised its potential to provide low-cost, sustainable, quality housing. Today the demolition of high-rise public housing is justified by an enduring negative legacy, the high cost of maintenance and a commercial imperative that drives its replacement by the politically more attractive concept of the affordable home. The study will conclude with an examination of prevailing perceptions of high-rise social housing, its treatment and latterly its recognition in some quarters as a significant and important component of the state sponsored housing provision.

The concluding chapter will consider the original contribution of this research. It will consider the new light shed on the role of the public architect and in particular the conflicts between the design professional and the elected official. It will also be shown to have provided a comprehensive and informative narrative relating to the adoption and implementation of high-rise in Birmingham. It will review the new evidence of the competing priorities of public architect and local politician and the extent to which public architects were able to maintain their professional integrity in the country's

second city. In studying in-depth the implementation of system build it will also be shown to have contributed original insight into the campaigns for the adoption of system build, those responsible, the opportunity the initiative provided and ultimately the failure of the initiative. This will consider evidence from Birmingham's implementation of system build and an evaluation of Continental and British experience in providing an explanation of economic failures of the initiative.

Modernism and the flat

2

2.0 Modernism and the flat

Elizabeth Layton's (1961) study of post-war local authority building begins by extolling the virtues of buildings, '*They outlive by so long a span the generation which conceived them. They are a tangible memorial to wealth, power, social success, spiritual dedication, philanthropy or public service'* (Layton, 1961:15). The Modernist-inspired high-rise social housing phenomenon of the early 1960s, centred largely on System build development, would however, quickly develop a negative reputation. Consequently, many would enjoy a much shorter lifespan and succumb to demolition within twenty years of their completion.

Figure 1: Promotional image of a suitably pristine, completed Morris Walk (1964) mixed-development, the first of the LCC's forays into System build. Source: The Concrete Society.

Under successive governments the post-war social housing initiative would be responsible for the construction of unprecedented numbers of new homes. Between 1945 and 1969 four million were completed, with social housing provision representing fifty-nine per cent of total housing production for the period. Of these some sixty-four per cent were houses, twenty per cent were low-rise homes of between three and five storeys and the remaining sixteen per cent comprised high-rise blocks of greater than six storeys (Glendinning & Muthesius, 1994). Despite the relatively small percentage attributable to high-rise development, for many the high-rise block has come to symbolise the post-war public housing initiative. To better appreciate how high-rise construction became an intrinsic part of social housing provision it is necessary to consider the influences that energised an emerging

generation of architects and how practical considerations relating to density and achieving a new vision of mixed-development witnessed the adoption of a blueprint for post-war re-construction.

2.1 The flat tradition in England

The growing antipathy shown towards the flat reported by many commentators from the early 1970s to the 1980s was partially explained by the absence of an established flat living tradition in England. In their denigration of the flat Sutcliffe (1974) and Colman (1985) cite a clear English preference for the archetypal cottage or villa complete with its own garden. Their argument is supported by a supposed absence of a flat living tradition in England which contrasts sharply with the apparently positive perception and acceptance of flats in other parts of the world. Whilst suggesting, *'In Southern Europe, Latin America and the Far East all income groups have viewed flats as an acceptable solution to the challenge of high-density urban living',* (Glendinning & Muthesius, 1994: 5) the authors concede that the level of enthusiasm might vary in different geographies. They observe that the utilitarian tenements for the poor in North America might exhibit *'a stigma of expediency'* in stark contrast to the positive perception in Scandinavia, '*often cited as one of the sources of inspiration for post-war architects they have been universally appreciated'* (Glendinning & Muthesius, 1994: 5). Despite the tenant's inability to exercise much in the way of choice they go on to suggest that in central and Eastern Europe flat living nevertheless appeared to be widely accepted. In Scotland, the ubiquitous city tenement, an early form of the genre and an integral part of the townscape whilst initially subject to criticism has lately been accepted and even celebrated. Closer still, the purpose-built flat in central London built for the upper classes as a pied-de-terre, whilst undeniably providing a higher level of amenity, has similarly been accepted and escaped criticism.

In the aftermath of the Ronan Point disaster in 1968 many commentators supported by the print media renewed their arguments in support of the supposed inferiority of and widely perceived aversion to the flat. In seeking to promote the marked English preference for the house Sutcliffe (1974) was particularly critical, *'There can be no doubt that the standard of accommodation offered by the English flat has always been markedly inferior to the separate cottage or villa…. our own minority of flats constitutes a deviant form of housing in a society which is rooted in a tradition of small, separate houses'* (Sutcliffe, 1974: IX). Conveniently excusing private flats that might always have been quite popular with their residents he admits that enthusiasm for the flat might be dependent on the quality of its construction, its setting and other attributes. But the overall conclusion reiterated the flat's shortcomings, in marked contrast to the virtues of the traditional villa or cottage with the reluctant proviso that for a limited demographic, *'childless couples in either early or late adulthood'* the flat may have some advantage (Sutcliffe, 1974: 3).

In order to substantiate this national aversion Sutcliffe proposed that our history conditions us to reject the flat. He suggested in Europe during the fortification period, a precedent emerged that favoured a tendency to increase urban density rather extend city boundaries. This, he contrasts with an English tendency to extend city boundaries with new construction to accommodate a growing population rather than the more commonplace European pattern of sub-dividing and extending existing homes. Consequently the need to accommodate a constantly extending family made flat living acceptable in other parts of Europe where the need to retain fortifications persisted. Our aversion to the flat and preference for the house is therefore long-standing and marked by the tendency to extend towns and cities beyond defined boundaries that occurred in England from the fifteenth century and continued until the twentieth century (Sutcliffe, 1974). The argument that the concept of shared accommodation conditions us and was somehow alien to the English town dweller is harder to substantiate. In the Industrial towns slums were quickly characterised by multiple occupancy and overcrowding, with accommodation commonly rotating from shift to shift. Elsewhere census returns demonstrate that it was common practice to share accommodation with paying lodgers. Later, Georgian townhouses were commonly subdivided to form individual flats with shared access. These trends were often the result of a need to accommodate a usually lower paid workforce in close proximity to their work, consequently leading to an increase in urban densities. When tackling slum clearance and re-development in the mid twentieth century, the need to maintain these high densities would inevitably necessitate consideration of high-rise development.

The enduring appeal of small cottages with gardens was a product of the Garden City movement characterised by the development by early philanthropists of model towns unencumbered by the density constraints of existing development. Instead they were able to champion the advantages of improved social welfare without concerns related to space or existing development and consequently present the resultant benefits that a physically-fit workforce could make to productivity.

Responsible for a range of housing projects ranging from New Lanark (1784), Akroydon (1861) and Saltaire, (1850-61) and later developments including Port Sunlight, (1888) and Bournville, (1893) they espoused Garden City values but rarely had to consider the flat as a housing solution when developing their blueprint for successful community living. The Garden City promoted by Ebenezer Howard (1902) provided a definition that appropriated Arts and Crafts values to promote ‘a town planned for industry and healthy living’. The movement stipulated a density of no more than twelve houses per acre, introduced the cul-de-sac with traditional cottages grouped around it and reduced road widths with pavements that offered space for children to play. Homes were to be built using traditional brick and tile with varied roof lines, prominent gables and grouped aesthetically rather

than regimented (Nuttgens, 1989). The garden city or suburb promoted the English cottage, set in a balanced community featuring schools, shops and community centres as the ideal.

Figure 2: Advertisement extolling the virtues of Welwyn Garden City. Source: Architects Journal.

But despite the widespread enthusiasm for, and, adoption of Garden City principles, purpose-built flats had been adopted in England. These had been largely limited to existing high-density urban areas predominantly in the capital. In this context flats were seen as a convenient solution to high-density London living, either as city boltholes for the upper classes or as solutions to housing the working classes close to their places of employment, as evidenced by Peabody Trust projects from 1861 in London.

Only from the 1950s would the urgent need to continue to eradicate the inner-city slum see the emergence of the high flat as a mainstream solution to maintaining high densities in an urban

setting. Advances in techniques and technology that had influenced the Modern movement would encourage a new discourse on ways of living that would see flats emerge as an intrinsic part of a solution that balanced work and living. Modernist thinking that had captured the attention of inter-war architects would when allied to a post-war need for re-construction further energise and influence a new generation of post-war architects.

2.2 Modernist influence

Pre-war examples of English Modernist flat design were largely limited to private commissions and famously include Wells Coates' Isokon flats for Jack and Molly Pritchard (1934) and Berthold Lubetkin's Tecton designed HighPoint I and II (from 1935).

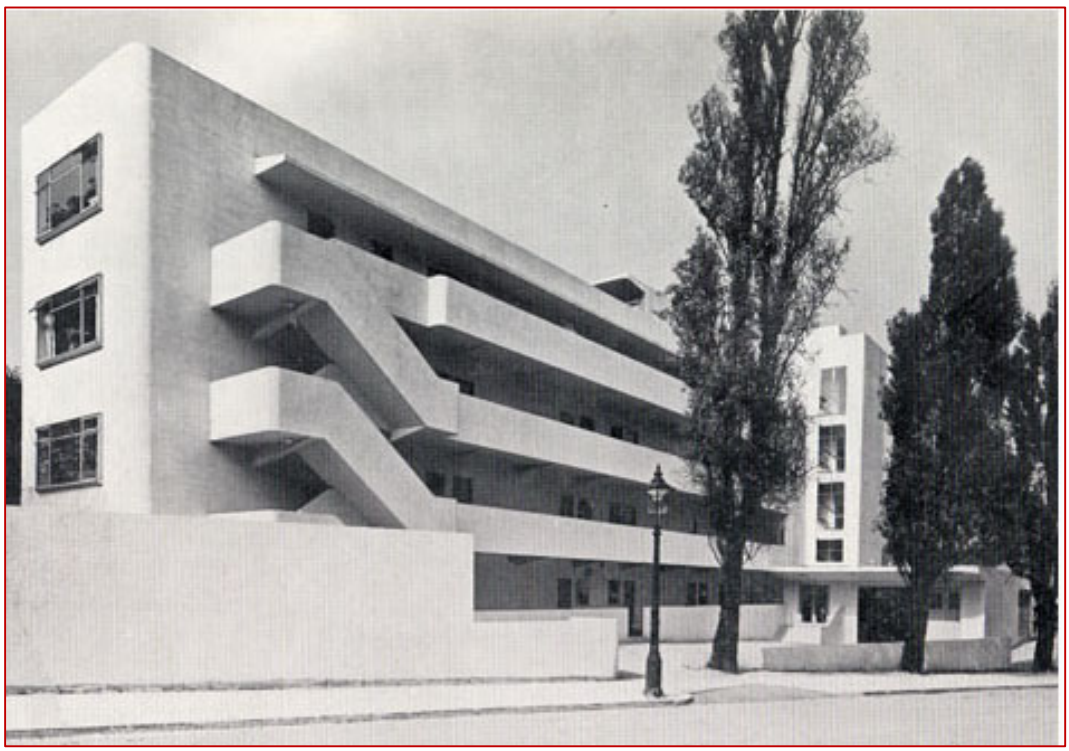


Figure 3: The Isokon Building (1935) by Wells Coates, an early example of modernist concierge flats for the professional classes. Source: en.wikiarquitectura.com.

The former even provided a more radical interpretation of modern living by featuring communal catering facilities. Kensal House designed by Maxwell Fry in 1937 with the assistance of social reformer Elizabeth Denby, would reflect the social and political ideals of Modernism in housing the working classes.

Figure 4: Highpoint Flats (1935) by the Tecton Group, originally built to accommodate staff from the Gestetner Company. Source: Architects Journal.

Figure 5: Kensal House (1937) by Maxwell Fry, flats designed specifically for the working classes. Source: Architecture.com.

Meanwhile in Leeds, the Quarry Hill Scheme developed by City Architect RAH Livett in 1938 and based upon the French steel-framed Mopin system provided large-scale Modernist social housing.

Figure 6: Quarry Hill Estate (1938) designed by RAH Livett, City Architect, Leeds, the largest social housing project of its day. Source: Municipaldreams.wordpress.com.

Less celebrated were the four- to six-storey balcony access flats based upon an evolution of the Victorian tenement that predominated in the capital. Some would appear in Birmingham evidenced by the St Martin's flats but extensive flat development remained pre-dominantly London-based (Sutcliffe, 1974).

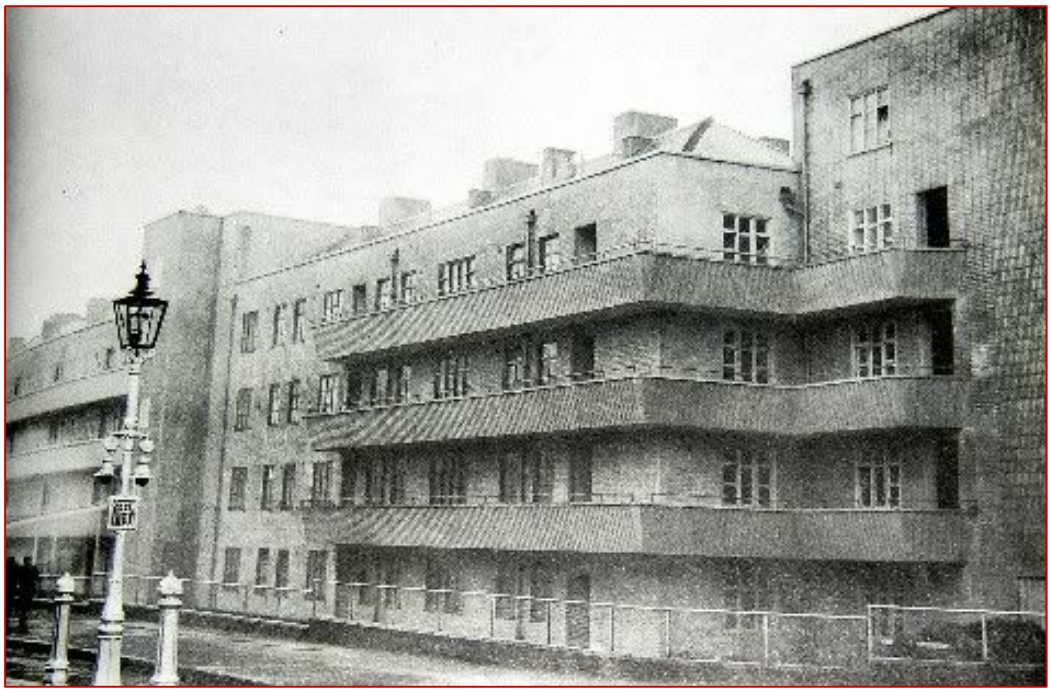


Figure 7: St Martin's (1939) flats in Birmingham. Source: BirminghamLive.

The emergence of the flat as an intrinsic component of modern housing would be enthusiastically promoted by the Modern movement, itself a product of wide-ranging influences. Contemporary

commentators would discuss these, with Pevsner suggesting it shared an emphasis on simplicity with the form over function design philosophy and an absence of needless ornamentation championed by Morris and Ruskin's Arts and Crafts ideals (Pevsner, 1936). The Functionalist movement would also contribute by espousing the need to question the purpose of architecture and to discover new forms in preference to mere stylistic revivals (Tubbs, 1945). The defining objective of Modernism was to transcend mere architecture in order to influence and change people's lives for the better. Weimar Germany, Gropius' Bauhaus movement and Existenzminimum would all play a part in defining what was viewed as an exciting new approach to living that focused on the provision of the basic requirements for existence. Banham (1962) explores the growing influence of Modernism, suggesting that up until the Steam Age the occurrence of new forms and functions was so limited that the relevance of previous schools of architecture could be maintained. The emergence of new forms of building that included factories, railway stations, prisons, schools, hospitals and office blocks created a new dynamic. *'Architects were faced with functional problems for which the past was no guide…. the new functions compelled the architects of the Steam Age to build in shapes and sizes that the ancients could not have recognised'* (Banham, 1962: 18). Although Banham questions their success he concedes that the task that faced Modernism was to respond to a similar revolution in the function of the home, *'it became necessary for architects to reconsider and re-assess the basic theme of their art, the dwelling of man'* (Banham, 1962: 18).

Modernism certainly captured the zeitgeist, reflected in contemporary art and literature, it exemplified a radical new movement for the Machine Age and the period that saw steam replaced by gas turbines and the internal combustion engine and witnessed new developments in long distance travel by rail, road and air. Taking advantage of new technology, a revolution in new materials and methods would also contribute to new approaches in the provision of housing.

The French Swiss Le Corbusier would emerge as Modernism's most vocal advocate, blessed with a poetic (and often patronising) turn of phrase and an innate ability for self-promotion. But for many he became the mouthpiece of the movement. Reflecting upon the period and the major players of the Modern Movement, Banham spoke of Le Corbusier, Frank Lloyd Wright, Walter Gropius, Richard Neutra and Mies van der Rohe in deferential terms whilst at the same time sounding an alarm: *'Whilst they lived they tyrannized the Modern Movement, monopolizing attention and preventing the recognition of other (not always lesser) talents'* (Banham, 1962: 3).

Figure 8: Le Corbusier at work, a master of self-promotion and highly vocal advocate of Modernism. Source: www.themodernhouse.com.

Whilst not the only arbiter of Modernist taste Le Corbusier was undoubtedly its most vocal, espousing the need for a building to be a reflection of its structure and purpose. This contrasted with a style that often saw decoration applied after the structure had been determined. The oft-quoted mantra '*the house is a machine for living in*' (Le Corbusier, 1928: 8) championed the idea that the form needed to reflect the needs of the inhabitants and enable them to live their lives in new and more fulfilling ways. Banham suggests that Le Corbusier meant that the likeness of the house to a machine should be seen in terms of its being cheap, standardised, well equipped and easily serviced, '*a house that resembled a machine in being radically well suited to the needs it had to serve, designed with honest - even inspired - rationalism, but without inherited prejudices*' (Banham, 1962: 19). Le Corbusier's success in monopolising attention disguised to some extent the heterogeneity of the Modern Movement, but his thinking and pronouncements would reflect a growing appreciation of the relevance of the flat within Modernist thinking. This would be particularly evident from his 1925 *Urbanisme* (published in England in 1929 under the title *The City of Tomorrow and its Planning*) that described a mixed-development of office skyscrapers incorporated into a community of low-rise flats and houses amid a landscaped park.

Quickly finding support on the continent, the germination of the Modernist seed would take a little longer in England and be subject to other influences. The formation of the Congrès Internationale

d'Architecture Moderne (CIAM), meeting for the first time in La Sarraz in 1928, would bring together architects dissatisfied with the status quo and invigorated by the new ideals of the Modern Movement. It was not until 1933 at their fourth meeting that the need for a statement of principles was discussed with the resultant Athens Charter identifying the four functions of the city as Work, Residence, Recreation and Circulation (Esher, 1983). The formation of a British branch of CIAM in 1933 known as the Modern Architecture Research Group (MARS), under the chairmanship of Wells Coates with FRS Yorke as secretary, would also provide a welcome destination for a number of European émigré architects and commentators. Meanwhile Phillip Morton Shand, Hubert de Cronin Hastings, John Summerson and Herbert Reed would emerge to form an influential part of the editorial teams of widely-regarded periodicals including the *Architectural Review, Architect and Building News* and the *Architects Journal.* In 1938 MARS would put on an exhibition entitled *'New Architecture'* that largely featured small-scale housing projects designed to promote their members' work but also markedly embraced flat living. The potential of flats to provide a solution to a new way of urban living therefore gradually became accepted by the architectural avant-garde in England.

A new generation of architects would be energised by the new possibilities of community housing that flats offered along with the exciting potential to incorporate new materials and methods of construction including pre-fabrication (Gold, 2007). That many of these young Modernists were also politically motivated by the social challenges of housing and living conditions added another dynamic to the discourse and witnessed the eventual emergence of flats as part of the housing solution (Bullock, 2002).

The influence of CIAM and MARS gave credence to a growing acceptance of the flat as a viable answer to the housing question in the eyes of a generation of new architects studying their craft in the 1930's with its place *'embedded in the consciousness of the British Wing of the Modern Movement…. these new ideas were being passed to a new generation of architects in the Schools of the 1930s*' (Jones, 2003: 76). During this period the progressive professional periodical the *Architectural Review* provided an enthusiastic commentary on all things Modern under the editorship of Hubert de Cronin Hastings and his Deputy JM Richards. It also provided a mouthpiece for established commentators including Nikolaus Pevsner and Phillip Morton-Shand and became the unofficial voice of British Modernism (Jones, 2003).

Whist the theory would continue to be developed, the practical implementation of Modernism in England would be put on hold during the war as the absence of a workforce halted all forms of construction not focussed on the war effort. Architects and an interested populace would however continue to be engaged in a dialogue that considered how post-war reconstruction might be

addressed. The development of a Modernist manifesto in Britain was further assisted by the spread of Fascism in Europe as a steady flow of émigré architects fearing persecution arrived in England. Whilst some like Mies Van der Rohe and Walter Gropius would only stop over on their way to the United States, others would stay and make a significant contribution to post-war architectural thinking.

The considerable influence of these new arrivals has been widely discussed contrasting the pre-war view that architecture 'was an activity of pure aestheticism, in which universal laws of beauty and harmony were sought' with what was to follow (Day, 1988: 23). Day uses the commentaries of JM Richards and J Summerson to explore the development of the proposition of architecture as a social art and ascribes this development in part to the influence of the émigré architects who *'brought with them a German Idealist tradition which replaced the British Empirical tradition'* (Day, 1988: 23). Summerson explored the proposition in his article '*The Mischevious Analogy*': *'great architecture of the past has often been the instrument and symbol of a class – the baron, the ecclesiastic or the great landlord parading his consequences before his compeers and before the people. The architecture of today must be the architecture not of a class but of the community itself'* (Summerson, 1942: 27). The influence of Modernist thinkers could clearly be seen in JM Richards *'Introduction to Modern Architecture'* (1940) when he stressed that architecture should be a social art related to the people it serves, *'rather than an academic exercise in applied ornament'* (Richards, 1940: 9). Richards also drew attention to an important new dynamic, a changing engagement model relating to architecture's sponsors and their interface with the professional advisor. He describes this as a move away from the tradition of *'the autocratic patron and the private architect handing down their prescripts via numerous pattern books'* (Richards, 1940: 9) Day describes Summerson's views as a reflection of a kind of left wing humanism rather than an explicitly Marxist one, one that accepts that architectural change occurs as a result of the '*effects of men of genius'* (Day, 1988: 25). Clearly Summerson's and Richards' views were widely circulated and discussed not least as Richards was an editor of the influential *Architectural Review* during this period. The appreciation of a new type of theoretical consumer was also evident in the publications of the left wing Association of Building Technicians (ABT) movement. In their 1949 Symposium *'The Kind of Architecture' we want in* Britain, organised by the Architecture and Planning Group of the Society for Cultural Relations with the USSR, March 17th it was reported by Boyd, *'there are great ideas, great social forces in the World today, and I personally believe that we shall get a great architecture in England only when the working class is dominant, when the state and society are moulded by the great ideas of socialism, and when architecture is inspired to be the conscious aim to celebrate and inspire the achievements of the people'* (Boyd, 1949: 26).

The greater appreciation of the working class and their role during the war in building a new world resonated with the provision of housing and was widely championed and accepted by politicians of the period. This was, in part as a necessary reward for the suffering endured during the war and less idealistically, as a necessity to stem potential sedition. In this way the emerging ideals of Modernism would meet a post-war political imperative and would influence how the country would address reconstruction and provide much needed housing.

Whilst the requirement for the post-war Modern home *'to be and look radically different, inside and out'* (Glendinning and Muthesius, 1994: 9), the influences for just how this new look would be achieved were numerous and were still largely the product of commentators rather than consumers. Exhortations to build for the working classes suggested that new tenants might get '*what they were perceived to need'*, rather than what they '*might actually want'* (Atkinson, 2012: 159). In fact there was growing evidence of public consultation in both planning and housing Committees and the introduction of public surveys. Certainly housing reformer Elizabeth Denby had been polling public opinion since the early 1930s and there would be further sporadic evidence of public engagement that canvassed tenants to learn of their preferences and aspirations. Although these largely focussed on practical considerations involving the women of the house, the Architectural establishment continued to engage in a debate that would influence the preferences of a new generation of architects and technicians who would be charged with re-building after the war.

2.3 Architectural styles

Much of the discourse would take place within the pages of the professional press but influential commentators would publish more comprehensive contemporary as well as retrospective studies. Reyner Banham would address the stylistic influences of the period in his essays *Revenge of the Picturesque: English Architectural polemics 1945-65* (1968) and *The New Brutalism (1955)*. In these commentaries he sought to understand the influences, concluding that Scandinavia, Europe and Russia contributed to the development, in the immediate post-war period, of styles that would be coined as New Empiricism, New Humanism and New Brutalism.

New Empiricism, one of the styles that found particular favour within the London County Council's (LCC) Architects Department derived much of its influence from Scandinavia. Most notably, it consisted of stylistic developments that developed in socialist neutral Sweden during the war and specifically witnessed the emergence of high-density mixed-development. In the *Architectural Review's* definition it favoured a more traditional level of domestic detailing, had a clear picturesque quality and would often favour more traditional materials including brick and timber. In contrast the New Humanism that found favour in communist Russia's classical revival harked back to the Arts and

Crafts movement and featured brickwork, segmental arches, pitched roofs and small windows. As an ally during the latter stage of the war Russia would enjoy a sympathetic press and, for some of the more radical young architects, it would represent an influential ideal, melding an architectural style with a well-defined political and social structure. The New Brutalism was more related to the traditional Modernist ideal consisting of flat roofs, glass and exposed structures and was irrevocably linked to the work of Le Corbusier. That these three styles would form the basis of architectural debate for the profession in the immediate post-war period was demonstrated by the extensive coverage that each received in publications, particularly the *Architectural Review*. Whilst each style varied, all shared an acceptance of, and commitment to, the use of the flat as an integral part of the housing equation. For a new socially-aware generation of post-war architects the prevailing discourse offered the opportunity for a full exploration of new styles and types of design as well as an opportunity to engage with emerging political theory.

Figure 9: Gunnar and Alvar Myrdal by Sven Ljungberg (1968). Source: nationalmuseumse.com

The prevailing styles and influences would be widely reported by a succession of commentators in the professional press. JM Richards' article *'A new empiricism'* in the *Architectural Review* would focus on developments in Sweden that suggested that architecture should do more than serve people's physical needs but include their psychological needs too (AR 101, 1947). During the war in neutral Sweden, isolated from the opportunity for wider discourse, thinking had developed in relative isolation. Gunnar and Alvar Myrdal's pre-war explorations of communal living were

particularly influential and developed the theme of high-rise blocks within mixed-development in a parkland setting. More progressively, thinking in Sweden embraced prevailing social considerations with development designed to accommodate mixed income groups co-existing in co-operative housing. In furthering the aims of mixed community, in Swedish mixed-development there was little to differentiate aesthetically, at least externally, the working-class flats from the luxury ones. Therefore this progressive approach found particular favour and was widely admired by advocates of mixed community development. The *Architectural Review* in particular would publish special feature editions identifying the New Empiricism to be found in socialist Sweden (AR 109, 1943). The result was that many architects and students would visit Sweden either independently or on organised tours to explore Swedish style and meet its practitioners. For the *Architectural Review* the New Swedish Empiricism represented a repudiation of the *'functionalist stereotype in favour of a new Empirical approach'* (AR 109, 1943). In Sweden this interest was met with enthusiasm by the National Association of Swedish Architects (SAR), who themselves organised tours and, keen to engage with British Architects published a series of pamphlets entitled *Swedish Housing of the Forties* to promote key developments. The *RIBA Journal* would also publish in 1942, Architect and Town Planner, Professor Holford's account of his trip to Sweden. This was later expanded to form the basis of a special Sweden feature in the *Architectural Review* in 1943. The approach and style found particular favour with those architects that favoured traditional design features such as tiled pitched roofs. It also resonated with commentators such as Cronin Hastings who longed for a return to an English picturesque style (Glendinning and Muthesius, 1994).

Many of the architects who would play key roles in the influential LCC Architect's Department visited and were subsequently influenced by the building programmes that had taken place in Sweden during and just after the war. For the socially-aware, a plethora of publications and reports were circulated featuring Swedish development and *'presented an image of a highly organised and successful welfare state building programme'* (Day, 1988: 44) that had been executed in a relatively consistent Modern style. GE Kidder Smith's *Sweden Builds* (1950) would illustrate a number of examples of Sweden's new house building and planning, including the Ribershus Estate in Malmo, which featured multi-storey slab blocks set in landscaped parkland, and the Remersholme Estate in Stockholm with its point blocks. For many architects, in Sweden they found a practical example of a country embracing a capitalist welfare state and tackling the challenges of large-scale housing provision. The applicability to the national challenge was certainly not lost on Patrick Abercrombie, himself a key figure in post-war planning and reconstruction. Writing the Foreward to B Hultens *Building Modern Sweden* (1951), a widely available and read Penguin paperback, he described *'a programme of social welfare designed to give everyone a life of basic security and equality'*

(Abercrombie, 1951: 4). Hultens himself went on to suggest *'this book of pictures tries to show what good modern Swedish architecture looks like and its connection with ordinary people in their daily lives'* (Hultens, 1951: intro).

Figure 10: The Ribershus Development (1937-43) in Malmo amid mature landscape. Source: www.ravjagarn.se.

Whilst Swedish Empiricism garnered much attention in the period, the influence of Russia on post-war British architecture was also significant. The architectural press explored styles, examples and techniques and, like Sweden, Russia welcomed English architects keen to explore styles prevalent in the Soviet Union. That Russia was able to emerge and enjoy acceptance, conveniently correlated with the 1941 Alliance with Stalin after which it was considered appropriate and acceptable to showcase and promote the work of Britain's allies. Day believed it certainly influenced *'five years of Soviet propaganda'* (Day, 1988: 54) which culminated in Victor Vesnin, the President of the Academy of Architecture of the USSR receiving a RIBA Royal Gold Medal in 1945.

For architects visiting Russia the Soviet return to classicism was of less interest than the methods and style of development. This embraced both flat building and new techniques of construction including pre-fabrication, and found more favour than the social and organisational aspects of the Soviet system. As Jones suggests, these features attracted those looking for a possible blueprint for post-war reconstruction and society in England (Jones, 2003). The Society for Cultural Relations with the USSR had an architectural group that included influential practitioners such as Lubetkin, Cleeve Barr and Arthur Ling. Cleeve Barr would become Chief Architect to the Ministry of Housing and Local Government and would become a vocal advocate for high-rise System building. The avowed

communist Arthur Ling would enjoy an influential role within the LCC Architect's department and would later take up the post of Chief Architect in Coventry. Ling in particular became a sympathetic commentator having visited Russia before the war and stayed on to research planning and regeneration.

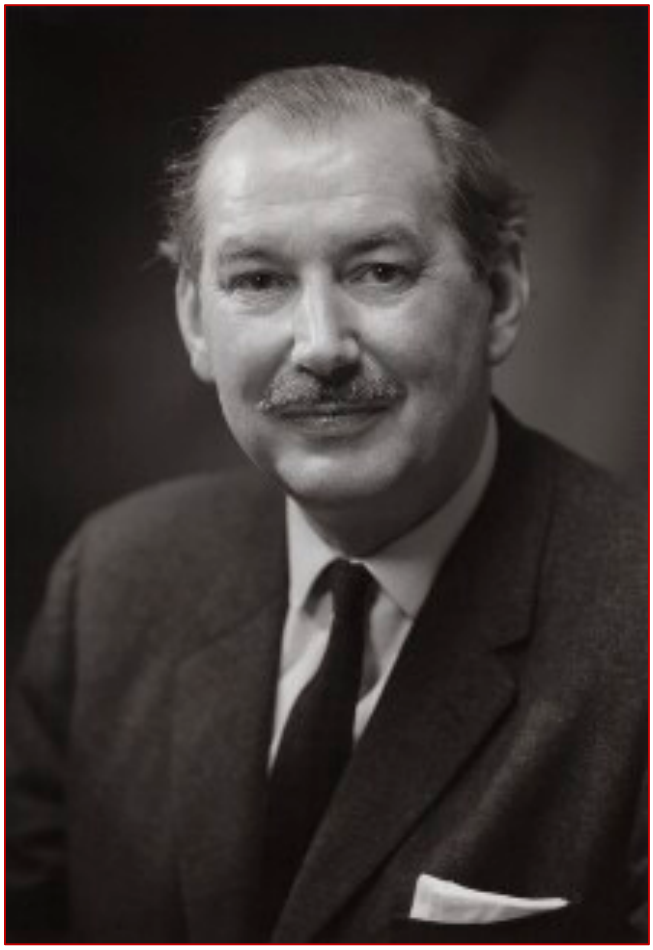


Figure 11: Arthur Ling, influential contributor to the County of London Plan and later City Architect Coventry. Source: National Portrait Gallery.

Writing in *'Planning and building in the USSR'* (1943) he extolled the progress being made in Russia aided by the beneficial circumstances of nationalised land and state-controlled industry. In particular he celebrated the active participation of citizens in defining the layout and design of their towns, cities and accommodation. His enthusiasm celebrated a pragmatism describing how Russia adopted previous blueprints including Modernism and the Garden City movement but having found them wanting adjusted their styles to suit prevailing requirements (Ling, 1943). In this way Russia represented an *'experiment in social reconstruction'* (Day, 1988: 54) that motivated a new generation of architects concerned with the possibility of radical change following World War II and despite the rejection of the stylistic conventions adopted by Russia their acceptance and adoption of flats and new techniques of construction remained.

The International Modern Movement whilst prescribing social ideals and a free and democratic society was not overtly political although commentators such as Summerson were keen to highlight its stance in opposition to Fascism (Summerson, 1942). Writing in the *Architectural Review* (1942) he celebrated the work of Le Corbusier with a Hegelian admiration that acknowledged the work of the architect as a genius whilst also recognising his work as symbolic of the spirit of the age.

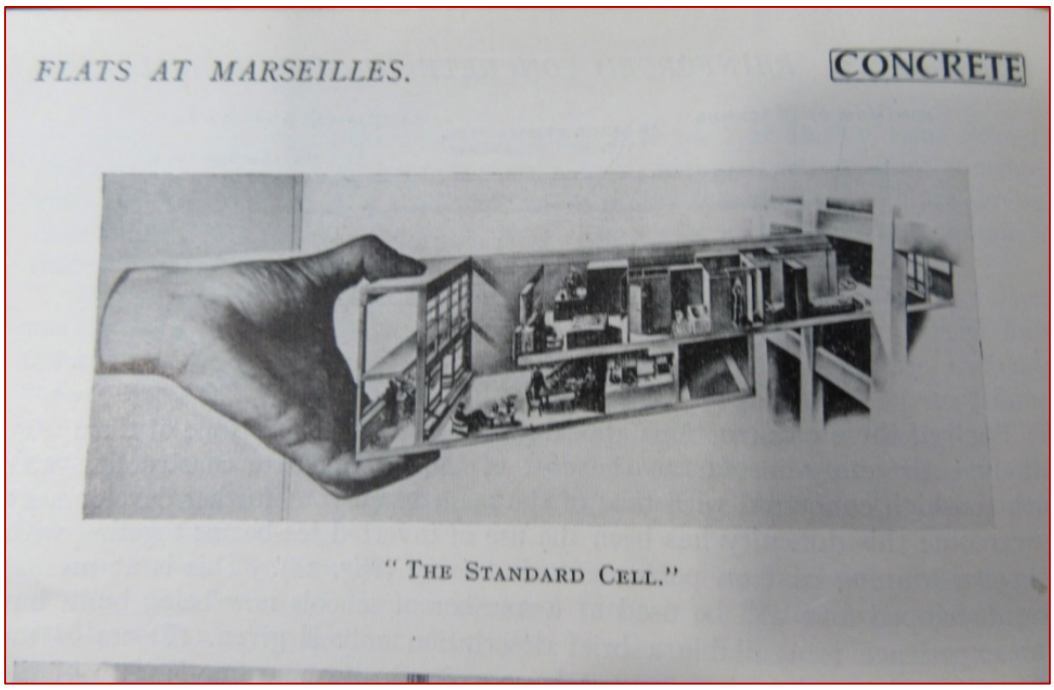


Figure 12: The Standard Cell at Le Corbusier's L'Unite, Marseilles. Source: Concrete and Structural Engineering.

In this period Le Corbusier seemed to effortlessly attract disciples and his proclamations were enthusiastically received by his followers. Familiarity with his work for students and professionals alike would derive from his authoritative pronouncements and numerous personal appearances. In England the translations of his writings were enthusiastically received including his *Modulor Theory* (1954) and his plans for *L'Unité d'Habitation* (1954). Taking as his subject Modulor Theory, he spoke in London for the first time at the *Architectural Association* in 1947, *'we have created what I call 'Modulor' which we will put at the disposal of all architects',* he continued *'this method cannot give intelligence to idiots. It must be used with delicacy. And then with it you can attempt to give proportion and the harmony of music to architecture'* (Le Corbusier, 1947). He would go on to explain the use of 'Modulor' with reference to his Unité d'habitation in Marseilles,

> *'Now I am going to show you a very much larger building - the great building which we are constructing at Marseilles - and how the same golden module can control everything... already a modern conscience has appeared everywhere and thus reformation of modern understanding is made manifest by architecture. You are going to see the whole built-up domain of the world and of each country transformed during the years to come…. The great*

moment is coming when architecture will forsake mighty cornices, and concern itself with the good of man in his dwelling, the homes of families, houses for work, for things, for institutions and for gods'

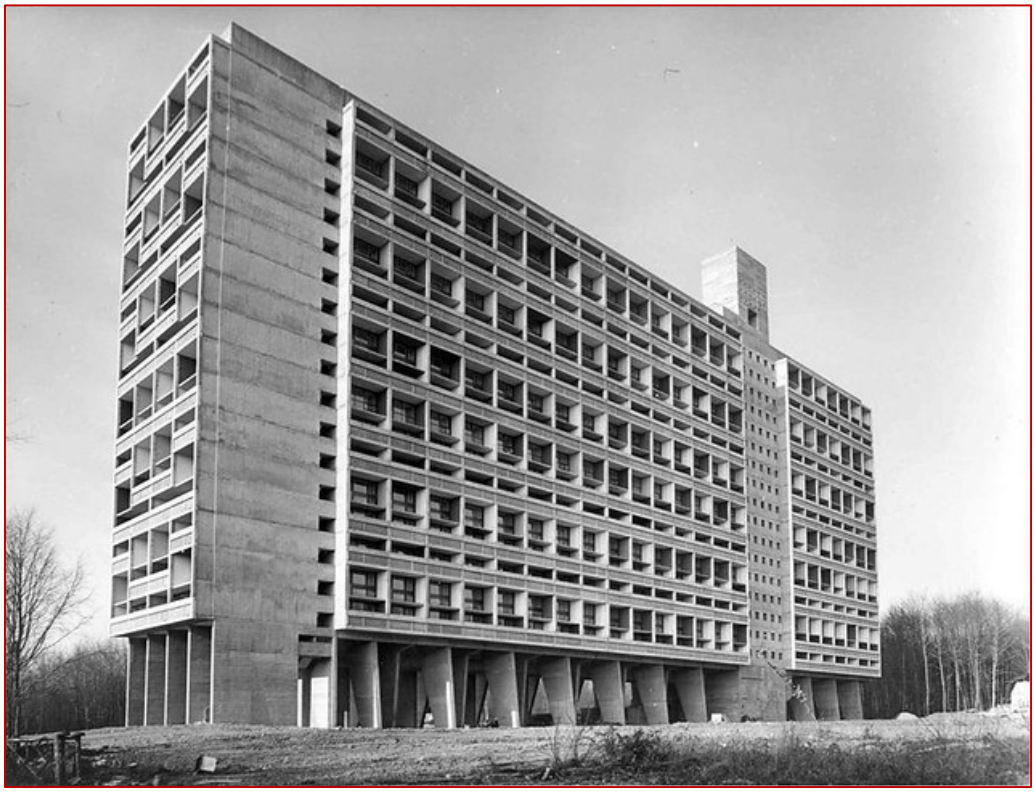


Figure 13: Le Corbusier's Unité d'Habitation (1952) with characteristic pilotis. Source: Architecture.com.

Le Corbusier's overblown and unapologetically elitist rhetoric was intended to garner support for the master, encourage young students to embrace 'Modulor', appreciate its application at L'Unité and then replicate its concept globally. The extent of the success of this endeavour would be demonstrated when Le Corbusier's received the RIBA Gold Medal in 1953 with the Awards ceremony affording him another opportunity to evangelise his message.

'I was asked, 'Will you make a great building for these people?' and I replied, *'Yes, on one condition that I am not to be bound by any rule. They agreed, and so I started work on this building, that embodies a great many of my proposals for the modern town, the town of today. I was governed by the cosmic laws of space, by my respect and admiration for nature, by the needs of the family, and the recognition of the home as the fundamental unit of society and the hearth as the centre of the home'* (Le Corbusier, 1953).

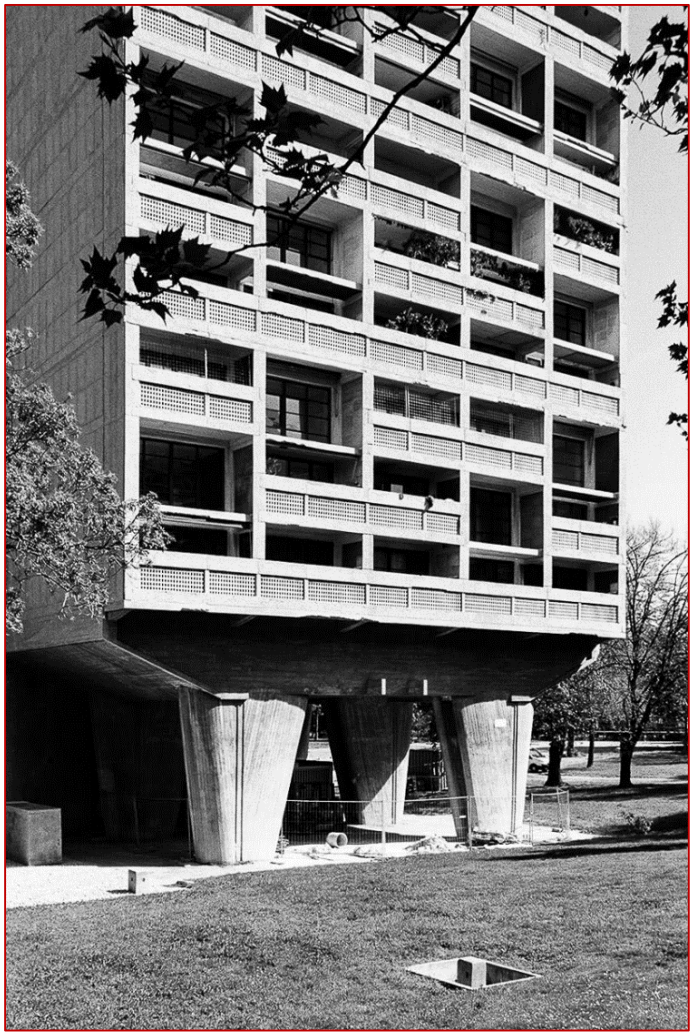


Figure 14: Balcony provision and the supporting pilotis at L'Unite d'Habitation. Source: divisare.com .

The Unité d'Habitation in Marseilles represented a radical interpretation of the potential of flat living set in a landscaped environment. It was certainly revolutionary with rooftop gardens, internal streets (in the sky) and a shopping centre on the seventh floor (Jencks, 1973). But rather than a limited number of identical dwellings it comprised twenty-three flat types each reflecting the differing needs of a multiplicity of tenants. These new flats co-existed alongside a further twenty-six different types of communal facility that included nursery schools and gymnasiums all pre-cast in concrete panels. Jencks suggests that whilst Le Corbusier may have wanted to see the four million or so homeless people in France accommodated in a series of Unités he was not so much providing a blueprint for architects as presenting the art of the possible (Jencks, 1973). The influence of L'Unité would be far-reaching albeit on a much smaller scale. Later developments by the LCC including the Roehampton Estate would draw clear architectural inspiration from Le Corbusier's L'Unité blueprint and despite efforts to establish a community the overall design and provision of amenities would be scaled back to reflect the budget. Whilst individual features of L'Unité would be replicated and copied in part by progressive architects the overall theory and composition would greatly influence suitably-

compromised examples of high-rise development with LCC's mixed community, mixed-development estates. Whilst originating in the capital, these theories and their early implementation would progressively attract attention and be replicated in the provinces. Leading the charge would be both progressive seasoned professionals and a new generation of architects serving their apprenticeships within the LCC Architect's department, many of whom would later take up positions within the Government machine or in the provinces within local authority Architects Departments.

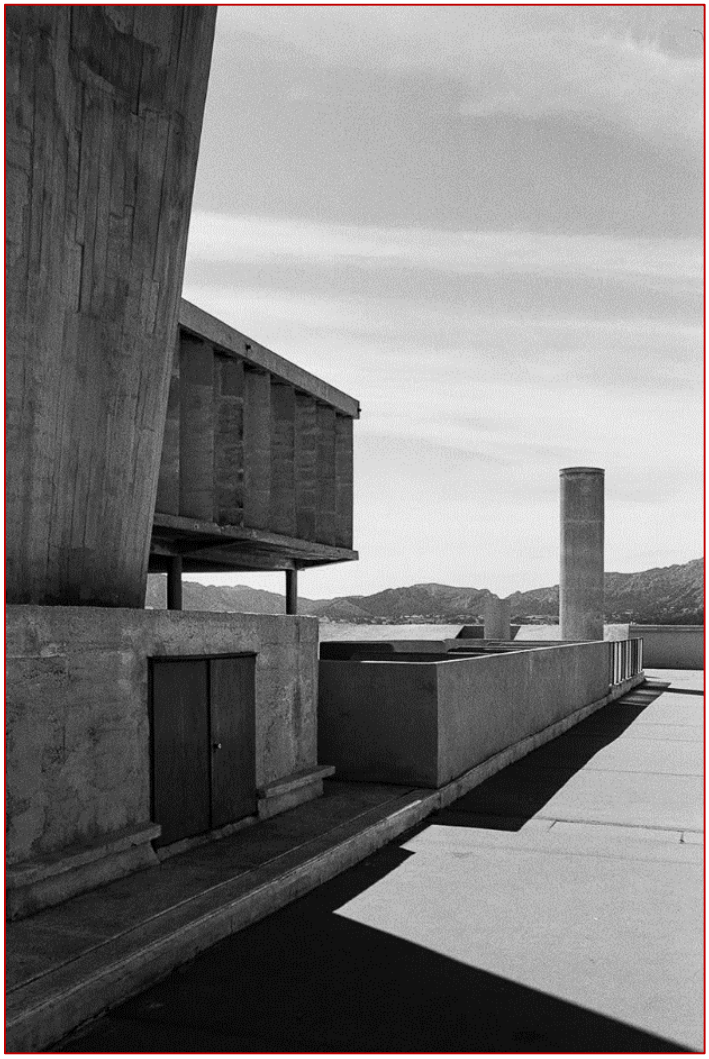


Figure 15: Acres of exposed concrete forming the roof treatment and swimming pool at L'Unité. Source: divisare.com.

The extent to which Le Corbusier's influence extended throughout the profession and resonated particularly with the increasing numbers of architects employed in the public sector was evidenced by Robert Matthew. Matthew, Chief Architect of the LCC, recognised Le Corbusier's achievement in his preliminary speech when conferring Corbusier's RIBA Award, suggesting that it represented, *'nothing less than a new affirmation of the Rights of Man, the Rights of Man in terms of sun, light, space, quiet, trees and grass…. Knitting together the technological possibilities of building with radical solutions'* (Matthew, 1953). The profession was clearly in awe of the new possibilities that design and

technology could bring as it grappled with the challenge of reconstruction and finding a style appropriate for post-war England.

Of the various styles that characterised the Modern movement it would be New Brutalism alongside Sweden's New Empiricism that made the most impact in post-war thinking and particularly characterised the early work of the LCC Architect's department.

2.4 The emergence of the LCC Architect's department

A heightened political awareness following World War II and the quest to achieve something better was a widely held objective and many architects employed in the public sector in the immediate post-war period reported a heightened social awareness as a prime motivation. The emergence of a new dynamic that focused on the needs of the working people was in stark contrast to the traditional role of the private architect working for a private client. As the influence of this new demographic gained traction a new generation of architects felt empowered to embrace new styles and new technology when considering post-war reconstruction. Some believed that Modernism up until this point had been something of an elitist pursuit and that there was a clear need to democratise the movement and ensure a new style would emerge better suited to the needs of the masses.

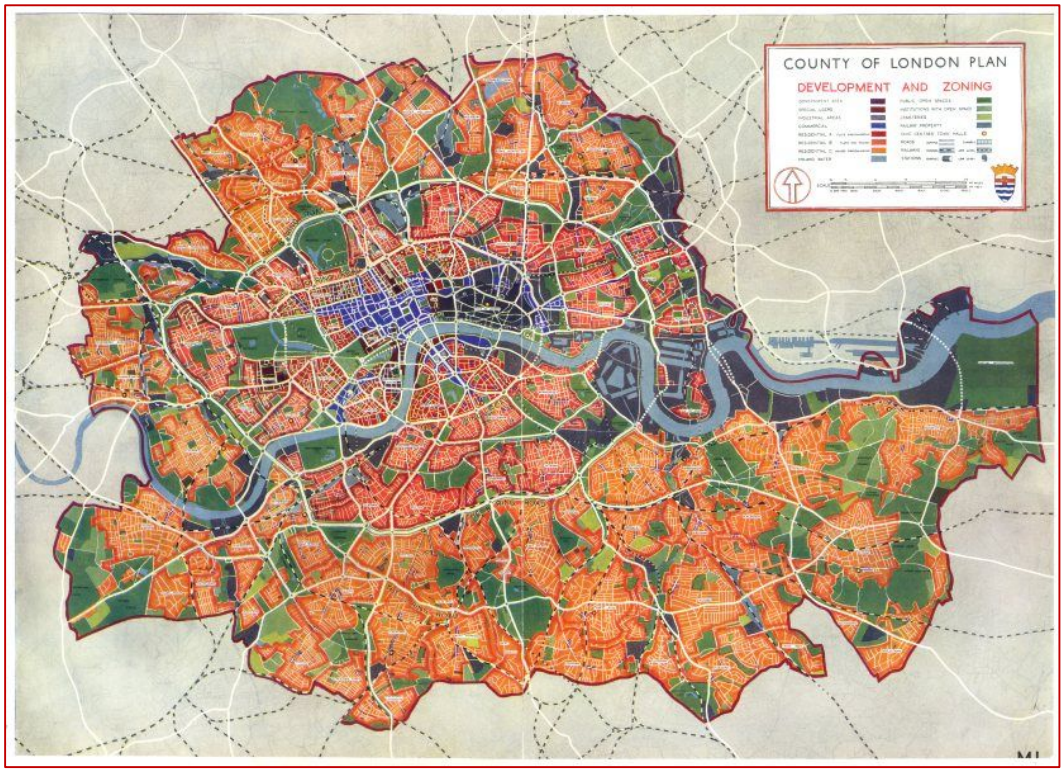


Figure 16: Development and Zoning in Abercrombie and Forshaw's County of London Plan 1944. Source: County of London Plan.

The stylistic preferences for a new generation of post-war architects were initially largely just a theoretical discourse secondary to the actual task of planning and rebuilding. For the London County

Council who would take the lead in the architectural charge after 1950 design was initially less important than planning. JH Forshaw who took up the position of Architect to the Council from 1941-45 having served for two years as Deputy would, with Sir Patrick Abercrombie, be responsible for the formulation of the County of London Plan. Completed in 1943 and published in 1944 it would be widely circulated and become a blueprint for post-war reconstruction in the capital. The plan adopted as its central theme the development of model neighbourhood units and its formulation unapologetically reflected the prevailing political discourse, the enhanced social conscience and an accepted need to reward the valiant (Abercrombie and Forshaw, 1944). In promoting mixed communities Abercrombie concedes *'It is commonplace to say that the war has done much to level incomes. There should be even less discrepancy afterwards, and this should be reflected in the plan, which provides for a greater mingling of the different groups of London Society. It is for this new world foreshadowed in the Atlantic Charter, that the Capital of the Commonwealth must prepare itself'* (Abercrombie, 1944: 67). Abercrombie and Forshaw's neighbourhood units were clear in their objective, not only would they provide a range of accommodation suitable for single people, young couples and families and an older population they would also provide this accommodation for workers and professionals alike. The concept of the mixed-development, mixed community would be a clear objective.

The theory of neighbourhood and community was not entirely new and would go on to be adopted by other cities including Birmingham. As a doctrine it had been introduced by planner Clarence Arthur Perry in 1929 when engaging in North American planning debates (Atkinson, 2012) and more recently by Arthur Ling in his research thesis on *'Social and Community Units'* completed for the Bartlett School of Architecture under Sir Patrick Abercrombie's supervision (1936-8). Ling presented a community consisting of smaller neighbourhood units arranged around communal buildings that combined with others to form larger townscapes. The theory was enthusiastically adopted by Maxwell Fry and Arthur Korn following their meeting at MARS and it subsequently became the basis for the 1938 MARS Plan for London. When Ling joined Forshaw and Abercrombie at the LCC his theories were successfully adapted to the development of the County of London Plan. Whilst avoiding stylistic recommendations when discussing the need for Housing, the Plan did however explain how flats could be incorporated to help meet densities of between 100-200 persons per acre (ppa) when utilised in a mixed-development model. These plans advanced the mixed-development theory that explained how by incorporating high blocks houses could be included at lower densities in order to form a neighbourhood unit. The range of building in these mixed-developments commonly included three-storey terraced houses, four-storey maisonettes, flats of two, three and four storeys and high blocks of between five- and ten -storeys complete with lifts, all built using

modern forms of construction. Although specific details of architectural style were hardly mentioned the Plan did illustrate the tall slab (rectangular) blocks set in landscape and suggested that *'the simple lofty white, flat roofed buildings with an occasional break are impressive and where the grace of a terminal feature is introduced can be beautiful'* (Abercrombie and Forshaw, 1944: 74). Whilst the plan avoided specific recommendations on architectural style it accepted that post-war trends and in particular the Modern Movement would come to influence much of the new development. Despite architectural impartiality it did advocate much stronger enforcement of architectural standards to control future reconstruction.

Adoption of the County of London Plan whilst broadly welcomed by the architectural press would be delayed due to internal conflicts within the LCC. As Chief Architect to the Council Forshaw would find himself in opposition against the LCC Valuer Cyril Walker who regarded his ideas as idealistic and impractical in financial terms. The controversial decision to appoint the Valuer as Director of Housing and the Chief Officer responsible for Housing Operations had been made at a special Meeting of the Housing and Public Health Committee on 14th November 1945 chaired by Councillor Gibson, Chairman of the Housing Committee (Day, 1988). The meeting concluded that Forshaw and his Department would report directly to the Valuer for a trial period of three years. LCC policy at this time was similar to that of many local authorities of the period, less motivated by ideals of planning and development and aesthetics and more motivated by production and cost. Rather than adopt Ling's more expansive and more costly, mixed-development model, focus would be centred on developing less expensive sites capable of accommodating high densities. Here flats would be incorporated to maximise densities but would commonly be of pre-war design featuring four-storey blocks built without the need for the expensive lifts that taller developments would require. From the outset Forshaw would challenge the Valuer's preference to ignore the Plan by acquiring any available cheap site and populating it with inferior housing (LCC HBC, 1944). He would continue to champion his and Abercrombie's neighbourhood units of mixed-development that would have featured new high blocks of flats alongside more traditional cottages to create a community. Forshaw's erstwhile colleague Sir Patrick Abercrombie would provide vociferous yet hardly independent support, writing in a letter to *The Times* (1944) he was especially critical of the Valuer's tendency to *'snap up cheap sites wherever obtainable'* that would be unable to produce *'communities fit for human beings'* (LCC HPHC, 1944).

With the Chief Architect removed from direct control of housing Forshaw eventually resigned and for the immediate future opportunities to introduce the new plans that he had advocated were severely limited. Examples of existing yet ultimately unsuccessful projects such as preliminary plans for the Woodbury Down development do however give an insight into Forshaw's preferences and the way

development might have advanced had he continued to exercise control of housing. The initial plans for the Woodberry Down Estate in Hackney provide an early example of Forshaw's favoured mixed-development model. His plan featured nine-storey blocks, four-storey tenements and two-storey cottages to achieve a density per acre of 41 dwellings equivalent to 148 ppa The development would also include communal facilities with shops and a community centre. Taking advantage of natural sunlight and established trees to create 'a more open character' also reflected progressive architectural thinking (LCC HPHC, 1943). According to LCC plans the neighbourhood unit would be surrounded by open spaces with main roads running through them on the periphery with minor roads forking off towards the centre that would accommodate community facilities enabling consistent access for the whole community. Although the estate necessarily featured standard LCC plan types of pre-war design Forshaw's efforts to improve aesthetics with a more comprehensive design at least resulted in Walker, always keen to maximise return, suggesting that they might prove attractive for skilled workers who could afford a 25 per cent uplift in rent.

Figure 17: Woodberry Down Estate, standard balcony access flats. Source: Municipaldream.wordpress.com.

The machinations and conflicting priorities of the Housing and Public Health Committees in the LCC during this period provides an enduring example of the conflicts that would continue to plague many local authorities, torn between providing a high standard of housing, meeting the required high volumes whilst accommodating budgetary constraints. Forshaw remained committed to the ideal of mixed-development featuring tall blocks of flats to not only provide variety but meet the needs of a diverse demographic, meanwhile Walker as Valuer was clearly more concerned about increasing density and maximizing return. Unfortunately, this inevitably resulted in the development of cheap sites populated with the maximum number of unimaginative low-rise flats. The conflict, recalled by Day (Day, 1988), would be amply demonstrated by the publication of the final much-altered plan for Woodberry Down approved by the Housing and Public Health Committee on 24th Oct 1945 (LCC

HPHC, 1945). Instead of Forshaw's plan the development in its latest iteration predominantly featured the ubiquitous low-cost five-storey blocks without what were then widely considered as expensive lifts. Approved a month before Forshaw's eventual resignation the resulting development represents a clear example of the reality of a policy focused upon volume and cost containment contrasting with the more enlightened vision behind Abercrombie and Forshaw's County of London Plan (1944). Nevertheless, any immediate hope that Forshaw's mixed-development blueprint would become a model for future development would have to be delayed. In the mean-time the reality of the cost-based development model is well illustrated by the development of the Kingswood Estate in Dulwich. Built on a site that in other circumstances would have been developed to maximise the benefit of a mature landscape with a pre-existing mansion, the development eventually featured only low-rise blocks rather than the anticipated eight-storey blocks and two-storey cottages envisaged in the County of London Plan. The consequence of this departure was that to achieve the required density, some 80 per cent of the final development featured flats with only 12.5 per cent houses, resulting in a clear failure to achieve the objectives of the mixed-development model (The Builder, 1948). That the development also featured the un-inspiring pre-war designs would mean the site would attract much criticism of the Valuer's approach and serve as emblematic of the architectural quality of LCC developments in this period.

Figure 18: Kingswood Estate, Dulwich. Source: ideal-homes.org.uk.

Day describes at some length the erstwhile development that was planned under the control of Charles Gibson, Chairman of the Housing Committee for fourteen sites in Wandsworth (Day, 1988). Comprising a number of sites in the Wimbledon Common and Putney Heath area they were formerly the grounds of Victorian and Edwardian mansions that benefitted from advantageous position and

established landscapes. The first site at Roehampton comprised some mixed-development but the main building type was yet again the ubiquitous five-storey flatted blocks. The planned accommodation comprised 91 per cent flats with just nine per cent houses in either a standard two-storey format or a three-storey maisonette that essentially comprised a house with a flat on top. Day describes it as *'typical of Walker's in-county flatted development'* (Day, 1988: 254). He goes on to describe the plans formulated by July 1949 to develop all fourteen sites in a similar manner with blocks of five-storey flats, the construction of which necessitated the removal of a large number of mature trees and the flattening of an established landscape.

Amidst mounting criticism, what was widely seen as a stagnant architectural policy at the LCC led to moves to re-calibrate housing policy by the introduction of new committees. These would be responsible for reviewing layout and design as well as each estate plan. By 1949 these overtures proved successful with the inauguration of two new sub-committees, the Housing and Joint Development sub-Committee to look at outer estates and the Housing Development Committee that would be responsible for flatted developments. In what would be seen as a progressive move Evelyn Denington considered something of a rebel, having joined the Housing Committee in 1947, was elected to chair both sub-committees. Denington had previously worked with Frederik Gibberd in St Pancras Borough and *'her interest in new ideas made her a rebel member on the Housing Committee'* (Day, 1988: 247). Forshaw's departure eventually made way for the appointment of RH Matthew as Chief Architect with JL Martin as his Deputy. Both architects were regarded as progressive, young and capable and would be able to count on Denington's support in raising architectural standards at the LCC.

These appointments coincided with a growing clamour orchestrated predominantly by the *Architects Journal* who vociferously challenged the architectural quality of LCC developments. The result of this campaign certainly influenced the Council decision on 24 June 1950 to remove housing work from the control of the Valuer (LCC HPHC 1950). As Day suggests *'the Housing Committee and the Council had decided that Walker's proposals for the fourteen Wandsworth sites were architecturally inadequate and failed to exploit the potential of these sites'* (Day, 1988: 256). Bullock (1994) suggests this decision had just as much to do with the failure to achieve the volumes of production promised in the Housing programme as any frustration with the quality of housing. Nevertheless, RH Matthew's newly empowered Architects Department would assume control of housing provision and, albeit slowly at first, have the chance to challenge Walker's cost-based doctrine. Despite wrestling control they would continue to be challenged by the Valuer.

Having finally gained control of housing, Matthew immediately began to articulate a new strategy, apparent in his early plans. At the Princes Way, Ackroydon site, the challenge of achieving the desired densities while still incorporating a proportion of houses necessitated the inclusion of high blocks. Normally these would be considered too costly but by utilising two new types of building that qualified for a higher subsidy their inclusion became acceptable. High point blocks; high towers with their circulation and services built into a central core, and four-storey superimposed maisonettes therefore entered the LCC buildings lexicon. The acceptance of point blocks was perceived to offer a number of benefits, namely the relatively small footprint required on which to build them and the aesthetic benefit of adding variety to the overall plan. This was considered in stark contrast to the much-derided inter-war practice of erecting monotonous rows of five-storey slab blocks. Further justification for high point blocks was the reasoning that whilst cost increased up to six- or seven-storeys due to the expense of providing lifts thereafter it levelled off. This was attributed to the use of economical shuttering and the advancement of reinforced concrete building technique. As well as taking up less space the high point block allowed a wider retention of established landscape. Despite continued opposition from Walker, the Housing Committee resolved to accept these two new standard types on 8 November 1950 (Day, 1988).

Matthew also continued to develop his ideas relating to the implementation of the mixed-development strategy. LCC policy up until then had been to include varying sizes of accommodation in the same block. Matthew's new policy was to see greater design standardisation by accommodating different size families in broadly the same type of accommodation rather than mixing accommodation within a block. Therefore, large families with children were to be housed in houses and maisonettes, medium sized families in staircase access blocks and small families in tall or balcony access blocks. Older people would be housed in ground floor apartments or bungalows within a development. To avoid segregation and isolation the concept was to group various types of housing around communal areas (Day, 1988). Despite opposition from Walker and an attempt by two Conservative members of the Housing Committee to question this strategy Matthew eventually succeeded. Resistance to the inclusion of high flats in LCC development saw a number of unsuccessful attempts including one that sought to highlight the potential of low-rise accommodation to achieve the stipulated densities. Later, unfavourable tenant surveys relating to high point blocks were presented but it seemed any attempt to question their inclusion was largely ignored. At this stage Matthew continued to develop standard flat types based around both balcony and staircase access with varying internal arrangements. The inclusion of dining/kitchen and dining/living rooms were seen by some especially Walker more used to separate rooms, as too associated with continental practice. The strategy developed by Matthew is explored by Day and

illustrated by comments given by JL Martin to support an exhibition of building work completed since 1950 and requested by the Housing Committee in 1953. *'One of the most important changes illustrated in the LCC schemes is the transition from ordinary block development towards a type of layout which can be described as mixed-development and which includes 11-storey blocks of flats as well as maisonettes and houses'*. Martin continues to provide examples of relevant LCC development including Ackroydon confirming that even at densities of between 100-136 ppa it was possible to ensure a significant number of families can benefit from their own garden. He goes on to suggest *'this type of development in which the architectural elements range from two-storey buildings to 11-storey blocks, has many architectural advantages. It allows the human scale to be more easily maintained, it makes possible a much easier relationship to the surrounding development, which is often two-storey in height, it opens up opportunities for considerable variety of layout and maximum use of changes of level'* (Day, 1988: 266). Martin's report also comments upon the strategy of using standardised components and pre-fabricated panels to reduce cost and, as Day suggests, sets out to paint a picture of '*radical change'* justifying the Committee's decision to return responsibility for Housing to the Architects Department (Day, 1988: 266).

2.5 Festival of Britain and beyond

At their meeting on the 26 January 1949 the Housing Committee was appraised of the intention of the Festival of Britain Council to stage a 'live architecture exhibition' as part of the celebration with the intention to showcase reconstruction in London (LCC HPHC, Jan 1949). The aim was to '*prepare a particularly interesting and original scheme in the way of a lay-out as a practical example of the application of the new planning concepts and building techniques'* (Day, 1988: 248). The Housing Committee reluctant to trust such an undertaking to Gibson; the serving Director of Housing and Walker, instead sought the input of private architects, leaving Gibson with only a co-ordination role and the, as yet untested new Chief Architect responsible for layout (Day, 1988).

Figure 19: Model of the Skylon, the motif of the Festival of Britain, designed by Powell and Moya and reputedly named by Alywn Sheppard Fidler's wife. Evidence of the popularity of toys and models that represented architectural forms and technology of the period. Source: rennart.co.uk.

With Festival Director, Gerard Barry and with Hugh Casson directing the architectural content, the Festival featured a veritable 'who's who' of the Modernist architectural (private) elite. As Director General of the Festival, Barry believed strongly that architects and designers had a crucial role to play in reconstruction (Atkinson, 2014). Philip Powell and Hidalgo Moya were to be responsible for the Skylon and Ralph Tubbs would create the Dome of Discovery, elsewhere contributors included Ove Arup, Jane Drew, Maxwell Fry, Leslie Martin and Basil Spence (Jones, 2003). The Live Architectural Exhibition site, centred upon the Lansbury Estate in Poplar would represent an altogether more down-to-earth approach and a less futuristic style. Frederick Gibberd, amongst others, would be responsible for a collection of traditional brick cottages and low-rise flats designed to meet LCC required densities and represented in a conservative mixed-development community. In reviewing the site, the *Architectural Review* condescendingly described it as a *'domesticated Modernism'* (AR 1951: 177) and it certainly owed more to the Swedish Empirical rather than any radical Corbusian style. Developed on a flat site with little in the way of landscaping it relied on low-rise development to meet its densities rather than embracing the high-rise block. What might have provided an opportunity to showcase the architectural credentials of the LCC would instead be a presentation of the work of predominantly private architects that would take as their theme a traditionally English picturesque style. By providing a blank canvas for a range of leading contemporary architects, the Festival would feature both elements of Corbusian as well as the less radical Swedish Empirical style. The only part of the architecture exhibition that the Council would be directly responsible for was the

development of Site No1. This would comprise three- and six-storey blocks of flats considered an improvement on previous developments but *'not very progressive or exciting'* (Day, 1988: 250).

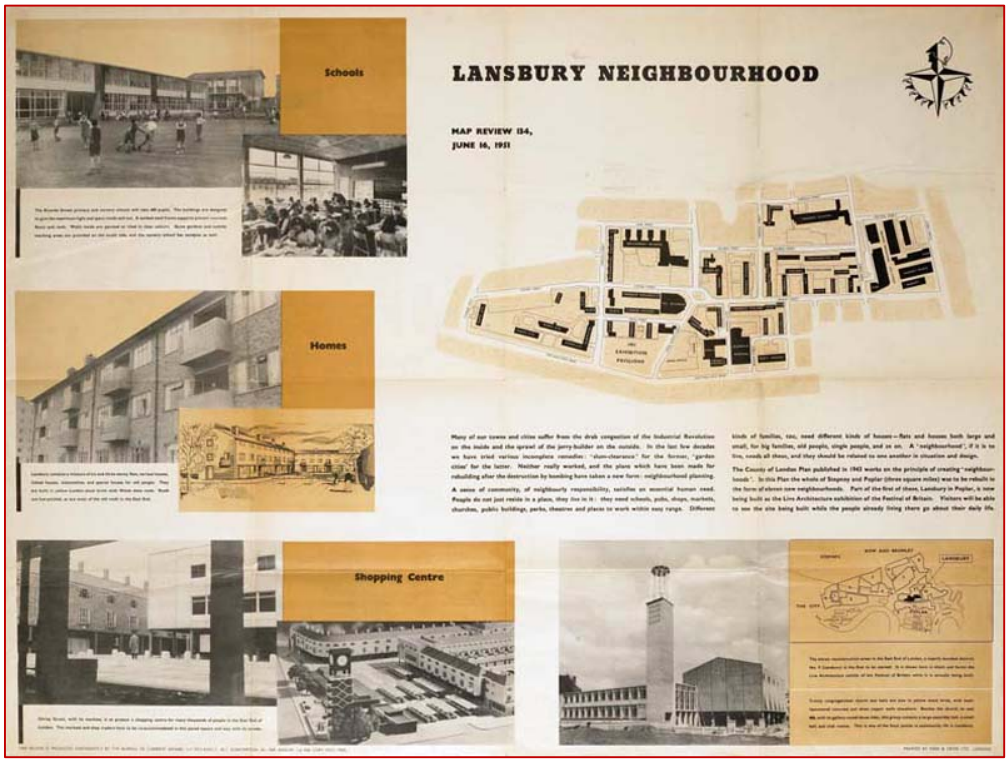


Figure 20: Festival guide to the Lansbury Estate, depicting layout and types of building. Source: modernmooch.com.

To get a better feel for the more progressive styles incorporating high flats being built in London at the time you would have to look further afield. Jones contrasts the development at Lansbury with the contemporary Churchill Gardens development in Pimlico by Powell and Moya. He suggests the contrasting styles represented the prevailing styles within the profession. Young architects, recently graduated from the *Architectural Association* School, Powell and Moya's development featured brick faced flats of between five- and nine-storeys aligned freely across the site. Representing a particularly high-density of 200 ppa the development was widely reported in the *Architectural Review* (AR 109, 1951) and the *Architects Journal* (AJ, 7 Dec 1950).

The stylistic variations and the differing schools of thought including the use of slab and point blocks and the general inclusion of a higher proportion of flats in contemporary developments are no better illustrated than by the LCC's development at Roehampton.

Figure 21: Alton East, Roehampton (1952-55), designed by AW Cleeve Barr and Michael Powell and reminiscent of the Unite d'Habitation in style. Source: museumoflondonprints.com

Alton East (Portsmouth Road), Roehampton designed by AW Cleeve Barr and Michael Powell provide an effective illustration of the prescripts of the Swedish Empirical style with point blocks and a range of low-rise flats and houses amid mature parkland. Approved on 17 October 1951 (GLRO HC, 1951) it featured what the *Architects Review* described as '*a more economical point block'*. This allowed a greater proportion of the new blocks than originally intended on the basis that they would '*achieve reduced site coverage….and give greater flexibility and openness in layout'*. By eliminating the previous balcony and staircase access blocks in favour of point blocks allowed larger dwellings to be accommodated instead in four-storey maisonettes or two-storey houses. The narrative accompanying the plan described how the two-storey blocks were situated on the perimeter of the development with the maisonettes *'arranged in the main between the areas of terraced housing and the point blocks, so that there is a gradual build-up of architectural scale from low to tall buildings….giving good prospects from most blocks and pleasant vistas through the site across the well landscaped open spaces'* (GLRO HC, 1951). The overall development resulted in 40 per cent of the homes provided being either terraced houses or maisonettes with the remaining 60 per cent in point blocks. Discussing the development later, the architects explained how the landscape had been

the defining factor in composition and layout, and in particular *'the sloping site with its big trees'* (Keystone, 1952: 36). In a further display of the softer side of the Architects Department, houses and maisonettes featured pitched roofs and the overall development incorporated traditional brick and timber. Greater individuality was achieved by the inclusion of private balconies for each flat and the use of aesthetic touches such as bold colours and tile patterns to differentiate each block. The level of detail extended to the use of replicating the brick bond pattern of the earlier Ashburton Estate nearby. The defining style was said to be influenced by turn-of-the-century English housing and its interpretation by Sweden (Jones, 2003).

Figure 22: Alton Estate Roehampton. Source: The Concrete Society.

The later Alton West development in Roehampton was designed by Colin Lucas and John Partridge and formally approved in September 1953. This development maintained the precepts of the LCC's mixed-development model amid an established landscape to represent *'a more dogmatic architectural statement'* (Jones, 2003: 73). The most striking element of their composition would be a group of 11-storey slab blocks comprising maisonettes and flats raised on pilotis (Jones, 2003). Whilst Alton East represented the Empiricism talked about at length by JM Richards in *Architectural Review*, the Alton West development was clearly more Corbusian in style, mimicking within local constraints the Unité in Marseilles and being based on a more local re-interpretation of Modulor (Jones, 2003). The 'soft' architecture of the Empirical school was the product of a slightly older more 'conservative'

school, the new men including Powell and Moya, Lucas and Partridge, as recently graduated architects, represented the more radical 'hard' school heavily influenced by Le Corbusier (Jones, 2003).

For Pevsner the inclusion of the high blocks in the Roehampton parkland had *'created a specifically English version of International Modernism*' (Glendinning and Muthesius 1994: 54). Despite the stylistic variations developments such as Roehampton demonstrated clearly the potential of architecture to build a new world, as Esher (1981) pointed out '*the young LCC architects were not, as they saw it, designing for elderly Mr Wilkins of Bethnal Green, but for their own generation, capable of seeing a brave new world'* (Esher, 1981: 110). The inclusion of high flats in the housing equation, whatever the style, by this time was recognised as a means of accommodating high densities in traditional urban settings and consequently architects of every stylistic persuasion sought to include them in their plans. Writing much later in 1966, erstwhile Paddington Chief Architect Rolf Jensen would publish his justification for high flats in *High-density Living* (Jensen, 1966). His experience dated back to his time in Paddington and he begins his study by describing the challenge *'there is no greater or more serious problem confronting the world, and more especially the Industrialised, urbanised countries today, than that of how best to deal with the so-called population explosion in a way that will enable people to live in a humane, civilised fashion free from the burdens of modern urban life, and where they can both work and play in an equally beneficial environment'* (Jensen, 1966: 1). Jensen in particular describes his early challenge in Metropolitan London faced with a growing population requiring accommodation close to work and the inability of the Garden City adherents to provide a viable solution. Describing his attempts to gain acceptance for radical high-rise tower blocks in Paddington Jensen explains how his plans exceeded the then current LCC density stipulations whilst providing a high degree of amenity. He describes an increasing level of pre-fabrication of reinforced concrete components and the use of the then relatively new tower cranes to build a new type of radical high-rise housing that solved the perennial challenge of meeting high densities in urban settings. The 1966 publication represented a continuing justification for high-rise accommodation, informed by Modernism and enabled by new technology that found voice initially within the LCC from the 1950s onwards but also throughout those cities keen to be characterised by their progressive social housing programme.

2.6 Daylight, density, slab and point blocks

Whilst slab and point blocks would continue to appear, part of the selection process for the type of flat selected related to available daylight and the required density. Orientation remained central to the planning process and it had long been taken for granted that in order for inhabitants to take

advantage of natural daylight it was necessary for flats to be built along a north- south line (Glendinning and Muthesius, 1994). Various forms of measurement were adopted to try to establish a 'daylight factor' but by the 1940s efforts focused on establishing both the measurement of light and the use of land and space between buildings. This last equation related to desired densities and, whilst Garden City adherents championed low densities, along the lines of Unwin's twelve houses to the acre these guidelines were really only applicable to new residential suburbs built on the outskirts. From 1938 the accepted measurement of density became the persons per acre (ppa). By the time of the County of London Plan it had been accepted that 200 ppa was the highest acceptable figure with 100-136 ppa a more acceptable inner surburban level and outer residential areas enjoying much lower figures (Glendinning & Muthesius, 1994). Low-density suburban development generally presented no challenge to daylight but with a new enthusiasm for the flat, issues of daylight became a central consideration. For many the challenge of resolving the daylight issue was to build high. An additional bonus of embracing high-rise construction in order to achieve high densities was the potential to benefit from more open space between buildings (Glendinning, & Muthesius, 1994).

Figure 23: Typical Zeilenbau layout (Germany). Source: Architectural Review.

The exact form of flat building would also be a subject of much speculation. For a long time technical and practical issues had made the rectangular block both more attractive and cost effective and it was widely believed that this form provided the best opportunity to maximise the benefits of daylight. Many examples would be built in massed ranks of long rectangular blocks reminiscent of the German Zeilenbau municipal blocks of the 1930s. Influential English publications of the period illustrated the tall rectangular block as the most desirable form of building enabling both the benefits of daylight and open space.

Figure 24: Slab block flats at Bollmora in Stockholm (May 1962) constructed using the Skarne system. Source: The Concrete Society.

In the Pelican book '*Town Planning'* (1940) Thomas Sharp would illustrate the slab block in a country setting and FRS Yorke and Frederick Gibberd's '*The Modern Flat'* (1937) would illustrate a tall rectangular block on its cover. Numerous examples of the type would feature in pre- and post-war development including the celebrated Kensal House in Ladbroke Grove designed by Maxwell Fry in 1937 and Churchill Gardens in Westminster designed by Powell and Moya in 1946. Building restrictions in London that imposed a maximum of five-storeys prevented much in the way of high-rise development until the 1950s. Glendinning and Muthesius (1994) examine the emergence of high blocks and conclude that it was a result of a widespread feeling that it was *'time to move beyond the prevailing post-war practical and utilitarian outlook'* (Glendinning and Muthesius, 1994: 53). They cite Gibberd at the *RIBA Symposium on High Flats* of 1955 suggesting that *'high blocks give more pleasure to more people'* (Glendinning, and Muthesius, 1994: 53). Certainly architects expressed a boredom with the uniformity of massed ranks of rectangular slab blocks and many articulated a desire to build higher and provide *'vertical accents'* to their designs (Glendinning and Muthesius, 1994: 53). To solely attribute the emergence of high-rise blocks such as Gibberd's The Lawn at Harlow New Town to architects is however an oversimplification. Whilst it had been possible to build high before it had been prohibitively expensive and it was only the emergence of high cranes and new technology that made this form of construction more feasible.

Figure 25: Point block flats at Nasbydal, north of Stockholm (May 1962) constructed using the Skarne system. Source: The Concrete Society.

Certainly leading architects would advocate the aesthetic advantages of high blocks to punctuate a development and provide architectural variety. Glendinning and Muthesius suggest that both point and slab blocks had entered the architectural vocabulary by 1953. The emergence and popularity of point blocks saw their development in a number of early configurations, the most common being the Y- and H-shaped blocks, each benefiting from central core access. Lifts and stairwells would be situated at the building's core as opposed to the earlier common form of balcony access slab blocks. As Glendinning and Muthesius (1994) explain these forms had been briefly explored in the Dudley Report and the former would go on to characterise Wimpey's early forays into high-rise construction that became common during the Manzoni period in Birmingham.

2.7 RIBA Symposium on high flats

In March of 1955 the RIBA Journal reportedly extensively on the Symposium on High Flats, a meeting held at RIBA in the previous month that was to give credence to the adoption of high blocks. Although not personally present, Duncan Sandys, Minister of Housing and Local Government, sent a message requesting two outcomes from the meeting. The first was agreement on how high blocks might best be incorporated into mixed-development to meet the required densities and, the second, how the cost of building high might be contained. Despite the Minister's absence his Deputy Secretary, Dame Evelyn Sharp, was present and addressed the challenge facing local authorities tasked with large slum clearance programmes. She conceded that local authorities would have to embrace high blocks even though '*high dwellings were not accepted by the whole of the public'*, although she did feel that *'high dwellings interspersed with low and middle sized dwellings were a thing of beauty'* (Sharp, 1955: 195).

Figure 26: Dame Evelyn Sharp, Deputy Secretary to the Minister of Housing and Local Government. Source: civilservice.blog.gov.uk.

Clearly Dame Evelyn was giving the green light to local authorities to incorporate high blocks, those of greater than six-storeys, in mixed-development estates as a means of maintaining high densities. At this time high blocks were viewed as a valuable solution to maintaining density albeit for a specific demographic. To this end Dame Evelyn stressed that families with small children should be able to enjoy *'dwellings near the ground'*, this represented a less than specific directive, giving local

authorities the freedom to interpret the advice. Margaret Willis, sociologist working at the LCC Architect's department was more specific, suggesting that families with young children should not be housed above the third or fourth floor. Although she did suggest that from her findings of 156 families interviewed ninety per cent preferred living higher. She cited three reasons for this, better air and healthier atmosphere, the greater quiet and the view or outlook (Willis, 1955: 203). The somewhat conflicting advice enabled local authorities to form their own opinions and policies and it was therefore no surprise when high flats increasingly emerged as acceptable forms of housing for families with small children.

Dame Evelyn's more direct concern related to economics and that in advocating high blocks the industry needed to find some way to limit the cost of building high. She suggested that this objective had already been achieved on the continent and the imperative in Britain was to find *'a height and method of design at which dwellings in the tall block do not cost substantially more'* (Sharp, 1955: 195). Other speakers at the Symposium generally supported the view that high blocks were both necessary and advantageous, not least in terms of aesthetics. HJ Whitfield Lewis suggested that high blocks would add *'variety and interest'* when incorporated into mixed-development (Whitfield Lewis, 1955: 196). Frederick Gibberd suggested that *'the building of tall flat blocks gives more pleasure to more people'* and were an antidote to monotony *'large areas of nothing but two-storey houses were dull*' but he did sound a caution: *'a tall building is a fascinating problem, but I hate to say it…they provide opportunities for architects to build monuments to themselves'* (Gibberd, 1955: 201) Ralf Jensen, Architect for Paddington, suggested that there were wider considerations in favour of high blocks, not least a need to limit urban sprawl. He relayed concerns for the absorption of more agricultural land, the preservation of the amenity value of the countryside, the revulsion of city dwellers for the countryside and the supposed difficulty in inducing industry to move to new development areas. He therefore advocated the development of valuable central areas with tall blocks capable of achieving 300 ppa and the adoption of point rather than slab blocks, *'the slab block in all its forms leaves a lot to be desired'* (Jensen, 1955: 204). His preference was for the point block ideally featuring six to eight 'open-plan' flats per floor, served by a single staircase and lift although he conceded two lifts might be required.

This chapter has explored the initial absence of a flat tradition in England the how the emergence of Modernist ideas engendered a new approach to architecture that focussed on form over function. It has discussed the work of influential architects including Le Corbusier and Gropius and how groups including CIAM and MARS redefined the accepted form of future development, how this approach was celebrated and promoted by influential periodicals and resulted in the emergence of a range of architectural styles. New Empiricism and Brutalism would attract a new generation of architects

tasked with reconstruction many of whom would practise their art in public service. The early work of the LCC Architects Department has been discussed and influence that organisation imposed on re-development throughout the country not least in the growing trend for large cities to appoint their own City Architect. It has witnessed how advances in both technology and materials as well as experience of continental development ensured the flat became a vital component in the palette of post-war estate design. The following chapter will explore how the need to house the populace after the hardship of war became a widely accepted political imperative that formed a part of post-war election manifestos and endured until the early 1970s.

Building the Welfare State

3.0 Building the Welfare State

In 1942 Summerson (1942) wrote about the potential of the architectural profession in the post-war period, energised not just by new fashions but also by a growing political and social awareness. Commenting on how a changing clientele might influence the rise of the public or salaried architect, he suggested that local authorities might begin to attract the brightest talents keen to put this new-found awareness to best use. Responding to the claim by the RIBA President in 1938 that Departmental architecture was *'stale chocolate',* Summerson argued it need not be 'secondhand or tepid' and that the tide had already turned and the *'brains and enthusiasm of the young'* would *'favour the Departments'* (Summerson, 1942: 236). He also suggested that RIBA should recognise these changes and adopt some of the more progressive strategies of the Association of Architects, Surveyors and Technical Assistants (AASTA), the more inclusive and progressive professional association formed in 1924, which better reflected the need for the profession to take on new skills and work collaboratively with other building professionals. The picture painted was one of opportunity for the salaried architect, the design of *'the shops, the pubs, the big bold cinemas, the tonic banks, the housing estates, the schools, the hospitals'* would represent '*a high proportion the 'work of the architectural salariat'* (Summerson, 1942: 240). He went on to discuss the architectural style that might be adopted suggesting a retreat from the work of Tecton, Maxwell Fry or Wells Coates to one *'incorporating many accepted formulas of planning and finish but more flexible'* and that *'pre-fabrication might be of enormous value'* (Summerson, 1942: 240). He concluded by suggesting *'it seems to me that the high-fliers, the Lloyd Wrights and the Corbusiers…. have broken as many barriers as need breaking for the present'. 'The next thing to be done is to render architecture effective in English life'* (Summerson, 1942: 243). It would remain to be seen whether the political setting would enable this new generation of architects, what part public architecture might play in re-construction and how new technologies would support the huge task of reconstruction.

3.1 Philanthropy and State Housing

Although the provision of post-war social housing would become synonymous with the incoming Labour Government of 1945, the birth of the state-sponsored housing initiative can trace its antecedents back to the philanthropic projects of New Lanark (1784), Akroydon (1861) and Saltaire (1850-61). These invariably saw enlightened industrialists realise that productivity and the health of their workforce went hand in hand. At the end of the First World War Lloyd George's exhortation in 1919 to provide '*Homes fit for Heroes*' was motivated by a similar imperative, a need to provide good quality housing for the working classes. Driven in part by a quest to eradicate the continuing evils of the Victorian slum it was also regarded as necessary to reward the sacrifice during the war and to

limit the potential for social unrest. The role that the state might play in housing provision had been introduced by a report of the London Trades Council in 1884 for a Royal Commission to investigate housing for the working classes. Such was the task that George V's speech to local authorities in 1919 sought to frame the problem and its solution*: 'it is totally impossible that private enterprise, philanthropy and charity can ever keep pace with the present demands …. Economic forces and population have outstepped their endeavours; hence evils accrue. But what the individual cannot do the state municipality must seek to accomplish. For it alone possesses the necessary power and wealth'* (Nuttgens, 1989: 52).

The contrasting policies of respective Conservative and Labour Governments of the inter- war years were considered in Marion Bowley's study *Housing and the State* (1945) which set out to consider the various policies of state-provided subsidy. Although economic in its focus, Bowley recognised the growing political imperatives relating to housing policy. *'Housing policy had become a national issue. It was no longer the special interest of isolated groups of social reformers. It had graduated into the world of party politics. With the slogan 'Homes fit for Heroes' it started its career as a pawn in the political game of bribing the electorate with vague promises of social reform'* (Bowley, 1945: 183). Bowley provides a breakdown of party policy by reviewing subsidy legislation commencing with the Conservative/Liberal Addison *Housing and Town Planning Act* (1919), itself heavily influenced by the *Tudor Walters Report* (1918) that saw the introduction of subsidy to aid building for the working classes. Her review discusses successive subsidies, including the Conservative Chamberlain *Housing Act* (1923) that saw a reduced subsidy made available to private builders for working-class housing provision. This was followed by the Labour *Wheatley Housing (Financial Provisions) Act* (1924) that would see an increase in basic subsidy and the Greenwood *Housing Act* (1930) that would focus policy on slum clearance. Conservative focus on the middle classes would see the 1930 *Housing Act* abolish subsidy for General Needs housing, itself a precursor to the long-standing Conservative policy of promoting home ownership exemplified in the Ministry of Health *About Housing* publication (MH, 1939). This publication focused almost exclusively on the benefits of home ownership, an area where it was envisaged the private builder would meet the needs of the middle and upper working classes, leaving the local authority responsible for slum clearance and provision of homes for a demographic unable to meet commercial rents (MH. 1939). Day suggests that political interventions in the inter-war years saw Conservatives base their policy on '*minimum state intervention with a focus on encouraging private enterprise to provide working class housing'*. This contrasted with a Labour policy that *'sought to make the state responsible for the general provision of working-class housing, as well as slum clearance'* (Day, 1988: 62). Whilst Bowley had set out to be politically neutral her

findings suggested a preference for a greater state control of housing to provide a more extensive range of options for the widest demographic.

3.2 The Dudley Report

The Second World War was to have a far-reaching effect *'on the fabric and culture of British society'* (Finnimore, 1989: 26) and *'the notion that the working class was enduring deprivation and sacrifice to secure a more equal society was crucial to the prosecution of the war effort'* (Finnimore, 1989: 27). The recognition of a need for a fairer distribution of wealth and with it social amenities played a significant part in post-war planning and was taken up by both sides of the political divide. During the war various authoritative publications would influence post-war housing policy. The most influential of these was the *Dudley Report* in 1944 entitled '*The Design of Dwellings'* published by the Ministry of Health which aimed *'to make recommendations as to the design, planning, layout, standards of construction and equipment of dwellings'* (MH, 1944). Some of its more progressive recommendations included the inclusion of women on Housing Committees as 'experts' that the local authority should consult (a policy that was adopted successfully in Birmingham during Herbert Manzoni's tenure as City Engineer). The *Dudley Report* also recognised the importance of the architect and advocated local authorities appoint them to public roles to ensure *'beautiful neighbourhoods'*. Emphasis would be focussed on layout and composition with a recommendation that construction should feature *'complete communities rather than the development of purely residential estates for a single social class'* (MH, 1944: 55). A study group from the Ministry of Town and Country Planning appended their report on how a complete community might be achieved. The concept of the neighbourhood unit would reflect the recommendations made elsewhere by Abercrombie and Forshaw's *County of London Plan* (1944). The neighbourhood unit envisaged, should be *'socially balanced, inhabited by families belonging to different ranges of income groups'* (MH, 1944: 61).

The *Dudley Report* was progressive in tackling issues relating to social balance, advocating tenant participation in Housing Committees as well as the introduction of a new breed of public architect and planner. In setting out the general principles that should guide the post-war provision of state housing and the need for greater tenant inclusion it *'expressed a greater awareness of consumer needs'* (Day, 1988: 66). The *Dudley Report* was clear in its recommendations suggesting that architects should be engaged to provide aesthetic input into a variety of housing types better suited to meet the needs of a wider demographic. These would include single people, couples, pensioners and families of different sizes. In seeking a solution for this mixed community it suggested '*a mixed-development of family houses mingled with blocks of flats for smaller households'* (MH, 1944).

This would address the common complaint of monotony of inter-war construction and avoid the *'dreary barrack like*' appearance of previous estates with mixed-development making possible a *'more intimate and varied grouping of the buildings around churches, shopping centres, public houses and community buildings'* (MH, 1944). This recommendation would therefore provide greater diversity in the height of development whilst making better use of public space and landscape. In line with publications like the *County of London Plan* (1944) the *Dudley Report* was the first official government publication to advocate the adoption of a mixed-development, mixed community model. The later *Housing Manual* (1944) made little mention of it and failed to address the challenge of social balance preferring to focus on physical issues such as densities and road layouts. By 1945 the Coalition Government felt ready to address the Housing challenge in their *White Paper* (1944-5) which promised a separate dwelling for every family deserving of one, a renewed slum clearance programme and a general improvement in standards of accommodation reflecting recommendations that had appeared in previous reports. In order to deliver on the promise of building 300,000 new homes within two years advantage would be taken of non-traditional forms of construction, for which subsidies would be available to both local authorities and private contractors. This general policy would be carried over into the *1945 Conservative Election Manifesto* which rehearsed the Conservative mantra that home ownership was a realisable objective for most of the population and that its provision would be delivered by an empowered private sector. Whilst the commitment was welcome, the similarities with pre-war policy were easy to recognise and re-iterated Marion Bowley's recommendations. Conservative policy had changed little from the pre-war policy that saw state intervention only being used for the provision of emergency housing, whilst relying on an energised private sector responsible for mainstream housing provision. As a product of the Coalition Government it was surprising that Labour Ministers were content to let this pass and ignore almost completely the progressive findings of the Dudley Report. With the end of the war looming and with the approach of an election it was widely regarded that housing was one of the '*non-controversial issues in party politics'* (NUCCA, 1944). Both Labour and Conservative post-war election manifestos would discuss housing but it was the Conservatives who would be more specific about their objectives. Their policy was largely a re-iteration of the commitments made in the *1945 White Paper* with some of the characteristics of the 1941 Report '*Looking Ahead, Foundation for Housing*' (NUCCA, 1944). With its focus on the values of family life, steady employment and national health, it declared that *'local authorities and private enterprise must be given the encouragement to get on with the job'* (CHC, 1945). Its vision recognised and articulated the need to avoid the much-criticised large inter-war suburban estates of monotonous character. In contrast a wider range of home types would be available situated near work, have ready access to community facilities and the countryside

and be available at a reasonable and affordable cost. The need for housing to be aesthetically pleasing harked back to Garden City principles that idealised the house or cottage with a garden that would have the effect of *'elevating the poor'* (CHC, 1945). In recognition of the likelihood of high building costs the Conservatives promised subsidy and reiterated their commitment to build 220,000 within two years with a further 80,000 already underway supplemented by 150,000 temporary homes. Although they largely re-iterated the already-articulated policy of the Coalition, Conservatives promised to make use of non-traditional forms of construction and continue the policy of land acquisition on which to build the required housing. Somewhat surprisingly, the Labour Party failed to even repeat Coalition policy and avoided detailed promises beyond a general commitment to provide reward following the hardship of war and the need for welfare reform. Although the Conservatives appeared more concerned about discussing a new World Order with Britain at its centre (Day, 1988) there was a clear differentiation between policies, with Labour focussed on empowering and supporting the workforce in contrast to the Conservative promise to support private enterprise. This was a demonstration of a more developed political radicalism that saw the Labour Party focus on *'winning the peace'* and ensuring the *'hard faced men and their political friends'* who benefitted from the last war did not return (Foot, 1997: 266). This was altogether more progressive in feel and harnessed the potential of an underlying social unrest to promise the electorate *'fair shares'* with a Labour Party committed to *'win the peace for the people'*. This stance reflected a consistent and long held fear that following the sacrifices of war, provision of homes was necessary to not only reward those returning but to also limit the potential for social dissatisfaction.

> '*We are telling them now that they are heroes for the way in which they are standing up to the mighty bombardment and it's true. I think they will keep on being heroes, but when the war is over they will demand the rewards of heroism; they will expect to get them very soon and no power on earth will be able to rebuild the homes at the speed that will be necessary…. I think there is going to be grave trouble, and the danger is that if the machine of government which can spend money so recklessly in engaging in war, fails to be equally reckless in re-building, there will be both the tendency and excuse for revolution*' (Kandiah and Rowbotham, 2020).

Whilst lacking specifics in their manifesto, during the 1945 General Election campaign Ernest Bevin, Minister of Labour in the Coalition Government promised *'five million homes in quick time'.* This commitment certainly recognised the need for large-scale housing development and reiterated a belief that had been held long before the end of the war and formally communicated to local councils as early as 1941. What might seem an early recognition of a need for a major post-war expansion in home building was not however solely attributable to enemy bombardment. Although

Lord Woolton, the Minister for Reconstruction, had announced in August of 1944 that 25,000 homes had been destroyed and serious damage done to a further one million, (Swenarton, 1981) many more were in a parlous state of repair and lacked basic amenities. This condition had been exacerbated by the absence of a workforce able to provide vital maintenance with those builders able to work engaged instead in essential war work.

3.3 Labour Victory

The landslide Labour victory with a majority of 146 seats would see the appointment of Aneurin Bevan to the post of Minister of Health with responsibility for housing. Attlee's reputation for non-intervention would mean that Bevan would largely be given free rein to develop a detailed strategy.

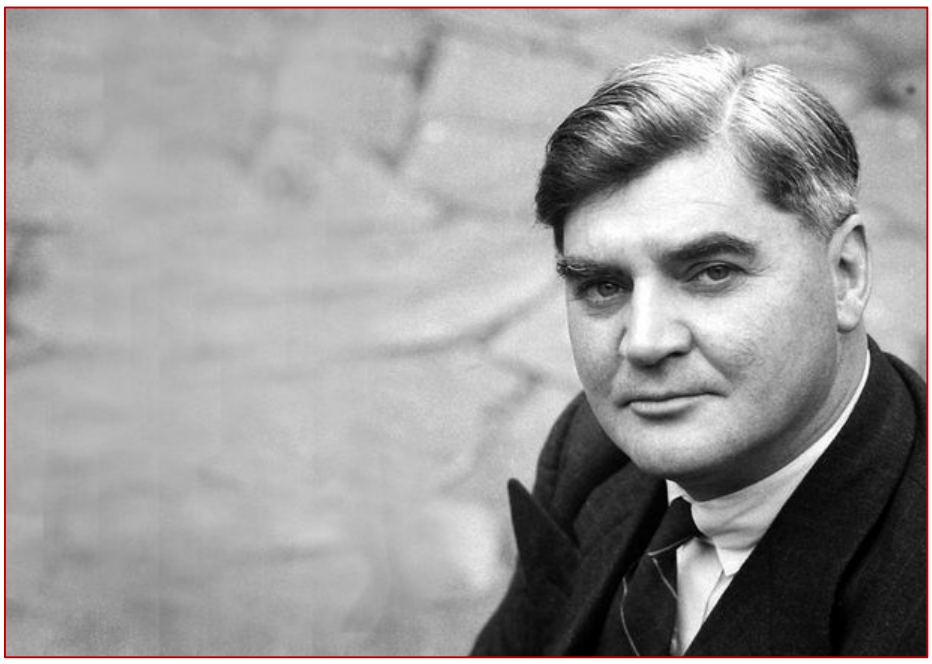


Figure 27: Aneurin Bevan, Minister of Health responsible for housing in the post-war Labour Government. Source: walesonline.co.uk.

Whilst the Conservatives favoured free enterprise, believing that Britain's pre-war building industry would re-group and rise to the challenge, Bevan took an alternative view. He decided to '*chill and check free enterprise house building which had always provided the bulk of the nation's houses'* (Foot, 1997: 261) in favour of an alternative. Despite widespread opinion making light of the task that confronted him, Bevin's '*five million homes in quick time'* and Stafford Cripps' suggestion that *'housing can be dealt with in a fortnight'* (a quotation attributed to the President of the Board of Trade by Churchill in a Motion of Censure in the House of Commons December 5/6 1945 but taken out of context according to Cripps), the reality was that immediate progress was painfully slow. The country faced an acute shortage of housing, of the 12.5 million homes in 1939 a significant number had been either damaged or gone without maintenance for six years. Foot suggests that Bevan was

faced with a population that were expected to live in 700,000 fewer houses than in 1939, a problem exacerbated in the first three years following the war with a further 11 per cent more marriages and 33 per cent more recorded births. Faced with an acute shortage of building materials and a potential workforce of servicemen awaiting repatriation, a pre-war construction workforce estimated at 1 million had fallen to 350,000. In an effort to meet demand aggressive targets were set to augment the workforce with new apprenticeships and retraining aimed at providing 800,000 new recruits to the construction industry by 1946. Progress was however much slower and there seemed to be *'little conviction that this would materialise'* (White, 1965: 52). For 18-months there was little real progress with efforts centred on the manufacture of pre-fabricated temporary housing, the repair of damaged property, compulsory purchase of vacant sites by local authorities and the prohibition of homes to office conversion. Throughout, Bevan's Marxist leanings would shape both his rhetoric and mould his strategy even if, at times, his views were in contrast to his less radical cabinet colleagues. The first debate on Housing on 17 October 1945 saw the opposition focusing on the shortage of housing and enquiring what role free enterprise might play in solving the problem (*Hansard*, HC deb 17 October vol414, 1945). Bevan countered '*Before the war the housing problems of the middle classes, were roughly solved. The higher income groups had their houses, the lower income groups had not'.* Criticising the speculative builder, and the unprincipled financial institutions that supported them, he continued '*We propose to start at the other end. We propose to solve first, the housing difficulties of the lower income groups'*. In sharp contrast to the Conservative pursuit of home ownership, Bevan would describe his policy: *'In other words we propose to lay the main emphasis of our programme upon building houses to let. That means we shall ask local authorities to be the main instrument of the housing programme'* (*Hansard*, HC Deb 17 October 1945 vol414 col1206). This major departure from earlier Coalition policy would place the responsibility for housing directly with the 1,700 or so local authorities who would henceforth develop their own building programmes, select and prepare sites, establish contracts with either private builders or their own Direct Labour Organisations (DLOs), fix rents, allocate tenants and manage their estates. The ratio of public to private development was set at 5:1 with building programmes approved by central government who would also apply the subsidy. Bevan believed that empowering local councillors would ensure a better response as local authorities were not only more aware of their local requirements but their success could be judged by their electors. In contrast he believed that continued Conservative demands to allow private enterprise free rein would result in private developers selecting the most profitable clients leaving the working class homeless. Bevan outlined a vision that would incorporate a policy of mixed-development with a wider social composition on new estates that comprised age-balanced communities (*Hansard*, HC Deb 17 October 1945 vol414 col1206). Whilst compatible with his

democratic socialist views in essence they were a re-affirmation of the various recommendations of both the *Dudley Report* of 1944 and the solutions proposed in Abercrombies's *County of London Plan*. What Bevan added to this formula was the empowerment of the local authority as the instrument of his policy with an increase in general subsidy. The 1946 *Housing Bill* (*Hansard*, HC Deb March 1946 vol420 col341) would provide the detail by outlining increased subsidy for construction on both expensive urban sites and for the adoption of flats of greater than four-storeys to reflect the high cost of lift provision. The Parliamentary Secretary announcing the new subsidy suggested that Parliament *'would welcome these proposals as being in excess not only of their wildest expectations, but even their highest hopes'* (*Hansard*, HC Deb March 1946 vol420 col341). Whilst the previous subsidy on a three-bedroom house was £5.10s from the exchequer and £2.15s from the local rates over 40 years the new subsidies were for a lengthened period of 60 years with £16.10s coming from central government and £5.10s coming from local taxes. Conservative opposition to these moves centred unsurprisingly on the exclusion of private enterprise in Bevan's plans but also presciently suggested that the method of subsidy would favour high flats rather than the universally-preferred mixed-development. In particular G McCallister MP responding suggested *'The Minister may imagine that he is following the lead of the French Architect and Planner Le Corbusier. If he does, he is profoundly mistaken. In his latest book 'The three foundations of a humane civilisation' Le Corbusier advocates de-centralisation of population and industry, the creation of garden cities and low-density housing policy'* (*Hansard*, HC Deb March 1946 vol420 col341). That subsidy might have the unintended outcome of accelerating high-rise construction would need the test of time to confirm but for the moment Bevan vehemently championed his policies. The Ideal Home Exhibition of 1948 incorporated a pamphlet *'Housing Progress'* that extolled the virtues of the architect-designed home, claiming *'socialist houses are bigger and better'* (MH, 1948), whilst celebrating the layout and neighbourliness of new estates. There was some truth in this claim, whilst the pre-war minimum size for a three-bedroom house had been 750 square feet and the *Housing Manual* (1944) had recommended 800-900 square feet, Bevan had gone with the Dudley formula of 900-950 square feet.

The radical nature of Bevan's policies would see him advocate the ideals of a classless society represented by mixed-development, mixed communities. That this might also represent an attempt to expand Labour's traditional demographic was supported by the *1949 Housing Act* that would see the replacement of 'working class' terminology with 'income groups' to describe housing policy. To support this wider vision talk was of a *'variegated kind of housing'* (*Hansard*, HC Deb 13 March 1950 vol472, col764) designed by architects that could achieve a quality not possible with estates of identical houses. In the absence of specific proposals in the Labour *Election Manifesto,* policy seemed

to reflect the more progressive recommendations of the *Dudley Report* (1944) and *County of London Plan* (1944). Labour supported the concept of mixed-development in its widest sense with recommendations on house-to-flat ratios and clear guidance on neighbourhood planning. Despite seeming like a wholesale adoption of the *Dudley Report*, Bevan was passionately committed to the quality and specification of housing resisting all temptation to lower specification in order to achieve greater output (Foot, 1997). Bevan was also fiercely committed to the concept of mixed-development not just from an aesthetic perspective but the need to mix a demographic to form the best type of community, *'we should try… to introduce in our modern villages and towns what was always the lovely feature of English and Welsh villages, where the doctor, the grocer, the butcher and farm labourer all lived in the same street'* (Foot, 1997: 273). Perhaps in order to support this ideal he cautiously enabled home ownership by authorising local authorities to lend money (up to £5,000) for home purchase. As Day concludes, by 1949 local authorities had been empowered by *'legislation, finance and guidance to build balanced communities for all sectors of society'* (Day, 1988: 87). Meanwhile in opposition the Conservatives continued to direct criticism at production volumes and lament the absence of private enterprise in the home construction equation.

3.4 Conservative control

For the 1951 Election Campaign Conservative attention would continue the focus on Housing, increasing Labour's achieved target of 200,000 new homes per annum to 300,000 and opening up opportunity for the private sector (*Hansard*, HC Deb 6 Nov 1950 vol 480 col605). Churchill would declaim in parliament that *'we should expand output so as to make it possible for free enterprise to build large numbers of additional homes, both for sale and for rent'* (*Hansard*, HC Deb 6 Nov 1950 vol 480 col605). With a Conservative victory Harold Macmillan would take over as Minister of Housing and Local Government and immediately increase the subsidy. Whilst his policy focussed on production volumes it went hand in hand with an overall reduction in the size and standard of accommodation. Instead of the more overt Labour statements about quality and size of housing, Macmillan would define housing policy in terms of family values, with community and society centred upon the home. By 1953, having achieved the designated target of 300,000 homes per annum, Macmillan set about outlining ongoing policy.

Figure 28: Harold Macmillan who would take over responsibility for housing in the incoming Conservative Government. Source: collectionimages.npg.org.uk

Unsurprisingly a greater emphasis on the role of private enterprise and a reduction of state control were paramount. Conservative policy focussed on the need for people to help themselves rather than rely upon the state to provide them with a home, ownership became a central tenet of policy, *'of all forms of ownership, this is one of the most satisfying to the individual and the most beneficial to the nation'* (MH, 1953). In a major reversal of policy Macmillan refocused local authorities on slum clearance whilst leaving private enterprise to provide General Needs housing, suggesting that *'this fresh attack upon the housing problem will commend itself to the great mass of the public as both practical and imaginative'* (MH, 1953). As Day concedes (Day, 1988) this was hardly accurate, but more of a return to Conservative pre-war strategy masquerading as new policy. A relentless drive to engage and empower free enterprise would be accelerated still further in 1954 with the abolition of building licences. The *Housing Repairs and Rent Act* followed by the *1957 Rent Act* brought in the removal of rent controls for private property and was marked by an immediate rise in rents. From 1954 Duncan Sandys, Macmillan's successor at the MHLG, would reduce further the General Needs subsidy whilst increasing that for slum clearance, ensuring that local authorities focussed their attention on the growing challenge of slum clearance. In 1956 the *Housing Subsidies Act* with the Progressive Height subsidy would facilitate higher subsidies for tall flats. Whilst the intention was not designed explicitly to promote the development of high-rise, local authorities, tasked with inner-city

slum clearance and with achieving high densities, would clearly be more likely to replace slums with the more financially-rewarding high flats. By 1956 the Conservatives had progressively dismantled Bevan's vision of social housing by reducing subsidy for local authorities and opening the door for private contractors. This comprehensive reversion to a capitalist-centred policy favoured free enterprise economics and home ownership, and ensured the dismantling of any ideas promoting socially-mixed development.

3.5 The Local Authority Architect

The *Dudley Report* of 1944 was influential in advocating the wide scale employment of public architects to plan post-war reconstruction. Recognising the importance of aesthetics when tackling such widespread re-development the findings of the report echoed contemporary publications such as the *County of London Plan*. Innovative and varied design and the recommendations of the Report were welcomed by both political parties. When Bevan announced his empowerment of local authorities to manage all aspects of home provision and set the ratio of public to private house building at 5:1 the die was cast. Whilst this curtailed the role of the private architect it did ensure that newly-qualified architects in particular had no option but to pursue careers in public service. For many this proposition presented not just an ideological challenge but an opportunity to put what they had learnt about Modernism into practice in order to effect post-war change. The architect of the post-war period was therefore a very different animal to his nineteenth-century counterpart. Modernism had changed the role from the professional concerned with structure, style and appearance to one encouraged to address social and political considerations. Many were very happy to see the requirement for social awareness as part of their job function. Wells Coates commented: *'we are not so much concerned with the formal elements of style as with an architectural solution to the social and economic problems of today'* (cited in Jackson, 1970: 63). For many of these new recruits the Royal Institute of British Architects (RIBA), ostensibly the mouthpiece of the profession, had for some time not adequately represented them. It had long comprised predominantly those architects in private practice *'middle aged, middle class, widely cultured men – no women – with middle sized practices'* (Carter, 1979). RIBA hardly represented the salaried architect employed by the local authority and for this reason in 1919 the Association of Architects, Surveyors and Technical Assistants (AASTA) had been formed. AASTA campaigned vigorously for greater representation for public architects within the professional association resulting in 1928 in the formation of the Salaried Members Committee of RIBA. Whilst debating the role of private architects within their Committees, RIBA was also investigating the respective roles of the private and public architect with the stated aim to decide which group *'is more likely to produce the better architecture'* (RIBAJ, 1935). With Raymond Unwin as Chair and his Committee comprised equal numbers of private and public

architects, their findings would underline RIBA's perception of the salaried professional. The Committee concluded that architects '*should be regarded with the same consideration whether they occupy official positions or are in private practice'* (RIBAJ, 1935). The report however went on to associate administrative and organisational skills with the public architect and the altogether less common skills of creative design to architects in private practice. It concluded that *'official architects should realise that there may be men better qualified than themselves in the matter of design, and be more ready to seek their help and co-operation'* (RIBAJ, 1935). The publication of a speech by Honorary Secretary Michael Waterhouse in 1943 suggested that RIBA had a choice *'between either being in a position to speak for the entire profession, or adhering to its long-term policy of being able to voice the view of that part of it which sets before itself the highest ideals and standards. Myself, I see only one line of action for this Institute. To adhere at all costs to its standards'* (Waterson, 1943), This was by no means an isolated view, reflecting the widely held perception within the professional association of the public architect, the type of work they were engaged in and their perceived political preferences.

The common viewpoint of the inferiority of the public architect was explored further in the October edition of *Horizon* (1942) in it, Summerson addressed the changing face of the profession contrasting the aspirations of the architect qualifying in 1925 with those of the architect qualifying in 1938. Summerson suggests the 1925 graduate aspired to be '*a successful independent practitioner of architecture, a scholar and a gentleman with clients in the aristocracy, the City and the Church'* (Summerson, 1942: 233). Then in the thirties the depression witnessed the profession *'shrink horribly'* leaving the practitioner the only option of salaried employment that *'attracted few and was entertained by the unambitious and the not very talented'* (Summerson, 1942: 234).

By the mid-thirties the attraction of salaried employment grew in response to Continental ideas that promoted town planning, sociology and politics. The emergence of influential local authority practitioners such as LH Keay in Liverpool, RAH Livett in Leeds and JH Forshaw at the Miners Welfare Commission represented a rise in status and consequently the range of opportunity available to the salaried architect. The rising status enjoyed by the public architect would be enhanced by the more progressive activities of AASTA in publishing research and guidance from MARS. This would coincide with a growing opportunity afforded by local authorities to the public architect as they were empowered by responsibility for the '*big programmes before them'* in post-war development. In charting this transformation of status, Summerson suggested that public bodies would henceforth '*recruit some of the best architectural ability'* and it was time that RIBA and AASTA work to ensure *'the slur on salaried practice is wiped out once and for all'* (Summerson, 1942: 241).

Since its formation in 1919 AASTA had continued to represent the public architect in much the fashion of a trade union. In seeking affiliation with the Trades Union Congress (TUC) in 1939 and, later in 1942, with the National Federation of Building Trades Operatives (NFBTO), *'it wanted to see itself as part of the labour movement'* (Day, 1988: 15). In 1942 AASTA changed its name to the Association of Building Technicians and by 1945 its membership had risen to 3,000 and represented *'in the most clear-cut fashion the Left wing of Architecture'* (Summerson, 1942: 235).

Figure 29: Lancelot Keay, City Architect at Liverpool and first public architect to become President at RIBA. Source: municipaldreams.files.wordpress.com.

The appointment of Lancelot Keay, Liverpool's City Architect and Housing Manager, to the post of President in 1946 may have given an indication of RIBA'S reluctant acceptance of the Public Architect. The end of the war certainly promised to enhance the role of the public architect although to many it would still struggle to achieve the standing of the private architect. Certainly in the period between the end of the war and the early 1960s local authority Architects Departments would grow exponentially. Private architects would win occasional contracts to design specific projects but by and large the public architect would reign supreme. Not until the building boom of this period began to slow would the leading public architects' transition into private practice. The balance between the public and private architect would be explored in Layton's 1961 study entitled *'Building by local authorities'*; in it, she set out to explore the organisation of building within local authorities. Part of

her report centred upon a review of the role of the Local Authority Architects Department and its use of private architects. What she found was sporadic and reluctant use of private architects by local authorities. The report explained that local authorities' use of private resources was largely limited to situations where '*the volume of work was insufficient to warrant a full-time appointment'* or '*a scheme of outstanding importance needs a man of acknowledged standing'* (Layton, 1961: 168). Notwithstanding the absence of any mention of women, this statement seems to echo the conclusions of a pre-war RIBA concerning the status of the private architect. The overall tone suggests a concern for the private architect in a period of unprecedented public building. The conclusions that Layton drew suggest an attempt to re-assert the position of the private architect and at least ensure that a few crumbs from the table were shared. In conclusion Layton encourages the contracting of private architects so that they might *'introduce new ideas and be a stimulus for regular staff'* (Layton, 1961: 169).

Layton's study is an important artefact charting the development and status of the public architect, reflecting that *'once in danger of being treated as less important members of the profession',* referring to the Salaried Members Committee at RIBA, *'they now outnumber their colleagues in private offices'* (Layton, 1961: 170). The changing role of the private architect with regard to local authority work reflected a complete reversal in the fortunes of their public colleagues. Layton found that local authorities regarded the private architect as an option of last resort, with authorities reluctant to accept that private architects could offer anything *'to add to the experience of the salaried architect or benefit the quality of local architecture'* (Layton, 1961: 170). What Layton's study clearly demonstrates is that a larger proportion of the profession was now employed in public service to the detriment of private architects. Whilst private architects might occasionally be engaged in landmark projects, the more likely outcome was, that they would be used in times of high volume to augment salaried staff. Layton's study provides an interesting insight into the profession in the immediate post-war period. Whilst she recommends the contracting of private architects by local authorities the clear belief from the authorities she polled was that they had good reason to believe they were capable of recruiting the very best talent that the profession had to offer. Only from the late 1960s with a decline in the rate of public building would salaried architects be tempted away to private practice. Contrary to earlier perceptions and not diminishing the administrative skills of the public architect this trend suggested perhaps that talent invariably followed the work.

3.6 Post-war high flat policy

The emergence of, and enthusiasm for, mixed-development philosophies immediately after the war meant that architects were keen to explore the development of estates that featured a range of

housing suitable for a wider demographic. This meant a wider range of housing types began to appear, single-storey bungalows for the elderly, conventional two-storey houses and a range of maisonette types as a practical compromise between the house and flat. Local authority architects would increasingly embrace new forms of flat construction. Initially the lower-rise slab block gained ground on cost considerations with the later emergence of point blocks as viable alternatives due both to advances in building technology and the belief that they were able to achieve higher densities in smaller spaces. Cleeve Barr would later describe the *'large vocabulary of multi-storey dwellings'* available in Britain including balcony-access, staircase-access, central-corridor access, cluster-blocks, short and tall point-blocks, scissor blocks (Cleeve Barr, 1962). The plethora of styles described by Cleeve Barr clearly demonstrated the vibrancy of local authority architectural practice but it could not have occurred without government support in the form of subsidy. The *Greenwood Act* of 1930 had initiated the subsidy that allowed local authorities to build flats on expensive mostly urban sites. The rate of subsidy was directly proportional to the cost of the land and a clause ensured that flats of at least four-storeys were built to ensure sufficiently high densities were achieved. The result was that in an effort to maximise the financial incentive the result was *'to produce rather crammed flatted estates'* (Dunleavy, 1981: 37). The incoming Labour government of 1945 retained the subsidy system from the inter-war years that consisted of a flat rate paid over the sixty-year lifecycle of the property, to *'offset the interest and repayment burden on the local authorities'* (Dunleavy, 1981: 42). Additionally, subsidies were paid based upon the value of a site, benefitting inner city development. Bevan increased the subsidy in 1946 and with housing still playing a major part of political strategy the Conservatives again raised the subsidy in 1951 whilst also signalling the reintroduction of the private sector into house building. Their intention was clearly to focus local authority attention on slum clearance, re-housing and overspill developments. The general subsidy was gradually phased out by 1956 when a Progressive Storey Height subsidy enabled flats of four-, five- and six-storeys to attract a significant increment over the basic house subsidy. In developments over six-storeys the increment rose for each additional storey. Under this new policy a flat in a six-storey block would receive 2.3 times the basic house subsidy rising to three times at 15-storeys and three point four times at 20-storeys (Dunleavy, 1981). The increase in subsidy reflected the higher costs of development accounting for the inclusion of expensive lifts and new building materials such as the emerging reinforced concrete. Whilst this increased subsidy was not as generous as the 1952 scale that enabled building on expensive sites it gave a significant encouragement for development on less costly sites. Subsidy would be changed yet again in 1961 and 1965 but the overriding effect was to provide encouragement for local authorities to embrace high-rise construction. It wasn't until

1967 with the introduction of mandatory housing cost yardsticks that it became evident that Government wished to reduce high-rise construction (Dunleavy, 1981).

Whilst flat construction figures for 1953 shows that of the total housing built, 20 per cent was in the form of low-rise, and just three per cent was high-rise. The rise in the percentages of high-rise construction Dunleavy correctly attributes to the freeing up by the Conservatives of the private sector to pursue speculative house building. A re-focus of public sector development on slum clearance and urban re-development witnessed a steady decrease in local authority house building and a steady increase in high-rise approvals. The need to maintain the higher population densities of the central urban slum areas made high-rise construction attractive to local authorities. The high-rise block could prove useful to not only maintain urban population densities but could also ensure the workforce remained local to work. Allied with height subsidies for less expensive land the explosion in high-rise development, whilst not specifically an objective, became an attractive proposition for local authorities faced with growing housing lists and more concerned about volume than quality of accommodation. From just three per cent in 1953, approvals for high-rise would grow to represent 15 per cent of total approvals by 1960 and 26 per cent by 1966. In terms of numbers this represented 6,000 in 1956, 17,000 in 1961, 35,000 in 1964 and 44,000 in 1966. From 1966 there was a steady decline with total approvals decreasing by 31 per cent between 1966-8, by more than 50 per cent in 1969 and 38 per cent in 1970. By 1973 just 2,750 flats were approved. Between 1955 and 1975 some 440,000 high-rise flats would be built with 90 per cent being in inner urban areas (Dunleavy, 1978: 1) and *'many if not most residents in high-rise flats moved there from slum accommodation'* (Dunleavy, 1978: 2).

This chapter has explored how the need to provide a decent standard of housing became a key political imperative following the hardship of the Second World War. It has described how early philanthropic housing introduced the need for, and benefits of decent working class housing and how following war both main political parties supported the need for the major reconstruction and the provision of new homes. Early political theory related to the form of the housing that would be provided has been explored through a study of the Dudley Report (1944) and subsequent Housing Manuals that witnessed the emergence of the flat as a viable form of housing. An exploration of the County of London Plan (1944) has examined the proposal to utilise the neighbourhood unit as a key component in future planning that would incorporate mixed development estates featuring flats as part of the housing equation. The form of early reconstruction has included a discussion on the implementation of early temporary pre-fabricated housing and efforts to combat labour and materials shortages with alternative forms of housing. The direction of political priorities has witnessed a move from general needs housing to a focus on the eradication of the slum. The need to

provide high density housing in an urban setting has been discussed including the introduction of building subsidies that encouraged the use of high flats as a solution to the problems associated with land shortages and density targets.

The following chapter will investigate how successive governments handled the problem of ever increasing housing demand amid a shortage of materials and labour. It will chart the introduction of non-traditional forms of construction and examine how certain contractors enjoyed greater success and how their experience influenced the development of industrialised methods of building in the early 1960s and how this earlier experience influenced contractor's responses to the demands of implementing system build.

New forms of construction

4.0 New forms of construction

As early as 1933 Walter Gropius had commented enthusiastically upon the potential for pre-fabrication and industrialisation to effect change in the building industry*: 'Our age has initiated a rationalisation of industry based on the kind of working partnership between manual and mechanical production we call standardisation which is already having direct repercussions on building. There can be no doubt that the systematic application of standardisation to housing would affect enormous economies – so enormous indeed, that it is impossible to estimate their extent at present'* (Gropius, 1933: 25-6). From the early years of the Second World War it had been recognised that major re-construction would be necessary after the cessation of hostilities. That new technologies and materials might deliver more efficient construction was one consideration but there was also a feeling that it could also contribute to an improvement in the quality of housing. In 1943 the Committee for the Industrial and Scientific Provision of Housing, lamenting the quality of small homes, suggested that the reason for this was the lack of technological progress, *'building is the oldest of crafts, and magnificent as our traditional building methods are, they are not adapted to the quick and easy provision of first call housing for the masses'* (Committee for the Industrial and Scientific provision of Housing, 1943: 6). Unlike the Burt Committee established in September 1942 with the remit to consider methods and materials, the 1943 Committee voiced more concern over the state of the existing construction industry suggesting that it would require substantial re-organisation. To modernise, the building industry would require greater standardisation, enabling in turn mass production with the proviso that to be successful the market would need to be assured of sizeable production runs and consistent demand. Clearly many people were conscious of the need for the industry to adapt to meet the new challenges and pre-fabrication and industrialised methods were widely seen to offer exciting possibilities. The perceived benefits that pre-fabrication could offer were succinctly recorded in 1945 by a RIBA Committee that highlighted *'economy in cost, economy in time, improvement in equipment, advantageous use of new materials, best use of available labour and improved working conditions'.* (RIAI, 1945: 1).

Figure 30: Early Industrialised concrete construction required accurate formwork in this case produced by carpenters and illustrating the position of duct-tube. Source: Cowley Concrete Co, (1952).

In exploring both new materials and processes after the war up until the early seventies many terms proliferated to describe new methods of construction. Non-traditional was a generic term coined during the 1940s to refer to any form of construction that did not conform to the traditional brick and stone method (Finnemore, 1989). It was used extensively and encouraged by Government to describe new building methods incorporating a wide range of predominantly new building materials including timber, steel and concrete. Despite its proliferation it was not universally accepted and conscious that non-traditional construction might have negative connotations, Wimpey coined the phrase *'new tradition'* to describe their No-fines construction (Wimpey, 1955). Promoters whether from government, architecture or the industry were keen to differentiate their offering and terms such as pre-fabricated, Industrialised, Industrialised system as well as rationalised traditional were regularly used, interchanged and often confused (McCutcheon, 1975). In 1944 the Ministry of Works defined pre-fabrication as *'the production under factory conditions of components that may be used in building, and of the pre-assembly of such components into complete units of a building'* (M.W, 1944). White in his History of Pre-fabrication published in 1965 extended this description to incorporate on-site production *'pre-fabrication is taken as meaning a continuing trend, with many fluctuations to manufacture always more of a building under a factory roof, be it only a temporary factory at or near the site'* (White, 1965: 3). Despite the variety of definitions used, the consensus was generally accepted that pre-fabrication, whether of individual components or of large sections of

a building, was related to factory-based mass production whether in a purpose-built factory away from site or in a temporary one on-site.

The term 'industrialised building' whilst incorporating the features of pre-fabrication went further by adding detail to the process and end product. In 1959 a United Nations Report attempted a wider definition of Industrialised Building that resulted in a closer definition of the process:

- continuity of production, implying a steady flow of demand;
- standardisation of products;
- integration of the different stages of the whole production process;
- a high degree of organisation of work, which in the case of building implies in the first instance more complete organisation of work on site; the transfer, where economic in given conditions, of certain operations from site to factory; and may mean factory production of the greater part of the house;
- mechanisation to replace manual labour wherever possible;
- research and organised experimentation integrated with production

(UN ECE, 1959: iii)

The definition adopted by the United Kingdom government in 1965 largely agreed with these principles but made one significant addition:

> *'the term industrialisation… covers all measures needed to enable the industry to work more like a factory industry. For the Industry this means not only new materials and construction techniques, the use of dry processes, increased mechanisation of site processes, and the manufacture of large components under factory conditions of production and quality control, but also improved control of the selection and delivery of materials and better organisation of operations on site. Not least, Industrialised building entails training teams to work in an organised fashion on long runs of repetitive work, whether the men are using new skills or old. For this purpose, Industrialised building can include schemes using fully rationalised traditional methods'.* (MHLG, 1965).

The inclusion of the term 'rationalised traditional methods' was meant to describe traditional techniques that adopted a more Industrialised process but might utilise factory-produced components. A later report in 1968 to the US Congress on the European experience with industrialised building would specifically address Industrialised System building, '*although rationalised conventional building is commonly regarded as being Industrialised, the central concern of this report is with the systematic application of industrial technology to the building industry.*

Therefore, the term industrialised building systems will be used hereafter to refer only to advanced pre-fabrication and in-situ systems, thus excluding rationalised conventional construction' (Patman, 1968: 3). It is therefore questionable whether early non-traditional schemes could really be classed as Industrialised building or indeed whether the System build that emerged in the early 1960s exhibited the required characteristics to warrant the Industrialised definition.

4.1 Non-traditional building

Whilst the inter-war period had witnessed the development of a number of new types of construction including pre-cast and in-situ concrete as well as steel and iron relatively few examples had been built. Of the four and a half million new homes built in the inter-war period it is estimated that fewer than two hundred and fifty thousand were non-traditional, amounting to just five point five per cent of the total (BRE, 2002).

Figure 31: A Royal Visit to an early example of a non-traditional home, the Cornish Unit produced by Selleck Nicholls and reportedly a favourite of Aneurin Bevan. Source: www.sellecknicholls.com.

After the war the projected requirement represented a doubling of inter-war production that a recovering building industry, beset by labour and materials shortages, would be unlikely to achieve or sustain. The need for the modernisation of the post-war building industry was hardly news, the *Tudor Walters* report of 1917 had already lamented *'the absence of industrial processes in house building'* (Tudor Walters, 1918: 16). Although it had fallen short of advocating standard plan types for fear of compromising good design, it had recommended the adoption of standard dimensions in an effort to promote the pre-fabrication of building components. The commitment to investigate and promote new methods of construction would be furthered by the inauguration of the Building Research Station in 1921 to consider new materials and processes and during the war the inter-

Departmental Committee on House Construction or Burt Committee had been formed to look at the efficacy of new forms of construction. In an effort to find alternatives to traditional brick and tile construction the Committee having investigated the use of steel and timber in house construction would report that 'type design' had the potential to offer significant economies. With the encouragement of Government many non-traditional systems would be developed incorporating varying degrees of pre-fabrication and by the time the Burt Committee had published its third report in 1947 some 101 systems had been recommended as appropriate for use by local authorities (Lewis, 2012).

A shortage of both materials and labour was the major concern driving investigations into new forms of construction but this was also allied to a fear that politicians and commentators had had for some time relating to the lack of innovation in the building trades. Progress or lack of it was still inextricably linked to the availability of skilled labour. In order to meet the challenges of unprecedented new building programmes it was felt that building methods would need to *'change permanently and irrevocably'* (Finnemore, 1989: 67). Many felt that a lack of improvement in efficiency and productivity was attributable to the continuing absence of the type of technological development that might enable large-scale expansion (Richardson and Aldcroft, 1968). Previously, the larger scale estates had only flirted with pre-fabrication by utilising standard house types benefitting from consistent components. Government attempts to get the building industry to embrace new technology had not always been met favourably. The National Federation of Registered Housebuilders baulked at plans that suggested that its members might embrace new technologies in order to rise to the challenge of increasing output (NFRH, 1944). By 1942 there were ten building firms employing over 10,000 workers each, perhaps unsurprisingly the two that sat on the Burt Committee were Laing and Mitchells (Wimpey). For these ambitious builders the war would not only provide valuable construction work but would also favourably cement their relationship with government as companies keen to rise to the post-war challenges of re-construction whilst capitalising upon war-time goodwill. Both firms would be in the vanguard in recognising the opportunity to provide a type of housing that could deliver growth with a limited dependence upon skilled labour and material shortages.

The projected shortages of both labour and materials post–war were not the only reasons for the state to invest resource in investigating non-traditional forms of construction. There were also widespread fears that the building industry would be unable to scale up, and skilled labour would be costly and better directed to export related industries. RA Butler's aim as Chancellor of the Exchequer was to ensure that labour was employed in the export industries and the perceived inefficiency of the construction industry supported this policy with Cabinet demanding that *'more of*

the available building resources must be transferred to the development of the engineering industries, which were capable of expanding their exports' (N.A, 1952).

Despite early attempts to promote apprenticeships in the building industry to boost the available workforce, it quickly became apparent that the results of these initiatives would arrive too late to meet an urgent and growing demand for housing (White, 1965). A labour allied to a traditional building materials shortage encouraged a drive to develop alternative building systems. This witnessed the encouragement of many wartime industries more used to building products such as aircraft to switch production to temporary buildings. These manufacturers were able to capitalise upon an available workforce using familiar materials and methods to produce pre-fabricated permanent homes (pre-fabs). The relative success of this initiative encouraged traditional builders to embrace new materials and technology. The motivation that resulted in the early proliferation of 'pre-fabs' was illustrated by the Minister of Health's reckoning *'that it takes 100,000 building operatives to build 100,000 houses in a year, the building labour force for these bungalows is not much more than 8-10,000'* (*Hansard*, HC Deb 17 Oct 1944 vol404, col1255). Despite temporary homes providing a much-needed stop gap, the primary objective was clearly to encourage the wider adoption of pre-fab homes. The extent of government concern that any new systems might not be quickly adopted resulted in discussions that considered the possibility of the government placing orders directly with manufacturers and even taking direct control of construction on behalf of local authorities (Finnemore, 1989).

The success of the Labour Party in the 1945 Election and the announcement of its plans for state-sponsored housing would provide the necessary catalyst for the promotion of an extensive range of non-traditional housing systems. On assuming office in 1945, Aneurin Bevan quickly demonstrated his enthusiasm for new building techniques: *'I have been looking eagerly, ever since I took office, for some system of pre-fabrication which would enable us to build houses in the same way as cars and aeroplanes'* (Bevan, 1945: 253). By September 1945 the Ministry of Works had recommended that local authorities should be made aware of available systems and encouraged to place orders. Encouragement would take the form of subsidies to local authorities to offset the greater initial cost of building non-traditional homes. It was widely accepted that new methods would prove more-costly initially until volume and methods were established. The Burt Committee of 1943 had already recommended the use of 78 systems and, by the end of hostilities, there was already an extensive range of building systems available from a variety of sources. Whilst these included established national building firms such as Laing and Wimpey, they were augmented by new entrants seeking to switch war-time production to pre-fabricated house construction. These varied between companies primarily concerned with material supply such as BISF to those involved in large scale war-time

production such as the Hawker Siddeley Group. The systems proposed were either developments of pre-war designs, completely new systems or increasingly common a wide range of licensed systems from European sponsors, predominantly in Scandinavia and Central Europe (Lewis, 2012).

Finnemore's suggestion that Industrialised building was directly related to the *'social and economic policies of the Welfare State'* (Finnemore, 1989: 9) is in many ways an over- simplification. Its rise in popularity was driven by a number of complimentary factors, not least the anticipated post-war shortage of building materials and labour. Whilst there was a compelling desire to quickly and cheaply reward the populace this coincided with a desire to support wartime industry and move it as efficiently as possible to sustainable peacetime production. In pre-fabrication governments recognised that critical re-construction might be also be effected by a less skilled workforce thus enabling skilled tradesmen to seek employment in export-orientated industries that would benefit the balance of payments.

Finnemore recounts Henry Ford's three pre-requisites to enable mass production. Ford believed that mass production would only be possible if there was a) the identification of a large enough market to support it, b) the standardisation of components to a minimum number and c) the ability to invest in systems that would eventually deliver a cost reduction (Finnemore, 1989: 13). The inability of the industry to meet the reconstruction challenge using traditional methods ensured that Ford's first criteria for mass production would be met. Whether the second and third criteria could be met would ultimately define the success of the initiative.

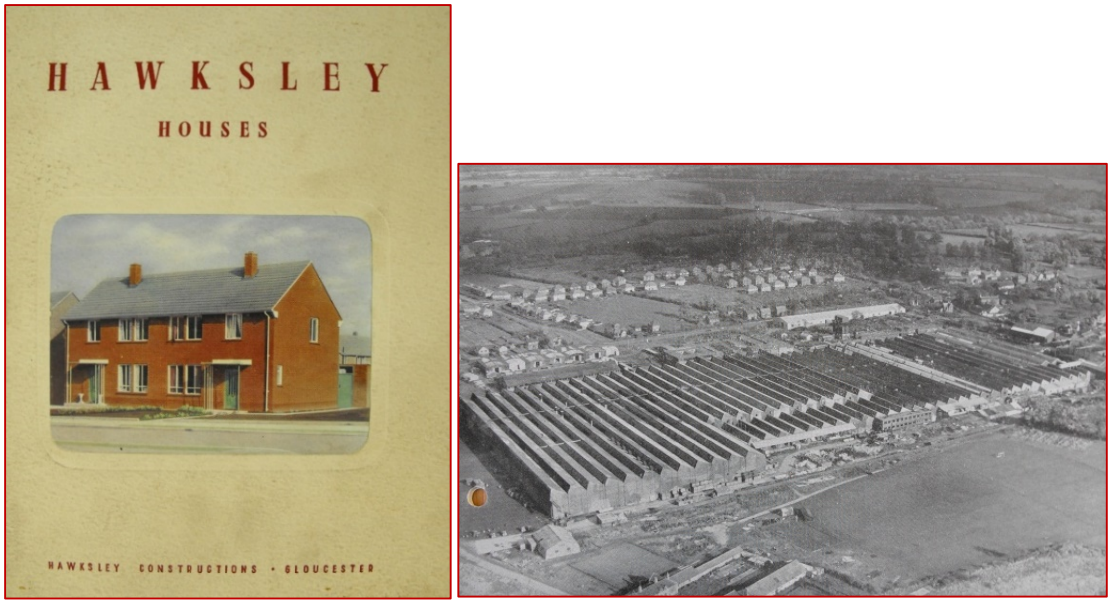


Figure 32: Hawksley promotional materials of the 1950s, detailing the type of housing available and an aerial shot of the factory producing it (formerly engaged in aircraft production). Source: Gloucestershire Archives.

Partly due to the significant numbers of new systems available but also the strength of the traditional building firms, many of the engineering groups would find their participation in the pre-fabrication experiment relatively short-lived. In most cases this was only as long as the government subsidy for non-traditional homes lasted. Their inexperience of the building industry including the need to come to terms with contracting with local authorities and the requirement to employ a separate workforce for ground-work, transport and finishing would quickly become apparent. That early systems were no longer financially viable without subsidy to some extent masked other issues, including a failure to effectively switch production to viable systems, to market them and implement them in an efficient way.

By 1948 the potential of non-traditional construction was already being questioned as the National Building Studies Report would attempt to quantify the benefit of non-traditional systems. They concluded that *'the best of the new methods save up to forty per cent in man power for the part of the house to which they have been applied. The saving, in terms of the whole house is not more than twenty per cent at best'* (NBSR, 1948). In concluding, the report confirmed that *'the best of the new methods are shown to be capable of being cheaper than tradition construction'* but this was qualified by the proviso that only *'when working at an economic tempo and assuming sufficient continuity of operation'* (NBSR, 1948). For the local authority, non-traditional homes proved no cheaper than their traditional counterparts and significantly more expensive in most instances than traditional 'bricks and mortar'. By 1947, when the Department of Health removed the subsidy many developers who had converted to house production found it less profitable to continue. In the longer term the real beneficiaries of what in essence was a short-lived initiative were those established building firms who, conversant with the industry, had capitalised on a new market by adapting their processes to meet the demand for homes constructed of new materials using new methods. That none of these could truly be classified as pre-fabricated further highlights the conservatism of the industry and a reluctance of established players to embrace the large-scale industrialisation of their businesses. The most successful of the major building firms was Wimpey who focused their efforts not on off-site pre-fabrication but on in-situ construction utilising new methods of construction.

Although the inter-war building industry had largely been characterised by multiple smaller local firms it was only the larger more efficient firms that would enjoy real success and this trend was repeated post-war. The inter-war period had seen the likes of Taylor Woodrow and Wates enjoy pre-eminence and, in the immediate post-war period, it was firms of the size of Wimpey and Laing that rose to the fore. That neither firm really embraced full scale pre-fabrication supports Finnemore's contention that the non-traditional movement was largely seen as a temporary expedient to

'overcome immediate housing shortages' (Finnemore, 1989: 67) and consequently only a few were committed to long-term change.

The potential of pre-fabrication and greater industrialisation of the industry continued to be supported by Government. The 1948 Committee of Inquiry into the cost of housebuilding would find that the post-war house was 325 per cent more expensive to construct than its pre-war equivalent (Finnemore, 1989: 61). Whilst in part this increase reflected a higher and more-costly labour content it could also be attributed to a 31 per cent decline in output. The productivity and efficiency of the building industry would continue to be a concern for government and although Britain's early forays into non-traditional building could not be considered an unqualified success it felt that pre-fabrication and industrialisation of the industry might yet deliver success. Despite the removal of subsidy from 1947 Government remained keen to encourage and support non-traditional forms of construction. The incoming Conservative Government of 1951 whilst setting targets of 300,000 new homes per year dictated that the use of steel and timber should not increase and the labour force remain at the same level. This clearly demonstrated that improvements would need to come through the use of alternative materials and technologies that embraced pre-fabrication and enabled greater productivity. The continuing support of non-traditional housing would continue with the Ministry of Housing and Local Government explicitly instructing their Regional Officers in 1952 to increase non-traditional housing, something they were able to do because they controlled allocations of new building licences (Lewis, 2012).

4.1.1 Wimpey, a blueprint for success

To better understand the development of non-traditional forms of construction and how individual companies could achieve success there is no better illustration than that of George Wimpey and Co. In the immediate post-war period the company eclipsed their competitors and provided a blueprint that many firms tried to emulate during the second wave of local authority System building in the early 1960s.

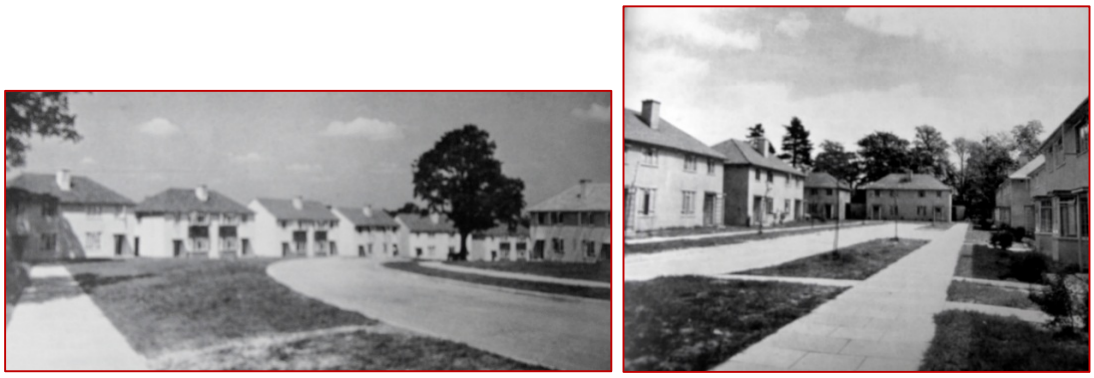


Figure 33: Illustration of Wimpey Homes at Farnborough contained in period promotional materials. Source: Wimpey (1950).

Wimpey's rise to prominence would be through their development and implementation of the No-fines system, a non-proprietary system of building that had been in use on a relatively small scale for a number of years. It was originally developed in the Netherlands and adopted by a number of builders from the 1920s who recognised its potential to alleviate the challenges of labour and material shortages following the First World War. The earliest example of the use of No-fines was by the Corolite Company in Scotland in 1923 but, following the Ministry of Health's Post-war Building Studies Report (1942) the system was adopted by a number of building firms most notably the Unit Construction Company, Wilson Lovatt, Laing and Wimpey. Wimpey would have the greatest success though and by 1968 they were able to report that 750,000 people were living in their No-fines homes (Finnemore, 1989: 189).

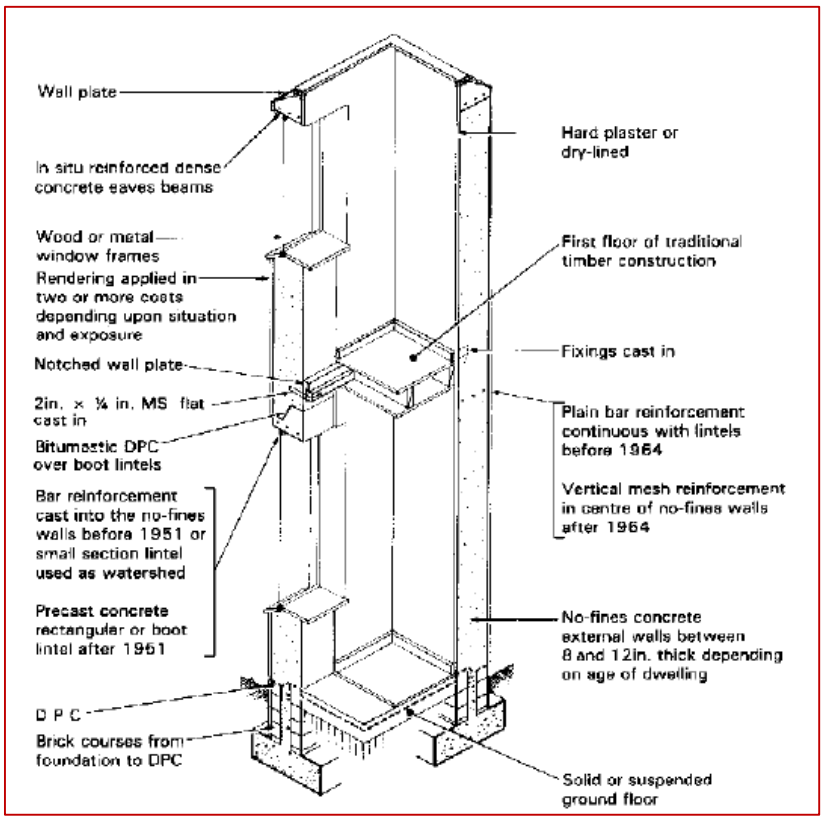


Figure 34: Exploded view of construction method of two storey Wimpey No-fines house. Source: BRE 1989.

The basis for the system and the term No-fines referred to the absence of sand and fine stones in a poured concrete mix that formed a cellular construction, lauded at the time for its thermal qualities and ability to suppress damp. The Wimpey system utilised a standard formwork of light re-usable shutters, and in some cases a mesh, to form the load-bearing outer walls. It was said this method, where the concrete was poured from height avoided the hydrostatic pressure of normal dense concrete and so prevented disintegration (BRE, 1989). The mix was advertised as consisting of 1 cwt cement to ten cubic feet of aggregate (approx. 1:8 by volume). The aggregate used would vary depending on location, but would normally be washed river ballast able to pass through a three

eighths inch sieve with no more than ten per cent passing through a three quarter inch sieve. A band of re-enforcement bar would be installed in the concrete at eaves level, and support above ground floor doors and windows would be provided by pre-cast concrete lintels with projecting re-enforcement. Internal walls could be either traditional brickwork or of timber construction. Render was applied in two or more coats to the external No-fines concrete: this contained natural stone chippings available in a variety of finishes that could imitate local vernacular buildings. Internal walls would be dry- lined or hard-plastered and party walls were often rendered to provide additional sound insulation. A brick course would be formed from the foundation to the damp proof course with ground floors of either solid or suspended construction and first floors of timber construction attached to a notched wall plate. Windows could be of either timber or metal construction.

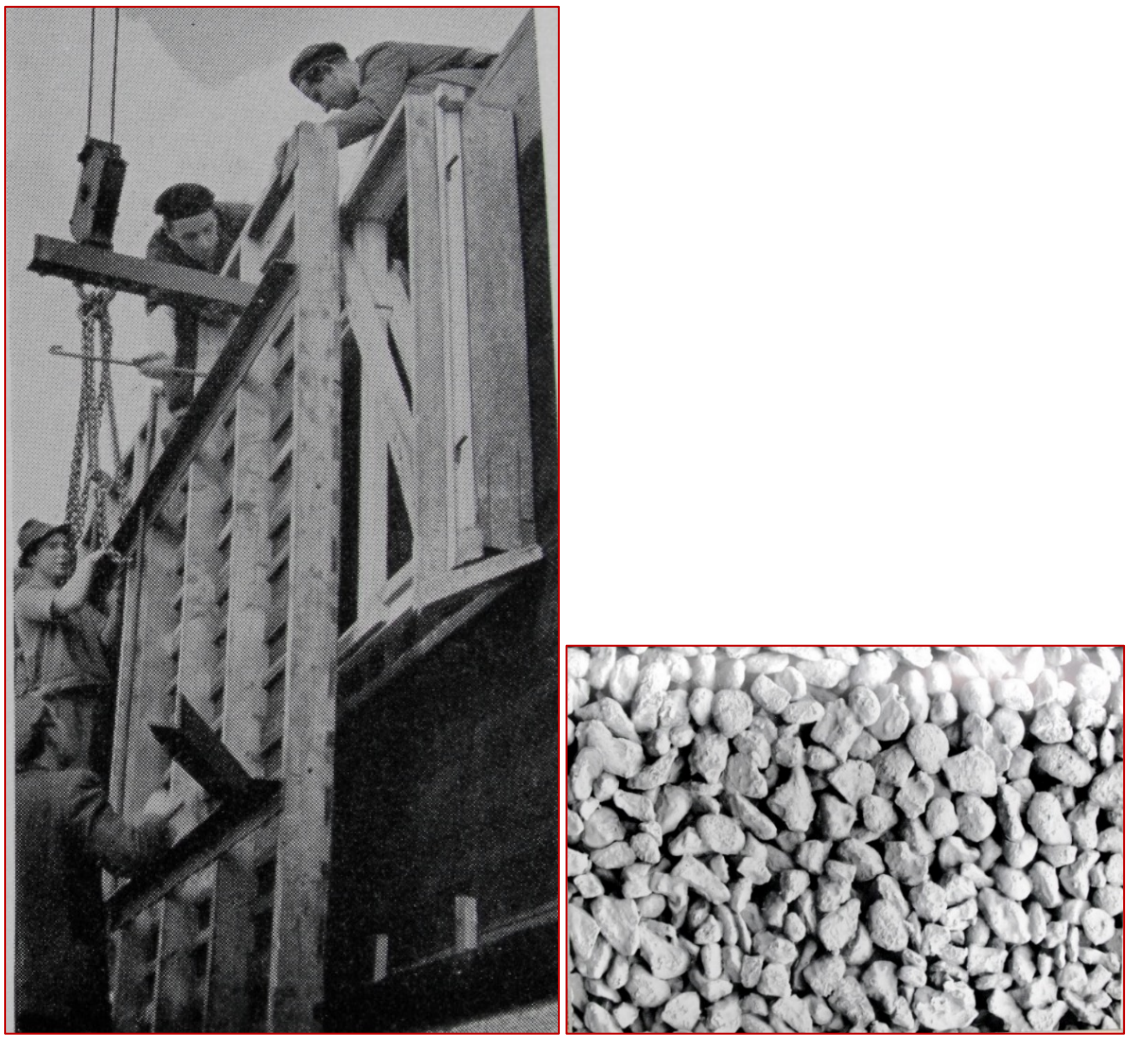


Figure 35: Promotional images of Wimpey mobile formwork and aggregate used in the construction of No-fines housing. Source: Wimpey (1950).

The relative success of Wimpey in the post-war housing drive cannot merely be attributed to the timely adoption of No-fines as a system. A number of competitors promoted similar systems but were less successful. Wimpey's success in this first phase of non-traditional building would greatly

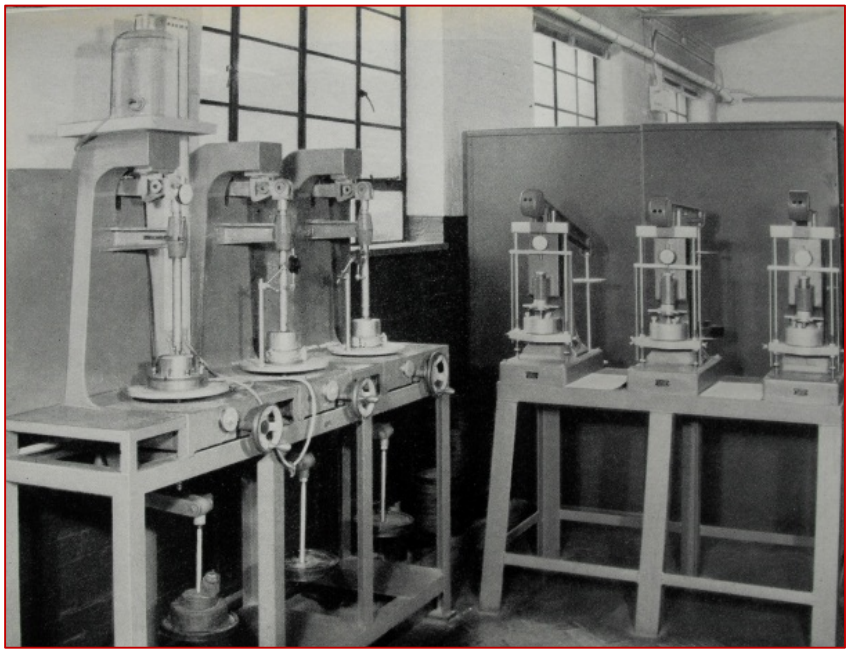
influence participants in the second phase. This influence would not only condition sponsors in the methods they needed to adopt to succeed but would provide a timely example of how one company might emerge to capture the lion's share of a lucrative market.

A preference for national building firms willing and able to scale their operations had been signalled in March 1944 when the *Department of Health Circular 14/44* gave priority for future infrastructure projects to some 50-60 contractors who had been involved in aerodrome construction. This afforded Wimpey the opportunity to leapfrog the often-preferred local contractors and even local councils' own Direct Labour Organisations when contracts were being considered. The provision of government subsidy to support the adoption of non-traditional forms of construction also proved particularly beneficial to Wimpey in allowing the company to be competitive in a new market. Unlike transitioning manufacturers who still had costly factories to maintain Wimpey were able to exercise cost control by avoiding purpose- built factories in favour of the less costly temporary in-situ fabrication that their system used.

No-fines therefore represented perhaps the most practical example of a firm utilising new technology to solve the housing problem. Many of Wimpey's competitors were promoting systems that embraced pre-fabrication requiring expensive factories or casting plants. Transport costs could be high and component damage during transportation was common. No-fines benefitted from utilising commonly-available local materials that reduced the high transport costs more commonly associated with pre-fabricated systems. Local supply also often avoided the common delays associated with mainstream material shortage. As Finnemore points out, the lack of tensile strength of No-fines necessitated the 'use of windows and openings of modest size' (Finnemore, 1989: 191), these were not only cost- effective but also mimicked the more common traditionally-constructed cottage. The options to render properties in a variety of finishes to reflect a local vernacular proved attractive to local authorities.

Although the Ministry of Housing and Local Government did not find No-fines to be *'a particularly labour-saving system requiring on average 1700 labour hours per house'* (Finnemore, 1989: 190) it did have benefits. Finnemore cites Gosschalk (1970) who concludes that the use of non-skilled labour in the initial construction represented a considerable cost saving that resonated with the shortage of a skilled post-war workforce. The speed of initial construction was also beneficial, enabling skilled workers to move in after a day to complete the remaining construction (Finnemore, 1989). Wimpey's adoption of on-site labour camps also ensured they were able to mobilise a relatively low-cost workforce quickly and reliably avoiding the delays associated with the need to contract scarce local labour. This ready and willing mobile workforce also enabled Wimpey to promote its ability to quickly

and seamlessly engage in follow-on projects. This ability put pressure on local authorities to award repeat contracts or run the risk of losing a proven and available workforce to another authority.



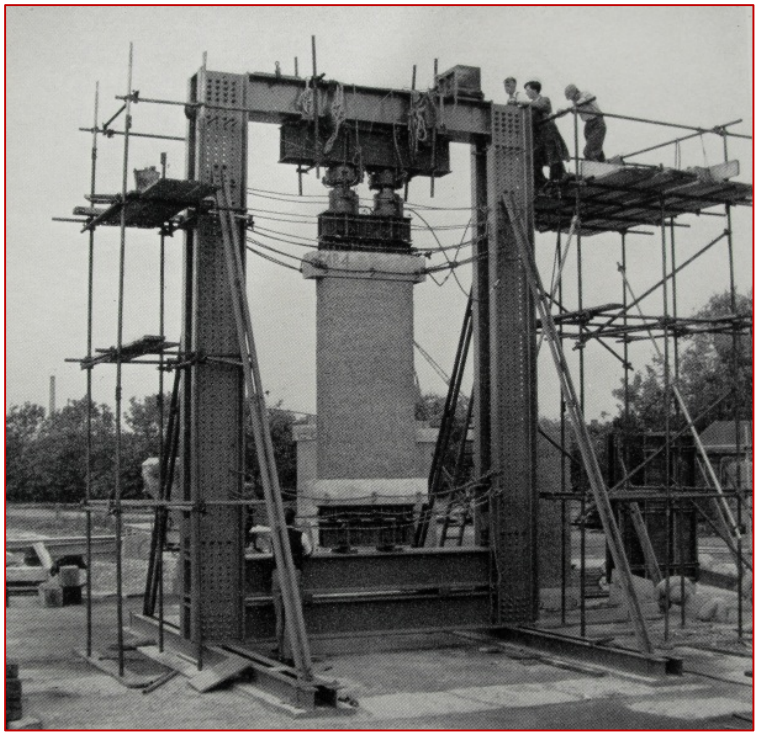


Figure 36: Illustration of Wimpey's advanced testing facilities including Soil and Compression testing, featured in promotional materials. Source: Wimpey (1950).

Wimpey's use of new technology would also have implications that would influence other building companies when weighing up the prospects of investing in System build. Wimpey's use of light re-usable shuttering provided an advantage over the standard formwork of the type utilised by Laing. Due to its weight, Laing had a greater reliance upon cranes that were not only expensive but could in practice slow down the building process. In contrast the light weight of Wimpey's shuttering

invariably meant it was not only less expensive but was easier and cheaper to transport within and between sites.

Although in the immediate post-war period only a small number of options were available Wimpey wasted no time in developing its portfolio to include a comprehensive range of design options. Launching their system, initial designs were limited to a single orientation but when facing demand for alternatives Wimpey were quick to accommodate both north- and south-facing orientations as options for their No-fines houses (Lewis, 21012).

Figure 37: Wimpey No-fines terrace, one of the advantages of the No-fines system was the variety of designs available utilising the system. Source: BRE 1989.

Their range subsequently expanded to include 2-, 3-, 4-bedroom terraced and semi-detached options, with flat, hipped or gabled rooflines, and a range of porch styles and even ground and upper floor bay windows (Wimpey, 1950). No other company offered such a comprehensive range and they went on to offer low-rise flats of three- to four-storeys and then high-rise blocks of six- to eight-storeys, as well as a range of community and commercial buildings including churches, schools and retail premises. Wimpey were able to accommodate an increasing portfolio of design options without deviating from their standard process, as options invariably only required a slightly different configuration of their standard shuttering. Features such as bay windows and porches were easily added to a standard product. Other vendors would find this level of flexibility difficult to accommodate, so despite local authorities invariably opting for the most cost-effective solution Wimpey were able to progress further in the procurement process by presenting their ability to meet almost any requirement. Firms would find that offering flexibility in design could be costly and adversely affect their completion deadlines. The result was that going forward firms would increasingly look to limit their ranges and favour delivery of a standard product.

Figure 38: – A terrace of No-fines homes, external and internal views included in promotional materials. Source: Wimpey (1950).

Wimpey's success could not just be attributed to offering a compelling product, their sales and marketing effort was markedly different from the less-advanced efforts of their competitors. The organisation promoted its proposition through widely-circulated bound brochures that featured attractive illustrations of the building process and the finished product, backed up by impressive statistics of completed projects across the country. These printed promotional materials were accompanied by professionally-produced films, viewings of which councillors would be invited to, to witness the success of the organisation and the transformation it might enable. Their marketing materials were assertive and self-congratulatory: '*In the hands of the Wimpey organisation this building method has been developed to such a high degree of ingenuity and efficiency that it is able*

not only to meet the swiftly changing needs of the national building programme, but in many cases to influence its form' (Wimpey, 1950). Rhetoric also closely reflected the policies of post-war governments, *'In the midst of our towns and cities living space awaits the vigorous action which at one sweep can remove disfiguring slums and replace them with homes of dignity and comfort….THE WIMPEY ORGANISATION IS PREPARED FOR THE CRUSADE AGAINST THE SLUMS AND STANDS READY TO GO'* (Wimpey, 1950). Local Authorities were also invited to completed schemes and Council officials were keen to join the pilgrimage to show estates such as the one in Farnborough, to witness first-hand the type of development they might build.

Promotional materials also included the option to provide local authorities with a turnkey solution. Those authorities without the requisite resources could contract Wimpey to rely to provide their own structural engineers, surveyors or project managers to fulfil a project. In anticipating this requirement Wimpey conditioned the later System builders to replicate this service, confident that package deals not only generated additional income but allowed the contractor complete control of construction and the adoption of standard units that suited their purposes.

Wimpey were also quick to reward appreciative customers, the prospect of unveiling plaques to mark completion of landmark developments quickly became a high point in the civic calendar, invariably coinciding with a formal civic dinner (CBC, 1952). Wimpey's reputation for hospitality was well known, appreciatively accepted and widely replicated. In 1987 when Sheppard Fidler, Birmingham's first City Architect, was interviewed by Glendinning and Muthesius he was careful to be both complimentary about Wimpey's Sales Department and keen to communicate his reluctance to accept their hospitality, *'they said, 'Come out to lunch', and I said, 'No, I can't'* (Glendinning and Muthesius, 1987). In the light of the later conviction of his successor, Alan Maudsley, for corruption, Sheppard Fidler's retrospective eagerness to distance himself from any charge of succumbing to inappropriate influence is understandable. Council reports in Birmingham and elsewhere regularly reported civic dinners and excessively-catered lunches that demonstrated Wimpey's ability to 'oil the wheels'. What is undeniable is that these methods were not only widely appreciated by councillors but totally effective in achieving the developers' objectives of winning new business, as evidenced by Birmingham's House Building Committee's visit to Kidderminster.

Despite slick marketing, the key to Wimpey's success was undeniably its ability to utilise a cost-effective in-situ construction technique that harnessed a largely unskilled mobile workforce. This method was able to consistently deliver projects on time and within budget, that resulted in repeat orders. Wimpey's enviable success and methodology would prove a significant influence for a range of builders who would go on to adopt and promote System build. Firms were motivated by the

promise of similar success, a desire to protect existing local authority markets and a keenness to ensure they were not left behind by competitors more willing to invest and adapt.

4.2 School building and pre-fabrication

Whilst pre-fabrication would play its part in post-war house building, those builders utilising it would never achieve the production figures accorded to in-situ construction using techniques such as No-fines. Although there was a similar pressure to build schools in the immediate post-war period, design and construction would be markedly different from housing and would in itself have a major impact on the development of pre-fabrication and System building. Writing in the *Architects Journal* Henry Swain suggested that *'pre-fabrication probably represents Britain's biggest contribution to building technique since the war'* going on to claim that *'schools would not have been built in sufficient numbers without it'* (Swain, 1960). Like housing, the school building program was similarly devolved; in this case to county councils and, to a lesser extent, local education authorities. These were, '*numerous, popularly elected and legally independent'* (Bullock, 2002: 219) and were tasked with the definition of local policy, school design and management of construction programmes. Unlike housing, the schools programme was unique in being able to call upon the resources of dedicated architects. Of the 145 county and local education authorities responsible for schools in 1957, some 107 already had full time in-house architects. This figure contrasted starkly with the 1529 local authorities of which just 72 had architectural staff dedicated to housing (Bullock, 2002: 220). School design therefore benefitted from the coming together of teachers and architects to develop a new model, in contrast to the majority of post-war non-traditional housing which was largely devoid of major architectural input. As Bullock describes, non-traditional house construction concerned itself with building traditional cottages using different materials and there was little in the way of design innovation (Bullock, 2002).

Just as Modernist experimentation into new ways of living and working had contributed to the dialogue about the composition of housing, resulting in the emergence of new forms of high-density urban mixed-development, educators, architects and post-war circumstances would combine to influence the form of school construction. A number of pre-war reports focussed on nursery and primary education would inform RA Butler's *1944 Education Act*, which heralded developments in primary and secondary school provision. An extension of the school leaving age to fifteen, with a further commitment to extend this to sixteen, would increase demand and put more pressure on the post-war school building programme. Just as influential architects felt empowered to direct the way people lived and worked, teachers no longer felt confined to teaching children to read and write. Instead, encouraged by a widening brief, they extended their remit to include the acquisition of

social and life skills, and consequently sought new schools in order to deliver their vision (Harwood, 2015: 167). The introduction of a wider curriculum engendered discussion relating to how and where pupils might be taught, envisaging open, light, airy and adaptable buildings (Harwood, 2015). The inter-war period had already witnessed progress, in 1934 the Nursery School Association had commissioned Erno Goldfinger to design a school. The result was a building that was adaptable and cheap to construct and which made extensive use of timber to provide a semi-permanent building. Innovation in design would continue and timber would be adopted by other authorities with Hendon in Middlesex producing semi-permanent schools designed to maximise the advantages of light, air and landscape. Dennis Clarke Hall's winning entry in the *News Chronicle* competition for secondary schooling in the larger urban category would also take advantage of natural lighting and views of the sky, utilising a standardised steel frame with light cladding (Harwood, 2015).

Figure 39: Advertisement for Simms Sons & Cooke for Industrialised timber building for the Schools programme. Source: Interbuild 1965.

By 1941 it was estimated that ten per cent of elementary schools had been either destroyed or damaged by bombing (Bullock, 2002: 183) but the drive to build new schools was not solely influenced by the Luftwaffe: like housing, education and the type of schools needed would quickly emerge as a key component of the reconstruction agenda. As early as 1941 Robert Wood, the Deputy Secretary of the Board of Education, would be tasked with chairing a Committee to explore post-war schools provision in the light of an envisaged labour and materials shortage. Mirroring the Burt Committee for Housing, Wood's Committee would publish two reports between 1942-3 and, whilst less detailed than their counterpart, they would discuss how post-war schools might be designed and built using either traditional methods or pre-fabrication. Steel was widely considered to be

preferable to timber on account of its relative longevity and ability to accommodate larger glazing panels. Principal in the discussion were the relative merits of a construction system that utilised either a standardised bay or grid system. Whilst the bay system tended to accommodate building in rows, the alternative grid system could be extended in all directions. Definitive direction and a debate on the relative merits of each system would be left till after the war. Instead, guidance focussed on a compelling need to take advantage of pre-fabrication with lightweight or cold rolled steel regarded as an ideal material for the backbone of a school (BE, 1944). Unlike the MHLG, the Board of Education was initially unsuccessful in its attempts to test its theories by partnering with local authorities and was reluctant to face the risk and expense of developing their own systems, leaving the county and local education authorities to formulate their own solutions.

In the immediate post-war period Middlesex Local Education Authority (LEA) would embrace the challenge under County Architect C G Stillman, who would pick up his pre-war work with West Sussex to refine his ideas on pre-fabrication utilising a standardised bay system. This consisted of adopting a standard bay formed by a lightweight steel frame to make up 24ft x 24ft classrooms with corridor access and glazed and brick infill panels. The first school was completed by 1947 but Stillman would continue to evolve his designs to minimise his use of steel which would be rationed until 1954. His new designs would incorporate experimentation with gypsum partitions and hollow plastic panels (Harwood, 2015).

Just as in housing, firms that had been dedicated to the war effort were encouraged to switch their post-war production to meet the challenge of school building. One such company was the Bristol Aeroplane Company, producers of the war-time Beaufighter, who considered schools more commercially attractive than housing, due to the scale of the projects. Utilising the design skills of Richard Sheppard and Geoffrey Robson the firm developed a bay system on a 4ft grid suitable for classrooms, corridors and toilet blocks. Sections were delivered to site fully clad and glazed, only requiring erection and roof sections to be fitted. Whilst the extent of the pre-fabrication was ground-breaking, as with similar housing systems, the cost was high (Harwood, 2015).

Figure 40: The ubiquitous HORSA hut at St Joseph's RC School in Nuneaton. Source: cloudfront.net.

The other county heavily involved in exploring non-traditional forms of construction was Hertfordshire under John Newson. Keen to avoid the use of temporary HORSA huts (Hutting Operation for Raising the School Leaving Age), Newson was convinced the solution lay with cheap lightweight pre-fabricated construction, based loosely upon Stillman's pre-war plans. With a challenging target of 176 schools to build in 1946, he appointed Herbert Aslin as Chief Architect with Stirratt Johnson Marshall as his deputy. They would go on to populate their department with recent graduates of the Architectural Association. Their plan was quickly formulated and work started on the first school within 12 months of Johnson Marshall's appointment. Aslin and Johnson Marshall had quickly decided to develop their own system rather than rely upon the proprietary systems available from some of the larger firms, who at the time, were largely concentrating on housing. Instead, they partnered with Hills & Co of West Bromwich which by 1943, having already experimented with house pre-fabrication with their Pressweld system, had demonstrated an enthusiasm to address school construction. The firm had already built an experimental unit at their West Bromwich headquarters based upon the standard 8ft 3in bay, this utilised a lightweight steel frame with standardised components to form roof, walls and floors. The Hertfordshire team would take Hill's existing work and adapt it further, replacing the bay system with their preferred modular grid that enabled the complete building, not just the classrooms, to be pre-fabricated. The first schools built utilising the Hertfordshire system were Burleigh Infants at Cheshunt and the village school at Essendon.

Figure 41: Burleigh Infants School, Cheshunt. Source: architecture.com.

These examples demonstrated the flexibility of the system, exemplified by the very different appearance of each school despite their use of the same components utilising square fabricated columns and light steel trusses (Bullock, 2002: 190). Although ground-breaking, the system did not escape criticism, with commentators focussing on the incongruity of heavy concrete cladding on what was a lightweight frame. Further development would experiment with vertical concrete panels and even stove-enamelled metal panels and, whatever the criticism, the Hertfordshire system was widely recognised to provide '*all sorts of interesting possibilities*' (Townsend, 1949). Meanwhile, having experimented with their own systems and found them uneconomic, the London County Council would eventually also decide to work with Hills. Their collaboration would witness the development of a two- storey system in contrast to the Hertfordshire model and, unlike Middlesex and Hertfordshire, their architectural input would largely be confined to private architects rather than in-house staff.

The Ministry of Education whilst exercising strong control over teaching would finally seek to influence local school building and design. The A+B Branch (Architecture and Building) of the Ministry of Education not only advised on proposals but would eventually build experimental schools in partnership with local authorities. Whilst its control was not absolute, they did provide useful assistance largely based upon the experiences of the Hertfordshire Schools programme, widely regarded as an exemplar for pre-fabrication during the late 1940s. This was largely a result of the former deputy to the Hertfordshire County Architect moving to the Ministry of Education to head up the A+B Branch in 1948. Stirrat Johnson Marshall would be responsible for the design of schools and

successfully recruit many of his former colleagues who, like him, shared a desire to build schools rather than merely develop policy.

Figure 42: Advertisements for the Hills and CLASP systems of Schools construction. Source: Architects Journal.

The pressure to build new schools and do it as quickly and cheaply as possible was exacerbated by a rise in the birth-rate after 1942 and continuing pressure on capital expenditure. By 1950 the capital allowance per pupil would drop from £170 per place to £140 for primary schools and from £290 to £240 for secondary schools, a factor that would encourage the use of pre-fabrication and standardised designs (Harwood, 2015). The success of Hills & Co inevitably led a number of other parties to enter the market and, with each County Council or local authority enjoying autonomy, many systems enjoyed local success which limited the possibility of national standardisation or the ability to benefit from the resultant economies of scale. In the 1960s Lord Hailsham, as Minister for Science and Technology, suggested that authorities that co-ordinated their Industrialised school building efforts might attract a bonus. This suggestion prompted the formation of a consortium featuring County Durham, Coventry, Derbyshire, Durham, Glamorgan, Leicester, Nottinghamshire and the West Riding to come together to develop a common system. The resultant system, CLASP (Consortium of Local Authority Special Programme), was led by Nottingham and its success resulted in a number of similar consortia. SCOLA (Second Consortium of Local Authorities) was led by Shropshire, METHOD by Somerset and SEAC by Hertfordshire (Harwood).

By the early 1950s most authorities were party to some degree of collaboration, but the pre-fabrication experiment, despite its perceived success, did have some drawbacks. Architects lamented a lack of individuality and the relative high costs of systems, and local authorities experienced difficulties co-ordinating the timely supply and transportation of components from multiple sources to a single site. Despite these problems the experience suggested that architects and teachers could work together to find solutions to new challenges and could produce new types of schools that attained the new standards. That they did so whilst successfully adopting Industrialised methods that offset material and labour shortages and offered the potential to lower costs would ensure the potential of Industrialised building methods remained on the political agenda. That the initiative whilst achieving higher levels of school building failed to eventually deliver cost savings is perhaps more attributable to the wide range of participants in the market and the lack of experience in co-ordinating production, transport and construction.

4.3 Parker Morris – higher standards, higher cost

By the early 1960s rising living standards would seriously influence the adoption of System build construction methods. The drop in social housing production of the late fifties would be dramatically reversed in the early 1960s as government renewed its policy of slum eradication and sought to ensure housing provision kept pace with a rising standard of living (Finnemore, 1989).

In 1961 the first major review of housing standards since the war had been published and the Parker Morris Committee's report entitled *'Homes for Today and Tomorrow'* specifically addressed the standard of living and the general provision of housing.

Figure 43: Promotional interior image, local authorities would often commission show flats to demonstrate and promote their projects, in this case a typical modern interior promoting the Morris Walk development by Taylor Woodrow Anglian for the LCC. Source: The Concrete Society (1964).

Appointed by the Central Housing Advisory Committee of the MHLG to look into the standards of design and equipment in public and private residential accommodation, it was perhaps unique in welcoming feedback from a diverse range of stakeholders including householders and building professionals. As part of the research, 600 homes were visited and the report addressed a broad demographic. Both houses and flats built since the war were assessed to ascertain general living conditions and levels of equipment, with the report specifically addressing the challenges of living in flats. Parker Morris acknowledged the enormity of the challenge of building 1000 homes each day to eradicate the slums, limit overspill and promote urban renewal (MHLG, 1961: 1). In the report, the Committee reported on the relative improvement of life in the 1960s that contrasted with that at the time of the earlier Dudley Report of 1944. Acknowledging *'a social and economic revolution… full employment, a National Health Service and the various social insurance benefits such as family allowances and retirement pensions'* (CHAC,1949: 1), it reported a doubling of living standards in the previous twenty five years. At the time of publication, one household in three had a car and washing machine, two in three a television and one in five a fridge. Despite these positive findings, the improved standards found remained in stark contrast to life in the slums and the report helped to create both a political and social imperative for their eradication.

Whilst addressing standards of living, the report was particularly informative in its recognition of the changing dynamics of modern housing. The report highlighted '*the greater informality of home life'* in the 1960s and it addressed emerging requirements for homes to provide space for family members

to '*pursue new endeavours'*. This might include new uses for rooms including social activities or study, which in turn, required the consideration of space and comfort including heating requirements. Recognising a new dynamic for family life that these new activities presented the report concluded that new buildings could more easily accommodate the new living standards required than pre-existing dwellings.

Whilst studying the flat, Parker Morris noted that tenancy was no longer limited to single people or childless couples and families living in flats could be expected to have the same requirements as those living in houses. To compensate, in future flats should therefore have equal floor-space to houses despite the risk that this would make an already more expensive form of construction even more costly. Critical of the rescinding of Dudley Report size standards in 1951, the Parker Morris report highlighted the need to set new optimum space standards. The architect would then be *'free to arrive at the best way of arranging the space and equipment to meet the requirements of particular sizes of family'* (MHLG, 1961: 4). Confirming prevailing MHLG sentiment Parker Morris would stress the importance of architectural input to ensure local authorities achieved the best solution *'in translating these principles in practice, there is no substitute for skilled design, and this is obtainable only if qualified people are employed to undertake it'* (MHLG, 1961: 7). The report therefore stresses the key role and importance of the architect '*Our recommendations are made on the basis that architects must be employed as the designers of houses'* (MHLG, 1961: 7).

Figure 44: Promotional images for living room and kitchen at the Morris Walk (1964), the caption suggesting that room- sized units required little more than assembly. Source: The Concrete Society.

Perhaps surprisingly, successive governments would accept the findings of the report but would initially leave it to local authorities to decide when and if they would adopt the new standards. Eventually faced with some reticence they would compel local authorities to adopt the new size standards. To better understand the acceptance of the Parker Morris report one needs to look towards Europe. Every country in Europe post-war was focussed on providing better education, social and medical services whilst increasing manufacturing output, not solely for export but to service local demand. Housing provision was seen as a major factor in enabling higher living standards, and many commentators were concerned that Britain was lagging behind many of their continental neighbours. Michael Shanks, Economic Advisor to the 1964 Labour Government, was especially critical: *'if existing productivity trends in the various countries were to continue, by the early 1970s the average Briton would find himself worse off than all his Continental cousins'* (Shanks, 1967: 17). As a country that had been on the winning side in the war Britain needed to be seen as at least keeping pace with its continental neighbours.

With a consensus on the need for improved welfare provision, successive governments would find themselves in a difficult position, accepting the need to meet higher standards but at the same time achieve higher production. As this concession coincided with a period of full employment, a resultant shortage of labour coupled with a materials shortage the challenge that faced governments would be how they would build more homes providing higher standards of accommodation whilst controlling costs.

4.4 The emergence of System build high-rise

Like the early experiments in the pre-fabrication of houses and school building initiatives of the immediate post-war period, the System build boom of the early 1960s was driven by similar pressures. The labour and materials shortage immediately after the war had ensured that non-traditional construction became synonymous with the public housing drive. The *Town and Country Planning Act* (1947) had empowered the local authority to control new development but it was the Ministry that granted authorisation and awarded loan subsidy for their plans. With a heavy government bias towards non-traditional forms of construction the market was flooded with a plethora of factory or in-situ produced systems from established contractors such as Laing, Wimpey and Reema together with new entrants from other industries.

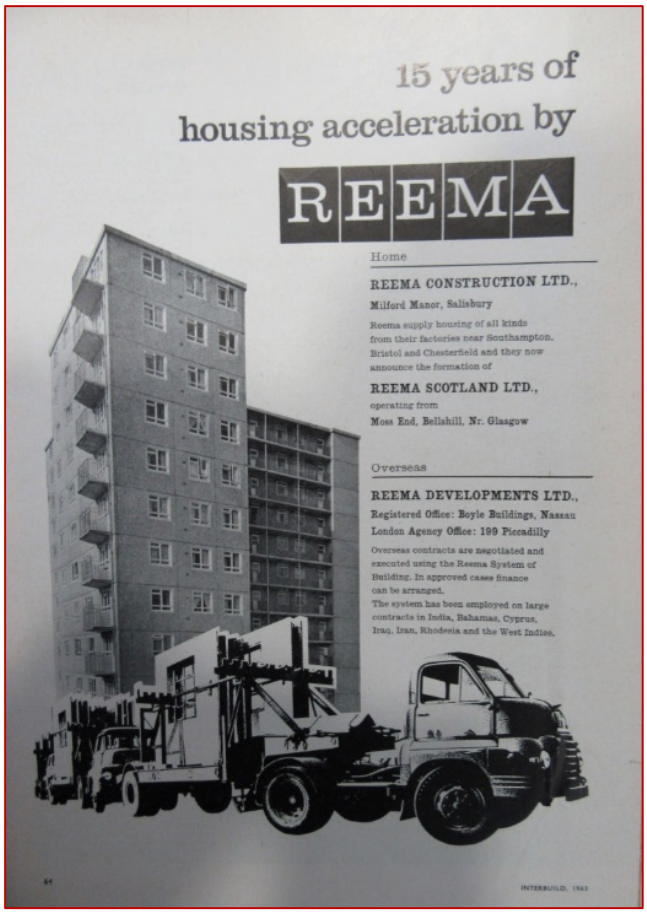


Figure 45: Advertisement for Reema emphasising their wide experience of System building. Source: Interbuild.

That only a relatively small number would go on to achieve real success in terms of volume remained a frustration to governments that had hoped non-traditional construction could provide a quicker and eventually a more cost-effective alternative to traditional forms of construction. In the case of the school building programme, various initiatives had demonstrated the viability of Industrialised processes and the forming of consortia had allowed education authorities to pool resources and offer greater commitments in an attempt to lower cost. The size of the challenge was encapsulated by EFJ

Humphries writing in the *Structural Engineer* in 1964 when reporting that the Ministry of Public Buildings and Works estimated that building output needed to increase by 55 per cent in the following ten years but in the same period the labour force was only estimated to increase by two per cent. He went on to conclude that *'increased output can only come by the increasing use of modern 'Industrialised methods of building'* (Humphries, 1964; 16).

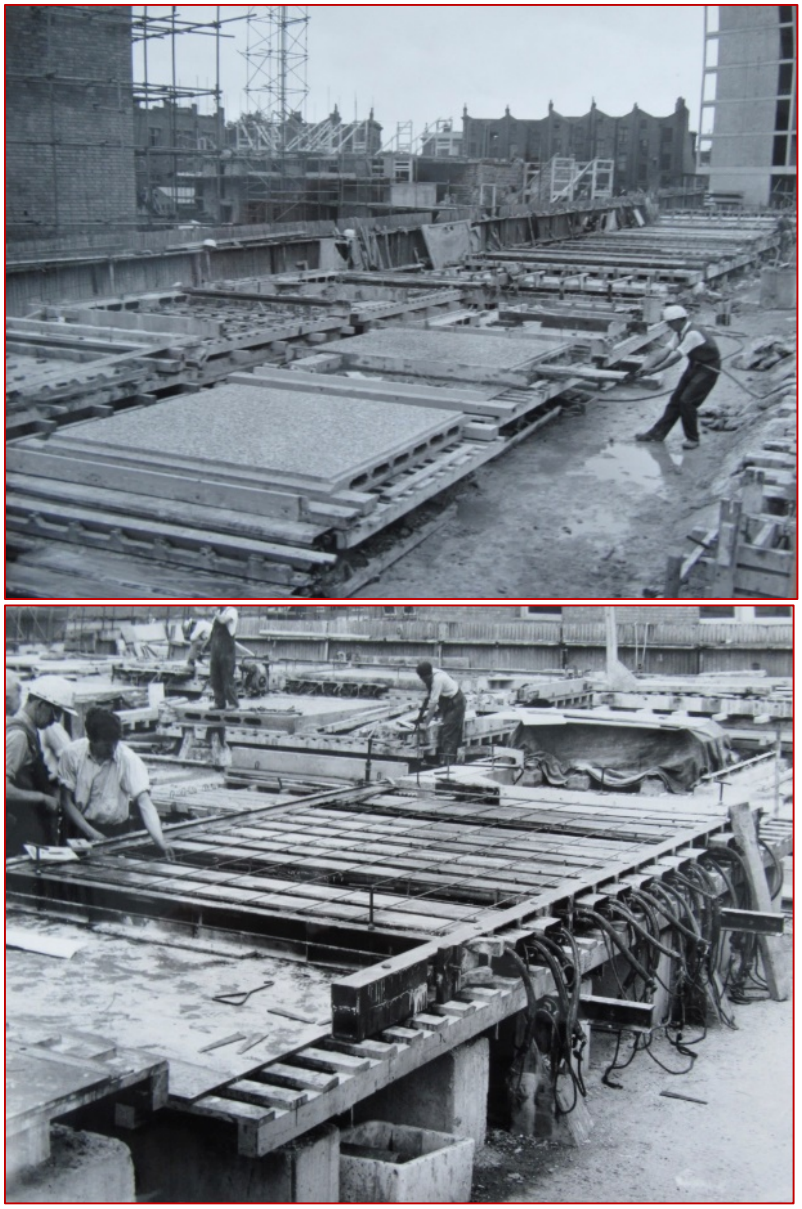


Figure 46: Experimental in-situ facility manufacturing panels using the Wates system in Paddington. Source: Concrete Quarterly.

For the Conservative Government of the early 1960s an exasperation with traditional building firms meant that any form of innovation in the construction industry was welcomed and sponsors of new systems were actively encouraged and supported (Finnemore, 1989). Finnemore demonstrates that Government not only encouraged and assisted sponsors in planning but coerced authorities to implement, citing the example of major building firm, Costain who in 1952 was; encouraged and

enabled to adopt a 'system' in order to benefit from the Miner's Housing programme. Elsewhere in the Cannock coalfield Wimpey No-fines construction had been stipulated for the CIHA (Coal Industry Housing Association) to avoid conflict with local authority traditional building programmes (Evans and Larkham, 2004: 673-691). Persuasion evident in MHLG regional and local meetings was often greeted by a healthy scepticism from local officers responsible for development (Lewis, 2012). CHH Smith, as reported in Finnemore, gives an indication of policy when persuasion failed, suggesting that loan sanction and licences were readily provided for System building and not for traditional schemes (Finnemore, 1989; 64). Concessions for private construction previously curtailed by the Labour Government were also favourably extended to those authorities embracing non-traditional construction for their public housing. Reports that non-traditional housing numbers were falling was met with a promise of a 50 per cent increase in approvals when non-traditional construction was proposed. The Ministry was also keen to stress the benefits of System building by suggesting that it offered between 30-50 per cent saving in labour and faster overall construction that meant rents receipts would be received more quickly.

Figure 47: In-situ experimental production yard in Paddington using Wates system for the construction of five 21-storey blocks. Source: Concrete Quarterly.

Whilst the Conservative Government had removed the previous controls on private housebuilding and consequently reduced the output of local authorities the entry of private developers ensured

building volumes remained high throughout the fifties. The Conservative Government's objective to curtail the direct involvement of local authorities in new construction with an increased emphasis on private development would see the private sector enjoying some 67 per cent of total housing production by 1959 (Finnemore, 1989).

From 1955 local authority housing policy had moved away from General needs provision largely consisting of new houses on suburban estates to redevelopment, and specifically the replacement of inadequate inner-city housing. This was partly brought about by a growing concern about overspill that saw the designation of green belts around major cities (Muthesius and Glendinning, 2017) and the Conservative Government's support for private development. Muthesius and Glendinning regard this as a local authority reaction against town planners wedded to the concept of *'rational reconstruction'* and focussed on overspill in preference to urban development (Muthesius and Glendinning, 2017: 155). The re-direction of local authorities' focus towards slum clearance and urban re-development inevitably led to an increased interest in high-rise development. High-rise was seen as the ideal solution to guard against displacement by maintaining high densities on urban sites close to employment. Furthermore, experience of System build on the continent suggested that it was particularly appropriate for high-rise development and the provision of social housing (Finnemore, 1989). Glendinning and Muthesius suggest that there was little support for central policies of slum clearance and the provision of industry and working-class housing in planned overspill and consequently local authorities pursued their own policies based upon urban high-density regeneration. This is in stark contrast to the perceptions of commentators such as Dunleavy (1981) and Finnemore (1989) who have preferred to attribute the rise of high-rise to architects, planners and contractors and paint the local authorities as weak and exploited (Glendinning and Muthesius, 1994: 156). Whilst not featuring in the 1961 Conservative Party Conference, housing provision was still seen as a priority (Finnemore, 1989). Local authorities, faced with a shortage of land and their permitted development focussed on smaller urban spaces, increasingly looked to multi-storey development in order to meet the need for high-density housing. Despite the widely held view that high densities could be achieved with low blocks – *'200 ppa had been achieved with 'closely spaced five storey LCC blocks'* in the 1940s (Glendinning and Muthesius, 1994: 162) - there was a commonly held belief in the late 1950s and early 1960s that to achieve densities of between 100-200 ppa high-rise offered the most appropriate solution. High-rise blocks quickly became the solution to counter overspill and deliver urban regeneration often at the expense of previously well-received mixed-development. In promoting high-rise to the exclusion of other forms of accommodation there was a risk that quality of provision would be subsumed by output, with it becoming *'especially suitable for the rapid exploitation of small gap sites which were becoming*

increasingly prevalent in the fifties' (Glendinning and Muthesius, 1994: 155). Despite a general proliferation of high-rise largely enabled by the emergence of new technology it would be a little while before contractors could offer 'systems' to exploit the building boom of the early 1960s (Finnemore, 1989). An upsurge in building already meant there was a significant labour and materials shortage by the end of the decade. Alongside an economy enjoying full employment it was therefore logical to revisit alternative systems of building that might exploit new building materials, techniques and technology to deliver modern forms of building.

4.5 Continental influence

Since early post-war attempts to introduce non-traditional forms of construction had been only partially successful, the Ministry of Housing and Local Government took a renewed interest in pre-fabrication and industrialisation in the early 1960s. For Government it was potentially a practical way of delivering on the promise of housing provision in the face of both a labour and materials shortage. That it also had the potential to deliver higher quality homes at a lower cost was for the moment a secondary benefit. In building a consensus around the industrialisation of building Ministers were encouraged by their own experience, the Ministry's own experimentation as well as trends on the continent. Key to the adoption of high-rise System build in Britain was the example of Scandinavia, Europe and the USSR which had all had greater experience of developing the type. In particular, progress made in Scandinavia and France would have a direct impact on the way System build would be implemented at home. The building industry was suddenly faced with both a problem and an opportunity, how to meet a growing housing need and the promise offered by Ministry encouragement to get on board with pre-fabrication and Industrialised System building. For those who, unlike Wimpey and Reema did not have their own systems or the time to develop them, the tendency was to look to Scandinavia and Europe and many would subsequently be encouraged to licence continental systems (Glendinning and Muthesius, 1994).

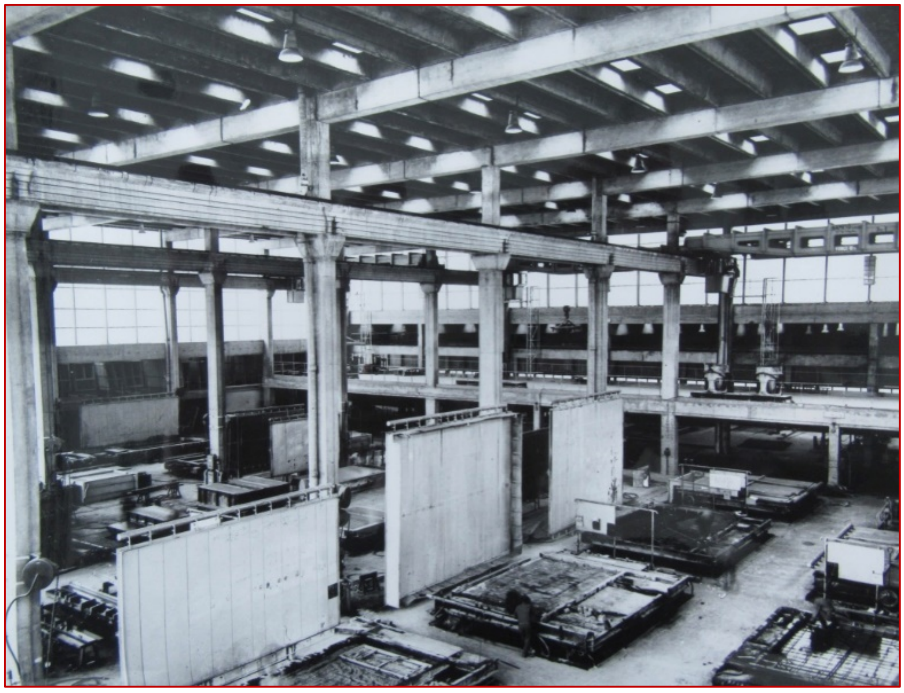


Figure 48: Contrasting dedicated factory producing panels for the Coignet system. Source: The Concrete Society (1962).

Sweden had long been an example of Modernist building provision and had developed systems of pre-fabrication since the early 1940s. At first, attention had focussed on the production of standard construction components including beams, slabs, stairs and balconies.

Figure 49: Albetong system, illustration showing room-sized units with load-bearing cross walls and box frame construction. Source: The Concrete Society (1962).

One of the earliest types was the Allbetong system that, like Wimpey No-fines, relied upon in-situ construction and sought to minimise skilled trades by making full use of mechanical equipment especially cranes. It was to serve as a model for successive Swedish systems based upon a monolithic box frame structure of concrete.

Frames would be built in full room-size units on the ground and then hoisted into position using mobile cranes. Similarly, kitchen structures including appliances and cupboards would be hoisted into position by crane before finishing by floor screeding, levelling and polishing before advancing to the next lift (Gerholm, 1962).

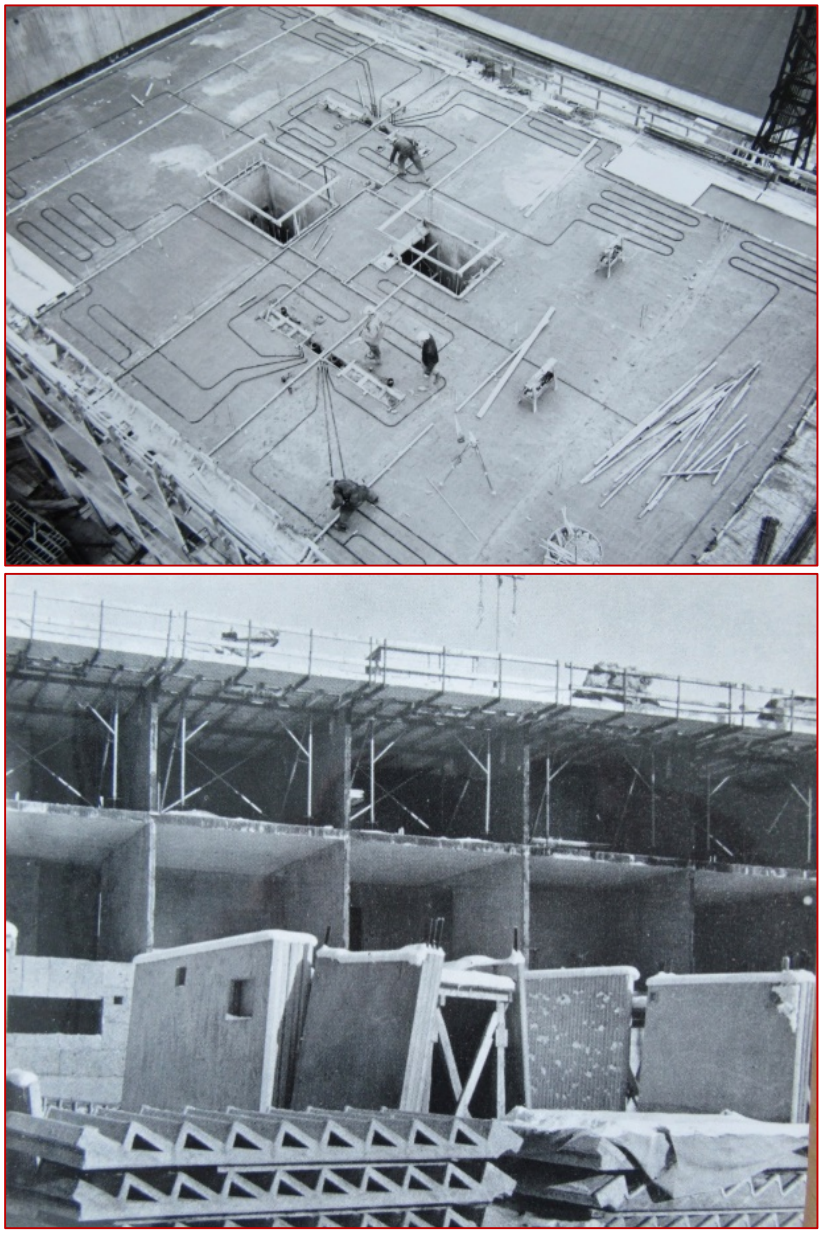


Figure 50: Albetong system, system floor ducts being positioned prior to moulding panels and completed panels in place ready for hoisting into position. Source: The Concrete Society (1962).

One of the early reported advantages of the Swedish Albetong system was the reduction in skilled labour required to build it. This was reflected in the complete elimination of bricklaying and plastering trades, and the possible elimination of painters should the components be finished to the required standard prior to construction. In Sweden any disquiet that might have been caused by the apparent marginalisation of an entire workforce failed to materialise. Existing crafts were comfortably engaged on traditional projects at a time when the economy was benefitting from full employment. Sweden would develop a number of systems that would go on to enjoy a level of recognition beyond their borders and ultimately be licenced by British firms.

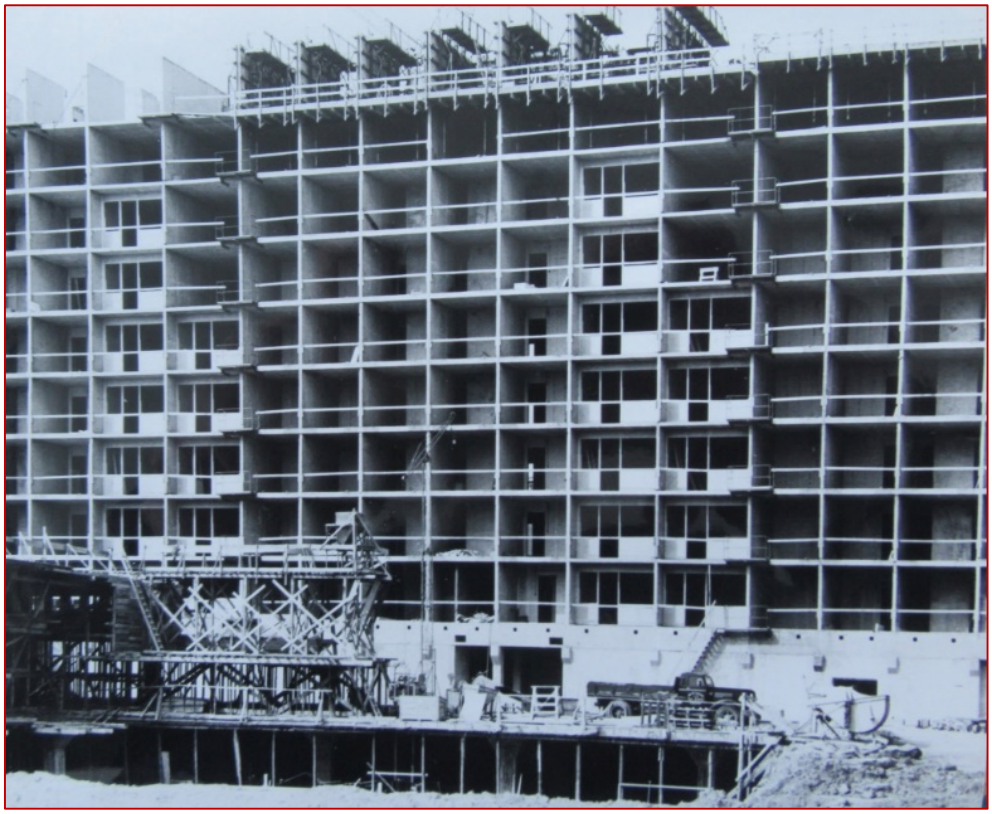


Figure 51: Albetong system, featuring a large slab block under construction in Stockholm. Source: The Concrete Society (1962).

The Sundh system shared much of the Albetong methodology and featured wall panels formed of 8cm concrete outer slab lined with 10cm of rockwool insulation placed between wooden studs. The interior would be plastered and backed by aluminium foil. The external finish of the concrete wall panels could either be formed of an exposed outer layer of crushed marble aggregate, a patterned concrete or be faced with decorative tiles. Synthetic rubber would be used between panels for jointing and stairs and balconies were all pre-fabricated. Utilising a standard wall panel of 4m the advertised tolerances achieved were within 3mm. Based upon experience in Sweden it was estimated that 100 flats could be completed within nine months utilising a total workforce of 75 people (Gerholm, 1962).

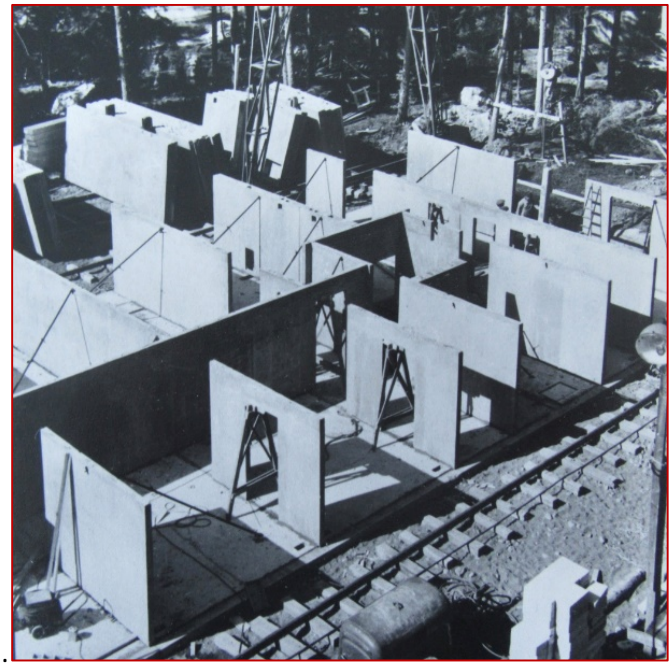


Figure 52: Skarne System, in-situ factory production showing curing with gantry cranes used to move completed panels around the facility. Source: The Concrete Society (1965).

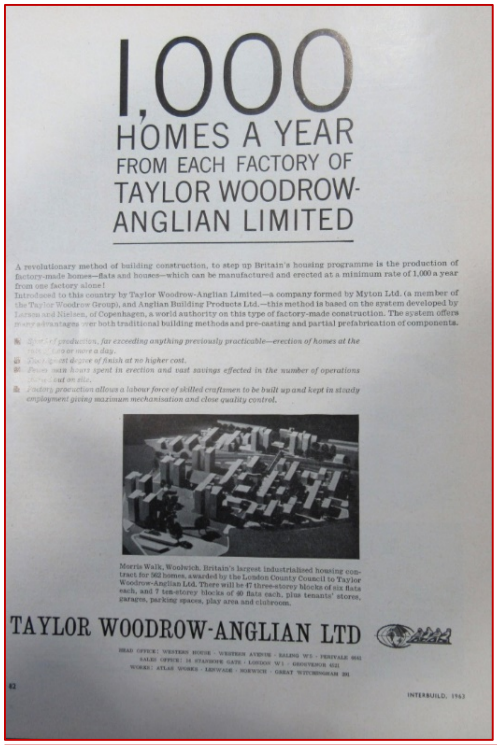
The Skarne system featured heavy pre-fabricated concrete elements of room size with the large panels joined invisibly over bearing walls. Skarne's model incorporated pre-fabrication in field factories with ducting and electrical conduits cast in. Wall elements of up to eight metres would be moved from casting after 24hrs to an on-site storage yard for curing and strengthening. Thereafter the panels would be moved into place by trucks and hoisted into position by cranes. Non load-bearing walls would be formed in-situ using sliding formwork and balconies were attached by hooks.

Figure 53: Skarne system, flats under construction at Bredang in Sweden with temporary in-situ factory adjacent to construction site. Source: The Concrete Society (1965).

As with other schemes, manufacturing to tight tolerances was seen as expensive but necessary. Slab lengths worked to tolerances of +2/-5mm with heights of between +2/-3mm. Similarly, wall elements worked to +5/-5mm with heights at +2/-5mm. Reveals in elements were between +5/-5mm. Skarne reported that four people were engaged to build outside walls with three for slabs and a production figure of 2.47 hours per cubic metre of concrete. Utilising twenty separate elements in total, Skarne sought to market its system on limited production runs suited to in-situ production believed to deliver optimum economic benefit.

Figure 54: Skarne System, completed flats at Osberga in Sweden. Source: The Concrete Society (1965).

In Denmark, the trend for non-traditional building commenced after the war for much the same reasons as it developed in England. A shortage of labour and materials was accompanied by a recognition of the need to automate the industry, brought about by high demand and a need to control building costs. In Denmark the labour shortage in the building industry was exacerbated by successful recruitment into more attractive industries that made greater use of automation to improve working conditions. To deliver on the promise of pre-fabrication the Danish government viewed subsidy as the key to encouraging Industrialised building. In 1961, due to increasing labour shortages, legislation had been passed that awarded subsidies for any building with a low man-hour requirement. This ensured an immediate increase in Industrialised building that was further promoted when modular systems were made compulsory from 1964. Denmark henceforth adopted a unit of ten cm for measurement and further standardisation ensured the emergence of limited plan types. Two of the predominant Danish systems to emerge were the Larsen Nielsen method which would later be licenced to Taylor Woodrow Anglian that utilised five ton elements and the Ballerup method that worked with a smaller two ton element.



1,000
HOMES A YEAR
FROM EACH FACTORY OF
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ANGLIAN LIMITED

A revolutionary method of building construction, to step up Britain's housing programme is the production of factory-made homes—flats and houses—which can be manufactured and erected at a minimum rate of 1,000 a year from one factory alone!
Introduced to this country by Taylor Woodrow-Anglian Limited—a company formed by Myton Ltd. (a member of the Taylor Woodrow Group), and Anglian Building Products Ltd.—this method is based on the system developed by Larsen and Nielsen, of Copenhagen, a world authority on this type of factory-made construction. The system offers many advantages over both traditional building methods and pre-casting and partial prefabrication of components.

1. Speed of production, far exceeding anything previously practicable—erection of homes at the rate of one or more a day.
2. Excellent degree of finish at no higher cost.
3. Fewer man hours spent in erection and vast savings effected in the number of operations carried out on site.
4. Factory production allows a labour force of skilled craftsmen to be built up and kept in steady employment giving maximum mechanisation and close quality control.

Morris Walk, Woolwich, Britain's largest industrialised housing contract for 562 homes, awarded by the London County Council to Taylor Woodrow-Anglian Ltd. There will be 47 three-storey blocks of six flats each, and 7 ten-storey blocks of 40 flats each, plus tenants' stores, garages, parking spaces, play area and clubroom.

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62

INTERBUILD, 1965

LARSEN AND NIELSEN

Taylor Woodrow-Anglian

Part of the scheme of 562 dwellings built at Morris Walk, Woolwich, for the GLC. A central access unit links two blocks

HISTORY The system was developed by Larsen and Nielsen in Copenhagen starting in 1948 and it became available in the UK in 1963. About 2,000 dwellings are completed and in course of construction.

STRUCTURE Reinforced concrete cross-walls are loadbearing with a minimum thickness of 7in. External storey-height panels in lengths up to 18ft have a sandwich construction and are not stuctural. Partitions are 2½in thick. Floor slabs, 7½in thick, have 4in voids at 6in centres except under partitions. Stairs, storey-height refuse chutes, flues ducts and lift walls are also cast in the factory.

DESIGN DISCIPLINES Economic span of floors up to 24ft with the width of each panel being a maximum of 8ft 6in. Plans are disciplined by the crosswall construction. Suitable for blocks three to 25 storeys high.

CONTRACTS Minimum number of 400 where special designs are required but orders for smaller quantities can be accepted if existing designs are used.

Figure 55: Larsen Nielsen System, adopted by Taylor Woodrow Anglian in the UK and the system initially selected by the LCC. Advertisement and entry in Interbuild 3, 1965. Source: Interbuild 3.

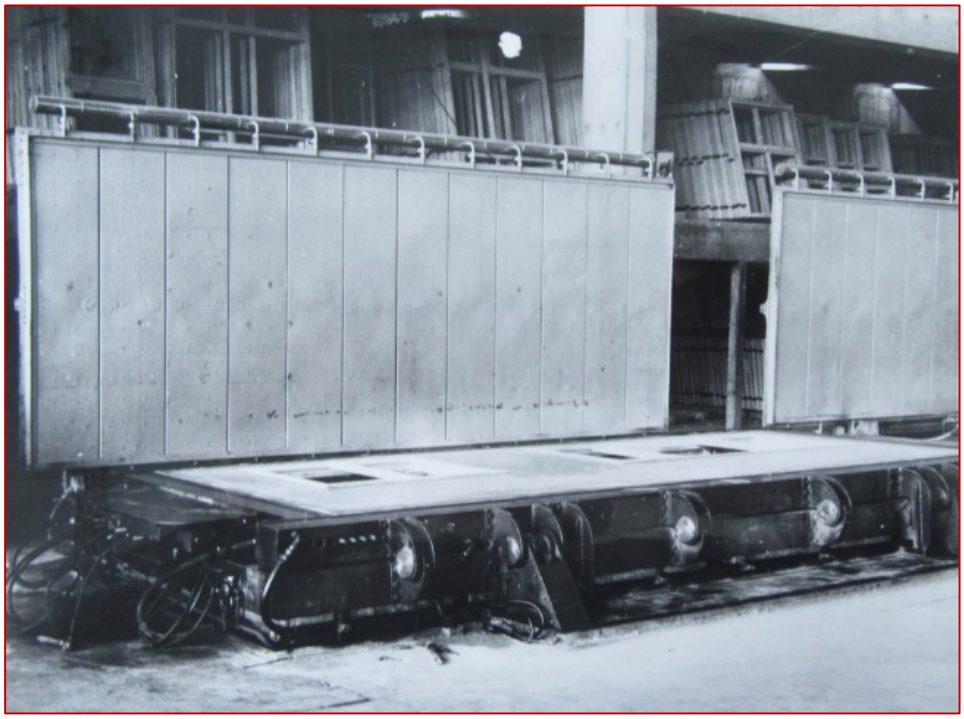
Larsen and Nielsen invested heavily in its system to ensure that it had the capacity to meet anticipated demand. Focussing on dedicated off-site production, its factory in Copenhagen was designed to handle an annual capacity of 2,000 flats. Similar to others, the Larsen and Nielsen production processes were designed to ensure a smooth transition from production to construction enabling claims of workforce reductions of 60 per cent when compared to traditional construction. The system comprised floor elements of 18cm slab with a cylindrical hollow core, with overall dimensions directly linked to prevailing transport constraints. These stipulated a maximum length of 480cm and width of 240cm suitable for loading on trucks. Wall elements were 15cm thick and

formed from un-reinforced concrete with a notional height of 260mm. Façade elements were formed of a concrete sandwich construction that featured between 5-8cm of foam plastic or mineral wool insulation with an outer wall most commonly finished in exposed aggregate. Overall elements were similarly limited to a maximum weight of 5 tons due to transport constraints. The system also avoided the need for plastering with a smooth concrete finish suitable for either paint or papering. Woodwork was also completed and fitted in the factory alongside pipe and ductwork (Lauret, 1962).

Consisting of high flats up to 16-storeys the Ballerup system featured elements less than half the size of the Larsen Nielsen system with a 30cm module unit said at the time to provide a greater degree of standardisation. Production occurred in purpose-built off-site factories providing all the major components that would just require assembly on site.

Jesperson had invested in a semi-automated factory at Olstykke, capable of producing ten flats per day in a double shift system. This was claimed at the time to reduce the manpower requirement to a third of that required for a similar conventional facility using a manual process. Pipework and heating ducts were built in at the factory and all woodwork fitted originated in Sweden due to lower cost. Finishing was undertaken as part of production, thus avoiding the need for on-site finishing trades such as plastering and carpentry (Lauret, 1962).

In France too *'the amount of site labour available to building was shrinking, drawn off to other Industries that were expanding at the same time'* (Lauret, 1962).



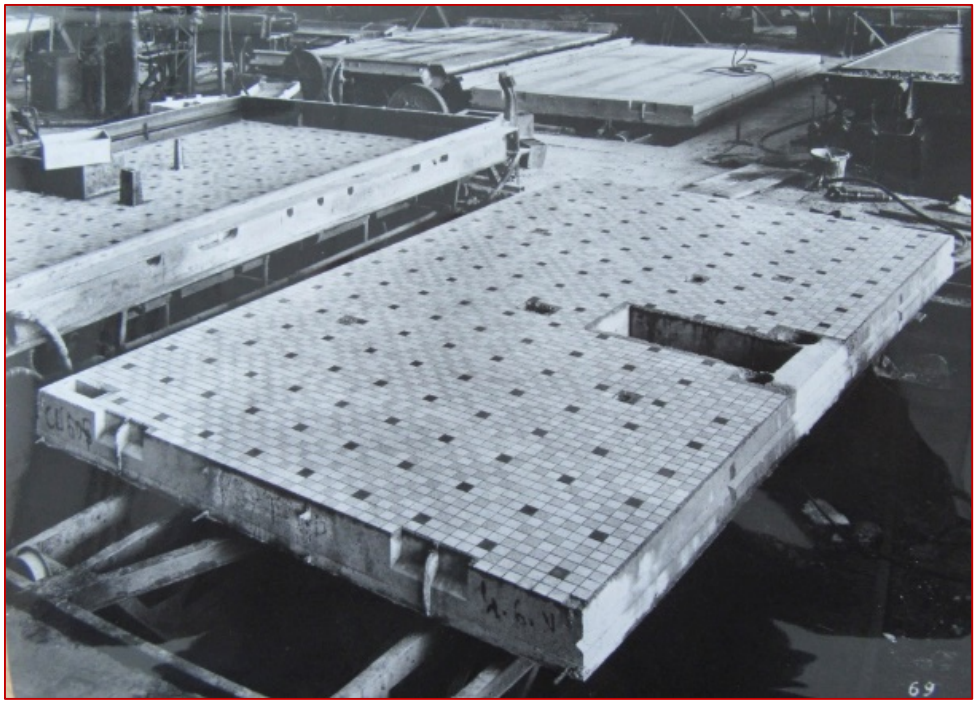
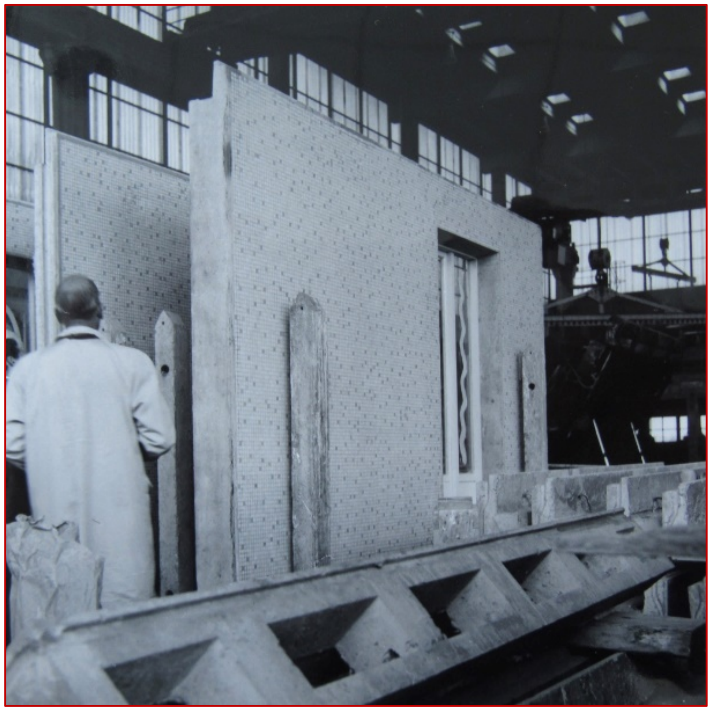


Figure 56: Coignet system, moulds in casting position in factory and pre-cast tiled bathroom floor panel. Source: The Concrete Society (1962).

In the French evolution of Industrialised building, contractors moved slowly from in-situ construction to developing standardised forms that could be manufactured in purpose-built facilities ready for assembly. Progress was enabled by advances in technology particularly in casting and transportation but also in the development and widespread availability of mobile and tower cranes that could be deployed to hoist components into place during construction. What differed greatly was the character of the casting facilities. These varied from small in-situ to much larger off-site factories designed to benefit from high levels of automation and mechanisation. The transition from small scale in-situ production being marked by greater demand and guaranteed volumes of production that enabled the investment in the larger- scale permanent facility.



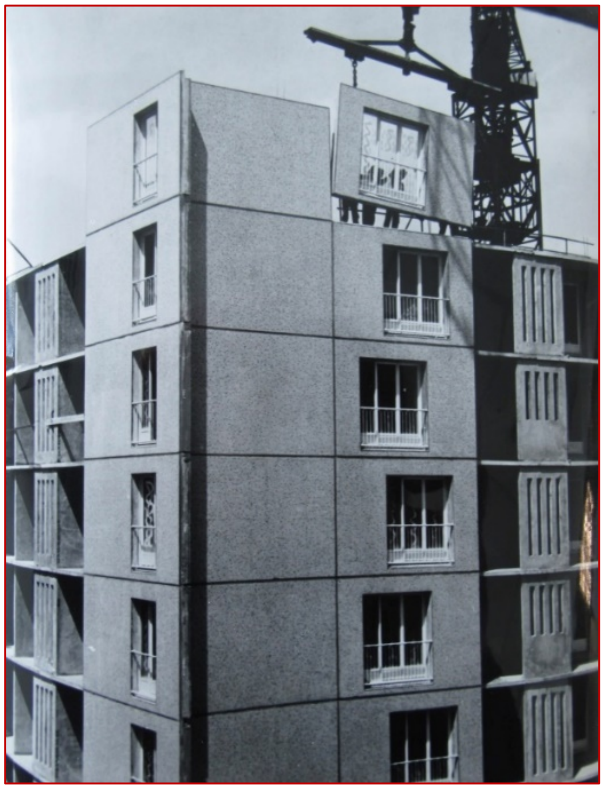


Figure 57: Coignet system, completed wall panel with tiled façade and panel being hoisted into position on site. Source: The Concrete Society (1962).

In both Scandinavia and France production was split between the in-situ and permanent off-site facility and this trend would continue in Britain as System build grew in popularity. Each type of factory benefited from varying degrees of mechanisation. The more basic in-situ facility employed a more traditional, largely manual, method of casting and storage that commonly utilised minimum specialised equipment but relied heavily upon simple inexpensive formwork/moulds.

Figure 58: Pre-fabricated in-situ formwork in Stockholm. Source: The Concrete Society (1961).

Invariably these facilities were less expensive to set up, but were more readily adaptable to accommodate a wider range of product, albeit requiring a greater investment in labour. Working on much smaller production volumes, this type of facility was unable to scale should volume demand increase, whereas the fully-automated facility benefitting from purpose-built mechanised and automated factories were much better equipped to handle increasing volume. The automated facility typically incorporated a wider range of processes and a more comprehensive level of automation into the production cycle and commonly involved the provision of ducting and installation of services as well as final finishing.

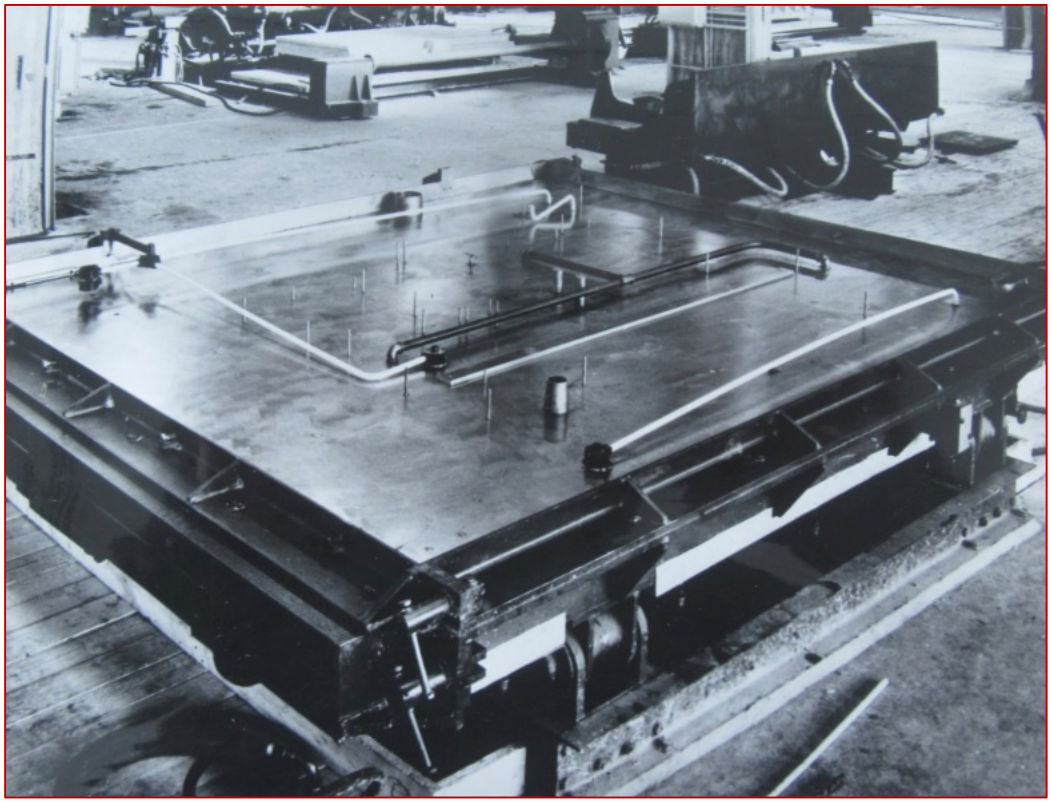


Figure 59: Coignet system, partition mould with ducting. Source: The Concrete Society (1962).

These facilities adopted optimised work cycles and commonly benefitted from advanced casting techniques that incorporated vacuum compactors and heat treatment to aid setting; this allowed elements to move to assembly within days of production. In maximising the benefits of automation to reduce labour these facilities typically required high investment, were generally less flexible and required higher output to justify. Whilst the smaller in-situ facility was well suited to a few hundred dwellings a year, its larger counterpart commonly accommodated greater than the 1,000 per annum required to justify investment (Lauret, 1962). In France the use of Industrialised methods was seen as the only way to solve the housing issue *'the whole question has really become academic: economically and socially, pre-casting is today the only possible solution to the problem of a massive building programme with a limited labour force'* (Lauret, 1962: 43). Despite their enthusiasm for the industrialisation of building in France, they were not blind to the possible drawbacks: *'housing built with large pre-cast units is easily recognisable… these buildings have a family resemblance which makes for a degree of monotony'*. Their solution and one which would be fiercely advocated by the Ministry in England, was the closer participation of the architectural profession, '*pre-casting has been essentially the work of engineers who know their job well* but from *whom one cannot expect more than that'* (Lauret, 1962; 43).

Further afield, but also the recipient of much professional and political examination, the Soviet Union also took advantage of Industrialised processes to deliver housing.

Arthur Wicks, Chairman of the LCC reporting on a trip to the Soviet Union reported that *'Industrialised building is the answer to our problem'* (Wicks, 1966). The use of pre-fabricated building in the Soviet Union grew significantly in the early 1960s, in 1959 Large Panel Systems accounted for one point three per cent of building, by 1969 it represented 35.8 per cent and in 1976 some 50 per cent (McCutcheon, 1979). This was by no means the complete picture, as, as well as large panel construction the Soviet Union also took advantage of box system construction and the less sophisticated large block pre-fabrication.

This chapter has considered the immediate post-war imperative to build increasing numbers of homes and how political parties united in the cause, sought new ways of building to counter shortages of both materials and labour. It has described how non-traditional construction emerged as a potential solution to these shortages but how the industrialisation envisaged failed to materialise and how instead a small number of contractors utilising in-site methods enjoyed considerable success. The business model of the most successful has been examined in detail. The approach adopted by Wimpey will be shown to have greatly influenced a new generation of system builders from the early 1960s. In contrast this study has discussed how the Schools programme enjoyed far greater success by exploiting early forms of industrialisation and pre-fabrication. The close involvement and commitment of the major stakeholders, the teaching professional, the architect and the contractor has shown to have resulted in far greater success. An analysis of the success of the Schools initiative has demonstrated how a smaller number of contractors, a steady demand and the willing adoption of Consortia combined to ensure relative success.

The emergence and later acceptance of Parker Morris standards (1961) exerted more pressure on a construction industry that was already failing to keep up with demand. Higher specifications necessitated higher costs and the government were keen to establish new and eventually cheaper ways of building a new standard of housing. The potential panacea of System building, its continental antecedents and its early attraction has been discussed.

The next chapter covers the period from the early 1960s and considers how the various stakeholders were convinced of the need to modernise the construction industry and encouraged to play their part to ensure the success of the system build initiative. It will show how the initial impetus behind the movement originated with central government and how the Ministry were keen to ensure a consensus of support from all the stakeholders involved in the initiative. It will chart the introduction of system build explaining the motivations of each group of stakeholders and how eventually rather than an initiative that united, system build would be driven primarily by contractors and local authority housing committees to the detriment of other groups.

System build –

building consensus

5

5.0 System build – building consensus

In the early 1960s the Ministry of Housing and Local Government were well aware of the potential limitations of the building industry. Faced with the task of continuing to provide homes, but to a higher standard, the response needed to be radical. System build had already proved successful in other parts of the world and the feeling within Government was that England was falling behind. Despite the limited success of the immediate post-war non-traditional housing drive Government widely believed that a second attempt had the potential to achieve a number of objectives. In this they were encouraged by the successes of the schools building programme in establishing pre-fabrication as a workable solution. Harnessing research from its own Building Research Station and supported by progressive and influential Ministry figures including Evelyn Sharp, as MHLG Permanent Secretary, and AW Cleeve Barr as Chief Architect the Ministry actively encouraged the adoption of System build. Building firms however were reluctant to invest, conscious that only a relatively small number of players had benefited from earlier attempts to promote new ways of building. Architects, while broadly in favour of advances in technique and materials, remained cautious fearing an erosion of their influence. Meanwhile the Trade Unions feared the marginalisation of skilled workers in favour of the un-skilled.

5.1 Government direction and local government priorities

In 1962 Keith Joseph took over from Charles Hill as Minister for Housing and Local Government and was not slow in articulating his support for new building techniques. His predecessor had been a supporter of pre-fabrication and the industrialisation of the building industry calling for a need for standardisation to avoid *'trivial departures from the normal'* (MJ, 1963: 224). Speaking in 1963, Keith Joseph was clear, *'we are on the threshold of a breakthrough in building techniques. What we need and what we are going to achieve is speedier Industrialised building – housing from the factory with larger components'* (MJ, 1963: 224). Joseph was acutely aware of the need for more housing and was frustrated with a building industry that had failed in the most part to evolve and take advantage of technology in the same way as other industries such as transport and aerospace had done. He was also reluctant to re-direct employment to an industry that would do little to positively affect the economy. At the time, Government widely agreed that an available workforce would be better directed at export-related industries that could have a positive influence on the balance of payments. In this environment System build represented an ideal solution and one that the Ministry was

committed to promote. Conscious of the need to keep the industry on side Joseph proclaimed that *'the industry is pretty fully stretched on a massive programme including housing and many other things as well'* (Joseph, 1962). To boost productivity, he suggested that the solution was to do *'over twelve months in the dry factory what at the moment has too often to be done in seasonal conditions on site'* (Joseph, 1962: 1). Conscious of the political repercussions of being seen to advocate a factory production that would inevitably reduce skilled labour he was careful to confirm that *'this does not threaten in any way the full employment of all the traditional crafts associated with the building industry for as far as the eye can see'* (Joseph, 1962: 1). With both Government and the Ministry keen to encourage the uptake of greater industrialisation across housing, much focus centred upon high-rise development as it was considered ideally suited to System building. In common with the Building Research Station, Keith Joseph was acutely aware of the need to unite stakeholders in the endeavour if it were to prove successful. This meant ensuring architects, engineers, building firms, unions and local authorities were at one with the Ministry, not just conceptually, but also actively in agreeing standards such as the dimensions and components that would enable pre-fabrication.

Figure 60: Bison Wall frame system, the first completed site in Kidderminster using the factory-produced Bison Wallframe system produced by Concrete Ltd in Lichfield, these flats were formally opened by the Minister of Housing and influenced Harry Watton's decision to order similar for Birmingham. Source: The Concrete Society (1963).

Joseph opened the very first Bison block in Kidderminster in 1963, built by Birmingham-based firm C. Bryant using components manufactured by Concrete Limited in Litchfield that would prove a turning point in Birmingham's Industrialised building strategy. The Development Group within his Ministry was also involved in test sites in Oldham, Sheffield and West Ham using various systems, including the Jesperson system licenced to Laing in Oldham (McCutcheon, 1979: 212). As Minister of Public Building and Works, Geoffrey Rippon's revision of Building Regulations in 1962 would be seen as a major boost for Industrialised building by focussing on the dimensional standardisation that Rippon believed would be a key driver to ensure pre-fabrication became a reality. In 1963 at the Annual General Meeting of the Building Trades Employers, he promised direct action to ensure progress, *'we are embarking on a vast construction programme*', and '*I am not going to spend my time merely*

exhorting the construction industries to adopt the best modern practice and techniques' (Rippon, 1963: 134-5). Instead Rippon stated that measures taken would provide *'not only quicker, and in the long run cheaper, building, but better building'* (Rippon, 1963b). To support Government building initiatives the National Building Agency was formed in 1964 accompanied by comments that output *'must increase by more than 50per cent in the next decade'* (McCutcheon, 1979: 212).

Throughout this period Government was encouraged by the success of the Schools Consortia and the progress made in industrialised school provision, and so actively encouraged similar initiatives for local authority housing. Support for the Midlands Housing Group and the Yorkshire Development Group was motivated by the belief that they would collectively be able to provide the volumes required by contractors and support the standardisation that was a key attribute of industrialisation (Stone, 1966).

In 1965 the White Paper entitled *The Housing Programme 1965 -1970* detailed the objective to raise home production to 500,000 per annum. A circular to local authorities was specific about how this might be achieved, *'I am directed by the Minister of Housing and Local Government to refer to the White Paper 'Housing Programme 1965-70 and to say that the Minister proposes to launch a concentrated drive to increase and improve the use of Industrialised methods in house building for the public sector'* (MHLG, 1965: 1). It continued *'the figures show that something like 40 per cent of the public sector house building will need to be Industrialised by 1970'* (MHLG, 1965: 2).

Many commentators have taken the multitude of circulars emanating from the Ministry in the early 1960s as evidence that the Industrialised building initiative was a project formulated and implemented by civil servants, suggesting that Ministers were obliged to go along with the policy. Richard Crossman's diaries while Minister of Housing go some way to support this view, citing the experience of the Permanent Secretary to the Ministry, Dame Evelyn Sharp, and her strong character and influence. *'Each Ministry had its own Departmental policy, and this policy goes on while ministers come and go'* (Crossman, 1975: 31). Perhaps this might be plausible in the case of Crossman who before his appointment had no experience of the building industry but to argue the same point during the tenure of Keith Joseph strains credibility. Certainly, Dame Evelyn had strong relationships with contractors and would go on to become a Director of Bovis in 1968 but the Ministry and Departments related to it were heavily staffed by seasoned construction professionals.

Figure 61: Advertisement for the French Tracoba system, adopted by Bovis subsidiary Gilbert Ash. Source: Interbuild 3, London (1965).

Keith Joseph himself was formerly Chairman of the family firm Bovis, and Deputy Chairman from 1964-70; and he oversaw licencing of the Tracoba System from France through Bovis subsidiary Gilbert Ash. Geoffrey Rippon was Chairman of another major building firm, Cubitts from 1964-70 and was a key player in the development of Thamesmead whilst Minister of Works. Rippon's personal private secretary was Albert Costain, Deputy Director of Costains. Reginald Maudlin who was Deputy Leader of the Conservatives was also a Director of the later discredited building firm Poulson. With such close connections and involvement, it was therefore inconceivable that those with such a close and vested interest in the building industry would lend support to an initiative in which they were not wholly in favour or felt could not greatly benefit the industry. There is nonetheless no denying the support for industrialisation amongst senior Ministry civil servants. Their task would henceforth be to ensure that Government policy was made palatable to the wide range of stakeholders whose

support was necessary to ensure its successful implementation. Two of the largest and most influential groups that needed specific encouragement were the local authorities and architects, not just those in private practice but the significant percentage employed within the local authorities.

5.2 A view from the profession

Whilst concern remained that the advent of System build might adversely affect the architectural profession there was a group of progressive public architects who felt that, faced with a seemingly unachievable volume of home construction, industrialisation offered the only real solution. Unsurprisingly the LCC Architect's department undertook extensive research before selecting their preferred systems and much of the prevailing mind-set within the Architects Department could be gleaned from an article by Jack Whittle, Assistant Housing Architect, in the February 7, 1962 issue of the *Architects Journal*. Entitled *Homes from the Factory* Whittle started by reiterating the challenge. Quoting from the *White Paper on Housing in England and Wales* (1961) he highlighted the plight of the top three cities with the greatest slum clearance challenge. Birmingham, Liverpool and Manchester as of 1955 had declared 50,250, 88,233 and 68,000 homes respectively deemed unfit. Whittle suggested that on current performance it would take these local authorities 60 years to clear this number. He also suggested the adoption of Parker Morris standards would further widen the gap between the '*well housed and badly housed',* the latter who would be faced with the *'prospect of life in a degenerating nineteenth-century environment topped up with TV'* (Whittle, 1962: 282-4). Lamenting the lowest rate of housing production in Europe after Poland and Spain he suggested that industrialisation of the building industry had the potential to both increase production and lower cost. Whittle backed up his assertion with statistics, suggesting that in France there was a reduction of up to 30 per cent whilst Denmark reported costs were 5 per cent below traditional methods. In what must have been a welcome intervention for the Ministry he also conceded that, *'an extensive measure of standardisation does not impair architectural quality'* (Whittle, 1962: 283). In concluding his argument in favour of industrialisation he suggested that removing most of the production from site to factory and replacing skilled and unskilled building labour with an industrial workforce is *'probably the only answer to our pressing need for more and improved shelter'* (Whittle, 1962: 284).

Having stated the problem and identified industrialisation as the solution Whittle would expand on how it might be achieved. His conclusions reflected an in-depth understanding of continental experience, acceding that purpose-built factories that might cost £500,000 each to build would need an annual production of at least 1000-1500 dwellings per annum to be economically sustainable. Returning to his specific challenge he calculated that to meet his reported deficit at least ten such factories needed to be built. Advocating greater central government involvement, he suggested that

these might be government sponsored and financed. To ensure both demand and output he went on to suggest that Birmingham, Liverpool and Manchester should form a joint production committee or consortium to target production at 10,000 units per annum by industrialised methods. Architects working for these authorities should he suggested, focus on a reduction in variety to both achieve production targets and deliver cost advantages. The difficulty for the existing construction industry in meeting the challenge of expanded building programmes had already been widely discussed. Whittle took the opportunity to also articulate the difficulty the architectural profession faced in meeting this continued challenge. He felt that it was *'unlikely that the architectural profession could meet the demands of a substantially increased housing programme'* suggesting instead that the production of *'standard units… of high quality… must become the basic vocabulary of the housing architect'* (Whittle, 1962: 284). Addressing the concern that industrialised building might not deliver the best architecture Whittle conceded that '*European housing has little architectural merit'* but this should not be seen as a constraint for English practice. He went on to state that *'methods and materials do not in themselves create good architecture, but neither do they induce bad architecture'*. As well as a statement of English exceptionalism it seemed to be an exhortation for English architects to embrace the potential of industrialised methods to ensure that high standards could be achieved rather than continue to demonstrate *'insufficient interest in industrialisation'* (Whittle, 1962: 284). Whittle presented the opportunity by drawing a comparison with his earlier quoted figures, achieving 10,000 units per annum would reduce the time taken to solve the slum clearance challenge from 60 to 15 years. The need for architects to not just embrace industrialisation but lead the initiative presented an opportunity that should not be missed: *'We cannot continue to wave the red flag of our sensibilities in front of the machine of Industrialised housing production; we must jump up and drive it'* (Whittle, 1962: 284). Whittles intervention could be seen to represent the prevailing LCC Architect's department thinking regarding the role of the architect in industrialised building and reflected the view of progressive architects like Birmingham's City Architect. Sheppard Fidler saw in industrialization not only the practical opportunity to meet the housing challenge but the chance to shape its implementation, consequently ensuring that good design was not sacrificed and the role of the architect in defining the style of housing was maintained.

Figure 62: The Future Architect, a childrens' large panel construction set displayed at Flying Panels Exhibition, Stockholm (2020). Some contemporary architects feared that their jobs would be reduced to designing the layout of standard components. Source: Author.

Much correspondence was received in the contemporary architectural press exhorting architects to take the lead in the face of a predicted increase in building programmes, *'if we settle for a predicted increase in building activity of 50per cent over the next ten years it is quite apparent that traditional methods of planning and producing buildings simply will not cope… if architects fail to take the lead in this problem someone else will'* (Morrison, 1963).

AW Cleeve Barr as Chief Architect to the Ministry continued to tirelessly advocate the greater involvement of the profession in the push for adoption of industrialised techniques. Failure to capitalise meant missing out on potentially valuable work as the more successful of the contractors expanded their service portfolio to include professional design services. Cleeve Barr could see that *'the largest contractors operating nationally, and having the resources to undertake very large scale works, seem likely to strengthen their position by extending their regional organisations and backing them up with central specialist services'*. Contrasting the differences between the traditional building site and its modern equivalent he described the transition of the *'building site into a shop floor for the assembly of factory made parts, instead of a ploughed field as a workplace for medieval crafts'* (Cleeve Barr, 1963: 168). Cleeve Barr suggested that the *'character of the design itself is of the greatest significance for productivity on site'* and therefore advocated strongly for the architect to

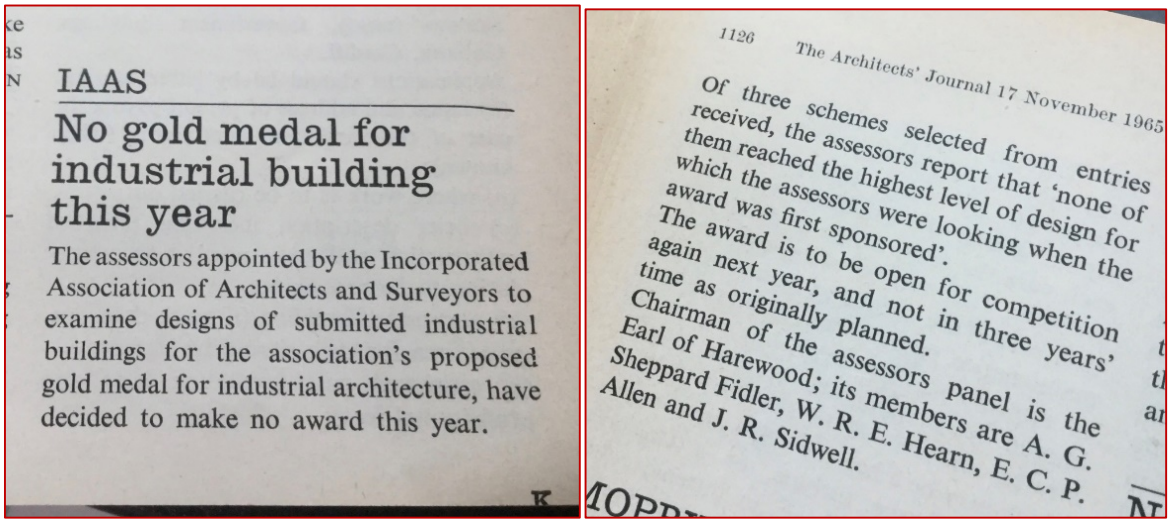
become a key player in the construction team*, 'as a profession we know that stylistically speaking, the days of Lutyens, of Mountford and Vincent Harris are finished…today we can only operate in the context of the twentieth century as members of a team'* (Cleeve Barr, 1963: 169). Courting favour with the profession it would become apparent just what role Cleeve Barr felt the architect should play in this team having acquainted themselves with the intricacies of Industrialised processes, *'the architect must acquire a more specific knowledge of the economics and disciplines of factory production and a more acute appreciation of new techniques and organisational methods on-site'* (Cleeve Barr, 1963: 169). It was clear that Cleeve Barr was concerned that the architect was at risk of being marginalised and closer involvement was critical to the success of the endeavour and their wider role, *'if Industrialised techniques are to be effective…the architect should be offered much greater freedom and responsibility…with virtually full responsibility for the brief and sketch design…architects should be able to advise…about the advantages and limitations of various industrialised methods'* (Cleeve Barr, 1963: 169).

The dialogue within the profession would continue throughout 1963. At the Building Exhibition Conference at Olympia Sir Donald Gibson would further encourage industrialisation by specifically advocating the formation of consortia in much the same way as the schools programme.

Figure 63: Coignet system, a completed 15-storey block at Savigny-sur-Orge. Source: The Concrete Society (1962).

CH Davidson speaking of continental experience at the same conference would review French systems and clearly advocate early participation by the profession, speaking of the *'astonishing improvements possible when a knowledgeable and strong-minded architect was in on the ground floor with a systems manufacturer'.* (Davidson, 1963: 1105).

Nevertheless, the opportunity for the profession to embrace System build and help to deliver high quality innovative designs was slow to materialise. Whilst the LCC would continue to innovate with System build and other authorities would make significant investment there were few examples of systems that excited the professional press. Architects were either reluctant to fully engage or were being prevented by contractors more interested in pitching their standard package deals. Perhaps reflecting this lack of involvement, the 17 November 1965 edition of the *Architects Journal*, reported that the Incorporated Association of Architects and Surveyors had announced that they *'have decided to make no award this year'* for their annual Gold Medal Award for Industrial Building.



IAAS

No gold medal for industrial building this year

The assessors appointed by the Incorporated Association of Architects and Surveyors to examine designs of submitted industrial buildings for the association's proposed gold medal for industrial architecture, have decided to make no award this year.

1126 The Architects' Journal 17 November 1965

Of three schemes selected from entries received, the assessors report that 'none of them reached the highest level of design for which the assessors were looking when the award was first sponsored'.
The award is to be open for competition again next year, and not in three years' time as originally planned.
Chairman of the assessors panel is the Earl of Harewood; its members are A. G. Sheppard Fidler, W. R. E. Hearn, E. C. P. Allen and J. R. Sidwell.

Figure 64: No Gold Medal for Industrial Building. Source: Architects Journal.

Reviewing the entries, of the three schemes that were under consideration they declared *'none of them reached the highest level of design for which the assessors were looking when the award was first sponsored'*. One of the panel of judges was Sheppard Fidler, the recently departed Birmingham City Architect. He might have lamented the lack of involvement of his profession but henceforth the professional press certainly began to question its commitment to promoting industrialisation. A later issue in 1966 would publish a letter from a Mr D Hamilton questioning the professions continuing support of Industrialised building and suggesting that *'architects withdraw in the face of Industrialised take-over and thus preserve their personal integrity'*. (Hamilton, 1966: 991).

5.3 Ministry charm offensive

As Chief Architect to the Ministry of Housing, AW Cleeve Barr was a consistent presence as the Government attempted to persuade stakeholders to adopt System build. His early architectural experience at Hertfordshire County Council on its schools programme had convinced him of the efficacy of pre-fabrication, something he had taken with him to the LCC. In 1958 he recalled his time at the LCC *where 'he had had on a number of occasions…. to evolve for housing, systems of lightweight steel construction and of precast concrete construction, comparable to those which have made possible such notable advances in the field of school design*' (Cleeve Barr, 1962: 1). His campaign supporting the adoption of System build took the form of numerous articles in the trades press and attendance at conferences up and down the country. Cleeve Barr saw pre-fabrication and the industrialisation of a backward industry something that could benefit the whole construction industry and not just be limited to social housing provision. *'There are unique opportunities in housing, which if matched with good design and good quality in building, could act as a catalyst for transforming the industry generally'* (Cleeve Barr, 1962: 3). Finnemore suggests that the State persuaded itself of the inevitability of technological revolution in building and so set out to promote this ideology to the population. Certainly by 1963 Keith Joseph and his deputy Geoffrey Rippon were actively engaged in promoting industrialisation via positive articles in the national press (Finnemore, 1989).

A key turning point in the acceptance of System build was the Concrete Society's *'Housing from the factory'* conference in October 1962 where Joseph and Cleeve Barr would make keynote speeches to an audience of architects, local government housing officials and contractors. The main lecture theatre was reportedly filled-to-capacity and closed-circuit television broadcast the conference to an overflow audience. Cleeve Barr presented a paper that set the scene for the remainder of the conference. Alluding to the enormity of the challenge facing the building industry in the early 1960s he forcefully articulated his Ministry's industrialisation strategy and the benefits that would accrue from adoption. Finnemore suggests that Cleeve Barr's argument at the conference would be one that *'pervaded lectures and conferences for the remainder of the decade'* (Finnemore, 1989: 88).

Based upon his department's own experimentation with industrialisation, Cleeve Barr was keen to evangelise the opportunities that pre-fabrication offered, visualising a scenario where *'the greater part of the building consists of components made in a factory or site works'* (Cleeve Barr, 1962: 2). For the local authority, the key benefit would be production time and Cleeve Barr contrasted the timeframes involved in various forms of construction. Whilst a multi-storey block with a more traditional in-situ concrete frame and brick infill might typically take 18-24 months to construct, a

rationalised method that might see this reduced by 50 per cent with a pre-fabricated approach result in a further reduction of 50 per cent. This improvement in building time could enable multiple benefits for local authorities, first by providing rent revenues more quickly but also by reducing housing waiting lists more speedily. As well as speed, industrialisation could facilitate a reduction in the reliance upon traditional construction skills and an overall labour saving of between 33-50 per cent. Although not an immediate requirement, the Ministry felt that allowing for reduced construction times and the associated reduction in labour, if volume and process could be optimised then industrialised building had the potential to compete on cost with traditional methods and over time, dependant on runs of a significant volume, actually deliver cost savings (Cleeve Barr, 1962: 6). Cleeve Barr also felt that System build provided the opportunity to build to Parker Morris standards due to the marginal cost of providing an additional 10 per cent of living space when utilising Industrialised methods: *'standardisation can give greater space for very little extra money'* (Cleeve Barr, 1962: 6). The challenge to successfully embrace industrialisation remained and despite the earlier drive to increase non-traditional methods of construction, few construction companies had made significant in-roads into pre-fabrication. The leader in non-traditional construction, Wimpey, had based their success on a process that revolved solely around in-situ construction.

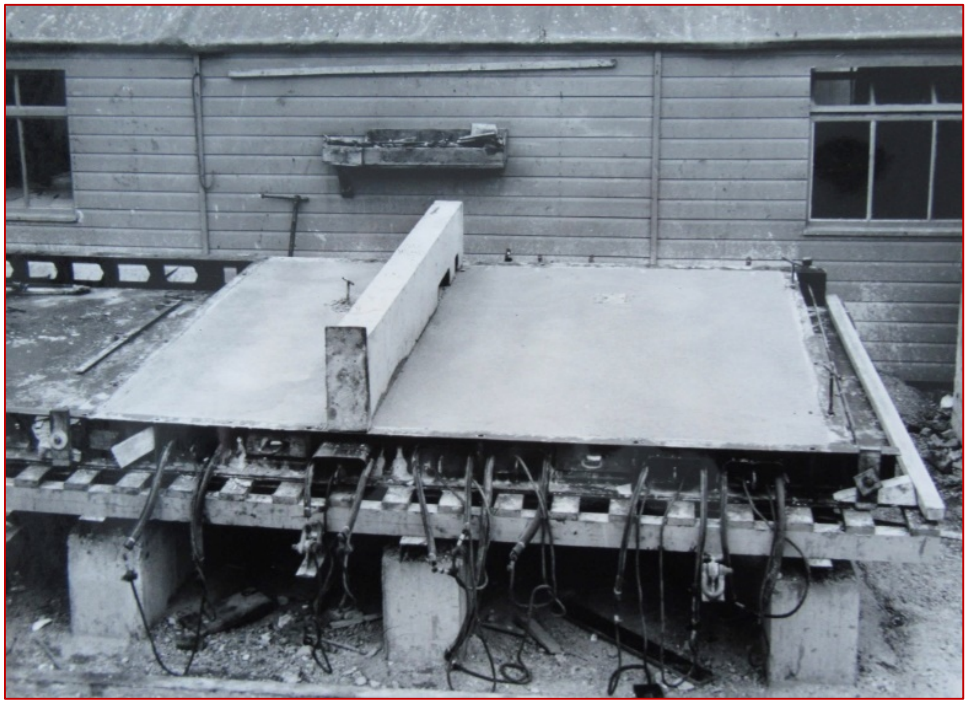


Figure 65: In-situ casting facility for Wates in Paddington, exposed to elements, there was little to distinguish the in-situ site from a normal building site. Source: The Concrete Society.

Many, including Cleeve Barr, believed that Britain's experiment with pre-fabrication was *'not a happy one'* (Cleeve Barr, 1962: 2). To visualise the purpose-built factory-based production that the Ministry had in mind it was necessary to look abroad. Attendees at the Housing from the factory conference

were able to learn about continental experience via comprehensive and detailed papers from many of the leading European and Scandinavian practitioners.

For the Ministry the conference provided an engaged audience consisting of contractors, architects, local authorities and Trade Unions. Cleeve Barr re-iterated the need for pre-fabrication to provide *'the right kind of housing… properly related to site'* (Cleeve Barr, 1962: 2) and to ensure this was achieved he first set his sights on the architectural profession. A charm offensive was undertaken that encouraged architects to engage with both producers and clients that replicated experience in the schools building programme. The Ministry believed that success would require concession from the architectural profession and clients would recognise and accept the inevitability of a reduction in variety, something it believed had been more readily accepted on the continent. Cleeve Barr presented an argument that overseas success had been characterised by an acceptance of less variety and greater standardisation. Continental flat development had often centred upon the *'long staircase access block with two flats per landing, walk up as far as four storeys and with lifts above'* (Cleeve Barr, 1962: 2). This he contrasted with the plethora of forms prevalent in Britain.

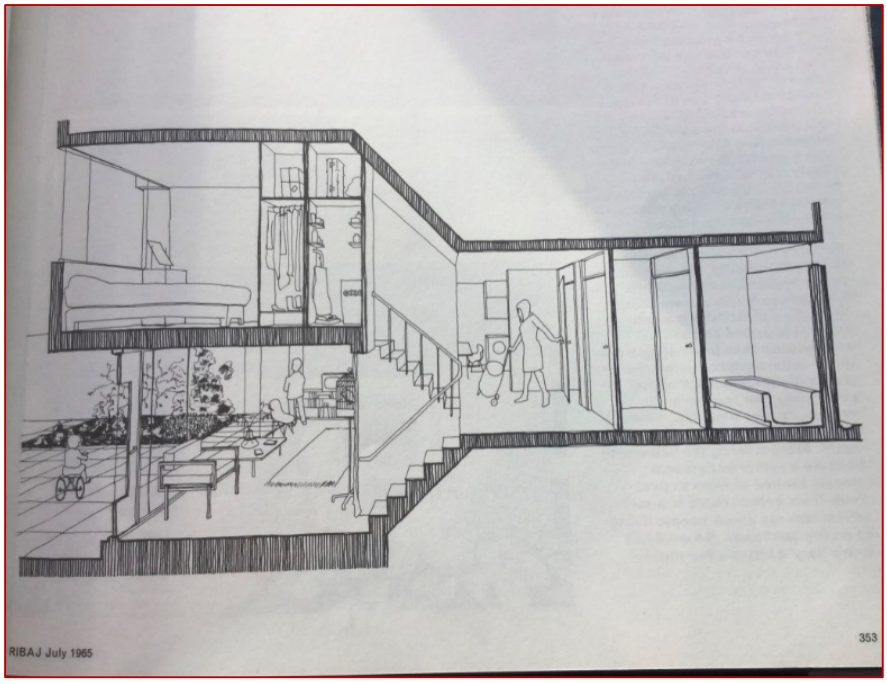


Figure 66: The scissor configuration, one of a number of imaginative treatments of the high-rise block. Source: RIBAJ.

These included balcony access, staircase access, central corridor access; cluster blocks, short and tall point blocks and slabs; four-storey walk up maisonettes and interlocked maisonettes and flats (Park Hill); scissor blocks mixing all types of dwellings (LCC) and walk up/walk down blocks with only two corridors to six or eight floors (Westminster) (Cleeve Barr, 1962: 2). Questioning the practicality of such variation he believed it could be explained by a peculiar British preference for two-storey living

and the wider demographic of flat dwellers. Conceding that it may have resulted at best in *'some fine examples of good architecture'* at worst it represented *'a waste of professional and technical skills'* (Cleeve Barr, 1962: 3). This tendency toward variety had, he explained prevented the full economic advantages of industrialisation and consequently had resulted in increased cost. The Ministry saw the solution as '*a great deal more standardisation with more architectural variety and flexibility*' (Cleeve Barr, 1962: 4). Willing to concede that whilst there were relatively small numbers of outstanding architecture the majority of local authority flats he felt number *'many thousands of thoroughly mediocre plans' each differing little in appearance but all featuring small differences in room size, ceiling height and standards of equipment that 'utterly frustrate the possibilities of standardisation and the associated economic advantage of large-scale standardisation'* (Cleeve Barr, 1962: 4). In advocating greater standardisation Cleeve Barr evidently saw the potential of standard designs to improve overall quality and went further by suggesting that it would not be difficult to improve on the quality of existing traditional building (Finnemore, 1989). The clarion call to the architectural profession, if successful might deliver better building but also by incorporating a higher level of standardisation would also ultimately deliver cost reductions. The Chief Architect envisaged at first, production in batch runs but believed these would ultimately be replaced by *'flow production in order to gain the full benefits (cost) of industrialisation'* (Cleeve Barr, 1962: 6). It would be a theme he would return to much later in the Municipal Review in 1965 when advocating large consistent orders that would allow economically-favourable production runs: *'they cannot be run economically, on the basis of one order for 300 houses here, 30 different houses in another part of the country, 20 elsewhere and infinitely protracted negotiations for a few dozen again different types elsewhere'* (Cleeve Barr, 1965: 738).

To further the cause of Industrialised building and replicate the advances seen in school building the Ministry attempted to specify the most appropriate dimensions to enable standardisation and that might encourage the production of standard components. The Chief Architect felt that flats in particular offered the greatest potential for standardisation due to the limited demographic attracted to them. Cleeve Barr felt that *'flats generally provide for the smaller families, single people, young couples and those whose children have grown up'*. He remained clear that *'in any case it is most undesirable on social grounds to put families with three or four children in blocks of flats….and this cannot be justified by pleas of difficulties in achieving density targets or standardisation in the use of tall blocks produced by Industrialised building systems'* (Cleeve Barr, 1962: 4).

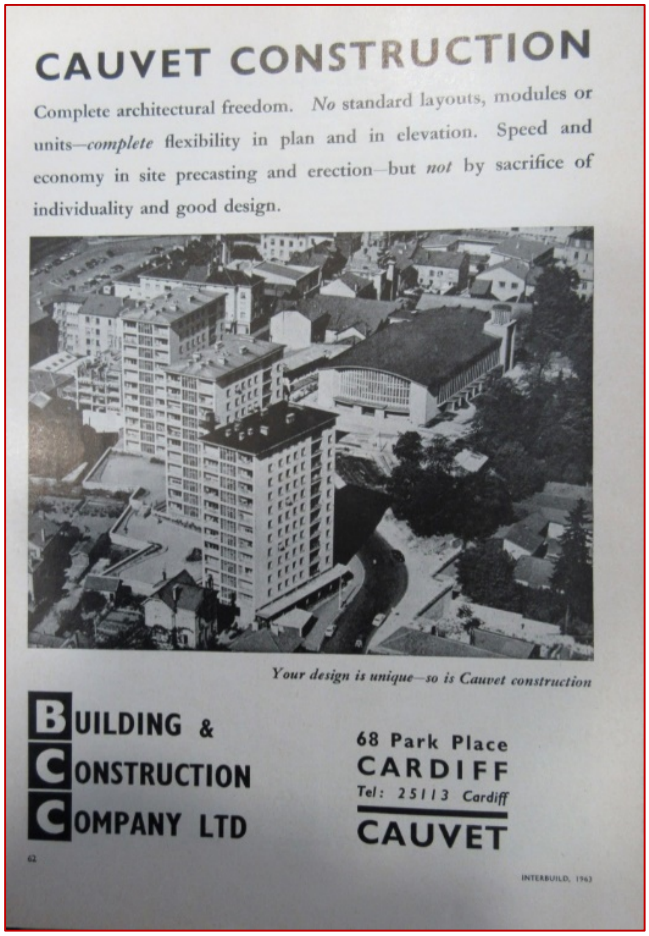


Figure 67: Cauvet System, claiming complete architectural freedom. Many contractors promised complete flexibility in design but had a vested interest in limiting expression to external façade treatments. Source: Interbuild 1, London (1963).

Countering a common perception propagated by contractors that there were no architectural limitations to their systems, Cleeve Barr lamented the '*Oh none. We can do anything*' response and instead argued for joint training between architects, engineers and contractors that would engender a more realistic approach*, 'good architects are anxious to discover the legitimate disciplines of a given technique, to work with it and fully exploit it, both planning wise and for aesthetic ends'* (Cleeve Barr, 1962: 5). So far Cleeve Barr lamented the lack of such co-operation and believed a new approach would achieve a better result by allowing architects to design new buildings having grasped a thorough understanding of a system, its benefits and limitations. Rehearsing a common complaint he suggested that, *'it is a poor substitute to be told that all external wall panels must be storey height by room width but you can have twenty-three varieties of finish on them in fifty-seven different colours'* (Cleeve Barr, 1962: 5).

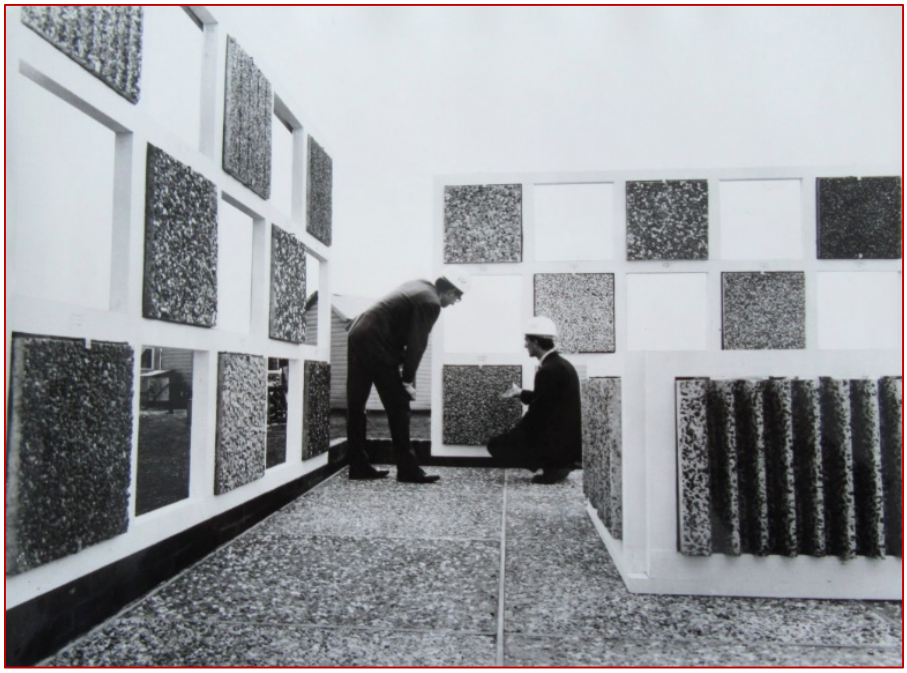


Figure 68: A range of external treatments. Despite promising architectural freedom, system builders preferred to limit intervention to the choice of external finish. In this case, the 48 different external finishes available for the Wates system. Source: The Concrete Society.

Cleeve Barr continued by recollecting the Ministry's own experience of close collaboration recalling work that had explored the potential of providing all the load bearing required within the internal walls and using external panels for limited structural purposes. This had *'enabled one to treat external walls as light screens, which can be set at different planes'.* Rather than impose an inferior standardised product the Ministry sought to encourage a higher objective, *'what we must achieve in factory made housing, I am certain, is a higher quality of design and finish than in traditional building'* (Cleeve Barr, 1962: 5). This aspiration encouraged both private and public architects to get more closely involved in the process of system build development and design. Initially the profession seemed happy to contemplate such an approach but such an intervention was not welcomed by inexperienced contractors, keen to promote package deals where design was limited to purely cosmetic detailing.

Figure 69: Camus system, completed flats in Y-shaped configuration with modern fenestration at Pantin outside Paris. Source: The Concrete Society (1962).

The reduction in reliance upon skilled workers realised through industrialisation was likely to be of obvious concern to the Trade Unions. Rather than focus heavily on the potential of industrialised building to reduce skilled labour the government and Ministry instead made much of the full employment already offered in the industry. Trade Unions generally accepted that a degree of industrialisation was inevitable (Civic Trust, 1963). Overall there was a willingness, albeit with some suspicion, to focus on the positive rather than the negative. Whilst discussing negotiations with the Unions, Geoffrey Rippon reported to Parliament in 1963 that attitudes were *'co-operative and sympathetic but they naturally wanted to look at the details'* (Civic Trust, 1963: 23). What would emerge was a tendency to be supportive initially but as system build took hold to seek better terms for skilled workers as the initiative gained ground.

5.4 Consensus and responsibility

The Ministry charm offensive may have ultimately ensured acceptance by a wide range of stakeholders but the ultimate responsibility for its take up and the huge growth in implementation would later come under particular scrutiny. Following widespread criticism from the late 1960s and early 1970s commentators have increasingly sought to attribute responsibility for the rise in high-rise system build development on a single group of actors. More recently Glendinning and Muthesius have forcefully advocated that responsibility lay with local authorities due to the *'urgent political pressure of large urban authorities, eager to launch themselves into high building'* (Glendinning and Muthesius, 1994: 198). Others such as Dunleavy (1981) and Finnemore (1989) preferred to attribute the responsibility to architects and planners. McCutcheon (1979) offered a wider explanation, accurately identifying the five potential primary contributors responsible for the rise of Industrialised high-rise development. McCutcheon accepted that initially, in the aftermath, responsibility for the rise of high-rise industrialised building in England tended to be attributed *'directly with the architect'* (McCutcheon, 1979: 175). Despite acknowledging the prevalent wider acceptance of the role of new technology in industry he also acknowledges the role of the construction industry in general, quoting Stone that, '*System building need not stem from a contractor, although mostly it does*' (Stone, 1966). He goes on to suggest that conversely, the construction industry would '*place the root of the Industrialised building drive squarely within central government'* (McCutcheon, 1979: 175) but also concedes others such as Campbell would see responsibility resting with local authorities and in particular housing committees who believed *'any methods which promise to enable the rate of building to be increased are very welcome and receive strong political support, particularly if costs are not increased'* (Campbell, 1979).

Despite the apparent confusion, what is clear is that without widespread acceptance from all stakeholders the initiative would never have got off the ground. Clearly central government and the Ministry were system builds primary sponsors, ably supported by the Cement and Concrete Association. These two organisations between them managed to convince all the stakeholders that system build could be an initiative worthy of support. Clearly for it to become so prolific, its adoption and implementation needed the support of a whole range of vested interests. This makes the tendency to attribute responsibility to a single group an oversimplification and a failure to fully grasp the dynamics of the initiative. Bearing in mind the fallout in the late 1960s and early 1970s and the emergence of widely circulated criticism of local authority housing and media reports of tenant dissatisfaction it is entirely understandable that commentators should seek to apportion blame for what seemed a failed initiative.

To understand the reasons for the rapid emergence of pre-fabrication and Industrialised System building it is necessary to look in more detail at the contemporary circumstances that saw the introduction, promotion and adoption of new methods of construction. What we will find is that, although there were times when a single group of actors may have been predominant, the movement could never have got off the ground without the support to varying degrees of all the players involved in the 1960s public housing drive. But there was a common link that made Industrialised building in all its forms acceptable to all those involved in its implementation. This included even those who at first sight might seem to be prime candidates to oppose the movement, namely architects, the workers and more specifically the Unions that represented them. McCutcheon describes this common link as *'a pervasive belief in the benefits of modern technology'* (McCutcheon, 1979: 102). The potential of technology and the need to accept it was brought into public consciousness in 1959 when CP Snow in his Rede Lecture had suggested that social and political elites were *'natural luddites',* ignorant of science and engineering and thus singularly unfit to govern in a world where technology was becoming ever more important (Snow, 1959).

Figure 70: Labour Prime Minister, Harold Wilson, his 'White heat of technology' speech would set the tone for his government. Source: parliament.co.uk.

Harold Wilson would take up this theme at the Labour Party Conference in 1963 in his *White heat of technology* speech that set the tone for the role of science in everyday life. Acceptance of the inevitability of Industrialised building was perhaps best summed up by the Secretary of the Amalgamated Union of Building Trades Workers who said in 1966 *'the building industry is not making*

as efficient a contribution to the Nation's welfare as it should…. too many firms are still in the wheelbarrow and spade age' (The Builder, 1966: 73).

This chapter has discussed the circumstances relating to the adoption of System Build based initially upon the Government's perception that the building industry was singularly ill equipped to rise to the challenge of meeting the required building targets. It has demonstrated that the Government and Ministry eventually achieved a consensus based upon the widespread acceptance that technology presented new opportunities for all industries in this period. This was a central tenet of Harold Wilson's Labour Government and a theme that the Ministry would use to convince stakeholders to invest in the System Build. This required and called for the agreement and co-operation of local politicians, architects, structural engineers, contractors and trade unions. Whilst the architectural profession seemed to accept the opportunity local politicians and contractors would prove less keen to embrace the concept of consortia and close co-operation between stakeholders.

Having considered the introduction of system build and reviewed the motivations and priorities of individual groups in this chapter the following chapter will take an in-depth look at the roles of individual contractors and their approach to the initiative. It will review the involvement of companies already experienced in industrialisation, those on the periphery who developed their own systems with the assistance of continental players and others who merely licenced existing systems. This will necessarily cover the implementation of the dedicated permanent purpose build factory and the temporary in-situ facility. It will explore the economics of successful system build implementation and explain the pre-requisites for successful profitable and therefore sustainable operation.

Jumping on the bandwagon

6.0 Jumping on the bandwagon

On the 4th and 5th October 1962 the Cement and Concrete Association held their conference *Housing from the factory* at Church House in London. The conference represented a milestone on the path to the wider adoption of System build for previously reluctant building companies and sceptical local authorities. For the former it represented a potentially lucrative departure and for the latter an opportunity to quickly reduce their housing lists. The Conference itself followed on from the International Union of Architects and the RIBA conferences of 1961 that widely discussed the subject. The conference itself was over-subscribed and widely attended with representatives present from all strands of the public housing movement. For those attending including local authorities what it presented was a co-ordinated and consistent message relating to the potential of System build. The Conference featured an opening address by Keith Joseph, Minister of Housing, with a response by Robert Matthew, President of RIBA. Despite stressing that the conference should include houses from the factory Joseph quickly conceded that looking at the conference agenda it would appear that '*a great deal of it will be flats from the factory'* (Joseph, 1962: v). Joseph's stated aim would be to *'bring along, as far as I can, the largest clients of all for the housing industry… - the public authorities - and to make clients recognise the industrial break-through on the edge of which we are now standing'* (Joseph, 1962: v). Matthew reiterated the '*technical revolution'* that was sweeping the country and exhorted architects to get on board. He congratulated Joseph on the *'great wind of change which has blown through his Ministry'* and celebrated the standing of *'some of the best architectural and other professional talent in your Ministry'* (Matthew, 1962: vi). This would provide the introduction for AW Cleeve Barr, Chief Architect of the Ministry of Housing and Local Government to present a paper entitled *'The problem stated'*. Thereafter representatives from most of the leading advocates for System build would present a detailed analysis of the features and perceived benefits of their systems. Others would relate their decision-making process and the experience and the success associated with early adoption. Representatives from many of the leading vendors would present their systems including Raymond Camus of French company Camus, as well as senior personnel from Reema, Bison, Balency, Coignet and Taylor Woodrow Anglian. Ove Eriksson would present some of the engineering problems and solutions relating to multi-storey development and representatives from the LCC would provide practical examples of their work with System build. The proceedings of the conference were widely circulated in printed form and proved influential in convincing local authorities that the future success of their building programmes lay with System build. For those builders yet to embrace System build the conference led to a mad rush to licence continental systems in order to ensure a share of what promised to be a lucrative market (Glendinning and Muthesius, 1994).

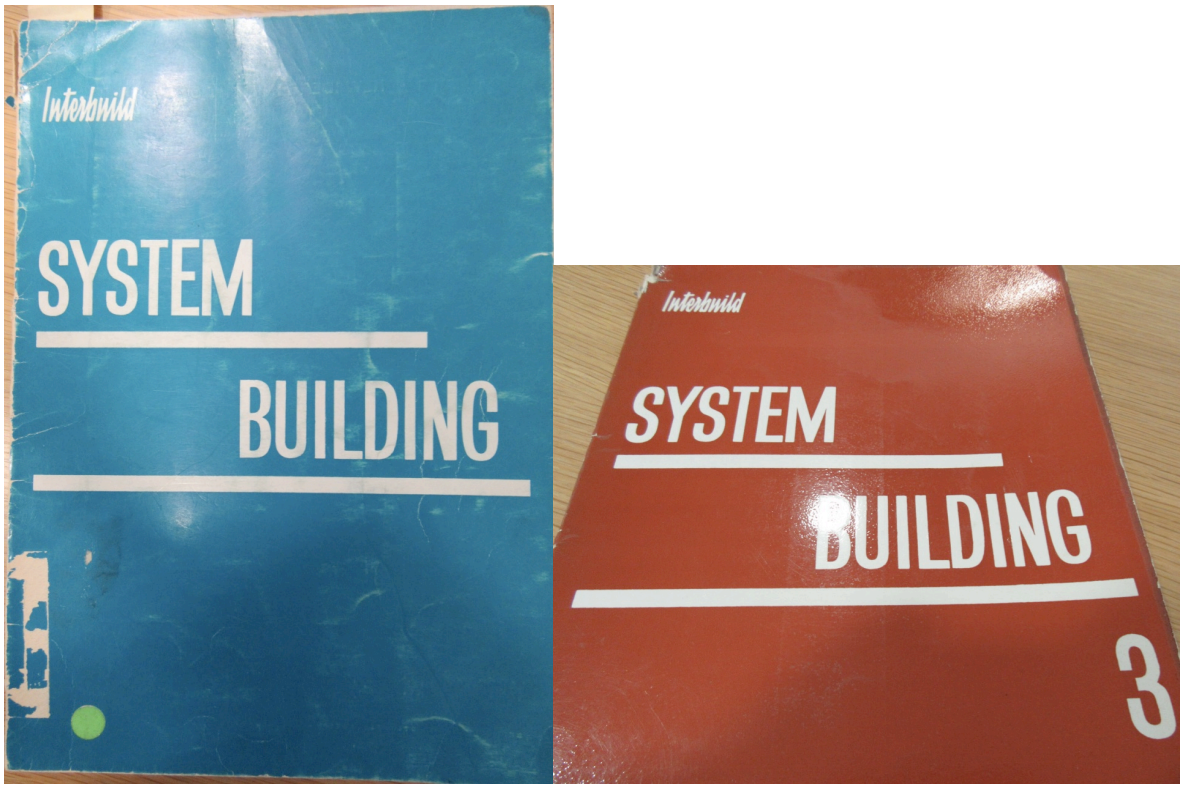


Figure 71: Interbuild's System building publication, Edition 1 (1963) and edition 3 (1965). Source: Author.

6.1 Conceive, adapt or borrow

The rise of Industrialised building methods took place in a climate of acute housing need when the prevalent belief was that the building industry was ill prepared to cope with the anticipated demand. The widespread perception that the industry was backward in terms of its processes and methods coincided with a period when society as a whole believed that technology could provide new solutions to old problems and improve peoples' lives in the process. This, together with an overwhelming government confidence in Industrialised building and a promise that volume would be guaranteed acted to convince reticent contractors to invest in Industrialised building. By 1962 the Ministry of Housing and Local Government had arranged a meeting with some 60 of the leading building contractors to discuss building policies and convince them to embrace Industrialised building. Another powerful force in this period was the Cement and Concrete Association who championed the use of concrete and lobbied stakeholders regarding the potential of Industrialised production. Their conference in 1962 'Housing From the factory' resulted in Interbuild, the publication dedicated to System building, reporting 'frenzied activity as contractors rushed to licence foreign systems or bring their older ones up to date' (Interbuild, 1962: 9). They did this in the belief that the not inconsiderable investment would not only protect their status in the industry but would

be justified by a payback consisting of greater volumes of business, improved profitability and less reliance upon skilled crafts.

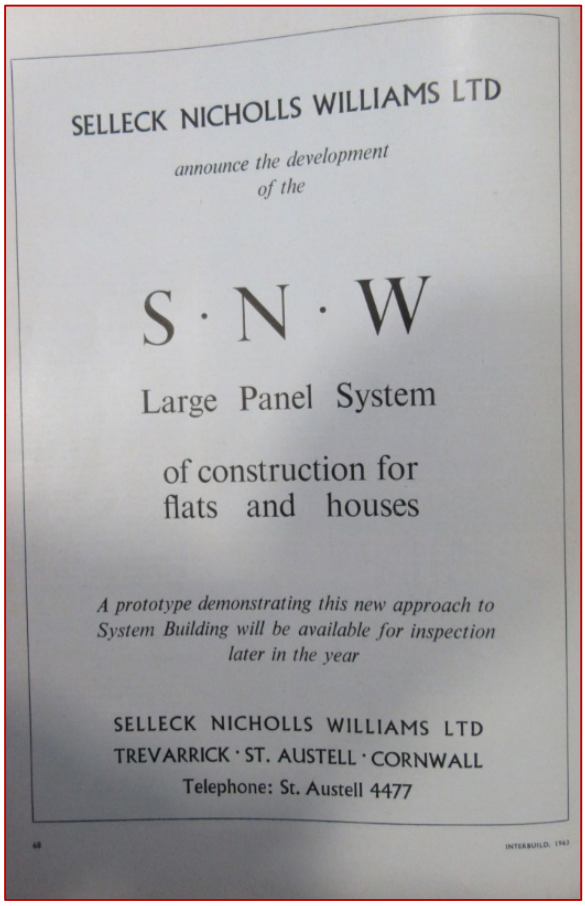


Figure 72: Selleck Nicholls Williams Large Panel System advertisement. Following the 'Housing from the Factory' Conference, contractors rushed to licence systems. In this case Selleck Nicholls Williams announced their system with a promise of a prototype. Source: Interbuild 1 (1963).

Faced with initial reticence, Government was in a position to highlight the opportunity for contractors with promises of large-scale production runs that would pay back investment and ensure profitability and the long-term sustainability of the initiative.

As well as orchestrated encouragement, the Ministry also took direct action in the assistance provided to Laing in their system build efforts when supporting the development of three of their Jesperson factories capable of handling 8,000 units/pa (Finnemore, 1989). In a climate in which everyone seemed to be championing Industrialised building, contractors were very aware that their competitors might capitalise on the opportunity and quickly develop a market-leading position in much the same way that Wimpey had done with No-fines. They were also attracted by the idea of less reliance upon skilled labour and believed that reduced material costs would offer greater profit margins. Whilst Industrialised building held the potential to deliver cost savings for the local authority, contractors and sponsors believed that short term savings would boost profits and provide a reward for their investment and the development of new systems and processes.

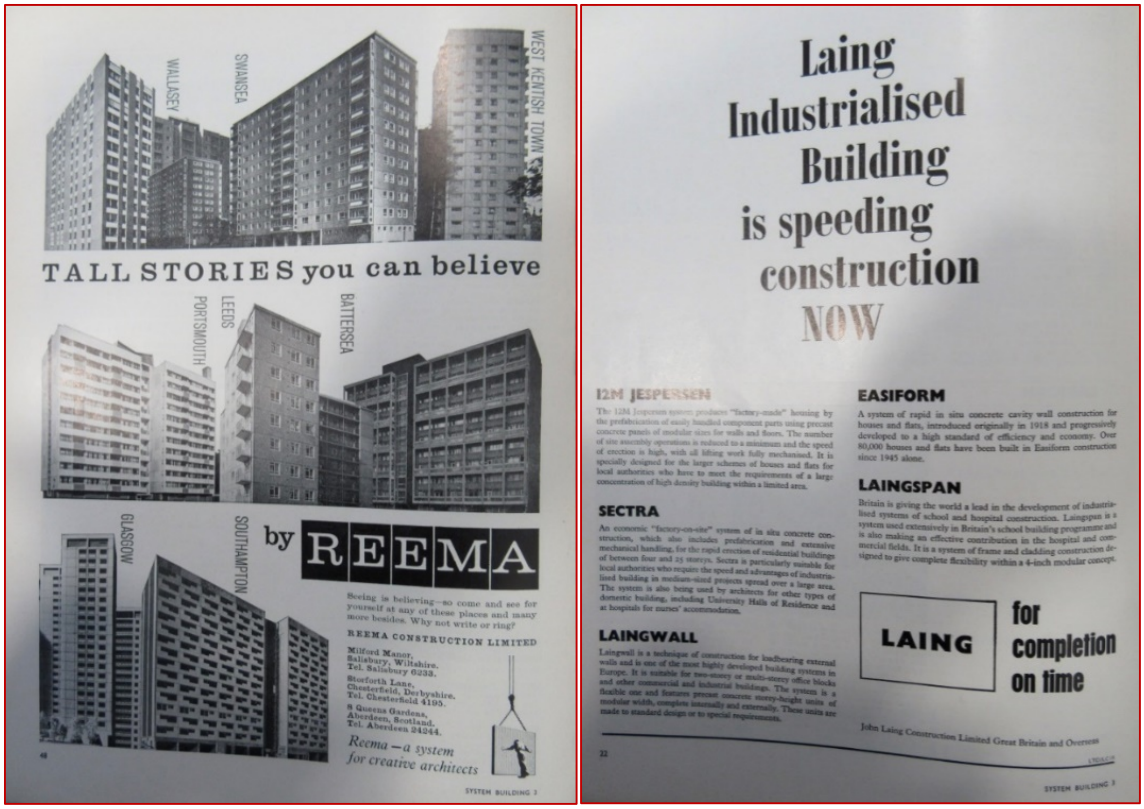


Figure 73: Contemporary advertisements for the larger contractors, Reema could feature actual sites whilst Laing celebrated the range of systems they had to offer. Source: Interbuild 3, London (1965).

For the larger firms able to afford the investment required this was particularly attractive as they sought to capture a lucrative slice of the public housing market. Although in the vanguard the large firms were not the only firms to embrace Industrialised building.

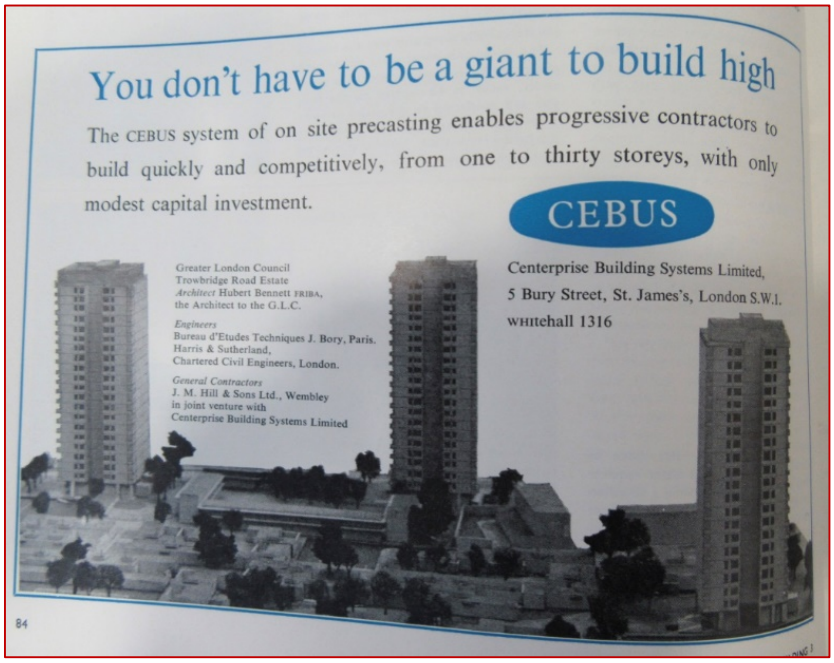


Figure 74: Cebus system, System build was available to the smaller contractor as well as larger ones. Source: Interbuild 3 (1965).

Smaller local firms like Stubbings in Birmingham, who were faced with a local battle with Wimpey and Bryants, were scared that their lucrative local authority business might disappear overnight if they failed to embrace industrialisation. This explains how between 1965 and 1977 approvals were granted for 146 different systems involving some 120 different firms (McCutcheon, 1979: 187). Not all would prove successful and *'the top sixteen companies, two proprietary systems and one consortium, together using forty one systems would come to account for 76.4per cent of the market'* (McCutcheon, 1979:192).

Homes completed in Building Systems in England and Wales by System 1946-79

System	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	Total
Bernard Sunley & Sons Ltd - Albetong			250	346	182	91	241	54									1164
C Bryant & Sons Ltd - (Low-rise and Wallframe)		225	1,123	1,593	1,689	2,689	1,786	1,158	461	721	753	20		127	281	48	12674
Camus GB Ltd - Unit Construction/Mitchell/FRAM/Higgs and Hill		2	696	614	352	1,034	1,143	1,205	671	521	24						6262
Centerprise - Cebus			12	194	95		240	80									621
Concrete Ltd - Wallframe	612	1,595	2,733	2,573	3,624	5,009	6,227	4,666	1,308	497	904	571	652	688	9		31668
Crudens Ltd - Skarne		27	187	328	1,414	814	1,404	1,701	913	508	7						7303
Cubitts Ltd - Balency					7	291	605	504	448	507	393	274	452	54			3535
Fram Group Ltd - FRAM	144	189	63	59	109	272	1,226	385	11								2458
John Laing Construction Ltd - Sectra	120	505	333	730	10	414	153	88	182								2535
John Laing Construction Ltd - Jesperson			133	765	1,588	702	1,893	1,445	774	426	577			340			8643
Reema Construction Ltd - Reema PPC	638	613	1,071	1,544	1,141	1,138	928	177	103	209	539	282	36	171			8590
Sundh (Great Britain) Ltd - Sundh				35	58	23	56	104	110								386
Taylor Woodrow Anglian Ltd - Larsen Nielson	40	406	664	1,056	875	480	632	1,528	880	393	669	457					8080

(Source: Finnemore, 1989)

Figure 75: High-rise building systems in England and Wales. Source: Finnemore.

Industrialised building developed most speedily amongst the largest contractors and of these Concrete Ltd, Taylor Woodrow, Laing and Reema were in the vanguard in high-rise Industrialised building. This can largely be attributed to the significant investment required for participation. This was not limited to the development of the system and the processes to support and operate it but in the capital outlay required for equipment including tower and gantry cranes, adjustable formwork and setting and batching equipment. Not surprisingly contractors proved reluctant to both commit to the investment but also embrace the changes required to their traditional practices. However the leaders of the major companies were finally convinced that attaining the required housing volumes could not be achieved through traditional means and their only option was to adopt Industrialised building techniques (Crossman, 1975). They also needed to be convinced that consistent, sustainable demand would be forthcoming to reward their investment.

Figure 76: Pingon P200 Tower Crane, although only recently introduced the tower crane made high construction feasible. Source: The Concrete Society (1964).

The extent to which contractors scrambled to jump on the bandwagon is perhaps best demonstrated by an anecdote from Donald Bishop of the Building Research Station relating to providing advice in the 1960s about Industrialised methods of construction. He recounts a senior executive from one of the largest companies calling to request information and advice on the best system to adopt. Rejecting an offer of a face-to-face meeting the executive hastened a reply by reporting that he was in a Board Meeting at the time and needed a recommendation on which to base company strategy. Bishop later noted that his recommendation resulted in the company adopting the system recommended (Bishop, 1978).

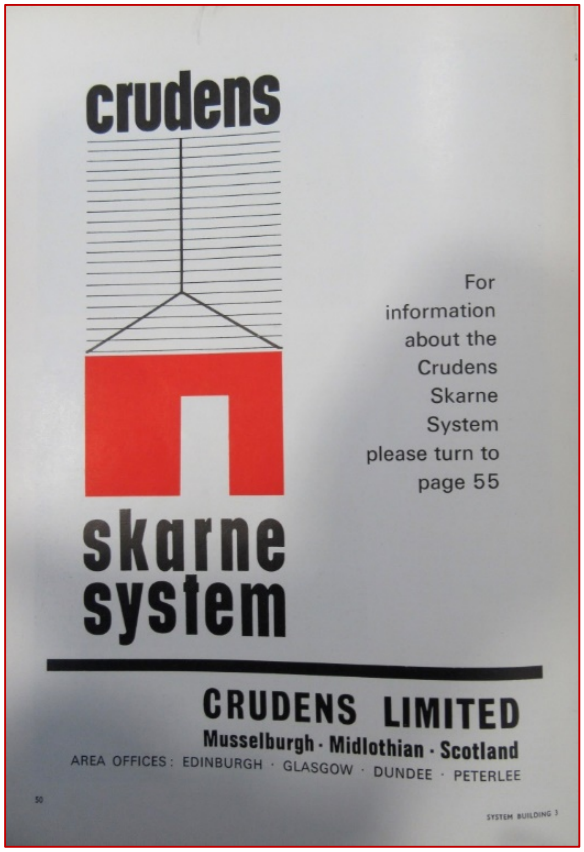


Figure 77: Skarne system, Scottish frim Crudens adopted the Swedish Skarne system. Source: Interbuild 3, London (1965).

Of the early adopters there were undoubtedly trail-blazers, those who had recognised the opportunity early and already made investment in developing systems or had been encouraged by Government, such as Reema and Waites as well as established players who quickly adapted their existing systems to address the need for high-rise System build such as Wimpey. Others like Concrete Ltd quickly used their expertise with concrete to adapt an established continental system in order to promote their Bison Wall Frame system. Others would simply build under licence, Laing would adopt the Jesperson and Sectra systems, Cubitts the French Balency system, Crudens the Swedish Skarne system, Taylor Woodrow Anglian the Larsen Nielsen system and Bovis subsidiary Gilbert Ash the French Tracoba system. The established French firm Camus set up a subsidiary in England but would struggle to gain a foothold and having been rejected by Birmingham would eventually succeed with an agreement to build with Liverpool in 1963/4.

CAMUS

Camus (Gt Britain)

The 22-storey block of flats at Boundary Street in Liverpool—the first multi-storey building to be erected in the United Kingdom using the Camus system

HISTORY The system was designed in 1946 by Raymond Camus and 70,000 dwellings have been built in different parts of the world. The system became available in 1963 in the United Kingdom and a factory at Kirkby (set up by Unit Construction Company) has an output of 500 dwellings a year for a 2,500 dwelling-programme for Liverpool. Low rise housing is under development.

STRUCTURE Concrete panels are cast to the largest possible size compatible with transport limitations and site erection equipment. Generous tolerances are allowed at the joints for the insertion of continuity steel and a site-poured joint, compacted by mechanical vibration. Floor and load-bearing wall panels have a minimum thickness of 6in. Longitudinal stability is provided either by loadbearing façade panels or by loadbearing crosswalls. Transverse stability is assured by crosswalls.

PLANNING Camus provide advisory services to architects working within normal housing design disciplines to help them exploit the advantages of industrialised production techniques. There are no preferred dimensions.

CONTRACTS Minimum number of dwellings in one contract is from 200 to 2,500 depending on the types and the amount of repetition. Costs are not available. The 2,500 flats and 1,200 garages for Liverpool form part of a £8,839,985 contract with Unit Construction.

Figure 78: Camus system, one of the many entries in System building published by Interbuild in the early 1960s. Source: Interbuild 3, London (1965).

All had been convinced that the housing volumes promised would materialise and be consistent and sustainable, enabling them to reap the rewards of their investment. The actual benefits of adoption were articulated by Norman Waites in 1964 at the *'Modern methods of house building'* conference:

> *'turning to Industrialised systems, I should like to explain my own company's policy on these matters. Operating as we do in London and in large industrial towns with the resultant need for high-density development, by far the largest part of our building for local authorities is in tall blocks of flats; ten- to twenty-storey. It is in the field that the advantages of System building are readily apparent'* (N Waites, 1965: 367).

He went on to elaborate the benefits:

> *1 - faster construction on site*
>
> *2 - higher proportion of work in factory*
>
> *3 - continual employment (no disruption due to weather)*
>
> *4 - closer control over workmanship*
>
> *5 - more efficient building sequences*
>
> *6 - higher mechanisation and systematic use of plant*

7 - elimination of trades in short supply

8 - greater control of issues

9 - restriction of design necessitated by smaller number of interchangeable components

10 - less wastage

11 - progressive image attracts higher calibre of staff

This was an interesting intervention and one of the very few made by the senior management of the contractors. Waites' comments certainly reflected earlier interventions from continental contractors who had sought to promote their systems in Britain. The perceived benefits of industrialised building and what seemed like ready encouragement from all quarters had ensured that contractors adopted systems quickly and some at least were able to articulate the resultant benefits they accrued. How the Ministry's vision of industrialised system building would fare in the longer term and the ultimate success of the initiative would depend upon the level of compromise that individual stakeholders would feel were needed during adoption.

6.2 Open and Closed Systems

It was thought and hoped by the Ministry that as industrialised building developed it would eventually lead to completely open systems with interchangeable units built to standard dimensions and specifications. This would allow architects to 'mix and match' components in their designs. The relative merits of open versus closed systems was much discussed. The Ministry accepted that it was essential to start with closed systems to establish the principle and gradually move to open systems as the concept was proved. The difference between the systems was widely understood: '*systems have been termed 'closed' – implying that only a limited range of presubscribed standard building types can be assembled with components; or 'open' – offering the possibility of detail component design variance within stipulated limits'* (Morris, 1978: 125).

The Ministry conceded that, in the first instance, construction would start with proprietary closed systems but, as the market developed, true off-site manufacture of factory components would enable the development of an open system. The Ministry was clear how they thought the industry should develop with the objective to minimise involvement on-site even for the systems that placed walls and floors in situ such as Wimpey, Laing, Mowlem and Allbetong. Factory components were seen as an opportunity to minimise concrete pouring site work which by its nature was difficult and subject to disruption by the elements (Cleeve Barr, 1962). A natural progression was to eliminate wet finishes on site and maximise the benefit of standardised components, services and fittings. The Ministry posed the long-term question, should the industry '*be dominated by a number of large firms each with its own system, producing a limited range of types of blocks of flats or whether there cannot be some wider interchange of components, based upon a common approach to standardisation and dimensional co-ordination from which architects can build up a much wider vocabulary of plan forms'* (Cleeve Barr, 1962: 6). The parallel was drawn with Scandinavia where standardisation had been successful and common components including staircases, kitchens, sinks, cookers, refrigerators, refuse chutes and doors were widely available that were of both a higher standard and, due to volume, cheaper.

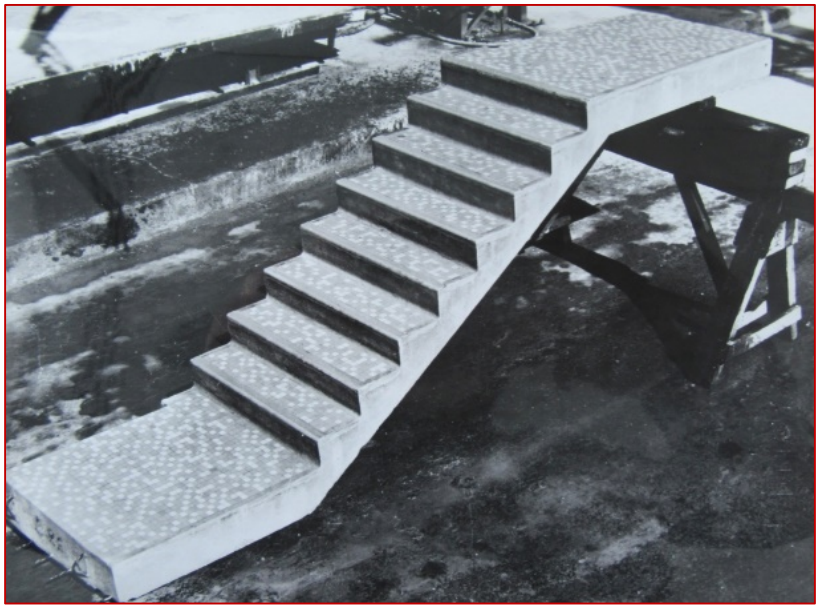


Figure 79: Pre-cast tiled staircase, the concept of standard components were readily accepted in Scandinavia. Source: The Concrete Society (1962).

The move to an open system would be the catalyst that would change the industry '*transforming it from its present low state to a highly mechanised level in a comparatively few years'* (Cleeve Barr: 1962: 8). In the short term though individual sponsors would develop and implement their systems in isolation, invariably with some system based upon large panel construction. The ultimate goal of delivering open systems remained a Ministry priority, *The Architects Journal* published a report of an address at Newcastle University in 1965 by Cleeve Barr that suggested that the *'present large number of systems is only a temporary phenomenon'* (Cleeve Barr, 1965).

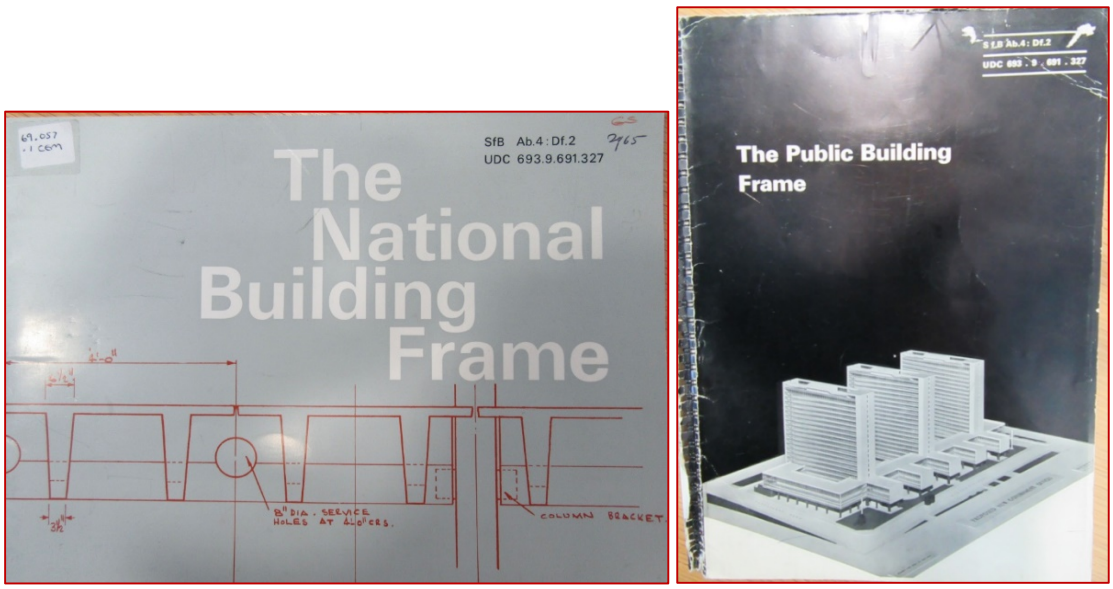


Figure 80: The National and Public Building Frame, attempts by the Ministry of Public Building and Works to promote Open systems and standardisation in construction. Source: The Concrete Society (1966).

Clearly there was still some frustration that the industry had not transitioned to an open system: *'Most of us prefer to look forward to a day when systems, as such will cease to exist, and the industry will provide us with a large range of well designed, high quality interchangeable components'*. Cleeve Barr's optimism was however tempered by a realistic appreciation of the challenge and the timescale required to achieve it, *'the concept is pretty idealistic and it is extremely difficult to foresee the development of society and economic forces so far ahead'* (Cleeve Barr, 1962: 6). Cleeve Barr's statement suggests an appreciation of the market-led imperatives of the major constructors and how, having made serious investment in their own systems, they would be reluctant to migrate their offering in favour of the assembly of a range of components from a multitude of competing vendors.

6.3 Large Panel construction

The Building Research Station were concerned that pre-fabrication using a kit of parts might actually increase the number of operations during construction, a factor that might explain why Open systems were not recommended from the start and why large panel systems (LPS) would come to dominate the market. Certainly large panel systems were economically attractive, employing large cheap concrete panels that were relatively simple to produce and erect, whilst benefitting from meeting prevailing sound and insulation standards. Not only could they be manufactured to incorporate all the required services large panel construction was proven, having been around since the 1920s. In 1925, Amsterdam had commissioned the Occident System that comprised storey height units of three tons to construct two-storey flats using a gantry crane. Similarly in the US LPS of storey height were used by Grosvenor Aterbury at Twachlam. In France in the post-war period LPS helped to contribute to a 300,000 per annum housing drive instigated by a shortage of labour and materials. In Scandinavia it was seen as the antidote to a disproportionately high skilled labour cost, and in Eastern Europe it was seen as a solution to the challenges associated with poor seasonal weather. The widespread emergence of large panel construction in Europe and beyond can therefore be explained in part by both economic and environmental factors rather than merely the application of new technology.

Figure 81: Large Panel Construction toy, the proliferation of large panel building systems encouraged the production of children's modelling sets. Source: Flying Panel Exhibition, Stockholm (2020).

The development of high-rise building technique was addressed in *The Building Research Station Handbook Principles of Modern Building* (1959) which concerned itself with the structural and functional performance of building focussing on the common preference of *'frame plus infill: the frame to hold up the building, and the cladding to keep out the weather*' (Glendinning and Muthesius, 1994: 73). The frame and lightweight cladding prevalent in the Hertfordshire Schools programme would also serve as an example of innovation that would signal a search for new methods in house and flat production (Glendinning and Muthesius, 1994: 74).

One particularly important component in the process would be the emergence of new machinery to ease the production of concrete panels, most significantly the introduction of the tower crane that would make the construction of high towers more viable.

Figure 82: The Pingon P90 prototype crane with 6 ton capacity, competing manufacturers promoted a wide range of tower cranes suitable for medium to high-rise construction from the 1950s. Source: The Concrete Society (1964).

The first example in England was purchased by the Building Research Station (BRS) in 1950 but, by 1954, there would be roughly 200 in action throughout the country after which they would proliferate (McCutcheon, 1979).

From the early 1950s the frame and infill method was to continue to prove popular for high tower construction, most commonly clad in traditional brick but also roughcast or plastered. Early examples were steel-framed such as the 'one off' and expensive Duddeston and Nechells development in Birmingham (Glendinning and Muthesius, 1994). A cheaper alternative to steel was reinforced concrete, the raw materials for which were freely available and production straight forward as it could occur in-situ. It would go on to become the main construction method for high-rise social housing blocks. Popularity would be aided by the increasing availability of formwork, vibrators for casting and machinery to aid setting, which all contributed to making standard floor and wall height units easier than ever to produce. Part of the high tower building revolution would include the box or cross Wall Frame where the frame comprised cast individual units to provide the main internal divisions that just required facing. Lubetkin and Arup would collaborate to develop cross frame and it would become the LCC standard with 11-storey maisonette slab blocks (Day, 1988). The next challenge was how to treat external elevations: what appeared to be walls from top to bottom were more likely to be just a thin external layer tied to the internal framework. An alternative was the French systems that featured inserts where the frame was exposed externally and had either sections of wall, window or balcony inserted into the void. A third option was cladding that usually consisted of pre-fabricated components being tied to the frame to form screen or curtain walls (Glendinning and Muthesius, 1994). These could be formed of concrete, brick, wood, plastic, glass, fibreglass or asbestos. In pursuit of the advantages of pre-fabrication, when at the LCC, Cleeve Barr's development at Picton Street would feature pre-cast floors and cross walls utilising tower cranes and adjustable shuttering to enable construction.

Figure 83: A range of new technology became available to support Industrialised building. Source: Concrete Quarterly.

Meanwhile Reema, a long-established contractor would go on to develop large panel construction methods with load-bearing walls and pre-cast wall panels that would be used in both Leeds and London (Glendinning and Muthesius, 1994). The attraction of large panel systems (LPS) was that flat panels of dense concrete were seen to meet the functional requirements of structure, sound insulation and fire resistance and were therefore promoted by the Building Research Station. They considered that three-, four- or five-storey flats were well suited to LPS and could be arranged in independent bays with two, three or four flats serviced by a single stairwell. External walls, party walls and partitions could be load bearing with floor panels designed to span in two directions. Building Research Station (BRS) experience of LPS suggested that it needn't inhibit architectural freedom and that it could comfortably accommodate all the common forms of flat types including stairwell, balcony, corridor and even scissor access (Bishop, 1962).

Camus and Larsen Nielsen would be first continental players into the British market with Camus using panels 21ft in length with '*six-inch thick floors and panels forming a multicellular structure*' (Glendinning and Muthesius, 1994: 82). The Larsen Nielsen system adopted by Taylor Woodrow Anglian consisted of a main structure of load-bearing walls six inches thick. Large wall panels would also be utilised by Laing in their 12M Jesperson system and Yorkshire Development Group's YDG Mk 1.

Wimpey, by far and away the most successful house contractor with their No-fines system, was not complacent and quickly sought to capitalise on the high building opportunity. Rather than develop or licence a continental large panel system they instead decided to develop their existing No-fines system. Utilising the already tried and tested in-situ approach they simply turned to larger and consequently cheaper forms of shuttering. Whilst this was acceptable for blocks of up to five-storeys Wimpey needed to further develop its system for higher blocks. This they achieved by incorporating *'a new kind of framework'* (Muthesius and Glendinning, 2017: 95). The result was a new product, named in characteristic Wimpey style, as '*Wimpey Industrialised System building'* which simply featured additional fixed shuttering for the wall shutters to form vertical columns that would be further reinforced with steel. No- fines concrete would be poured into the wall shuttering with a denser concrete poured for the columns. The same reinforcement and dense concrete would form the horizontal beams. In the first instance the No-fines concrete would support the denser reinforced concrete until set, then the reinforced concrete supported the No-fines wall panels. Externally the two types of concrete were indistinguishable. Just as with their successful No-fines houses Wimpey flats were finished with an external render formed of aggregate available in a variety of finishes.

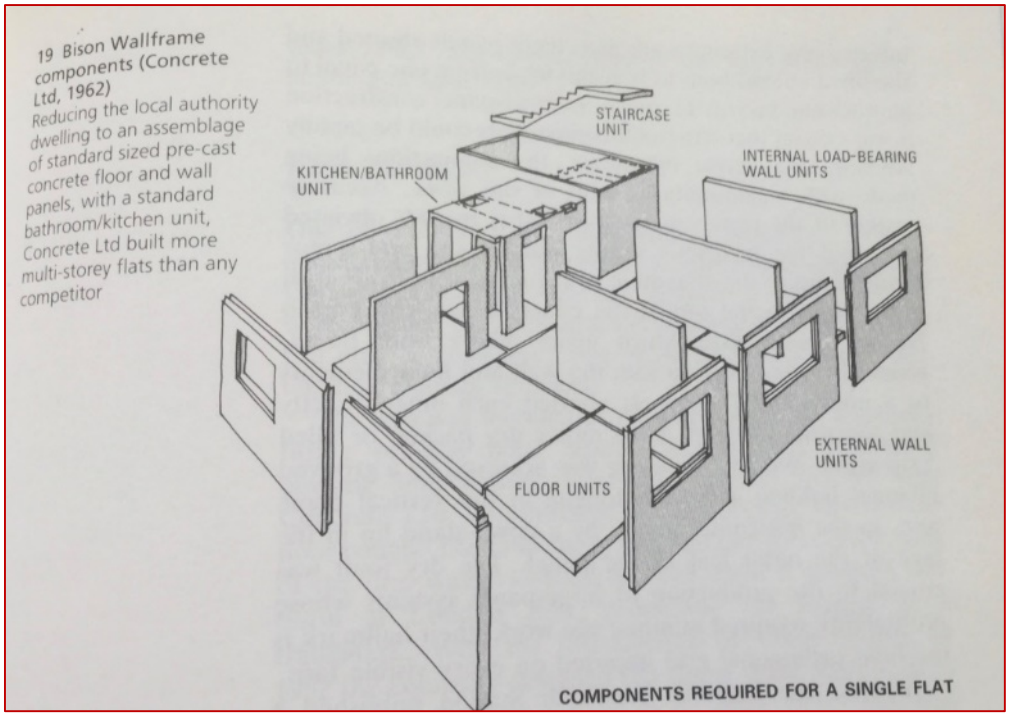


Figure 84: Bison Wall frame layout. Source: Concrete Quarterly.

In number the most successful of the large panel systems was the Bison Wall Frame developed by Concrete Ltd. The Bison Wall Frame consisted of walls and floors up to 21ft in length providing a frame to form a rigid box. Bison's walls were all load bearing including external walls differing from the earlier 1950s box frame that featured two open sides ready for infill. Concrete Ltd promoted the system on the basis of its apparent simplicity, requiring the minimum number of components. Taking

just 21 components to form a two-bedroom flat that comprised pre-fabricated walls and floors, staircases, bathroom and toilet units, Bison Wall Frame was manufactured in purpose-built off-site factories. Similar to other systems the completed wall and floor panels incorporated ducting for services and were ready for internal surface treatment. The external walls were completed and attached to the rest of the unit and were it was claimed, available in a variety of finishes.

Figure 85: Examples of Wallframe system, despite different external treatment both designs are identical. Source: Concrete and Structural Engineering.

Figure 86: Façade detailing on Bison Wall frame flats in Barking (Aug 1961) and Greenwich (Feb 1969). Source: The Concrete Society.

Whilst much was made about the variation and choice of external finish available including a range of aggregate finishes, mosaic, glass, tooled concrete, tiling or brick, in practice these all added something to the cost and invariably the local authority, keen to minimise cost, would invariably select one of the cheaper finishes.

6.4 Reema

Based upon previous experience developing predominantly two-storey housing Reema could be said to have been pioneers in the development of LP. Initially Reema had enjoyed some success in the period immediately after the Second World War when labour and materials shortages saw attention focus on opportunities for mass production using non-traditional methods. Developed originally by civil engineers, by the early 1960s the company had already had 15 years' experience developing standard elements in purpose-built factories both at home and abroad. The LCC worked with the company to further adapt their large panel system of housing to multi-storey designs, the result being the completion of the first block at Aegis Grove in Battersea in 1962. Following this experience and the publicity it afforded they began to market their multi-storey system to other local authorities (Finnemore, 1989). In simple terms, early Reema large panel methods consisted of factory-produced storey-height pre-cast hollow concrete panels erected on a prepared foundation. Recesses at the edges of the panel formed the joint to make an in-situ reinforced concrete frame which held the structure together and provided a waterproof joint (Reed, 1962). Reema's proposition centred upon their system's simple repetitive production process that much reduced the need for skilled craftsmen and was less susceptible to seasonal disruption. Reema operated a number of production facilities of varying complexity ranging from temporary in-situ operations that featured an open casting yard and a covered curing area, to permanent mechanised factories producing between 1000-2000 units per annum (Reed, 1962). This experience put Reema at the forefront of large panel construction in the early 1960s as they had already gained experience, refined their processes and experimented with a range of construction options.

Figure 87: Reema pre-casting facility. Source: The Concrete Society (1966).

Reema wall panels were commonly formed of a sandwich construction featuring a 1.5in outer skin with a 6.5in cavity and a further 1in inner skin measuring up to 15ft in length with an 11ft storey height. Internal walls ranged from 3-4in solid or hollow construction with the latter filled in-situ to provide a load-bearing structure in multi-storey applications (Reed, 1962). Hollow floor panels of up to 23ft in length were used to cross tie internal to external panels. Transport constraints limited the loads for lorries to between 10 and 15 tons and it was generally considered that a 100-mile range from site to factory provided the most economic range. In the early years and primarily for houses and low-rise applications, Reema made use of the Reema Mast that featured a central high mast secured by wire from its apex to the ground with a second arm that rotated around its base to lift panels. Later, in line with all other building firms, the company used mobile gantry and tower cranes. Each crane would have a foreman and five labourers. Like their major competitor Wimpey, Reema offered a range of design and construction consultancy services with its own team of architects and engineers. So, whilst Reema boasted of the flexibility of their system and its ability to produce *'schemes of distinction far removed from the monotony generally associated with housing from the factory'* (Reed, 1962: 82), in reality the extent of their design flexibility seemed primarily limited to interventions associated with external appearance. These would most commonly consist of stippled

concrete that was either painted or faced with aggregate. The cheapest was gravel although a range of more exotic finishes was available subject to budget that included white Derbyshire spar, pink limestone, grey or green Cornish granite or Cotswold stone. These external finishes were always applied in the factory and the company reported that self-cleansing finishes including glass or china were fast gaining in popularity. Reema's earliest examples incorporated a traditional internal plaster skim but this was quickly superceded by the more economic direct papering or painting of exposed concrete. Although Reema assemblies including glazing fixed at the factory, unlike the majority of their competitors the company did not initially offer pipework or ducting incorporated at the time of manufacture.

Figure 88: Pre-cast Reema panels being transported to site from the factory. Source: The Concrete Society.

One of Reema's earliest multi-storey projects incorporated the construction of ten-storey blocks in Leeds in 1958 with Civil Engineer Felix Samuely engaged as Consulting Engineer. Designed by City Architect RAH Livett, the project consisted of 21 ten-storey blocks with the bulk of construction taking place in an in-situ temporary casting yard. The main load-bearing units consisted of solid panels vertically reinforced by bolted connections. Reema also made use of hollow panels that would be filled in situ to provide vertical reinforcement. This would lead to the development for the LCC in 1962 of Aegis Court in Battersea designed by HJ Whitfield Lewis, then County Architect for Middlesex. Consisting of 11-storey blocks with flats on the ground floor, the structure was finished with a self-cleansing vitreous china finish for the main front elevations with a broken brown glass finish for side elevations.

Figure 89: Reema block at Aegis Rd, Battersea. Source: The Concrete Society (1962).

Reema were particularly proud to publicise the reduced construction times for their multi-storey flats, boasting for example that their ten-storey blocks of 60 flats produced in Leeds could be erected within five to six weeks. Taking into account site preparation, services, foundations and interior finishing they estimated that similar multi-storey blocks could be comfortably completed within 12 months.

Figure 90: Reema ten-storey block nearing completion in Leeds. Source: The Concrete Society (1962).

6.5 Bison Wall Frame

Concrete Ltd, already well established as a specialist concrete contractor, recognised the potential for multi-storey large panel construction. Concrete Ltd had begun producing pre-cast concrete floors as early as 1919. With the advent of cranes the Bison Wide slab was introduced that saw an increase in element size from just 14in to seven foot six inches which would henceforth become the basic unit for the assembly of their multi-storey flats. Nine-storey blocks first appeared in 1956 utilising wide floor slabs with pre-cast beams and columns but it quickly became evident that it was more economical to substitute wall panels in place of the beam and column. Concrete Ltd took advantage of the acceptance of concrete for external finishes to eliminate both the costly requirement for scaffolding and the fashion to face structures in brick.

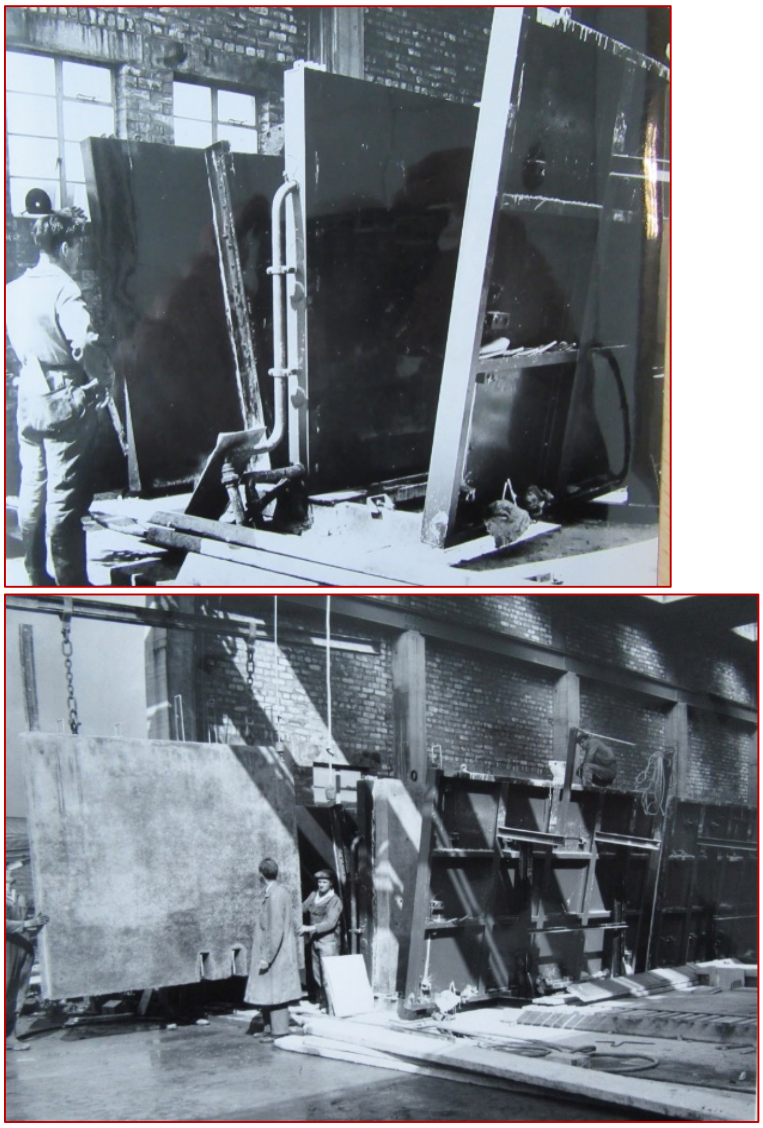


Figure 91: Bison Wall frame casting units. Source: The Concrete Society (1962).

Early iterations of the Bison Wall Frame system demonstrated promise but the company conceded that it would require further development in order to eradicate the need for a skilled workforce in its

construction. Concrete Ltd envisaged such development would primarily relate to finish and result in the elimination of plasterers, electricians and bricklayers. Consequently, keen to develop their system they studied continental systems, and, in particular, those of Scandinavia and France. The Bison Wall Frame system came about due to Concrete Ltd's close liaison with Scandinavian consultants and was far more closely aligned to these than to either French or Russian examples. Unlike the continental systems that celebrated to a much greater extent the virtues of standardisation Bison unsurprisingly promoted itself as much more adaptable to a variety of internal planning and elevational treatments.

The brief for the design team was to evolve a system suited for local conditions that featured large panel construction but captured the beneficial elements of continental systems. Concrete Ltd conceded that systems prevalent in Scandinavia and Europe could inform their plans as these were by their own admission more advanced. This necessitated the development of a plan form suitable for medium-sized schemes that offered a flexibility in layout and appearance. Attention was also focussed on liaison with both the BRS and utility providers to ensure the final specification complied with building regulations. The ability to comply with prevailing and possible future standards was seen as just as important as speed of construction, economy and durability. The resultant Bison Wall Frame system was considered by its promoters as not only future-proofed for any future regulations but in its latest iteration offered: *'ample scope for architectural expression both in planning and elevation'* (Wood, 1962: 87).

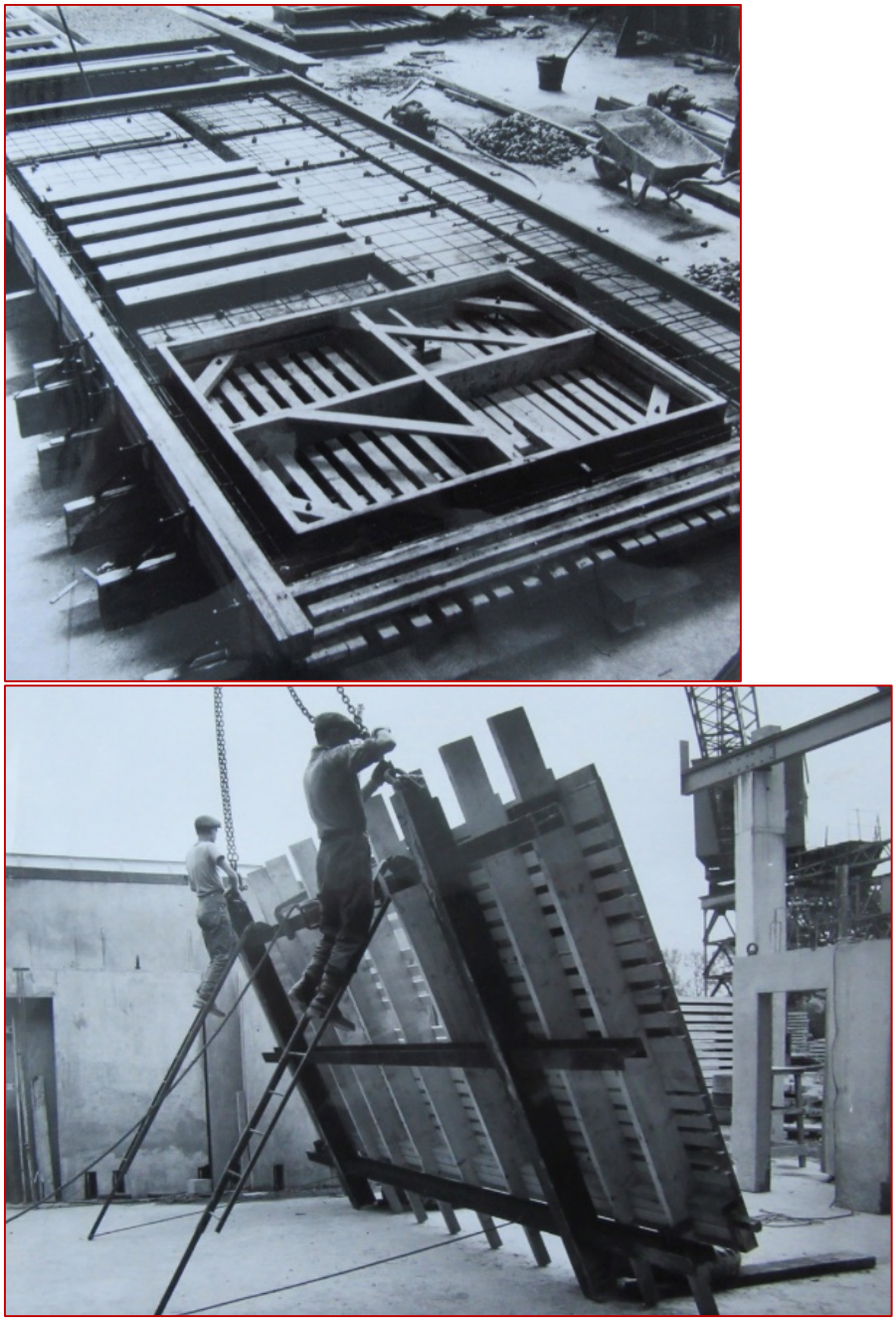


Figure 92: Bison casting frame and insertion of lifting hooks on completed panel. Source: The Concrete Society (1962).

The evolution of the Bison Wall Frame system from established Scandinavian systems was targeted at a market requiring high flats between eight- and 20-storeys in height, most commonly with either four, six or eight flats per floor. Whilst the key market for Concrete Ltd would be solutions for their local authority clients the system boasted that it could cater for the *'luxury standard of the better types of private development'* (Wood, 1962: 88). The updated Bison Wall Frame system was marketed extensively and claimed to benefit from both speed and economy of construction whilst utilising standardised pre-cast concrete with a dry finish that did not require scaffold or plaster.

Featuring these updated developments Concrete's Ltd's first example of the evolved Bison Wall Frame was completed in Barking in 1961.

Process	Extent of finish
Internal finishes	Walls/ceiling ready for application of lining/wall paper or filler for painting. Floors ready for thermoplastic floor covering or optional provision of floating timber floors.
External finishes	Any aggregate, tooled concrete, tiling or brick tiles. Up to 12-storey brick can be used externally, greater that 12-storey concrete required for structural stability.
Provision of services	Electric point and ductwork cast-in. Electric floor heating optional. Provision for radio, television and telephone points. Gas flues, air ducting cast-in. Refuse chutes cast-in. Bathroom/lavatory fitted traditionally post erection. Joinery of traditional type but pre-fabricated. Lift shafts designed to suit specific lift installations. Grade 1 sound insulation. Insulation 'U' value of 0.15.

Figure 93: Bison Wall Frame system specifications. Source: Wood, 1962.

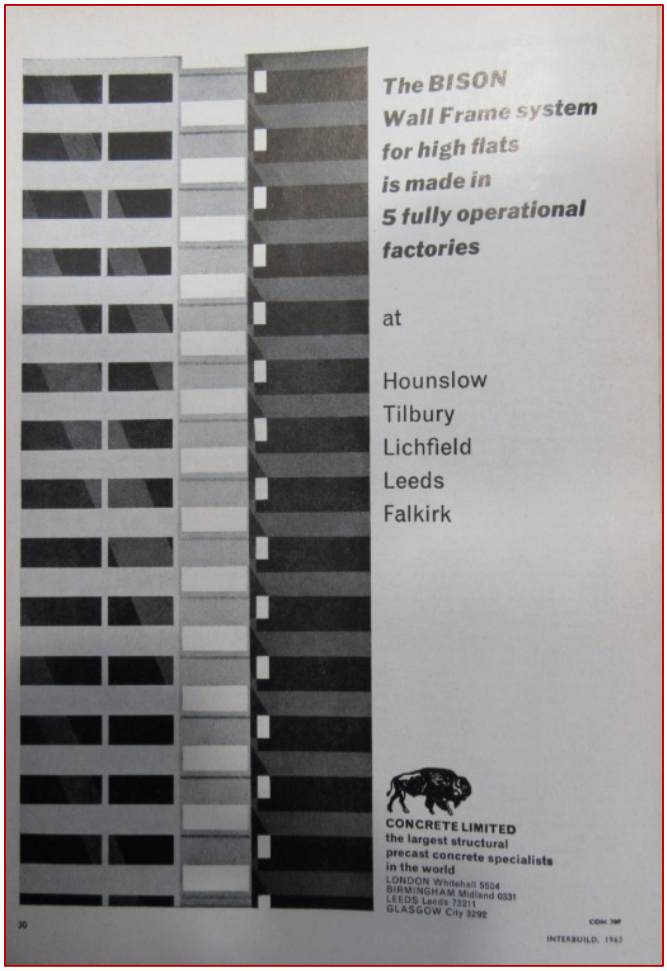


Figure 94: Advertisement illustrating manufacturing capability for Concrete Ltd's Bison Wall Frame system. Source: Interbuild (1963).

By 1962 Concrete Ltd was operating five factories producing the Bison Wall Frame system with the promise of up to two or three more, dependent upon demand. Existing facilities were economically located to best supply demand, with two in London, one in the Midlands, one in Leeds and one in Scotland. To justify the addition of further production facilities Concrete Ltd demanded a commitment of at least 500 new homes. Like Wimpey before them, Concrete Ltd was aware of the importance of marketing. Concerned that potential customers might be discouraged from committing to two companies, one that produced the system and another that built it, they stressed the supposedly seamless character of their regional partnerships suggesting that design, fabrication and erection would be carried out by one firm to ensure continuity. Certainly their partnerships brought other benefits, the company had a long history in the manufacture and supply of pre-cast concrete that demonstrated both experience and expertise and the partnership with significant local contractors allowed them to market their systems to an already-established local customer base.

Figure 95: Concrete Ltd was keen to stress the flexibility of the Bison system hence this publicity shot for a completed fire drill tower in Shoreditch, the components were produced at the Concrete factory in Hounslow and transported by road. Source: The Concrete Society.

In many cases this worked well because established local companies could leverage existing relationships and provide a recognisable face to the local authority whilst benefitting from Concrete Ltd's experience and investment in production. Between 1964 and 1974 Concrete Ltd constructed 31,668 flats in its Wall Frame system and three years after its introduction had already captured 20per cent of the high-rise market (Finnemore, 1989: 283).

6.6 Larsen Nielsen

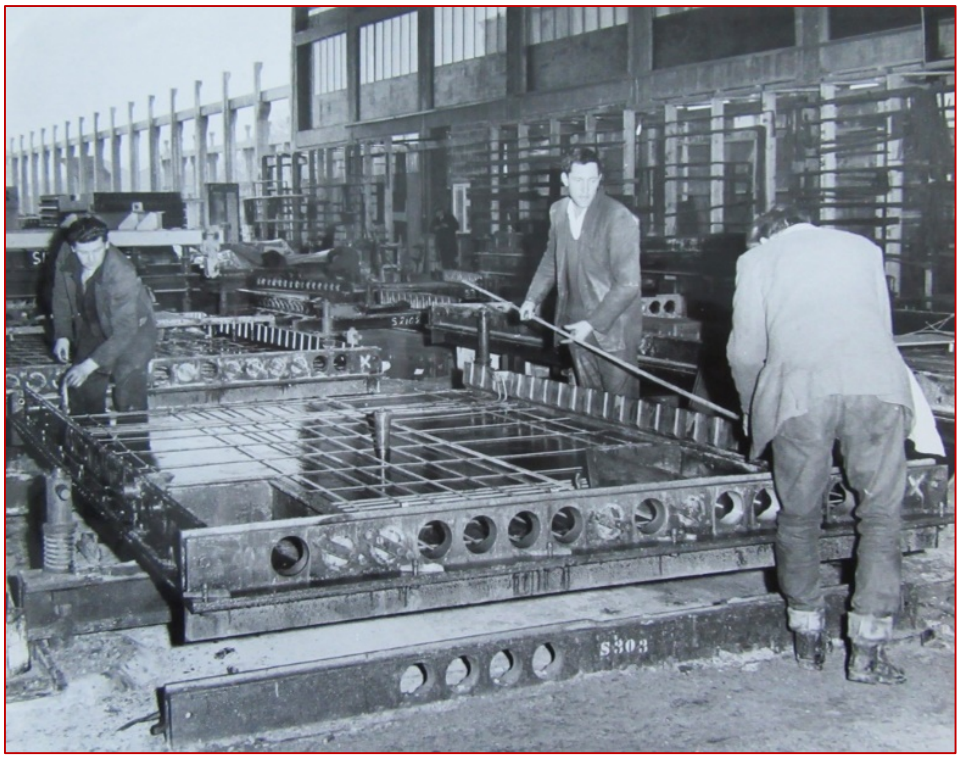


Figure 96: Re-enforcement being positioned in a mould at a Taylor Woodrow Anglian manufacturing facility. Source: The Concrete Society (1963).

In 1962 Larsen Nielsen publicised their capabilities in Denmark, where, operating from a dedicated component factory, they were able to produce 2,000 flats each year. Like many of the continental producers the company advocated a close collaboration between client, architect and engineer in order to benefit from their system and, like Camus in France, emphasised the need for detailed planning and the co-ordination of production and construction. Their system consisted of load-bearing cross-wall construction carrying floor slabs and facing panels, some of which would also be load-bearing, to ensure an even distribution of forces among the various components. Consisting of 18cm slabs incorporating hollow cylindrical cores for floor elements, a maximum width of 240cm and a length of 480cm was imposed due to transport limitations. Their wall elements were 15cm thick and unreinforced, with a notional height of 260cm with a 420cm length. Façade elements were of a 15cm thick concrete sandwich construction featuring a five to eight cm layer of either foam plastic or mineral wool insulation with an outer face of exposed aggregate. Expansion and contraction joints were provided between all adjoining components to minimise load forces and the resultant need for reinforcement. Overall the system incorporated five major components including façade elements, interior walls and partitions, floor units, stair-flights and landing slabs. Each of these would include electricity conduits, sleeving for hot water supply, television sockets and any other required feature.

Woodwork would also be factory-produced but with the exception of door and window frames would be installed on-site.

Figure 97: Promotional images of the finishing process for a moulded wall panel at a dedicated Taylor Woodrow Anglian manufacturing facility, these pictures highlight the difference between in-situ and factory production although the white coated supervisor may have been included to stress this variance. Source: The Concrete Society (1963).

Neither internal walls nor ceilings required plastering, having a smooth finish ready for paint or wall-paper covering. Construction could take place without scaffolding and the production cycle would be co-ordinated to ensure a steady flow between factory and work-site, where each floor, including

cross walls, partitions, glazed façades, stairs, landings and floor slabs would be completed before the next was commenced. The only major item of mechanised equipment required was a suitable size crane and the construction schedule enabled finishing to commence on the lower floors whilst construction continued above.

The system was well proven, with a 16-year track-record in its native country which convinced Taylor Woodrow Anglian to licence the system in England. This new company represented a merging of the Taylor Woodrow subsidiary, Myton, with the established pre-cast concrete specialists Anglian Building Products (Finnemore, 1989). They were able to modify the system sufficiently to accommodate local planning and building specifications and were also attracted by the ability to produce components in the less costly in-situ factory that also allowed greater flexibility of production. The LCC, under pressure to increase productivity in home construction, was an early adopter, considering it to be capable of making *'an effective contribution to the Housing effort of the LCC'* (Whittle, 1962: 129). The Council's first scheme would be the Morris Walk development in Greenwich, although they would by no means limit their support of System build to one developer. Although Taylor Woodrow Anglian reported that regular technical liaison took place with the Danish licence- holder they deemed the system straightforward enough to understand and modify. The apparent simplicity and flexibility of the system recommended itself to potential customers as a truly tried and tested system.

Figure 98: The Taylor Woodrow Anglian facility in Sunderland, said to be capable of producing six homes every 24 hours, the site covered 8 acres and cost £.5M to build and was equipped with six 10 ton gantry cranes. The manufacturing shop covered 38,000 sq ft with an adjacent 40,000 sq ft storage yard. (Sept 1965). Source: The Concrete Society (1963).

6.7 Camus

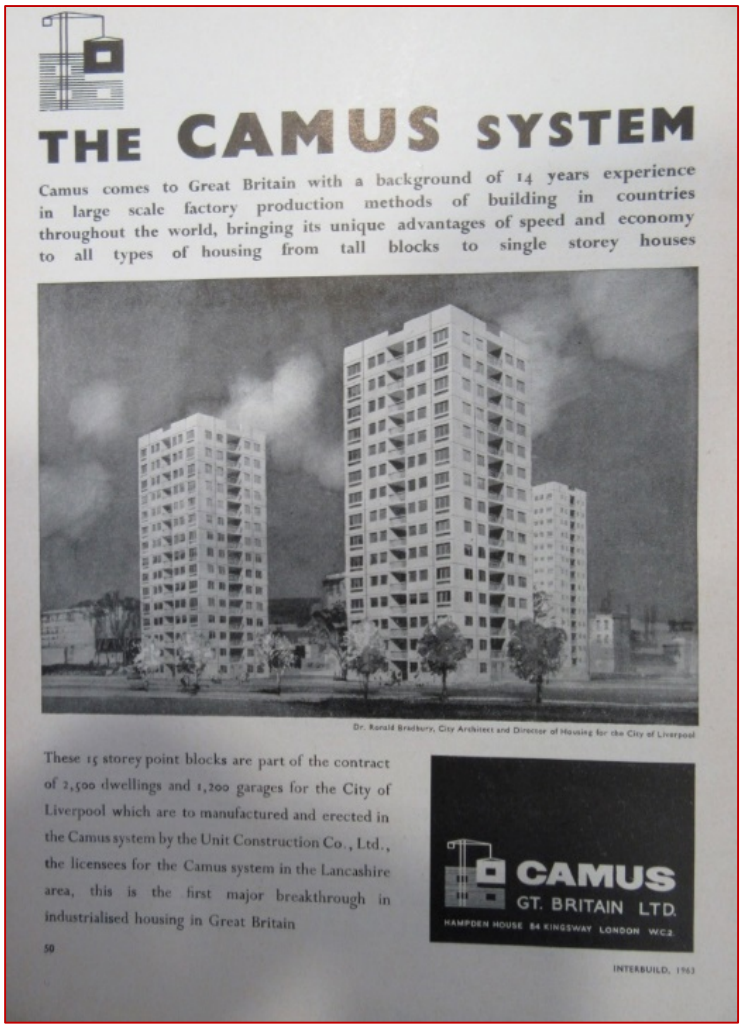


Figure 99: Advertisement for the Camus system, although operating as a subsidiary in the UK Camus used local partners for deployment as in this case with Unit Construction in Liverpool. Source: Interbuild (1963).

Unlike Wimpey, which had a long history in the industry, the Camus company emerged from the chaos of war and, capitalising on prevailing circumstances and opportunity, took a position at the forefront of the early prefabrication movement. France had already witnessed early attempts at System build producing from the 1930s the Mopin system that had been adopted for RAH Livett's Quarry Hill development in Leeds. In the aftermath of the War, Eugene Claudius-Petit as Minister of Reconstruction and Urbanism (MRU) announced in 1949 a campaign to build 20,000 new dwellings a year for twenty years (Bullock, 2009). Just as in Britain there was general agreement that *'the only way to achieve this was to transform the way that housing was built and that 'industrialisation' in one form or another was critical to doing so'* (Bullock, 2009: 59). Camus would go on to enjoy success in France but due to the entrepreneurial flair and pragmatism of their founder the company would also be recognised beyond European borders. In the early post-war period those tasked with 'the re-construction' in France would prove fierce advocates of Industrialised processes. Many had

witnessed how functional wartime buildings could be constructed quickly and easily to meet an urgent requirement and were confident that similar techniques could be harnessed to solve the domestic housing problem quickly and cost effectively (Solopova, 2019). Coincidently one of the sites to have suffered most under bombardment, Le Havre, would be one of the earliest sites to be developed. Plans saw Le Havre divided into a series of blocks with each allocated a required density of 750 pph. Born in Le Havre, Raymond Camus had gained experience at his father's small building firm that specialised in *'masonry, reinforced concrete, roofing, plumbing, and carpentry'* (Bullock, 2009) and later at his father-in-law's firm. Ironically it was Le Corbusier who had in the 1920s urged those designing houses to look at the example of Citroen (Bullock, 2009). Camus gained vital experience with the French car maker, where he assumed responsibility for workers' housing (1938-42) and this experience greatly influenced his views on production. He left Citroen, firmly of the opinion that all building components should be produced in a factory and assembly should be the only process completed on site. His views were echoed by officials at MRU who believed that a sufficiently large requirement might be fulfilled by purpose-built local factories that could take advantage of volume to reduce the need for skilled crafts and achieve a high degree of quality control (Bullock, 2009). By June 1948 Camus had developed his own system for pre-fabricated housing and registered his patent. His system centred upon construction utilising six panels consisting of four walls, a floor and ceiling to form a load-bearing dwelling. Tasked with rebuilding one of Le Havre's blocks, Camus moved into an ex-American storage warehouse to house his factory. Basic production facilities comprised a reinforced concrete casting table upon which casting panel moulds were positioned. Concrete pillars adjacent to the tables were used to support the completed panels for final curing. Opportunistically Camus would take advantage of the availability of a large number of abandoned military vehicles in Le Havre to transport these panels to site. Of the 20 workers employed in this rudimentary factory only 10 per cent were experienced builders. The first building on Lot 17 would take eight months to complete and result in a further three commissions. Later contracts for a further four buildings necessitated a move to a more advanced factory that this time benefitted from electric winches and bridge cranes. An early visitor reported '*we were enchanted by the industrial precision of the actions. It became clear that fabrication could be done in any season, everything else being but a matter of assembly'* (Dalloz, 2012: 117-120 cited in Solopva). This would be the key to Camus' success, producing panel-sized components to fine tolerances and therefore removing the reliance on finishing and erection skills. His next assignment would be a prestigious commission for the Supreme Headquarters Allied Powers Europe (SHAPE) for 163 apartments for American officers in Paris suburbs. It was this commission that would see a modification to the basic design of the system: by increasing the load-bearing function of the cross

walls, the façade no longer needed to retain this functionality and could instead incorporate more attractive designs. Comprising eight three-storey buildings, the site would be completed within 11 months, securing Camus a reputation for speed of construction. It resulted in a second commission for a further 280 apartments comprising four seven-storey buildings. Meanwhile construction continued in Le Havre, finally ending in 1953, at which time the factory was closed due to the lack of new contracts (Solopva, 2019: 159).

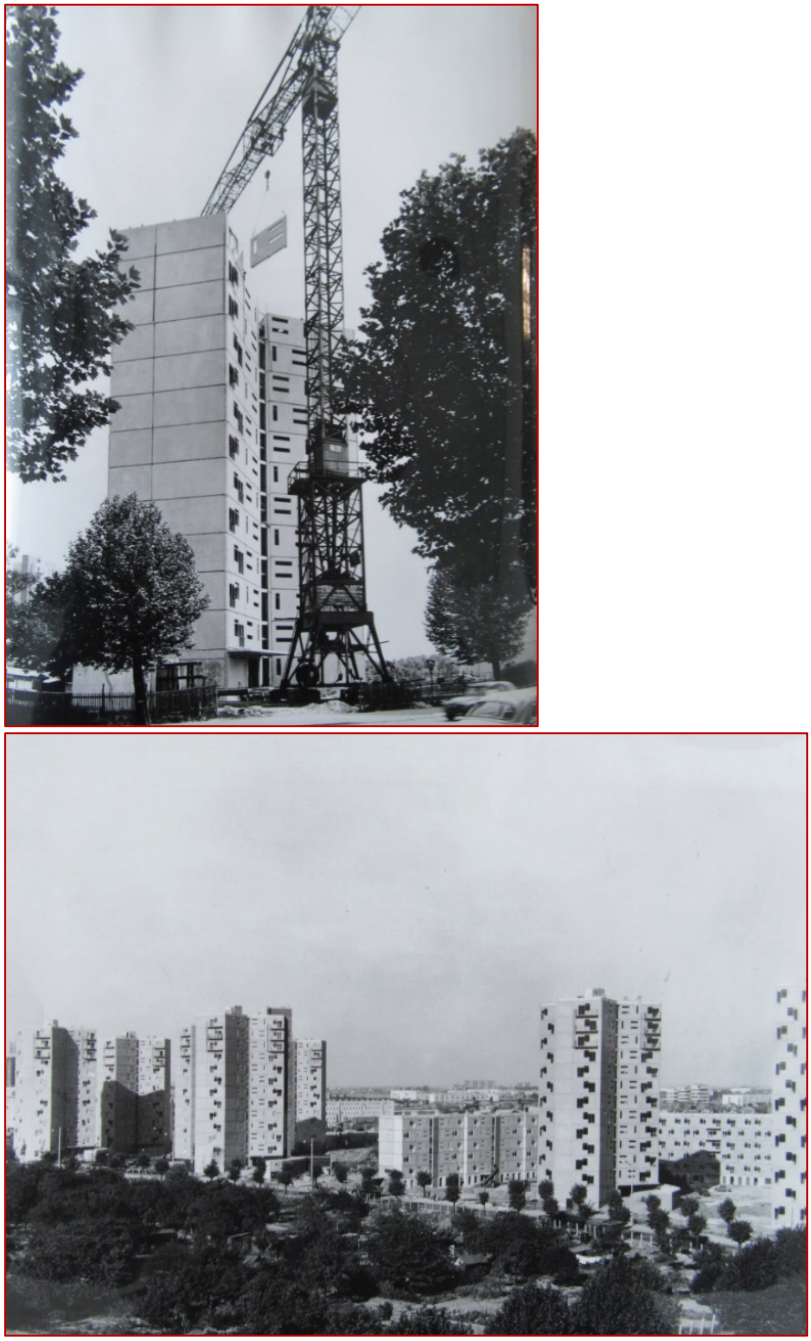


Figure 100: Publicity photographs for the Camus system showing construction and completed development at Cortillieres, Pantin on the outskirts of Paris. This development featured more adventurous glazing than usual. Source: The Concrete Society (1963).

The commencement of the 'Grand Ensembles' in Paris; a programme of high-density residential development saw Camus awarded three new commissions enabling the development of new highly-equipped factories designed to produce homes in industrial quantity (Solopva, 2019: 163). New commissions throughout France and the resultant difficulty in funding expansion led Camus into forging partnerships with local building companies. The growth in business allowed Camus to impose a strict operating model, only accepting projects of a size that allowed a constant production run, enabling a seamless flow from factory to site of dwellings constructed to a standard plan and located within close proximity to the production facility. Camus' model mirrored the automobile production that he had experienced at Citroen: *'the drawing office perfected the panel design, the lab tested the concrete elements, the factory manufactured the panels, specialist transporters delivered them to the construction site, and installers assembled the dwellings'* (Solopva, 2019: 163-4). Much of Camus' continued success was the ability to consistently deliver to budget and more rapidly than would have been possible with traditional methods (Bullock 2009: 64). That MRU selected an architectural team consisting of six architects to draw up plans for development in the Paris region also allowed Camus to benefit from external design expertise familiar with his system from previous contracts whilst maintaining the discipline of being able to manufacture standard units.

Figure 101: The Camus system manufacturing facility in Vienna. Source: The Concrete Society (1963).

Meanwhile Camus was perfecting his technique and output with successive factories; at Marienau he would use heated tables and a further commission to build 4,000 homes on the outskirts of Paris resulted in a factory capable of producing eight apartments a day.

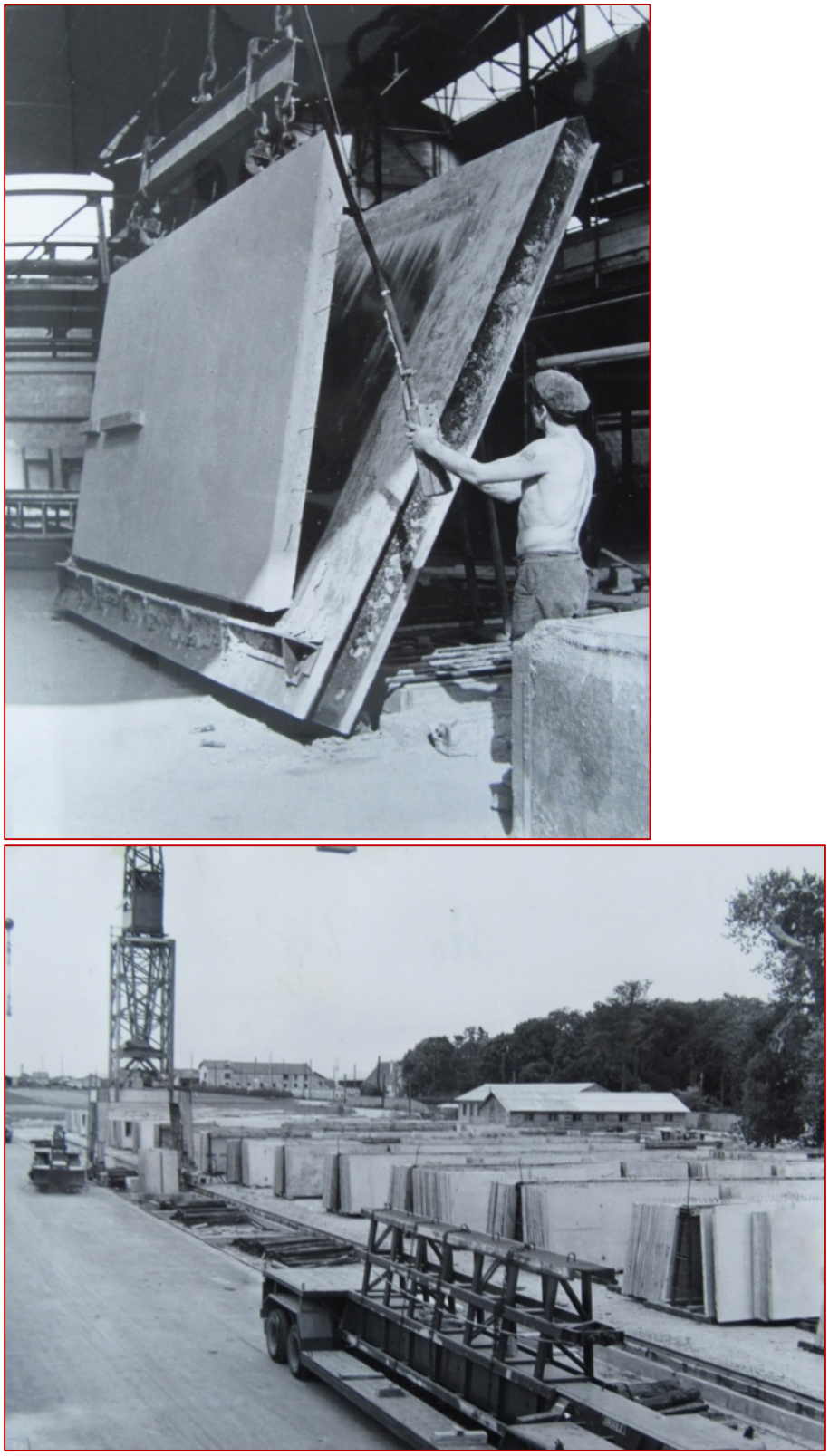


Figure 102: Camus system, panel being demounted and moved to storage yard pending transport to site. Source: The Concrete Society (1962).

This would utilise horizontal tables for façade panels and horizontal casting frames for wall and floor slabs. At the Montesson factory the whole process from delivery of raw materials, through mixing, batching, pouring and curing to eventual loading was studied and simplified (Bullock, 2009). Camus

would always be at pains to point out the time it would take to both build a factory, iron out any manufacturing issues and train a workforce. At the *Homes from the factory* conference he suggested this could take up to two years with no previous experience (Camus, 1962).

At Montesson the factory took six months to build and a further three months to 'bed in' after which could begin production of the 72,000 panels of 185 different types. The factory employed 165 unskilled workers and a further 20 drivers responsible for delivering the components sufficient to build eight dwellings each day.

Although 25 days production was reputed to be kept in storage to compensate for any unplanned disruption Camus would continue to experiment with direct assembly from the lorry to crane. Development of both the process and the system would continue, with attention being based upon panel construction, jointing and thermal insulation. By 1954 his system as well as others in France were attracting international attention.

Figure 103: Camus system facility in Tashkent, Russia. The system was adopted and adapted throughout the world. Source: The Concrete Society (1962).

A Russian delegation visiting Paris in 1955 would lead directly to a new commission in 1956 from Moscow that saw the licencing of the system in Russia and its further development for an earthquake-proof residential development in the city (Solopva, 2019). By 1957, a further agreement had been signed for the provision of construction equipment and expertise for prefabricated housing in the USSR. Following early overseas success Camus would actively pursue similar agreements and

contracts would follow in Germany, Austria, Czechoslovakia, Great Britain, Italy and Belgium. Although predominantly present in France where its projected annual out-put was in excess of 5,000 units per annum, the company had expanded into the colonies and the East with Algeria producing 1,350 per annum and Russia (state- owned but licenced) 6,500 units. By 1962, of the annual production of 15,000 dwellings 6,000 were from direct Camus subsidiaries and 9,000 were produced under licence. Overseas success would later witness contracts in Japan, Iraq, Syria, Zaire, Gabon, Taiwan and Bahrain, the success of which would result in the 1976 French Grand Prix de l'Exportation award to the company.

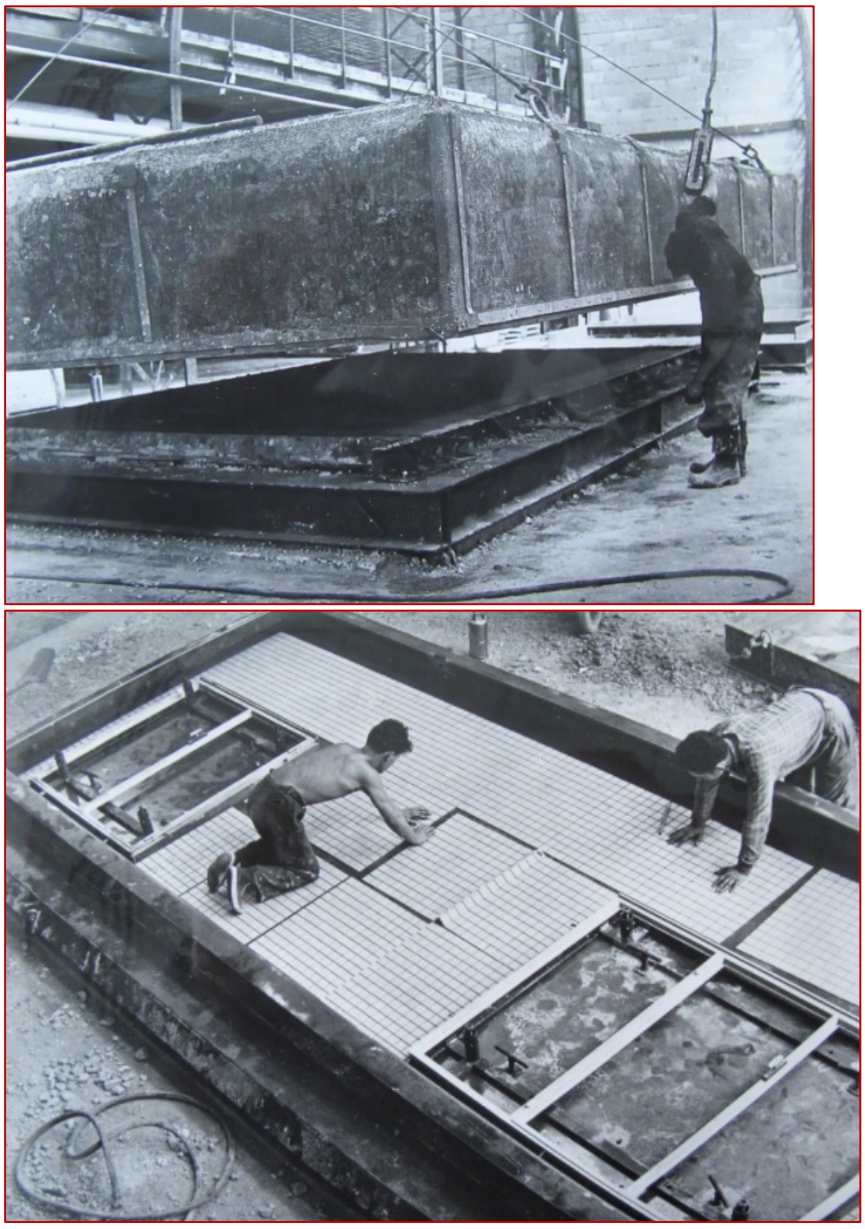


Figure 104: Camus system. An insulated steam cloche used to accelerate the curing process and mosaic tiling being installed for a façade in a window panel. Source: The Concrete Society (1962).

The Camus system whilst it shared many of the characteristics of other large panel systems was markedly different and arguably closer to the concept of a fully factory-produced system. Whilst

comprising the standard factory-produced large panel concrete units these fully incorporated thermal insulation, tiling, doors, window frames, supports and ductwork.

The system was designed to be transported to site, mounted one on the other and connected together. Typically, units were of room size and completed units consisted of 25 or more units.

Figure 105: Camus system. Wall panel with tiled façade being lowered into position. Source: The Concrete Society (1962).

Camus himself boasted that his system offered a number of benefits. He believed that with a higher proportion of in-factory work it was easier to co-ordinate, organise and supervise more effectively:

- Factory production based upon a permanent continued labour force rather than the traditional floating labour force of traditional or site construction
- Ability to sequence activities in factory production for greater efficiency and higher productivity
- The ability to eliminate the waiting time that occurs between traditional trades
- Disruption due to seasonal considerations such as poor weather
- Ability to optimise the use of materials and therefore have less waste
- Greater efficiency relating to use of plant/machinery optimised production
- Improved social conditions for the factory over the building site

Camus believed that the result was higher productivity and reduced cost with time to construct reduced by at least 50 per cent (Camus, 1962). In marketing his system at the *Housing from the factory* conference he followed the lead of the Minister and his Chief Architect by appealing to the public and private architects who might be in the audience. Whilst drawing comparisons with industries involved in the production of cars and domestic appliances Camus suggested that the consumer would be unwilling to accept a standard product like a car or a fridge. Instead his system could provide architects with a high degree of expression in presenting a range of plan types from single-storey, two-storey, three- to nine-storey slab blocks and twelve- to twenty-storey point blocks (Camus, 1962). Camus firmly believed that an acceptable range of plan types with '*the range of external finishes that are possible'* (Camus, 1962: 11) would provide the necessary aesthetic appeal whilst providing architectural cohesion and necessary economy. This would be a common dialogue with contractors seeming to offer freedom of architectural expression whilst steering customers to a limited range of preferred plan types and limiting customisation to a wide range of external finishes.

Similar to Concrete Ltd, Camus' operating model saw the firm most commonly forming a partnership with local contractors, an approach initially necessitated by financial considerations as demand had increased in France. When approaching the UK market, Camus set up a wholly-owned subsidiary, which might explain the reticence to engage on the part of some local authorities despite the enthusiasm of their in-house architects. Despite rejection in Birmingham, the company in partnership with Unit Construction would eventually enjoy greater success in Liverpool. Camus would however present his company's approach at the Cement and Concrete Society conference explaining that a central team was responsible for the development of factories and the system of production to ensure compliance with local building standards and regulations (Camus, 1962: 12). Continued research and development took place in Paris at the firm's *Centre de Recherche pour le developpement de l'industrialisation de la construction* that was financed by a levy from regional factories based upon their annual production. The laboratory reputedly not only concerned itself with improvements in construction but also the potential for further optimisation and efficiency within the process.

A slowdown in production in the early 1970s meant that only one factory was still in production in France, developments of the required volumes were no longer common and consequently the distance between factory and construction site was extending and proving more costly. Camus' death in 1980 marked the passing of an innovator in pre-fabrication. Utilising building experience with exposure to factory production at Citroen, Camus had successfully harnessed industrial production for housing and taken his product global.

6.8 System build Economics

The introduction of Industrialised building systems in England would, it was hoped, streamline an obsolete building industry by introducing new materials, improve quality, increase productivity (faster production with less skilled workforce) and eventually, based upon steady demand, deliver a lower cost. In 1961 the Building Research Station had clearly indicated the requirements necessary to make Industrialised building viable. The first was a need for a guaranteed volume *'this implies confidence in the market which must be maintained and a steady level by contracts of a reasonable size coming forward regularly'* (Bishop, 1962: 51). Experience abroad was used to stress this key requirement '*The big problem of most Continental producers has been to obtain continuity of work without relying on very large, long period contracts. Pre-cast concrete as a material can only be used economically if factories are kept in virtually full production year in and year out'* (Bishop, 1962: 62). The uncertainty relating to the likelihood of continuous high demand lay behind the initial reticence of contractors to accept government claims that demand would be consistent and great enough to justify their investment. Despite assurances at the time, Richard Crossman would later concede in his diaries that the fear that successive governments would fail to deliver on this promise was wholly justified (Crossman, 1975).

With appropriate demand assured, contractors without a system were faced with the challenge of either developing their own system or acquiring someone else's. Both would be costly but for those without existing expertise, acquisition of a proven system remained the only viable option and was most commonly achieved by licencing a tried and tested system from the continent. In practice, Scandinavian and French systems were widely adopted with new entrants obliged to invest both in the consultancy and training required to set up production and thereafter pay the licensee a commission to use it.

Figure 106: Coignet system. Advertisement highlighting the speed of construction possible using 'mechanised factory techniques'. Source: Interbuild (1963).

In addition to the cost and effort needed to either develop or licence a system, entry into the Industrialised building market required significant investment in the new equipment required for the casting, transportation and erection of factory-made panels. The purpose-built off-site factory would invariably consist of special motorised steel moulds that incorporated advanced heating elements capable of heating concrete to 80 degrees centigrade. These would both aid hardening and permit the components to be automatically removed once completed. Heating could be enabled by either electricity or steam and the motorised moulds, horizontal during the casting, would then pivot on their bases to allow vertical demounting following the initial hardening of the concrete. After approximately two hours the completed panels could be removed from the formwork by hydraulic lifts and transferred by gantry cranes to the curing area where further hardening and shrinkage could occur. The moulds or formwork would normally be machined within a tolerance of approximately 1mm with removable side walls to allow for the formation of different size panels. Although the formwork was designed to be adaptable to different sizes of panel, altering the formwork for new panels would delay production, add to the cost and introduce the potential for mistakes that could remove any potential advantage of mass production. This was especially valid when panels were designed to incorporate ductwork and services such as pipes and conduits for electricity. Describing the design of a typical factory for the Coignet System Edward Fougea explained at the *Houses from the factory* Conference that it would typically include:

- A central mixing plant, with silos for aggregates and cement, hoists, pneumatic transport, weight batchers, mixers, etc
- A control cabin for one operator who would automatically control all handling of material, the batching of concrete, its manufacture and its distribution to the moulds
- A storage area for storing the completed units, which is served by the same gantry cranes as the manufacturing area,
- A reinforcement workshop, where reinforcing steel is cut and bent
- Machinery for preparing the joinery, the polystyrene sheets, the tiles etc
- Power plant- heating, air compressors, electric transformers

(Fougea, 1962: 17)

Following production specially-constructed trailers were needed to transport components by lorry with tower and gantry cranes were be utilised to hoist components into place.

Figure 107: Gantry cranes being used in Sweden to move completed panels from curing to storage. Source: The Concrete Society, (1962).

At the time, Reema estimated that the investment required would be in the region of £150,000 to provide just the basic operation including cranes, casting equipment and transport capable of

providing 500 units per annum. As larger-scale production was often required representing a capacity of up to 2,000 units per annum the investment in machinery alone would be in excess of £3m (at today's value). Considering that Concrete Ltd had invested in five regional facilities with more promised gives not only some idea of the level of investment made but also that which any competitor faced if they wished to compete. The level of investment required to bring a system to market explains why many smaller operators favoured the smaller temporary in-situ facility. Factories therefore commonly consisted of varying specifications of equipment ranging from inexpensive timber and steel formwork to more advanced mobile pallets that could be moved on a conveyor system through the casting process to curing. The in-situ alternative was to set up small temporary facilities next to the building site equipped with cheaper and more basic equipment that was demountable. This represented a good compromise, especially for smaller sites because the equipment could be disassembled and moved to a new site relatively easily.

Figure 108: Patternmakers constructing formwork for the Cowley Concrete Co. Achieving the necessary tolerances in manufacturing was an early challenge and the reason why carpenters were often employed to construct formwork. Source: The Concrete Society (1952).

For more comprehensive pre-fabrication the industry faced a number of early challenges, not least in adopting acceptable levels of accuracy in the manufacturing process. Traditional building had never had to work to such close tolerances: *'we made our beams and slabs, stairs and other parts in the factory, and on coming to the building site with our elements we often found that a wall was a couple of inches further away than shown in the drawing or a little lower or higher'* (Gerholm, 1962: 33).

This experience illustrates the extent of the challenge facing sponsors of Industrialised systems, and suggests a high degree of investment was required to perfect the process. The BRS was also at pains

to stress the need for a high capital investment not just in technology but also in the dedication to the design, development and optimisation of the techniques, and expertise required. Whilst the BRS estimated this could take between 6-12 months (BRS 1962), more experienced continental players suggested in reality it could take anywhere up to two years to perfect a new process *'It takes at least two years from the start of production for a new factory to produce economically and to a satisfactory standard of quality. The labour force cannot then be laid off or disbanded without risking heavy future losses'*. (Camus, 1962: 10). With regard to the workforce, industrialised building altered the established dynamic: traditional building processes required a relatively small number of permanent employees who could move between sites to ensure high levels of utilisation. The use of sub-contractors, particularly in the finishing trades, was also similarly attractive for developers because they were paid only when they were working. In the industrialised model the workforce required to operate a factory needed to be employed full-time on production. If the volume requirement was not in place an inactive factory did not stop incurring costs. It was therefore crucial to ensure a steady flow of business to justify the investment and continued operation of the factory or risk significant losses.

Figure 109: Promotional image designed to illustrate the production rate of two flats per day. The seamless transition from manufacturing to construction was seen as crucial to ensuring efficiency and delivering cost savings. Source: The Concrete Society, (1963).

Continental sponsors underlined the need to adopt a standard factory production model of two units per day. This approach reflected the appreciation that the economics of System build required a smooth flow of units from factory to site with construction occurring contiguously with delivery to site. This obviated the requirement for double handling and storage, and the consequent risk of

damage to components. The favoured model stipulated that a two-flat-per-day production schedule necessarily required a site construction schedule of the same amount. Consequently, the design needed to reflect this requirement. Standardisation of components would make this all the more achievable with any variation adversely risking disruption to the production cycle and adding unwelcome cost. The extent of the challenge for the constructor was even recognised by the United Nations, which appreciated *'the special problems of applying industrial principles of production in building should, however, not be exaggerated and should not be allowed to excuse the use of obsolete techniques and out of date methods of planning and organisation'* (UN ECE, 1965: 5). Clearly Industrialised building required a different mind-set: *'these systems imply a much more systematic approach to planning, to control and supervision, particularly supervision of the production, the erection process and the installation of services'* (Bishop, 1962: 51). It reserved the most crucial advice for last, suggesting strongly that the greatest challenge to System building was the development of a new type of relationship between client, professional advisor and contractor, likely to be *'the most difficult and painful adaptation of all'* (Bishop, 1962: 51).

According to Muthesius and Glendinning (2017), Bison and Wimpey, the two most successful sponsors of System building, achieved their success by limiting their range *'in contrast to Reema, who stressed the diversity of their designs'* (Muthesius and Glendinning, 2017: 98). The trouble was that, in a competitive market, all vendors made extravagant claims that their systems could adapt to every requirement. What is probably a more accurate representation is that Wimpey and Bison were successful in limiting intervention and served up only minor cosmetic changes to their designs, and thus managed to maintain the integrity of their systems and production schedules and consequently limit additional production cost. Whilst both Wimpey and Bison could, to some extent, *'act as contractors for designs that were supplied to them by architects…. their principal activity was to produce 'packages', that is blocks designed and engineered by themselves'* (Muthesius and Glendinning, 2017: 92). What is less controversial is the assertion that these two sponsors very effectively *'turned their systems into strong brands'* (Muthesius and Glendinning, 2017: 98), they did so with a range of innovative marketing materials including promotional films, lavish brochures and invitations to demonstration sites, supported by generous hospitality.

A clearer picture of the types of manufacturing facilities operated by some of the major contractors was evident in the January 1966 edition of *Concrete and Constructional Engineering* in an article entitled 'Systems of Industrialised Building'. This concentrated on case studies from Wates, Reema, Taylor Woodrow Anglian and Camus. The study described a Wates site in Battersea for one 23-storey block and three 12-storey blocks as well as four- and five-storey low-rise blocks. In total the construction required 200 separate components including 60 types of floor slab, 50 types of wall

panel and 15 types of edge beam for the four- and five-storey blocks alone. The on-site casting facility covered 20,000 square feet, reputedly only two thirds of the normal size due to space restrictions, and incorporated adjustable steel moulds, hinged pallets, tilting moulds for mosaic-clad panels and steam boilers and electric blankets for curing. The production line extended 200ft and was partially protected from the elements by a mobile canopy that ran on rails the length of the production line. Polythene sheeting was utilised to further protect the machinery and workforce from the elements. A workforce numbering 20 was said to be capable of producing a weekly output of 160 components, equivalent to two-storeys of construction per week. The study of the Wates operation continued to report on the training of the unskilled workforce responsible for construction and described a training facility operated by the company in Mitcham, South London. Training consisted of three days of 'talks and demonstrations' followed up with a further day a week for a period of four weeks to cover 'advanced' construction tuition. The remaining time of this five-week programme incorporated working on various sites (CCE, 1966).

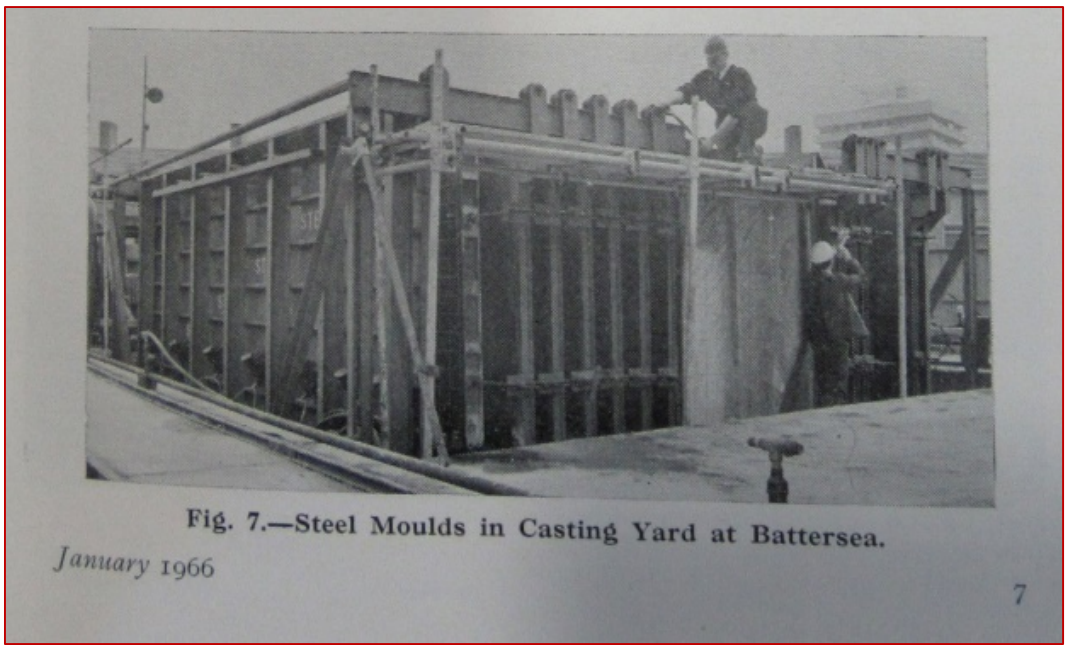


Fig. 7.—Steel Moulds in Casting Yard at Battersea.

January 1966 7

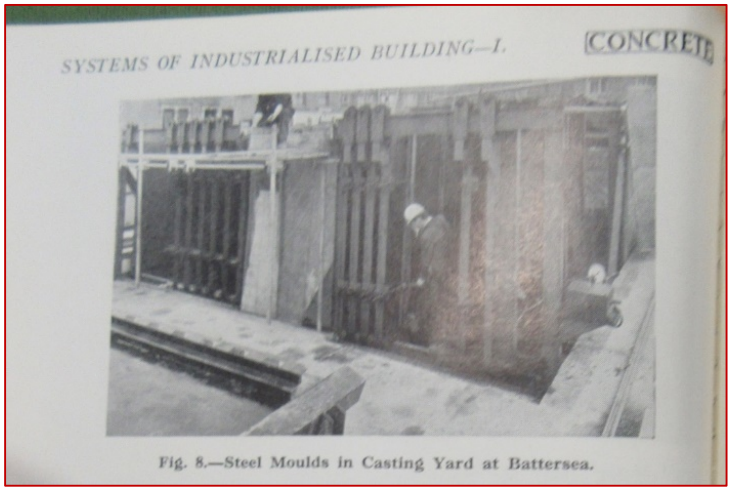


Figure 110: Early illustrations of in-situ casting in Battersea. The attraction of in-situ production was considered to be the lower cost to set up although quality and scale of production suffered when compared to the dedicated off-site facility. Source: Concrete Quarterly, (1966).

Reema, seen to be a pioneer of Industrialised building since 1947, presented a slightly more progressive picture when describing their development of a tall block in Portsmouth. The more complex panels such as wall panels and stairs were cast in a separate off-site factory with only simpler interior wall and floor panels cast in-situ in transportable battery moulds set up adjacent to each block. Production that incorporated removal, cleaning and re-filling moulds enabled completion of eight flats per week although the company stated that on-site production was strictly limited to sites large enough to warrant a full-time site engineer to oversee production. This would normally be a skilled craft-person with the company favouring carpenters for supervisory work due to their appreciation of dimensional accuracy (CCE, 1966).

Figure 111: The Taylor Woodrow Anglian facility at Lenwade. This manufacturing facility for the Larsen Nielsen system boasted a production capacity of 100,000 tons of panels per annum but was less advanced than the company's later facility in Sunderland. Source: The Concrete Society (1963).

Taylor Woodrow Anglian used their inclusion in the *Concrete and Constructional Engineering* article to describe their Morris Walk development, selected by the LCC as their first foray into System build construction and featuring seven ten-storey blocks and 47 low-rise three-storey units. Unlike the previous examples the Taylor Woodrow Anglian system was constructed entirely from components manufactured in a dedicated off-site factory, in this case, located at Lenwade in Norfolk. Dedicated trains consisting of 15 wagons carrying 90 individual components would make the journey on alternate nights from Norfolk to Charlton to enable the subsequent construction of four complete flats. Thereafter having transported the components by lorry to site a workforce of 15 working with an 85 tonne crane would on average complete construction of 11 complete flats per week. This method was much closer to the reported continental practice that featured dedicated factories and a consistent production mentality. To better support construction across the country the Norfolk facility was replicated, with similar facilities at Hounslow, Tilbury, Winsford, Lichfield, Liverpool, Leeds and Falkirk (CCE, 1966).

Continuing the discussion of dedicated factories, the Camus facility at Brimsdown in Enfield was described at some length and reflected the experience of the organisation in honing their production methods in France. The narrative also successfully communicated the advanced nature of production and the complexity and likely cost of the individual facilities. The Enfield factory consisted of six casting bays each with a further six casting tables. Concrete reinforcement was stored to the south side of the factory prior to installation on the tables and before the concrete was poured utilising an electrically-powered overhead travelling crane. Thereafter compressed air-powered poker vibrators would compact the concrete before the external finish could be applied and the panel could be cured. This was aided by an electrically-heated element contained in a cloche that was lowered above the casting table for periods of between two and three hours. Following curing these tables would be lifted to 70 degree angles and the panels removed and cleaned. The large-scale facility was mirrored by similar facilities in Liverpool, Glasgow and Brimsdown, the capacity of which was estimated at 1,500 units per annum and included a 92,000 square feet storage yard capable of accommodating three-months production. (CCE, 1966).

What the article and others like it made abundantly clear was that factory construction differed vastly from traditional construction. It not only required significant investment in advanced machinery but also the adoption of new methods and techniques. To make it cost-effective factory production needed to be seamlessly linked to construction to ensure consistent and steady factory and workforce utilisation. Production and construction needed to be consistent and sustainable over a period of many years to ensure efficiency and profitability. Whether the reported demand could be sustained to achieve this remained to be seen.

6.9 Case Study – LCC influence and Morris Walk, Woolwich

Early interest in System build centred upon the major cities facing large-scale re-development following war who shared a growing housing need with a continuing drive to eradicate the slum. The systems under consideration in London were either those available in Britain or some of the proven systems prevalent in Scandinavia and Central Europe. Adopting a pioneering role, the LCC was particularly influential, not least in providing an example and reference for System building, but also because of the tendency for ex-LCC architects to take their experience to either the Ministry or influential jobs in the provinces. In the late 50s and early to mid-60s Forshaw, Cleeve Barr and Whitfield Lewis would leave the LCC to take up important roles within the MHLG, whilst Ling would be appointed Chief Architect in Coventry, Jenkins in Hull, Maudsley in Birmingham and Bor in Liverpool. The LCC had experimented with System build from as early as 1947 with the Minerva Street project by Cubitts. Matthew would go on to propose a System build experiment with Laing for Picton Street, and by 1959 Bennett was experimenting with the Reema system utilising a standard LCC slab block maisonette design. By the early 1960s LCC experimentation had been replaced by a firm commitment to those British firms making use of continental systems (Finnemore, 1989). Finnemore (1989) suggests that the LCC commitment to System build was largely in response to the increasing pressure of greater housing targets coinciding with a diminishing workforce attracted away from public projects to more lucrative private development. Whilst true, this explanation is an over-simplification. LCC architects were responsive to a growing dialogue within the profession calling for the greater use of new technologies in building and were also motivated by Modernist ideas that celebrated a new way of solving housing problems. This in no way indicated a willingness to relinquish responsibility for design but instead a commitment to experiment with systems and assess the viability of the approach with new designs suited to the method. This would ensure the architect continued to play an important part in the design of homes whilst maximising the potential of new technologies and processes.

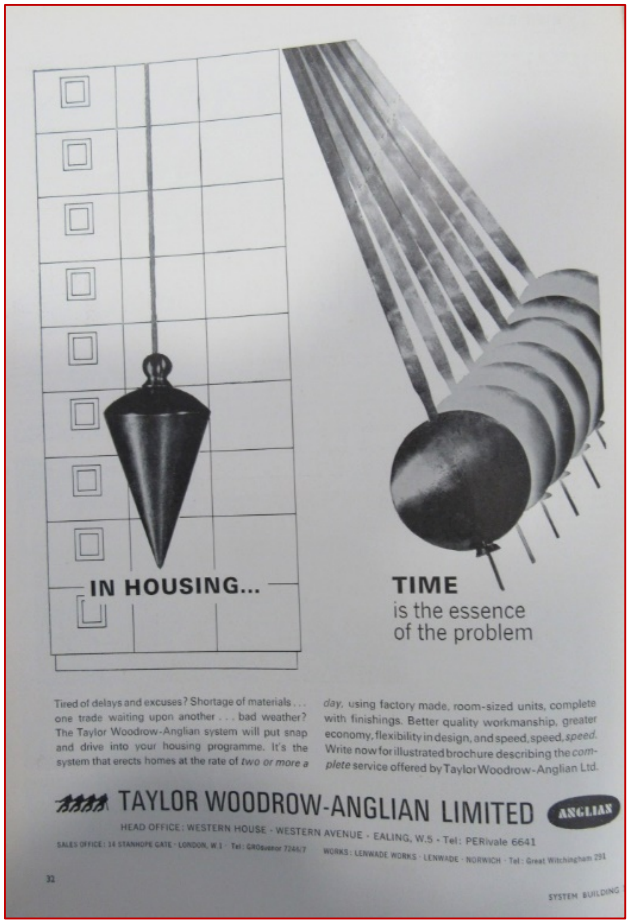


Figure 112: Taylor Woodrow Anglian elected to highlight the speed of production using their system (1965). Source: Interbuild 3.

Finnemore (1989) suggests that the adoption of the Larsen Nielsen system licenced to Taylor Woodrow Anglian was largely due to the perception of its ability to be adapted to standard LCC plans, however the truth of that claim is somewhat challenged by period reports. The LCC Architect's department clearly studied the available systems with a view to developing new designs that suited the system but at the same time met their requirements. At the Morris Walk development in Woolwich, the Department felt that the use of heavy concrete units *'offered the most promise'* despite the feeling that many of the housing schemes that they had visited abroad were '*architecturally disappointing and the layout monotonous'* (Whittle, 1962: 129). Comments by Jack Whittle, LCC Assistant Housing Architect, made at the *Housing from the factory* conference provide an illuminating insight into the perception of System build within the LCC at this time. Whittle describes the feeling that blocks initially designed for traditional construction had been adapted to suit System build as contractors delighted in claiming that they could adapt any traditional design to their system rather than promoting a *'recognisable architectural expression, which should develop from a rational use of the method by the architect'* (Whittle, 1962: 130).

Figure 113: Aerial view of completed LCC Morris Walk mixed-development using the Larsen Nielsen system by Taylor Woodrow Anglian. Source: The Concrete Society (1964).

Whilst the Morris Walk development in Woolwich was selected for the LCC's first Taylor Woodrow Anglian site it reportedly presented some unique problems. The LCC intention to make use of mobile cranes rather than fixed tower cranes imposed a height limit of 100 feet. However they believed that System build and in this case the Larsen and Nielsen system could provide an opportunity to develop *'a recognisable architectural expression'* (Whittle, 1962: 130). To familiarise themselves with the system the LCC sent a group of architects to the Copenhagen office of Larsen and Nielsen to study its production and assembly techniques. Refuting the contractor's claim that their system could accommodate existing LCC standard plans, the architects were quickly convinced that their existing design plans would not *'lend themselves to the rational interpretation of the Industrialised form'* (Whittle, 1962: 130). In particular, the ubiquitous four-storey block with balcony access and private internal stairs was considered unsuitable for early factory production. Focussing first on production and assembly, LCC architects were convinced that the optimum production of at least two units per day should be adopted as a rule. This would allow the economics of Industrialised building to be achieved by providing a smooth uninterrupted flow of completed units directly from the factory to site for immediate integration using a conveyor system.

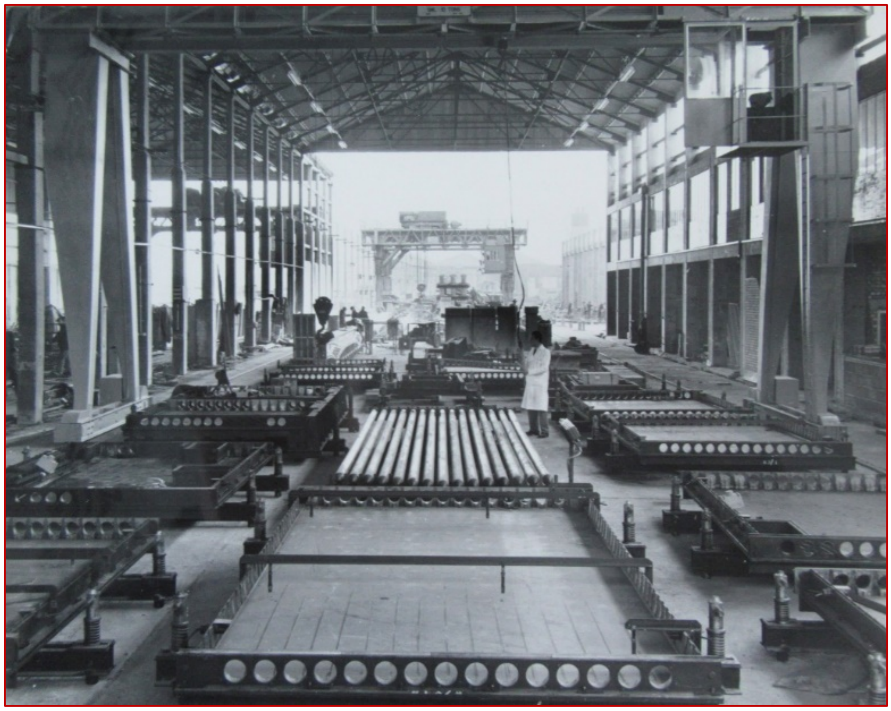


Figure 114: Promotional image of the Taylor Woodrow Anglian dedicated factory at Lenwade near Norwich. This was the factory responsible for the manufacture of the panels required for the Morris Walk Development. The dedicated facility contrasts markedly with the in-situ temporary facilities used by others. Source: The Concrete Society (1963).

To accommodate this a production schedule of at least two dwellings per day needed to be supported by a design that incorporated multiples of two units per floor. As the most economic production run of units was considered to be in the region of 500 the team recognised that the sites chosen for Industrialised production would need to be able to support this number and consequently the variety of design types would be constrained by this requirement. The decision to favour the less costly and more flexible mobile crane in preference to the tower crane for economic reasons could also impose some constraints on the possible designs. The conclusion was that the site chosen in Woolwich would prove a less than ideal site for System build but would nevertheless allow LCC Architects to test their theories and develop a design that recognised the constraints of the building system whilst maximising its potential benefits

Figure 115: The Taylor Woodrow Anglian development at Morris Walk nearing completion. These promotional images illustrate the aggregate-faced panels of the ten-storey blocks and the LCC intention to retain mature foliage and adapt the development to the landscape. Source: The Concrete Society (1964).

Height restrictions precluded the adoption of the very tall slab block, at the time a favourite of many European developments, in favour of two types of building that would provide more variety to the development. LCC policy to provide a lift for all buildings of four-storeys and above resulted in the selection of ten- and three-storey blocks for the proposed development. The commitment to adhere to a two unit per day production required a construction model that needed to be accommodated by the design, in this case ten-storey point blocks. The final design requirement was specified by the Housing Manager who stipulated the mix of accommodation types.

Type	No of rooms	Overall percentage
Elderly	1	10per cent
	2	10per cent
Standard	2	10per cent
	3 and 4	65per cent
	5	5per cent

Figure 116: Composition of accommodation, Morris Walk. Source: Whittle, (1963).

The LCC architects charged with formulating the design were George Bailey, Martin Richardson and Ronald Parker, who came up with an 'exploded' point block plan of four dwellings per floor. Their design incorporated two wings that would be connected by a separate service tower incorporating a central lift, stairways, refuse chutes, drying rooms and short access bridge. Each wing therefore recognised the requirement to comply with a two-unit production/assembly per day. It was decided that this 'exploded' wing model would not only provide the necessary repetition suited to Industrialised production but would also offer the potential to incorporate a range of plan styles. Each day's production would produce two living rooms, two kitchens, two bathrooms, two WCs, four bedrooms and two store cupboards. This provided the flexibility to offer either a one-bedroom bedsitter and five-room flat, a two-room and four-room flat or two three-room flats for each wing of the building.

Figure 117: A promotional image of a suitably pristine completed Morris Walk development utilising the Larsen Nielson system adopted by Taylor Woodrow Anglian and in this image featuring both low and high-rise development. Source: The Concrete Society (1964).

The entire structure was designed around two spans, one of 12ft 6in and a second of 18ft which represented the maximum economic span of the 7inch floor unit. The design incorporated one standard bathroom for all types of flat with two types of kitchen depending upon the size of the flat. The three-storey designs also adopted a similar 'exploded' wing approach but utilised an independent staircase. An example of the flexibility of the design demonstrated by this approach was evident by the two variations available within the three- storey blocks. This consisted of the two standard units per wing either in the form of a single room bedsitter together with a four-room flat, or one three-room and one four-room flat, the variation achievable by moving one room from one element to the other. This flexibility reputedly surpassed initial expectations and allowed the housing manager's pre-requisites to be achieved whilst not compromising the self-imposed stipulations required to achieve the most economic production. In practical terms the larger flats and old people's flats were always located on the first two floors to permit easier access for larger families with small children and older less mobile tenants. Consideration was also given to possible disruption caused by noise so the designs allowed living rooms to be located at the opposite ends of units to bedsitting rooms. The extent of thought that went into the designs certainly allowed a number of key pre-requisites to be achieved, most notably:

- *The most economic two-unit production and assembly model was achieved*
- *The overall design proved eminently flexible by utilising the two-unit element for the whole scheme that could be incorporated at any height*
- *The service tower, by remaining independent, could be considered separately and didn't therefore compromise flat design and resulted in an overall simplified design.*
- *The design allowed the service core to be constructed separately and in this case before the dwellings, which provided the additional benefit that relatively complex lift installations could be completed at the same time as the flats.*

(Whittle, 1962: 132)

In reviewing the experience of the Morris Walk development, Whittle also discussed at length the site layout and how its complexities were handled by the final design. He stressed that the selection of the Morris Walk site was not due to any imagined suitability for Industrialised building processes but because it was the first site available. It certainly posed some challenges, being both varied in contour and terrain and divided by a railway line. The need to incorporate up to 500 units in standard blocks around a site that was irregular in topography presented some challenges. The LCC architects were therefore challenged to be imaginative in the layout (Whittle, 1962: 133). It was decided to group tall blocks around an existing mound that allowed mature trees to be incorporated into the

overall layout to provide a seamless link to existing parkland. The three-storey units were then arranged in rows running parallel with the contours in a series of terraces. Pedestrian access was provided to the side of the blocks and vehicular access enabled by short spur roads running off peripheral roads. The layout allowed for semi-private squares between buildings and a large central square providing a focal point for the estate. In addition, the contours of the landscape allowed for the development to benefit from largely-concealed external garaging that was situated under the blocks (Whittle, 1962).

Figure 118: The completed Morris Walk development featuring seven 10-storey blocks and 47 three-storey blocks, ready for occupation by Christmas 1964 having been started the previous March. Source: The Concrete Society (1964).

LCC Architects also experimented with the external treatments, keen to ensure strict cost discipline whilst focussing on the structural requirements of the panel, the positioning of joints and adherence to building regulations concerning the spread of flame from one block to another. Overall there were four basic panel sizes with the largest being 9ft x 18ft, with variations caused by different window openings increasing this to 17 different types of panel although this did not affect the overall number of moulds required. Consideration was also given to external panel treatment with colour, texture and weathering being investigated. By their own admission the Morris Walk development led the Architect's department to learn a number of valuable lessons not least the need for architects and contractors to collaborate from an early stage in order to fully achieve the potential of the system. Only through this close collaboration could architects acquaint themselves with a system and apply

their designs, to take into account any limitations or potential benefits a system might offer whilst adhering to the discipline of industrial production.

Figure 119: Promotional image showing specially-adapted wagons carrying completed panels for the Morris Walk development. Much was made of the production schedule for manufacture and subsequent construction, so timely delivery was essential and in this case the twice weekly train journey from the Lenwade factory to London. Source: The Concrete Society (1963).

This chapter has provided an in-depth overview of many of the leading systems available in the UK and presented the approach that vendors took on entering the market. It has demonstrated how the 'Housing from the factory' conference proved a key event in the history of system build by convincing attendees that it was both a viable commercial proposition and one that local authorities should include in their building programmes. Research has demonstrated how significant continental experience was in influencing the form of adoption and providing a blueprint for successful implementation. An review of the main vendors has allowed a better understanding of the specific features and benefits claimed by contractors in this period. The case study of the LCC's first foray into system building has allowed an assessment of the practicalities of implementation, provided an overview of the economics of system build production but also provided an insight into the frailty of many of the claims made by contractors. This chapter has also shown how the acceptance of system build promoted adoption of high-rise flats as the method was viewed as ideally suited to this form of housing. Conveniently this perception co-existed with the need for local authorities to find solutions to high density housing provision in urban areas and therefore presented it as an ideal solution to inner city development challenges.

The next chapter will feature a case study of Birmingham and its experience of the high-flat. Despite initial reluctance the city would go on to build over 460 high flats (Dunleavy, 1981). Birmingham will provide a particularly pertinent example of the development of the high-rise flat in the major cities. It will commence with the emergence of the high-flat as a standalone feature of Manzoni era development before becoming an important component of the first City Architect's preferred mixed development estates. The emergence of ever taller blocks and the adoption of system build in the city will contrast the differing priorities of an earlier design led ethos with and a later production led approach.

Development in Birmingham

7

7.0 Development in Birmingham

Much has been written about the re-development of London, commencing with Abercrombie and Forshaw's County of London plan (1944) and the emergence of the LCC Architect's department as the country's foremost architectural practice in terms of size and volume of work in the post-war years (Bullock, 1994; Garside, 1979; Larkham and Adams, 2011). The period when housing fell under the responsibility of the valuer and then the transfer of responsibility for housing to the Chief Architect has been discussed widely (Day, 1988; Bullock, 1994). What occurred in London was enabled by the need to replace war time damage and existing slum accommodation coupled with a huge rise in the numbers of people requiring accommodation. A similar situation prevailed, albeit to a lesser extent in Birmingham and, investigating to what extent the responses to these issues were similar and the responses to the issue can inform how architecture and housing developed more widely across the country. The emergence and adoption by the Corporation of the high flat as an intrinsic part of their post-war housing drive may seem surprising in the light of earlier pronouncements. From as early as 1884 Joseph Chamberlain had celebrated Birmingham's aversion to the flat when proudly proclaiming '*No we have no flats and no cellars'* (BPP HC, 1884: 443). The Birmingham Gazette in 1930 attempted to explain Birmingham's reluctance to embrace flat living when it reported *'There is a prejudice against flats and it is not confined to any one class'* (Birmingham Gazette, 1930). How the high flat became a core component of Birmingham's response to the housing shortage can inform our understanding of its early acceptance and the way that architects viewed its inclusion. It can also explain the conditions under which it was accepted as a viable component of housing provision and how these conditions changed over time. Consideration of the flat as a viable form of accommodation had many influences and a study of Birmingham's adoption provides a useful counterpoint to its development in the capital.

7.1 Birmingham and the flat

The longstanding aversion to the flat in Birmingham was a very real phenomenon. Unlike other cities who experimented with working class flats, Birmingham politicians steadfastly rejected any proposals to experiment with working class flat provision for many years. In the nineteenth century Birmingham housed its workforce in small, self-contained houses (Sutcliffe, 1974). The highest densities occurred in the central areas populated by the infamous Birmingham 'back to backs'. Fifty thousand of these had been built between 1780 and 1876 before the Corporation finally outlawed their construction (Sutcliffe, 1974) and up to a third of Birmingham's population were housed in these properties until the Corporations 'filtering up' policy witnessed the migration of the better paid artisans to the newly developed suburbs.

Figure 120: Mothers and children congregating in yard adjacent to Birmingham back-to-backs. Source: The Birmingham Mail.

Nevertheless, the 'back to backs' continued to play an important role in housing the lower paid working classes at high densities in close proximity to their places of work. Sutcliffe suggests that by the turn of the century what had previously been a relatively efficient form of housing had transformed into slums (Sutcliffe, 1974). Having accepted that the 'back to backs' represented a form of housing *'detrimental to health, morals and education'* (Sutcliffe, 1974: 182) the Corporation finally accepted responsibility for their demolition and replacement. In order to achieve comparative high-densities it was widely considered that the flat offered the only realistic alternative. Not only did it achieve the aim of retaining the requisite number of workers close to their place of work it promised to achieve this at a cost likely to be agreeable to the Corporation (Sutcliffe, 1974). However, efforts dating from Joseph Chamberlain's 1875 Birmingham Improvement Scheme would witness attempts at introducing flats into the house building equation falter. It was not until 1898 that the first scheme featuring four terraces of two storey tenements in Milk Street in Digbeth finally received approval. But flat development would prove a limited experiment, instead the Council continued to favour suburban development rather than central area demolition and rebuilding. Constrained by the potential expenditure required to replace the slums, in 1902 the Housing Committee under JS Nettlefold utilised the *Housing of the Working Classes Act* (1890) to introduce a policy that became known as 'slum patching' (Chinn, 1999). Nettleford would prove influential in Birmingham's formative town planning and his thoughts were recorded in *Slum Reform and Town planning: the garden city idea applied to existing cities and their suburbs* (1910) and Practical Town Plannng (1914).

Hereafter, improvement prevailed over potentially more costly replacement with many reluctant landlords effecting repairs rather than risk the Corporation intervention. Rather than assume direct responsibility the majority of councillors believed that private enterprise would provide the solution to Birmingham's slum problem. This proved optimistic, the limited development that did take place included a further two experiments in flat provision in 1903. Completed by Homes Ltd, the first in Palmer Street, although comprising low rent, low amenity flats proved difficult to tenant. The second in Hospital Street offered better standards of accommodation but was not considered successful enough to repeat. Faced with replacement homes at higher rents it seemed that tenants preferred to either remain or find accommodation in the three room 'back to backs' that were widely available at significantly lower rents.

Figure 121: Back-to-back houses in Central Ward. Source: Bournville Village Trust, 1941.

After World War I the focus remained on suburban development and a focus of attention on Cadbury's Bournville development saw no change in the condition of the central area slums. When the Bournville Village Trust published their report '*When we build again'* in 1941 they would refer to an earlier 1913 Civic investigation that had found 50,000 homes unfit for habitation. Conscious of the need for action despite delegations to Liverpool to experience at first hand their flat developments in central high-density areas the Corporation remained sceptical about flat development for Birmingham. Throughout the 1920's, despite a Government initiative to finance municipal housing, Birmingham remained slow to embrace the opportunity to eradicate the slums. The potential to

eradicate the problem with suburban development was recognised to be an issue when in 1925 the Public Works Committee recognised both the reluctance and difficulty of relocating low paid workers to the suburbs. Meanwhile successive efforts to introduce flats as a viable alternative to the 'back to backs' continued to be thwarted. It wouldn't be until 1927 that the Garrison Road flats would be completed, 180 flats in three blocks. Initial enthusiasm quickly made way for criticism as the flats poor space, lack of communal facilities, high rents and the deterioration of the surrounding area surfaced. The result was that the flats had to be let at a loss which did nothing to promote the policy or enthusiasm for further flat development (Sutcliffe, 1974). Further refurbishment work would be favoured over demolition as Birmingham accepted that those currently housed in the central areas had no inclination or ability to move to the suburbs and needed to be housed locally.

Figure 122: Birmingham's first Council flats at Garrison Lane in Small Heath. Source: Municipaldreams.wordpress.com.

A changing attitude to flat living in Birmingham was occasioned by the development of luxury blocks of private flats most especially in Edgebaston and Moseley (Sutcliffe, 1974). That middle class homeowners were willing to sacrifice space in favour of location resonated within the Council and prompted a re-evaluation of the flat in many councillors' minds (Sutcliffe, 1974). The result was a gradual acceptance that flat living might be acceptable for the working classes if it also incorporated community facilities such as shops, nurseries and social amenities. The *Housing Act* (1930) encouraged slum clearance and despite Birmingham's seeming preference for refurbishment and out of town development, the subsidy for flat building gradually convinced an increasing number that flat provision might be acceptable. Nevertheless, despite proposals to builds flats, the Council compromised with the construction of maisonettes on clearance sites in the central area and it would not be until 1935 that the Council agreed to build 240 flats on a five acre site in Emily Street. The resulting St Martin's flats proved just as unpopular as previous projects (Sutcliffe, 1974) but it seemed the die had been cast and Birmingham's final acceptance of the flat was in no way reduced by the arrival of the new City Engineer, Herbert Manzoni appointed in 1935.

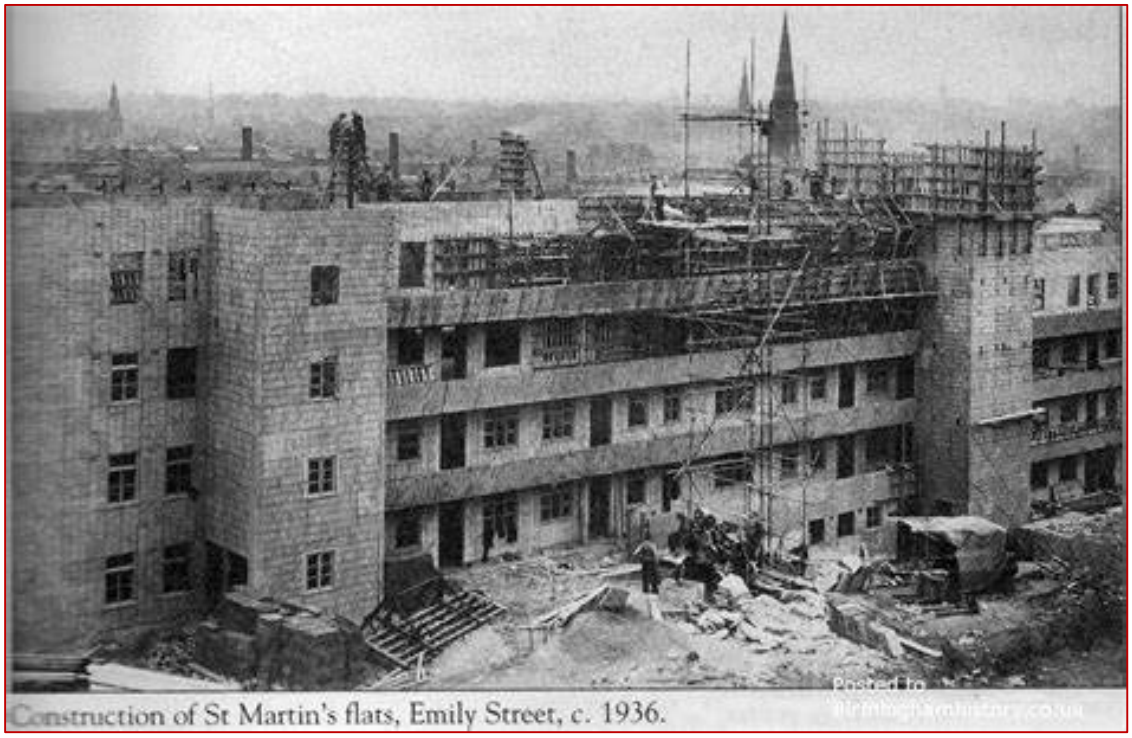


Figure 123: Construction of St Martin's flats (1936). Source: Birminghamhistory.co.uk.

Recognising the specific issues relating to planning in Birmingham, as early as 1935, the Bournville Trust had commenced research that would inform their report on post-war planning. In the absence of a Corporation sponsored plan the objectives of what would become *'When we build again'* was to assess prevailing housing conditions, review the effect of post 1919 development policy and taking these findings into account suggest directions that future policy might take. Acknowledging both the 1931 Census and the Reports of Birmingham's Medical Officer of Health, the report published in 1941 incorporated extensive sample surveys and painted a vivid picture of the challenge that lay ahead. Whilst including the results of some 7,000 interviews, the report acknowledged it represented a mere 1 in 35 working class homes in a city that covered a total area of some 1,100 square miles including industrial sites and open space. The report stated that '*so far the war had made little impact*' (BVT, 1941) but *'enforced demolition'* (BVT, 1941: 3) together with a long term plan for reconstruction would be required to tackle the major issue; the eradication of the slum. The 'back-to-backs' had continued to play an important role in accommodating the lower paid working classes in close proximity to their employment. The general acceptance that the 'back-to-backs' were *'detrimental to health, morals and education'* (Sutcliffe, 1974: 182) eventually resulted in the Corporation accepting responsibility for their demolition and replacement. The Trust reported the dire conditions, in total 200,000 people were housed in 43,366 dwellings, a large proportion of which were 3 room 'back to backs', of these 42,020 homes had no water supply, no sinks and no drains, 58,128 had no WC, having instead to rely upon a communal water closet in a central court (BVT, 1941).

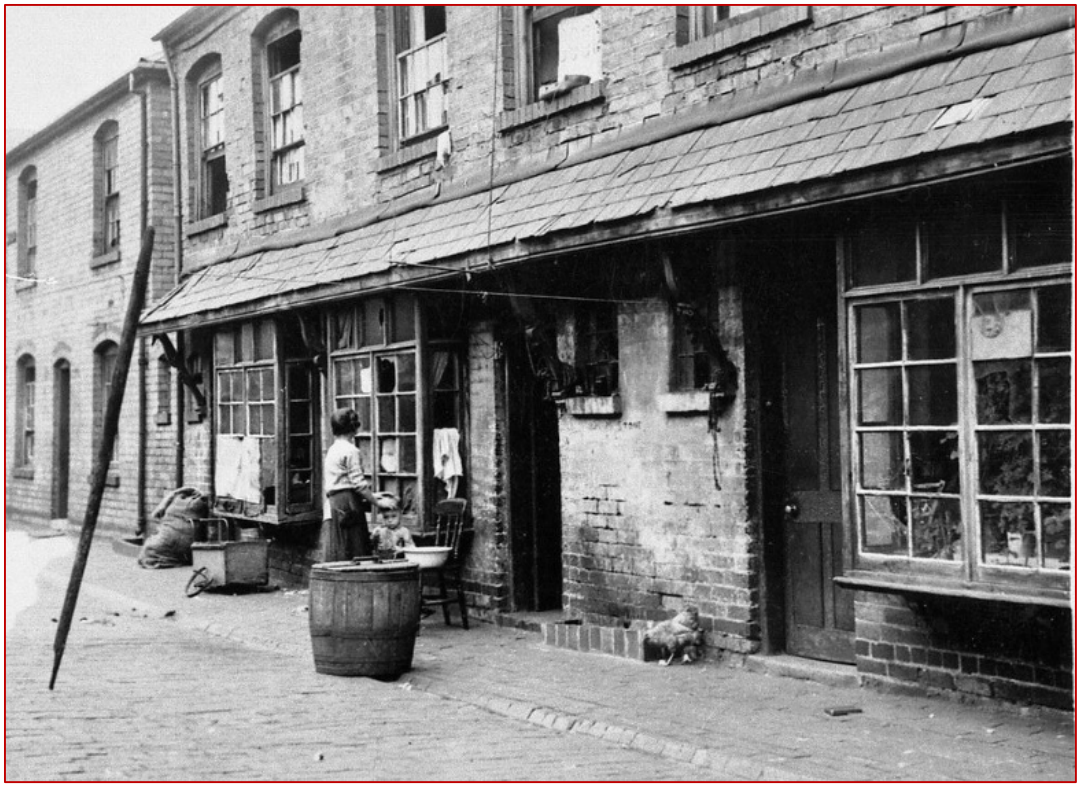


Figure 124: Birmingham back-to-backs. Source: Birmingham Mail.

When we build again described at some length the ubiquitous 'back-to-backs'. At the time, numbering some 38,000 they represented the smallest type of workers housing commonly referred to as a two up one down and omnipresent in the central wards and middle ring. These consisted of an entrance into a kitchen / living room with a vaulted cellar below and narrow stairs to first floor bedroom and attic room. Built in a double row, with one facing the street and, another facing a courtyard used for drying, washing and housing a WC and wash house, they were largely a product of speculative builders. The fact that back-to-backs provided net housing of 60 houses per acre representing a density of 200 and in 1941 collectively housed between 100,000 to 150,000 people would represent a significant challenge when seeking to maintain communities and rehousing of a population close to their place of work.

Figure 125: Tunnel-back housing of Birmingham's Middle Ring. Source: Bournville Village Trust 1941.

Another common type of Birmingham house, the tunnel back was developed to provide a minimum air space on at least two sides of the building and could largely be found within the middle ring. Representing a density of between 20-30 houses per acre the tunnel backs were largely inhabited by the artisan and *'black coated'* worker (BVT, 1941: 36) as opposed to the unskilled in the back to backs.

Figure 126: Allen's Cross municipal estate in the Outer Ring. Source: Bournville Village Trust.

In response to the popularity of the Garden City movement that had encouraged the development of smaller houses and cottages, the universal plan was developed around the turn of the nineteenth century. Built in pairs or blocks of four or six without consideration of aspect, they proliferated throughout the country. Built in Birmingham in the Outer Ring and *'dressed up in a variety of external treatments'*, the Bournville Trust saw them as *'ostentatious additions that serve merely to justify higher rents'* (BVT, 1941: 39). Described as '*disturbing restless vulgarity'*, the Trust contrasted these common types with the work of the Council that '*are superior in planning and architectural treatment'* and provided *'good substantial homes'* (BVT, 1941: 40).

Having critiqued Birmingham's range of working class housing and highlighted its failings, the Trust set out to recommend the type and volume of housing required in the future and the challenges the city might face in replacing high-density central area accommodation. Recognising that an extension of boundaries would provide the opportunity to develop satellite towns up to thirty miles from the centre of Birmingham the Trust accepted a continuing need to provide high-density accommodation in the Central Areas. For practical reasons, workers needed to live in close proximity to their work and, discounting large scale movement of industry to the suburbs, a percentage would still need to be housed centrally. The Report suggested that Central Area density approached 120 ppa with a total population of around 190,000, only 60,000 of which could ultimately be moved out to the satellite towns. This would mean that replacement housing would need to be built at a density of at least 80 ppa. Accepting that the Garden City standard of 12 homes per acre would only represent 43 ppa, the Report concluded that the required densities could only be practically achieved *'in large blocks of flats'*. In a major and prescient departure for Birmingham, the Trust suggested that 80 ppa could be comfortably attained in 10-storey blocks (BVT, 1941: 116). Whilst accepting the preference for houses it concluded *'Despite preferences, which our research indicates lean towards the individual home, the plain truth of the matter is this: there is no solution for our 130,000 people in the inner wards without a considerable transfer from small house to modern flat'* (BVT, 1941: 116). Although it did accept that for diversity maisonettes and terraces could be interspersed *'for a minority'* (BVT, 1941: 116). The Trust were keen to point out that the 'flat' is no synonym for *'tenement….. flats, can be justified only if they provide communal advantages and economies: central heating, constant hot water, playgrounds, creches and lifts'* (BVT, 1941: 117). Conscious of a deep seated aversion to the flat in Birmingham, the Trust advised caution '*Before the large block of flats, designed and built for working people, can provide the answer for the overcrowded central cores of all great cities, large scale experiment is essential'* (BVT, 1941: 117).

Whilst championing the desirability of the neighbourhood unit, a common prescription championed by Abercrombie in the London County Plan (1944), the Trust was reluctant to be prescriptive on the

type of flat that it might incorporate. Calculations to achieve high-density central area accommodation were based solely upon a notional ten-storey *'We mentioned ten because the figure we quoted had been worked out on this basis. It may well be that some other number would be preferable and any uniform standard would be undesirable. The answer: actually, depends on the equation of constructional costs, amenities, convenience, land values, and the provision of large open spaces'* (BVT, 1941: 117). The solutions illustrated in 'When we build again' would be first explored by City Engineer and Head of the Public Works Department Herbert Manzoni who would experiment with flats in the immediate post-war years but it would not be until the appointment of the City's first Chief Architect that the strategy would be fully developed.

7.2 Manzoni – post-war initiatives

For Housing the first priority for the Council after the war centred largely upon the provision of temporary homes, the improvement of existing stock and the planning of the municipal estates. Large scale new building programmes would be at the mercy of a shortage of both materials and labour. As City Engineer and Surveyor Herbert Manzoni was tasked with the challenge of re-construction and whilst planning took place, attention focussed on the improvement of municipal stock. Some 42,000 dwellings were improved in the twenty years from 1947 (Cherry, 1994) when a Central Areas Management Committee was set up to oversee a maintenance programme pending redevelopment (Chinn, 1999). The aim was to improve existing dwellings dependent upon their anticipated life expectancy. Short life properties (up to five years) were provided with a water supply and were brought up to the minimum public health standard; intermediate properties with a projected lifespan of five to ten years were more extensively repaired and those over 10 years were comprehensively reconditioned (Cherry, 1994). This policy of improvement, widely known as 'soling and heeling', could not be extended indefinitely and, by 1950, the extent of the properties deemed unfit for habitation resulted in the clearing of the 'back to backs' around Great Francis Street and Bloomsbury Street (Chinn, 1999). The need for more focussed attention to both eradicate the slums and meet Birmingham's growing housing challenge was recognised. Initially the responsibility of the Public Works Committee, a new House Building Committee, was inaugurated in 1950 under Alderman Burman to address the problem.

Figure 127: Sir Herbert Manzoni, Birmingham City Engineer. Source: Birmingham Mail.

Conscious of the widespread criticism of the inter-war estates with their lack of facilities and architectural diversity, the Corporation had been converted to the Abercrombie and Bournville Trust's vision of the desirability of the neighbourhood unit (Sutcliffe and Smith, 1974: 428). Priorities remained wedded to the principle of low residential density, only grudgingly, accepting the need to maintain high densities in central areas something they believed could only realistically be achieved by adopting the *When We Build Again* recommendation to build flats. Support for flatted accommodation also came from the Birmingham and Five Counties Architectural Association, when responding to a request to develop a plan for the Shard End Estates advocated flats that could increase *'architectural variety'* (Sutcliffe and Smith, 1974: 428).

The task of the new Housing Committee was two-fold, with a seemingly insurmountable pressure to identify and acquire more land for housing as well as find more economical and efficient ways to build. At its inauguration the Committee requested that Manzoni brief them on the current state of housing. He would report that between 1st April 1945 and 24 August 1950 Birmingham had built 4,898 permanent homes, provided 4,625 temporary homes, completed 436 flat conversions and 48 house refurbishments (HBC, 7 Sep 1950). For 1950, subject to Ministry approval and resource allocation the Committee targeted 4,587 and it was suggested that the first 1,000 units should incorporate new homes built using non-traditional methods on the recommendation of the Standing Joint Housing Conference (HBC, 7 Sept 1950). The challenge of identifying and acquiring land and

finding more economical methods of building would be a continuing challenge for the next 25 years, and would be further exacerbated by a struggle to recruit enough building firms to meet its aggressive targets. Whilst a post-war shortage of materials certainly did not help, labour shortages were an even greater challenge in a city dominated by industry that could offer employees consistency of tenure immune from the risks of poor weather in winter time. For building firms keen to capitalise upon the opportunity, the economic challenge of working for the public sector could also present difficulties. This was exemplified by a Corporation that was largely dependent upon seven large contractors and would consistently struggle to augment this number. Conscious of the difficulty, the Housing Committee continued to explore opportunities that might increase the number of contracted building firms. Consequently, some of their more onerous terms were relaxed and they courted and developed relationships with a number of smaller firms able to augment production by utilising traditional construction methods on smaller sites. Minutes would record Manzoni lamenting the disappointing response from tenders leading to the Committee agreeing to adopt revised schemes of sureties and retention in order to make Council work more attractive. Still a lack of response persisted and added to the Committee's frustrations: *'small builders are not being attracted by small contracts… larger contracts are attracting those builders already engaged*' (HBC, 15 Jun 1950). The shortage of willing and able building firms was further exacerbated by a continuing shortage of materials that remained constrained until 1954 and continuing difficulty recruiting labour. The consequence was that non-traditional construction that enjoyed less reliance upon traditional materials and was commonly dependent upon largely migratory workforces became increasingly more enticing.

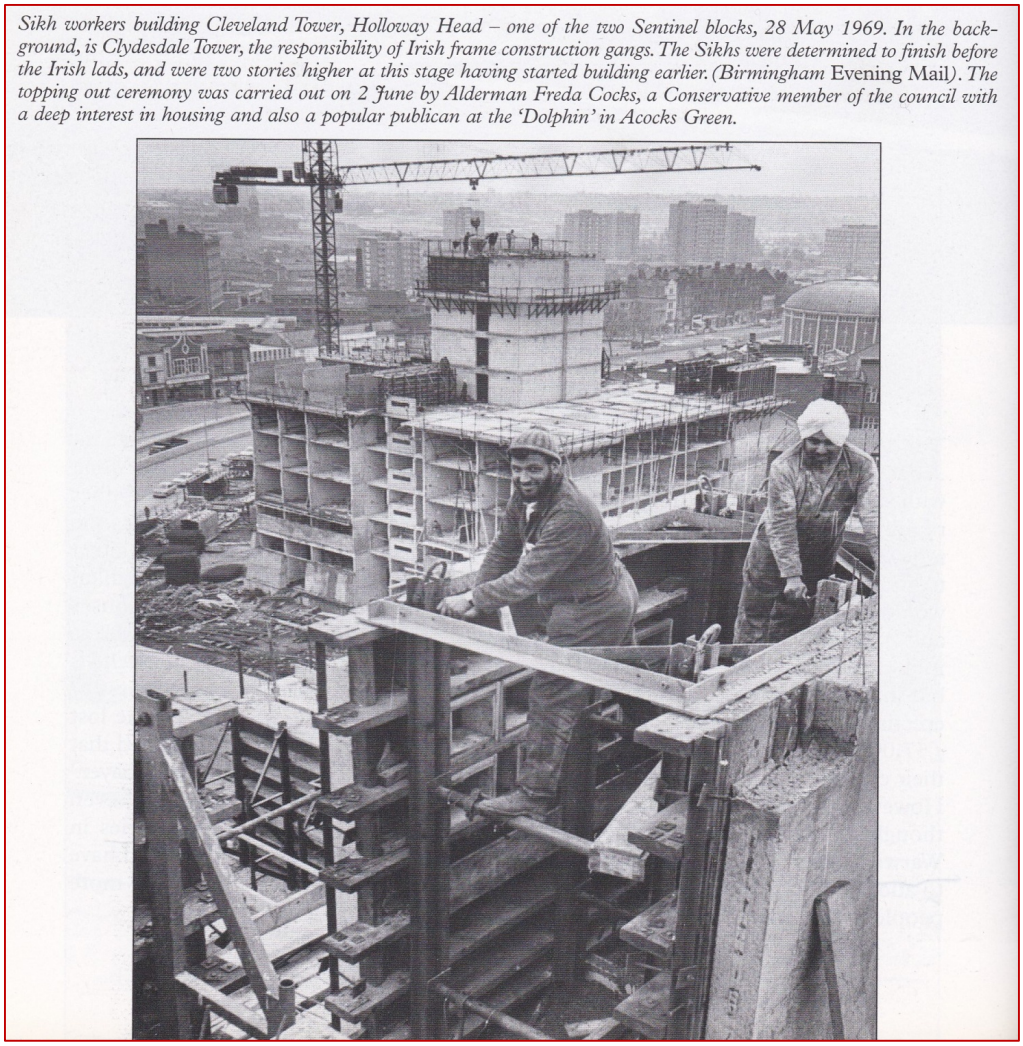


Figure 128: Much of Birmingham's post-war redevelopment was completed by immigrant labour. This illustration in the Birmingham Evening Mail describes the competition between Irish and Sikh workers to be the first to complete one of two identical towers. Source: Birmingham Evening Mail.

A shortage of builders, labour and materials was by no means the only challenge, and land acquisition remained a major headache. The Committee estimated that over a ten-year period it would lead to a deficiency of 56,933 dwellings that would leave 187,000 people without homes. Faced with a growing housing list and a shortage of land the Committee resolved to double housing densities. The increase in targeted densities was reflected Manzoni's Report for 1950 that continued to specify houses but, also incorporated three storey flats and maisonettes as an effort to achieve higher densities (HBC, 15 June 1950). The continuing shortage of materials and the apparent disinterest of small builders meant that the larger firms held sway and in the most part these relied upon non-traditional building methods. Particularly active in this period were Laing with their Easiform system, Wimpey with No-fines, Wates and the Smiths Building system. Birmingham's apparent willingness to embrace non-traditional construction was by no means ideological but motivated at this time entirely by necessity. Although widely encouraged by Central Government, Birmingham regarded non-traditional construction as the only way out of its predicament, the fact

that it was less reliant upon material shortage and promised a faster implementation and potential longer term lower cost were incidental benefits. In order to cater for the agreed higher densities on both existing and new estates flats of six storeys were proposed with the ideal configuration being two bedroom flats to cater for those with grown up families. New flats of this type were earmarked for Warple Rd, Quinton, Turves Green, Hawksley Farm, Wychbury Rd, Bartley Green, Garretts Green, Ward End Hall. Each Wates flat would comprise a living room, dining kitchen, two double bedrooms, a bathroom with separate WC and a private balcony, and was equipped with central heating and served by a six-person lift (HBC, 5 Oct 1950).

By 1951 in a continuing quest to raise densities on Council developments the Housing Committee agreed to include a proportion of new three and six-storey flats to an already approved standard plan form on all estates built using non-traditional construction. Consequently, Wimpey provided costs for six-storey blocks of 90 flats each that would go on to proliferate on estates during the Manzoni period as well as three-storey walk-up units with two flats per floor that conformed to design standards set out by the Ministry. The Wimpey blocks featured their own standard adaptation of the No-fines system featuring a reinforced concrete frame with a 'No-fines' clothing. Columns and beams were cast with a stringer beam encircling each floor and finished with a No-fines twelve-inch cladding with four-inches of coverage to beams. The flats were rendered in an aggregate finish and were said to represent a 50 per cent saving in labour/time for the fabric of the building (HBC, 1 Feb 1951).

Birmingham's interest in the potential of the flat to deliver higher densities coincided with discussions relating to the appointment of a dedicated City Architect. Helpfully Manzoni took advantage of a number of visits to other cities during this period to ostensibly learn more about their treatment of flats but also gain a greater insight into public sector architectural trends. As someone who attended some architectural training himself he would have been more than aware of the constraints of his wide brief and his visits to London may have convinced him of the benefits of relinquishing control of design. The new role would require someone capable of keeping up with the latest trends, to avoid Birmingham falling behind other cities. Nevertheless, in reporting back to Committee he used his visits to strengthen his own position by markedly reporting his own views concerning prevailing housing trends. Although ostensibly visiting to discuss heating in flats, on 8th January 1951 Manzoni and his senior architect Harkness visited the LCC but reported back more widely on prevailing LCC flat policy. Reflecting the Abercrombie and Forshaw mixed-development model policy of the time was very much compatible with the prevailing Bournville Trust recommendations of 1941. Reporting back, Manzoni described the economic benefits of progressive three, five and seven-storey flats that London was building and contrasted this with the relative lack

of progress Birmingham had made in articulating a coherent development policy. Manzoni reported that experience in London had proved four storeys uneconomic due to the prevailing requirement to incorporate lifts for flats of four-storeys and above. The Committee also learned that blocks featuring superimposed maisonettes were acceptable and whilst five-storey blocks were still popular, six-storey did not work economically when built with load bearing walls and frame construction. Consequently, the LCC alleviated this by building to seven-storeys. Manzoni's visit and his reported findings highlighted to the Housing Committee just how backward Birmingham was with prevailing trends in flat design and the most economical way to implement them. Having met with two architects from the LCC Architect's Department Manzoni reported that the prevailing principle with London flats seemed to be '*the higher the better*' (HBC 16 Jan 1951). Manzoni's report of his visit to the LCC would provide the necessary motivation to justify the Committee's policy of embracing multi-storey development. Learning that the prevailing maximum height in London was eleven-storeys and of the LCC intention to build higher provided all the encouragement the Committee needed to follow suit. For Manzoni though, the relative complexity of achieving high-density with tall blocks could not be underestimated. He learnt that above six-storeys light provision was of critical importance and could affect layout necessitating the wider spacing of blocks and the alternation of high and low buildings. In addition, above eight-storeys wind pressure became a consideration leading to the LCC preference for 'Point' blocks rather than 'Slab' blocks. On a more practical level the fact that Manzoni felt it necessary to report that the LCC favoured eight-person lifts as optimum for both people and moving furniture in high blocks further highlighted Birmingham's relative naivety concerning the implementation of high blocks.

Just days after his visit to the LCC, Manzoni was on his way to Leeds to meet up with its well-known City Architect RAH Livett, subsequently reporting to Committee that Leeds already had some 500 flats ranging from between five to eleven-storeys. As well as confirming other local authorities' adoption of high blocks these visits must have emphasised to Manzoni that Birmingham was falling behind in developing strategies and methods of implementing public housing at high-densities.

Figure 129: Recently completed block at Great Francis St, Birmingham, contrasting with remaining adjacent retail premises. Source: The Phyllis Nicklin Collection.

Keen to make up lost ground, Birmingham's early experience with high-rise would clearly demonstrate that Manzoni was experimenting in order to define a strategy for the City. The prestigious privately-designed blocks of 264 flats in Great Francis Street, Duddeston and Nechells, designed by SN Cooke rather than in-house City Council staff, would be the first examples of highly specified advanced design for public housing in Birmingham. Featuring a steel frame, brick facing and equipped with the latest Garchey waste disposal system they were in sharp contrast to early contractor-built examples. Jones (2005) suggests the Duddeston flats were an effort by Manzoni to win over those still reluctant to embrace the flat. The experience might have softened attitudes to the flat but did nothing to recommend the high specification private architect designed examples. Their construction would be subject to regular amendment as the contractor sought to increase contract pricing due to unforeseen expenses including piling and installation of the waste disposal system. The first block would take two years to complete with the completion extending to up to three years three months for subsequent blocks (HBC, 19 Apr 1951). They were constructed by Messrs Whitall for a total cost of £591,654 and would contrast heavily with contemporary standard offerings from large contractors in the City such as Wimpey and Wates. The Duddeston and Nechells flats would highlight the relative costs of engaging private architects in order to improve on standard contractor offerings. Commissioned at prevailing RIBA rates the cost to the Council was 2.75per cent less consultant fees with a further 3 per cent more for internal layout, and proved a salutary lesson

into the relative costs of using private versus in-house or contractor's own design staff. The superiority and finish of the blocks was hardly in doubt and, whilst commentators would subsequently criticise the over provision of stairwells, the economics of designing and building high quality bespoke units was clear to see. They would be the first and the last of this type that would be built under Manzoni's stewardship and would contrast starkly with the type of flats that would go on to characterise flat architecture during his tenure.

In contrast for future flat development Manzoni would favour the altogether less grand, contractor designed and built blocks from Wimpey. The new six storey no-fines blocks would proliferate on mainly suburban estates including Ley Hill, Egghill Lane, Wychall Farm, Welshhouse Farm, Holybank Farm, Ward End Hall and the Bath Row development (Jones, 2005: 313). This trend would, as Jones has discussed represent something of a departure from normal flat building practice. Birmingham were alone in selecting flats for suburban estates in contrast to the more common practice of limiting their implementation to largely urban sites. For Manzoni the attraction was compelling, it enabled the achievement of a 'modest increase in population density….combined with a freeing up of ground space that would otherwise be used for gardens' (Jones, 2005: 314).

The standard Wimpey blocks that sprang up on suburban estates did so quickly and at substantially lower cost than their counterparts in Duddeston. Featuring only partial central heating with a drying room per floor, the resultant cost comparison was a clear indication for the cost conscious Committee of the way forward.

Location	Duddeston and Nechells		Tile Cross, Wimpey	
	2 bedroom	1 bedroom	2 bedroom	1 bedroom
All in cost March 1951	£3,217	£2,416,15s	£2,417,6s,8d	£1,714,6s,8d

Figure 130: Comparative costs, Duddeston/Tile Cross. Source: HBC, (1951).

Encouraged by Manzoni's visits and keen to learn more about multi-storey flat development for themselves, the Committee expressed their desire to see LCC developments at first hand and, on 2 April 1951, Manzoni received confirmation from Cyril Walker of the LCC of the Housing Committee's visit to see examples of three, four, five and eight-storey LCC flats on 16 April. The Committee planned to spend a further day with the LCC to study standard plan forms of flats. Whilst proving educational the visit would further highlight the differences between the first and second cities' approach to defining its building strategy.

Figure 131: Completed six-storey Wimpey Y-shaped blocks. Source: BirminghamLive/Phyllis Nicklin.

Under continuing pressure to build, the 1952 Housing programme saw a target of 4,260 dwellings for the year consisting of 3,502 on suburban estates and 758 in re-development areas and sites devoted to flats. At this stage a large proportion of development still utilised traditional techniques but Wimpey were increasingly making in-roads into the high flat programme with their No-fines based systems. Meanwhile the Committee were frustrated that the bulk of their development was being handled by just four main contractors severely limiting the potential for greater expansion. The year 1952 would see a renewed focus on flat construction with a consequent rise in storey height and a greater proliferation of flat building. Both four- and 12-storey traditional blocks were earmarked for the Aston Reservoir site, three-, six- and eight-storey traditional blocks at Ward End Hall and standard Wimpey blocks of three- and six-storey No-fines at Bath Row and the Duddeston and Nechells Areas 1 and 2 sites. The benefit to the Committee of the non-traditional schemes quickly became apparent at the Cranes Park Estate where Wimpey blocks comprising 126 flats were forecast to be completed within just 13 months and four dwellings a week were handed over after just six months. To a Committee handicapped by material and labour shortages and dependent upon just a small number of building firms and an ever increasing waiting list the potential of non-traditional construction was clearly evident. Wimpey had clearly demonstrated an ability to deliver and the prospect of losing an already established and available work force undoubtedly influenced Manzoni to convince the Committee to authorise a decision to award further work to the company at Tile Cross. Manzoni would encouragingly report that '*work on the other contracts let to this firm in the Shard End area is very satisfactory and so far advanced that preliminary work should now be put in*

hand by the contractors to avoid a dislocation of labour and a consequent break in the continuity of building operations' (HBC, 21 Jun 1951).

Whilst the speed at which contractors performed was admirable, the quality and appearance of some of the early non-traditional estates were often regarded as less impressive. As early as 1948 a Birmingham Central Housing Advisory Committee published their report on The Appearance of Housing Estates (PWC, 27 Jul 1948) that lead to £7,000 being allocated for landscaping on the Harborne Estate. Two years later the decision was taken to relieve the monotony of non-traditional housing estates by building a proportion in traditional brick. Sutcliffe reports that some Council members began to suggest that *'Birmingham was placing itself at a disadvantage in relation to other local authorities by leaving all architectural work to the City Engineer and Surveyor, Herbert Manzoni'* (Sutcliffe and Smith, 1974: 429). He correctly concluded that as production increased from 1950 *'it became increasingly apparent that Birmingham's standards of design and layout were inadequate'* (Sutcliffe and Smith, 1974: 429). It was reported that Manzoni even admitted as much himself in 1955 when he told an audience at the Institution of Municipal Engineers that *'the ideal of low densities had had some undesirable results: Tens of thousands of acres were developed to this standard between the wars to form the dreariest and most depressing monument to my generation – I plead guilty to over thirty thousand of them'* (Manzoni, 1955). An underlying belief that Birmingham and the hitherto celebrated Manzoni were aware that they were falling behind is demonstrated by Manzoni's visit to the LCC and Leeds followed by the extended visit of the Committee to London. The Committee were by this time more than aware that other large cities had a dedicated Architects Department *'Birmingham is in-fact the only authority of over 250,000 population in England and Wales which does not employ an architect as a principal officer engaged exclusively on architectural work'* (SPC to GPC, 18 Jun 1951).

Some Council members were also of the opinion that the appointment of a dedicated City Architect and the setting up of a separate Department could speed development work. Consequently, the Unionists who had controlled the Council since 1949 advocated with the support of the Labour Group the appointment of a City Architect (Sutcliffe and Smith, 1974).

On 18th June 1951, the Committee, reporting on the Architectural Work of the Corporation decided that Birmingham needed a dedicated Architects Department in addition to Manzoni's Public Works Department. It would be *'responsible primarily for the house building work but also concerned with general architectural work of the corporation'* and involve the '*transfer of staff and functions to that new Department'* The result would be *'the appointment of a City Architect and ultimately the establishment of a new Architectural Department of the Corporation'* (HBC, 18 Jun 1951).

Although this would be a new departure for the Corporation, the transfer of responsibility would be designed to placate Manzoni, who would still maintain control of the Public Works Department and oversee the new Architects Department for a transition period. The General Purposes Committee was at pains to acknowledge his achievements *'it is asking a great deal of any one man that he should be responsible (however good his staff may be) for the control of a Public Works Department so vast as Birmingham's has grown to be…..it is a very high tribute to Mr Manzoni that he has so far been able to so successfully command so large an undertaking'* (Sutcliffe and Smith, 1974: 430). The recommendation was that *'the City Engineer be responsible for all work on roads, bridges and sewers and so forth and the City Architect for the erection and maintenance of buildings'*. In managing the transition, the Committee was keen to ensure Manzoni remained 'on side' and stressed the authority should *'benefit from the skill and experience of Mr Manzoni until a qualified and experienced successor is well established'* with a suitable candidate able *'to function within the framework of the present Public Works Department'.* This accepted Manzoni's ultimate authority whilst trying to ensure he should 'delegate the greatest measure of authority in all architectural matters to the new City Architect'.

In finding their preferred candidate the Committee was committed *'we have spoken of the need to attract a man of eminence'* and in order to guarantee it a salary of £3,000 per annum was discussed with the role being on a par with the council's 'other principal officers'. A transition period was discussed that *'should not exceed two years'* with the proviso that the appointment of a City Architect *'need not imply that 'the Corporation should not in future put work out to private architects'* (HBC, Jun 1951)

Whilst Manzoni's authority over the city's architecture had, to some extent, been eroded, his interactions with the Committee had the character of someone keen to confirm their architectural credentials. Not having previously found it necessary to comment on architectural fashions, now he was suddenly keen to articulate to the Committee his own views on contemporary developments. Having visited the *'Live Architecture'* exhibition at the Festival of Britain, he took the opportunity to comment on the development of the Lansbury estate in Poplar, a mixed-development with a density of 136 ppa: *'the building and the layout are competent and safe but rather unimaginative...my feeling is that in a few years' time, when the first freshness and colour has worn away, the effect will be one of architectural monotony'* (HBC, 6 Sep 1951). The use of the word monotony was perhaps the ultimate insult, one that had been consistently used by commentators of inter-war development, and would be repeated continually for any new development that failed to meet the prescribed aesthetic. Manzoni proved more appreciative of the work of Maxwell Fry and Frederick Gibberd when commenting on Harlow New Town: *'the general architectural standard is high and the work of*

the individual architect is very good indeed' and, appreciative of the concept and application of mixed-development, Manzoni suggested that the Committee should visit personally (HBC, 6 Sep 1951). Seen together with his visits to the LCC and Leeds, these reports were a new departure for Manzoni and were, perhaps, made in order to both strengthen his case for the supervision of the new City Architect as well as to convince the Housing Committee that he was appreciative of new trends and keen to keep pace with other authorities when it came to design and construction. Whatever the purpose, the Committee was convinced of the need for Birmingham to have its own City Architect and, the fact that other comparable and lesser cities already had one seemed a greater motivation than the need to produce inspiring architecture. Successive visits to the LCC would discuss LCC plans on Point blocks together with illustrations and models before visiting sites in Shoreditch (six-storeys), Lansbury, Stepney (eight-storeys) and Woodberry Down (five and eight-storeys). For a Committee who were challenged by the availability of land the attraction of high-rise to enable high-density building was undeniable and would be an incentive for high building. In December of 1951, encouraged by a new commitment to architecture and high-rise, Manzoni presented a design for a multi-storey Point blocks *'incorporating certain new ideas in the planning of flatted dwellings in 'Point' and 'Tower' formations, produced with special regard to economy, standardisation, method of heating, hot water supply, appearance and siting'*. Each block consisted of four flats per floor served by a central lift shaft with central bathrooms and WC's 'after the Swedish model'. The two-bedroom type designed for a family of four comprised 639sq ft with a separate balcony. The blocks were served by two lifts that stopped at alternate landings, a refuse chute and comprised a first or ground floor half a storey above ground. Summarising, Manzoni stated his view *'it is felt that 'Point' flats allow a much more open treatment of layout and in themselves they are more pleasant to look upon than the ponderous and heavy massing of high flats arranged in row formation'*. Ever conscious of economy, Manzoni suggested that his new flats *'will be £300-400 cheaper to build than those at Duddeston and Nechells and Aston Reservoir'* (HBC, Dec 1951).

Manzoni's new-found enthusiasm for architecture signalled a far more vocal input into Committee meetings. In January due to shortages of steel, he announced to the Committee that designs were being changed to dispense with steel and instead adopt reinforced concrete and load-bearing brickwork. Rather than method, the Committee remained primarily concerned with output. When the Minister of Housing visited Birmingham to open the 10,000th dwelling built since the war, Alderman Burman, chair of the Committee met Harold Macmillan with Manzoni and the Town Clerk; the conversation centred upon Ministry allocations. Macmillan was happy to confirm that subject to satisfactory progress the Ministry would accommodate the Council's requests for additional allocation (HBC, Dec 1951).

7.3 The arrival of the City Architect

'below this ridge, formed of ancient rocks, the landscape forms a plateau, and one sees it stretching away level beneath its canopy of smoke unbroken to the horizon; factory chimneys and cooling towers, gasometers and pylons, naked roads with trolley-bus wires everywhere, canals and railways tracks….. wide stretches of cindery waste-land, or a thin grass where hawthorns bloom in May and June – the only touch of the natural world in the whole vast scene; plumes of steam rising all over the landscape, the pulsing sounds of industrial power coming across the dark waste; and the gaunt Victorian church spires rising above the general level, or completely blackened towers receding into the smoky distance. This is the Black Country, well and truly named'

(Hoskins, 1951: 26)

This was the environment described in the Festival of Britain, 'About Britain' guides into which Alwyn Sheppard Fidler arrived, previously Architect to Barclays Bank, Architect of Crawley New Town from 1947 to 1952, Winner of the Prix de Rome and RIBA Victory Scholar and now Birmingham's first City Architect (Sutcliffe and Smith, 1974). The appointment of Sheppard Fidler roughly coincided with the 20,000th Council dwelling being completed (HBC, 21 May 1952) and although Manzoni would remain in ultimate control and output would dominate housing policy, Sheppard Fidler's appointment would bring a new dimension the House Building Committee.

Figure 132: Crawley New Town. Source: locksands.files.wordpress.com

7.3.1 Early challenges and mixed-development

As his credentials might suggest, Sheppard Fidler determined to *'boldly set out the primacy of design'* (Glendinning and Muthesius, 1994: 166). As the new City Architect he would later report that he had been initially distressed by the uniformity of external design, and the lack of variety in house types in Birmingham (Sheppard Fidler, 1957). The appointment of the City Architect, like other initiatives, seemed to be primarily motivated by the need to be seen to keep pace with other cities rather than any overriding desire to embrace good architecture: *'there was no grouping of design-minded councillors in Birmingham, and so this 'design-first' initiative was highly vulnerable from the start to any pressure from production-minded members and officers'* (Glendinning and Muthesius, 1994: 166).

Figure 133: Alwyn Sheppard Fidler. Source: National Portrait Gallery.

Sheppard Fidler would later comment on his early period with Birmingham *'Birmingham were an engineering city and felt that they didn't need a City Architect. It was funny to find I wasn't really wanted'* (Sheppard Fidler, 1987). What Sheppard Fidler inherited from Manzoni was his programme of contractor-designed six-to-eight-storey blocks that had become the standard solution following the costly experience of the Duddeston and Nechells prototype blocks. '*When I went to Birmingham you could have called it Wimpey Town or Wates Town. The Deputy City Engineer came into my office the very first day I arrived, shoved all these plans on my desk, and said 'Carry on with these!' He was*

letting contracts as fast as he could go, didn't know what he was doing, just putting up as many Wimpey Y-shaped blocks as he could!.....there was very little architectural quality about these 'mud pies' but I had to let it run and hope to bring in changes' (Sheppard Fidler, 1987)

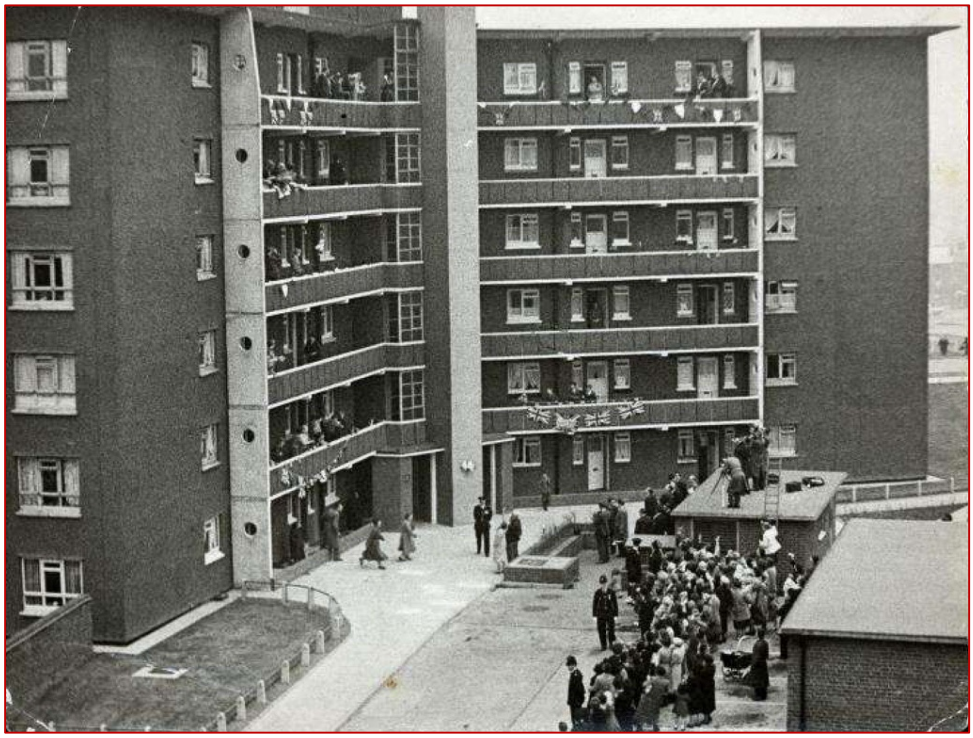


Figure 134: The Queen Mother opening a Wimpey standard Y-shaped No-fines blocks at Lee Bank. Source: BirminghamLive.

Despite being obliged to continue in the short term with Manzoni's standard contractor offerings, Sheppard Fidler would quickly produce his own standard plan forms that would embrace new designs and technical approaches for cottages, low blocks and point blocks. He quickly replaced the six-to-eight-storey contractor blocks with mixed-development arguing that *'over repetition of layout groups must be guarded against and resisted if 'design' is not to be relegated to the least important factor in development'* (Glendinning and Muthesius, 1994: 167). Although under Manzoni design had never been a major consideration in Committee meetings, Sheppard Fidler immediately started to introduce and demonstrate his own aesthetic vision, one firmly based upon the teachings of Gropius and the doctrine of mixed-development advocated by the LCC. Under Alderman Bradbeer as Chair of the House Building Committee, he would present his new six-storey flats (type LB/A) consisting of load bearing brickwork with reinforced concrete floors developed by Trussed Concrete Steel Ltd (Truscon).

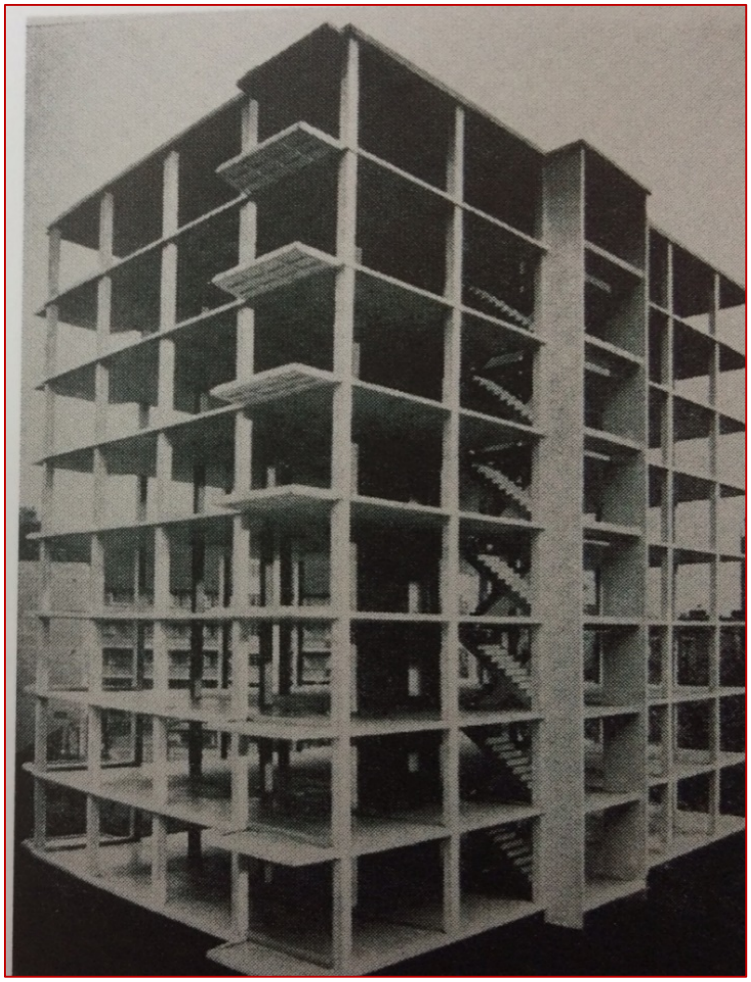


Figure 135: Truscon publicity image illustrating reinforced concrete frame. Source: Architects Journal.

The flats that were approved for Hawksley Farm, Aston Hall and Hobmoor Road would signal Sheppard Fidler's willingness to embrace new technology and alternative ways of solving Birmingham's ever- present housing shortage. The Committee seemed pleased with their appointment and the new direction housing was taking, particularly when, at the end of May the new City Architect received congratulations from the Committee on receiving a Housing Medal for his work at Crawley. That Birmingham might both achieve and improve on construction volume and demonstrate the high aesthetics variously enjoyed in other cities might justify the decision to appoint a City Architect.

Figure 136: Hawksley Estate. Source: William Dargue/Phil Jones

From the start of his tenure the emphasis was clearly on volume, the 1953 programme agreed on 5 June 1952 comprised 4,422 new dwellings, 3,802 of which would be on suburban estates with a further 620 in the central re-development areas. To achieve these numbers the Housing Committee would need to continue to embrace the larger contractors who inevitably centred their production on non-traditional construction. By 1952 non-traditional construction in Birmingham represented some 50 per cent of all production and it was envisaged this would continue into 1953 with a growing proportion of multi-storey development forming an important component of mixed-development estates. Sheppard Fidler's standard plan designs (LB/B) of load-bearing brickwork flats would be approved for mixed-development on sites on the Rubery Estate, Pool Farm, Fernbank, Bristol Road and the Firs Estate, with the smaller sites utilising low-rise three-storey blocks and the larger sites the high-rise blocks.

Figure 137: Eight-storey Truscon blocks on the Firs Estate. Source: Phil Jones.

This was indicative of Sheppard Fidler's early design philosophy that fully embraced the concept of mixed-development featuring a variety of house types and designs that would include both flats and maisonettes. This approach had the benefit of raising densities, providing a more balanced social structure and improving appearance (Sutcliffe and Smith, 1974: 431). Advocated by Abercrombie and the Bournville Trust and forming the basis for the LCC's housing strategy, it was widely appreciated *'A great variety of accommodation should….be provided within the neighbourhood and this variety is welcomed by the architect as his great opportunity to create an interesting and satisfying living community'* (Sheppard Fidler, 1954: 87).

Whilst Sheppard Fidler was clearly influencing design, it was still Manzoni who reported to the Committee, he also continued to negotiate with contractors to provide *'continuity of building'*; a common excuse to award follow-on contracts to builders without the need for competitive tendering. Contracts were negotiated along these lines with Wimpey, Bryant's, Morris and Jacombs and Stubbings providing an indication of the Committee's intention to reward successful builders and continue to build without interruption.

Achieving volume by rewarding a coterie of preferred builders though would only be part of the solution, as the Committee reported that, at its current rate of 4,000 new builds per annum the Corporation only had enough land for a further three years (HBC, 3 Jul 1952). This shortage of land would be a common problem throughout Sheppard Fidler's tenure as City Architect. With the Ministry now setting targets for building instead of providing allocations, a new increased target for 1953 was set at 4,600 units which the Committee unanimously resolved to achieve.

Figure 138: New Blocks on the Kingshurst Estate pictured against the derelict seventeenth century hall (Dec 1961). Source: Municipaldreams.wordpress.com.

In order to meet the joint challenge of volume and quality, the Committee received a report from the Architects Department at their meeting of 2 October 1952 (HBC, 2 Oct 1952). Whilst, promising more detailed plans for the Department before the end of the year, Sheppard Fidler chose to set out his plans regarding the structure and organisation of his Department as well as future staffing. To strengthen his case for additional resources, he pointed out that 4,500 dwellings represented a Corporation investment of some £8m, and that much of this development would take place on smaller sites than before due to the acute shortage of available land. This, he suggested, represented a significant challenge to his Department and inevitably increased his workload. Conversely, whilst larger sites were less numerous, they also represented an exciting challenge to the Architects Department. Speaking of the 250 acre Kingshurst Estate he recognised a project that represented 'potentially a first class estate to which I am anxious that a very high standard of layout, house and flat design should be given' (HBC, 2 Oct 1952). The new City Architect went on to stress that, in his view, a higher standard could be achieved on both types of site, but would require the imaginative design of high-density housing necessitating an increase in qualified personnel. Sheppard Fidler recommended an increase of six in addition to the existing nine fully qualified staff 'in order to deal successfully with the design problems involved in good layouts, with landscaping, harmony of

materials and treatments etc and to design new types of houses and flats suitable for these sites, and to avoid monotonous repetition, I feel it essential to strengthen the team of designers' (HBC, 2 Oct 1952). He also proposed that these personnel would be organised into design teams much like the organisation successfully implemented by RH Matthew at the LCC. This similarity may not have been lost on those Committee members that had so recently spent time with Matthew discussing his strategy and organisation in London. The constantly recurring exhortation of the need to avoid monotony might have been enough to ensure a positive response but, in order to promote and better illustrate his vision, Sheppard Fidler began to introduce scale models of his designs when seeking approval. These were enthusiastically received, Councillor Holland in particular wished to record that *'he was impressed by the scale model which had been prepared of the site at Rubery'* (4th Dec 1952). The accompanying description of the site provided a greater -insight into the approach taken by the new City Architect. Demonstrating an adherence to a vision reminiscent of recent LCC developments Sheppard Fidler explained *'the site has been developed with bungalows, houses, two, three and six- storey flats. Natural features on the site have been preserved where possible and the layout generally built up around the reserved sites'* (HBC, 4 Dec 1952). The description could just as easily be applied to the celebrated Alton Estates in London and, whilst Sheppard Fidler was still a largely silent participant in these Committee meetings, his plans and models spoke for themselves. For the foreseeable future Manzoni would present the City Architect's plans and continue to negotiate with contractors while routinely seeking ratification of decisions to provide follow-on projects to Wates, Wimpey and Laing in order to maintain momentum and ensure continuity.

In 1953, Manzoni's presentation of Sheppard Fidler's plans for various sites in Birmingham would provide evidence of a much more holistic approach to planning and design. Whereas in the past the inclusion of shops, doctors and midwife surgeries, police and fireman's houses often seemed to occur as afterthoughts, Sheppard Fidler's plans incorporated them at inception as integral components in complete neighbourhood units. The Rubery Estate, a development of 26 acres, would incorporate houses, two-, three- and six-storey flats built around a central shopping area that also included a tenants' room, public house, doctors' and nurses' houses as well as allotments, multi-faith church provision and schools. Sheppard Fidler's plans for the Holfast Grange Estate in Erdington included allotments, a technical school, shops and a public house and followed his approach to offer a range of accommodation that included bungalows, houses and two-, three- and six-storey flats. With each of his proposals he would include a lengthy descriptive justifying his approach, exemplified by the description of his plan for the Kingshurst Estate at Coleshill: *'The site is gently undulating, with a strip of steeper ground fronting the River Cole. The natural features of the site include mature trees in the existing hedgerows and Kingshurst Hall with its moat and an associated hill and summer house'* (HBC,

15 Jan 1953). The development would also include a proportion of private houses meeting the traditional definition of mixed-development. The City Architect went on to describe his mixed-development vision*: 'the whole area to be developed is sufficiently large to warrant an attempt at creating a true centre……and it is suggested that this should take the form of a green which will combine a main shopping site with the number of public buildings required for full community life'*. In total the estate would comprise 300 private homes at a density of ten to the acre representing 44.5 ppa, the public development would number 1,830 at 16.35 dwellings per acre representing a density of 62.3 ppa incorporating a range of different homes with three- storey flats representing 40.6per cent of the total, two-storey houses and flats 56per cent, bungalows 1.2per cent and a twelve-storey block 2.62per cent. The site would be completed with schools, shops, churches, pubs, clinics, a library, police station and other reserved sites to form a complete neighbourhood unit (HBC, 15 Jan 1953).

Further plans would be submitted for the Pool Farm Estate, *'a site of 83.3 acres rising from a level area adjacent to the canal up a very steep slope to a plateau fronting Walkers Heath Road with some fine trees along the frontage and amongst the hedges. This configuration has been used to achieve a fine massing of buildings, the lower development being kept to the slopes and valley and the tall flats grouped amongst the trees at the summit'* (HBC, 15 Jan 1953). Sheppard Fidler's stamp was apparent on a site that would provide 1,228 new dwellings at a density of 17.5 dwellings per acre. As usual a scale model was provided.

Meanwhile the projection for 1953 would be set at 6,572 dwellings demonstrating that the pursuit of quality was not expected to impede Birmingham's increasing housing targets. Following recognition for his work at Crawley the House Building Committee would learn that the Hawksley Farm Estate design had been accepted for display at the Summer Exhibition of the Royal Academy giving an indication that both aesthetics and output could conceivably co-exist.

By 1 January 1954 Manzoni's Public Works Department finally transferred its architectural work to the Architects Department giving complete control of Corporation architectural matters to Sheppard Fidler. He would also be able to exercise greater control by assuming responsibility for direct negotiations with contractors. Nevertheless the necessary reliance on larger national firms would necessitate embracing non-traditional forms of construction that would ultimately challenge the aesthetic vision of the City Architect. But Sheppard Fidler was nothing if not a pragmatist and he demonstrated an ability to adapt to the external challenges whilst maintaining his architectural vision, as evidenced by his directive to Wates to incorporate brick facing to flats at Staple Hall Farm (HBC, 1 Jan 1954).

Sheppard Fidler's philosophy of mixed-development was one that favoured Gropius's concept of the 'Green City'. Landscape was always important, as Sheppard Fidler himself said in 1953: *'the true spatial approach lies with landscaping in a park'* (Glendinning and Muthesius, 1994: 39). It would see him appoint the City's first Landscape Architect early in his tenure. Mary Mitchell joined from Stevenage New Town and her appointment was not fully understood by the elected members: *'I had a hell of a time explaining to the Committee why I required such an unusual being… that what we wanted was a landscape designer and not a Parks Department person'* (Sheppard Fidler, 1987).

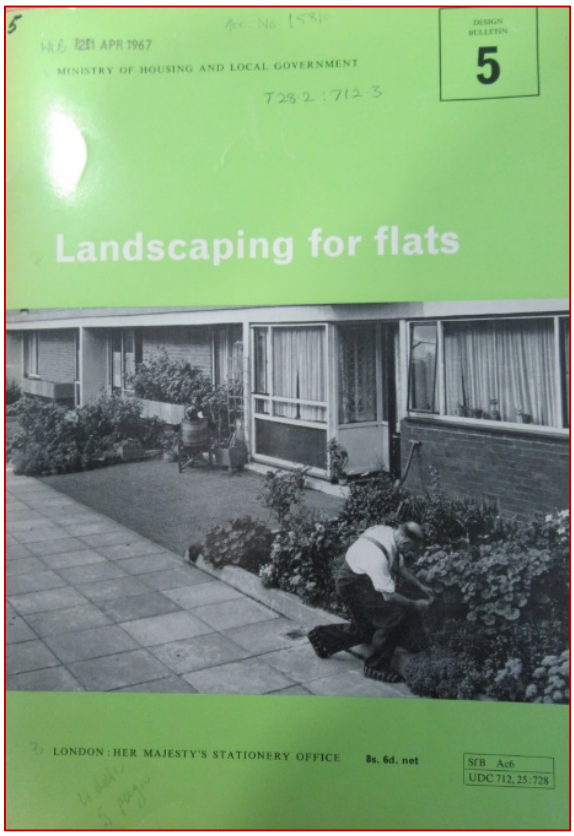


Figure 139: Landscaping for flats. Source: MHLG.

Throughout his tenure the City Architect remained committed to maximising the contribution of existing landscape. Presenting his plans for the Ladywood development area on 4 September 1957 he focussed his attention on the landscaping in areas around the high towers. His commitment to make the best and most appropriate use of a site was amply demonstrated by his plans for the Fox Hollies Hall Estate with a *'layout designed specifically to suit existing conditions'* featuring a boulevard with views from the three 12-storey blocks situated in echelon formation and set well back from the road. Even retaining the gate piers for Fox Hollies Hall Sheppard Fidler explained that his vision was to *'improve the architectural character of the district*' and *'reduce the monotony of extensive two storey development'* he continued *'the flats have been sited on the axis of a wide boulevard… rising up above the established trees on the site… commanding views of the City… as well as over Parkland.'* (HBC, 4 Sept 1957).

Children playing outside the flats in Great Lister Street, Duddeston, mid 1950s. By this time, the housing management of the council had a waiting list of sixty-five thousand people for new houses or flats. According to Picture Post *(1956), 'Some have been on the list for fifteen years. Top priority has to go to those with large families.'*

Figure 140: Examples of sculpture and children's play equipment. Source: Alan Clawley/Birmingham Mail.

The need to consistently achieve targets often resulted in minor modifications to pre-approved plans. To achieve higher densities at the Pool Farm Estate 14-storey blocks were substituted in place of the previously agreed 12-storey blocks, but landscaping and other enhancements were not sacrificed. Sheppard Fidler also favoured the incorporation of art into his developments and despite early opposition, money was set aside for sculptures for multi-storey sites ranging in value from £300-£500 per site. The City Architect announced a contract with Mr John Bridgeman ARCA ARBS as sculptor to the Nechells Green Development area as well as other sites (HBC, 1 Jan 1959) and further contracts would be awarded for play areas for children designed by Mary Mitchell. His enthusiasm

for the detailed enhancement of his estates was demonstrated by support for tubular steel playground sculptures completed by Bridgeman for Nechells Green, Millpool, Banghams Pit, the Firs, Hawkesley Moat, Kent Moat and Lyndhurst. He was quick to point out that *'considerable interest is now being taken of this work throughout the country'* (HBC, 1 Dec 1960) suggesting that Birmingham might fall behind others in failing to embrace such schemes.

Figure 141: Nechells Green development, view from Health Centre (September 1960). Source: Birmingham Mail.

This enthusiasm for landscape and art evidenced a continuing quest to brighten up Corporation schemes with either sculpture or other forms of artwork and became a theme for Sheppard Fidler's high-rise schemes. He sought permission to engage D & H Seager, Architectural Sculptors and Mural Artist, to provide a *'bright and cheerful scene'* in the form of a decorative mural at Ladywood. He explained the contribution the requested £100 would provide: *'I feel such a painting would be a colourful and humanising element in the landscape'* (HBC, 7 Jul 1960). These policies had also become a hallmark of LCC policy and Sheppard Fidler quickly recognised that often the best way of gaining acceptance for his proposals was to stress how successful similar initiatives had been elsewhere. On learning that sculpture on London estates was being orchestrated in conjunction with the Arts Council of Great Britain he suggested that a similar arrangement could be developed with the City Art Gallery in Birmingham.

Figure 142: Sheppard Fidler's Chamberlain Gardens development in Ladywood (1964). Source: Birmingham Mail.

Conscious that continuing support for his architectural strategy might benefit from the reinforcement that national recognition might provide he proposed the Hawksley Farm Moat Estate and Firs Estate for the Good Design Awards for 1961. The potential conflict between design and output was however evident when the City Architect's continuing quest for quality development at times frustrated his Committee. He would periodically come in for criticism on the densities achieved on some of his developments. Harry Watton, a vocal member of the House Building Committee drew critical attention to the achieved densities in Chamberlain Gardens (HBC, 8 Feb 1960). Watton believed higher densities were possible, conversely the City Architect reported an achieved density of 130.59 ppa, a development justified by the retention of *'fine existing trees'* allowing the placement of five 9 storey point blocks freely planned within the natural landscape. The development also included three rectangular slab blocks eight-storeys high and four-storey maisonettes and two-storey houses with provision for old people and 672 garages. Sheppard Fidler further justified the use of landscape when describing: *'the massing of the point blocks has been balanced on the Monument Rd frontage by the introduction of three rectangular slab blocks... With this form of development it has been possible to retain a large number of existing trees'*. (HBC, 8 Feb 1960). The experience at Chamberlain Gardens was just one example of Sheppard Fidler's continuing challenge to resist

compromise in his designs in the face of a need to achieve ever higher densities and consequently boost output.

7.3.2 Density and high-rise

The shortage of land during Sheppard Fidler's tenure as City Architect was a constant theme in Housing Committee meetings and with a growing housing list the knock-on effect was perhaps inevitably to pursue ever increasing densities. For the central re-development areas where slum clearance was a primary concern, the case for higher densities was particularly strong. What at first sight may have been a seemingly simple solution to remove slums and rehouse tenants in newly-built Council homes in the suburbs wasn't always practical (Chinn, 1999). More often than not, it was unfeasible for tenants to vacate the central areas, this was where they worked and where they had their support networks. The 1947 Town and Country Planning Act had effectively divided Birmingham into two, one the inner zone with 75-120 ppa and the outer suburban zone with 50 ppa. Consequently, up to 50 per cent removed from the re-development areas would have to be rehoused elsewhere and with Birmingham *'running out of land everywhere within its boundaries'* (Chinn, 1999: 107) a solution needed to be found.

For Sheppard Fidler the solution was the re-development of the inner zones with mixed-development estates but as pressure to achieve higher densities grew so did the height of multi-storey construction. During discussions relating to the 1955 Housing Plan, to better meet the needs of a growing housing list, densities were increased on pre-approved sites. Sheppard Fidler suggested that the further demolition of existing houses on municipally-owned sites could free up space for high-rise development in order to reduce the housing list. His views upon the use of high-rise were apparent from his involvement with the RIBA Symposium on High Flats of 1955 (see Appendix A) when he acknowledged the reluctance of some local authorities to adopt tall blocks. He believed that development plans specifying higher densities made tall blocks a necessity whilst where medium densities were required they were unnecessary. His opinion on the use of high-rise continued to demonstrate his pragmatism. He conceded that not only were they more expensive to build but they also attracted higher rents because of the higher costs of maintenance and management associated with them. Associated higher costs could also be attributable to security lighting, expensive waste disposal systems such as the Garchey system and booster pumps needed to maintain water pressure. Despite these drawbacks on the flipside he felt able to justify the inclusion of high blocks for aesthetic reasons, they might add *'vitality'* to a design and avoid *'the dullness of uniformity'* (Sheppard Fidler, 1955). He also recognised their potential as a symbol of the age: *'individual tall flats might also have significance as a symbol representing the aspirations of people of our age'* and represent the *'time to rebuild in a worthier way than the old'*. In concluding he felt that high blocks

could be appropriate for a limited demographic; those tenants who do not want gardens, single people, young married and childless couples. His views in 1955 would change little, maintaining a belief that high flats were an appropriate solution to the need to achieve high-density and could provide vitality to mixed-development where they could be implemented for a limited demographic (Sheppard Fidler, 1955).

Challenged with finding enough land to fulfil their housebuilding agenda the Committee would need to be resourceful. Activities included approaching Hospital Boards to investigate the potential to free up land on hospital sites for construction. Council officers were even authorised to attend private property auctions and bid up to market rates in an effort to increase the Corporation's stock of land. Pressure to build and with a diminishing stock of land in the central areas the Corporation were forced to consider the outskirts *'having regard to the urgent need of obtaining building sites so as to maintain a satisfactory rate of home construction for many years ahead, which can only be obtained outside the city'* (HBC, 9 Jan 1955). By June 1955, when the 1956 Housing Programme was announced, a target of 2,830 dwellings was announced, 1657 on new sites, 420 on redevelopment sites and a further 662 by increasing density on existing sites. The shortage of available land and a continuing demand for homes led the Committee to look further afield to see how they might make best use of high-rise construction. Sheppard Fidler's undoubted enthusiasm for the LCC mixed-development model and new building techniques certainly influenced a decision for the Committee to visit the LCC Ackroydon, Alton and Trinity Road estates to inspect the use of point blocks, maisonettes and general mixed-development on 29 November 1955. A visit to the Fitzhugh Estate in Wandsworth enabled the Committee to see how technology in the form of the tower crane could assist construction, in this case of five 100ft point blocks utilising in-situ structural walls and floors, beams and columns constructed by Wates. Sheppard Fidler remained keen to advocate the practical and aesthetic benefits of adopting the mixed-development model but to some extent this hope was dealt a blow by Ministry Circular N042/55. This warned of the danger of urban sprawl and advocated the establishment of green belts to protect against this risk. Increasingly the Committee and the City Architect would be forced to consider high-rise as a means of achieving high densities without contributing to urban sprawl.

Figure 143: Tower blocks on the Egghill Estate, Birmingham, built by Wates. Source: ukhousing.fandom.com.

The drive to achieve more with less was evident when original plans for six-storey flats at Egghill Lane with Wates were increased to eight-storey for reasons of both density and economy. That these flats would now comprise 48 one-bed for two people and 96 two-bed for four people flats presented the clearest indication that the Corporation was now considering flats as suitable for family living (HBC, Nov 1955).

The City Architect considered achieving high densities in smaller urban settings was *'the most difficult kind of housing'* (Sheppard Fidler, 1954: 1). Describing the challenge Sheppard Fidler explained the common solutions to the problem and his personal preferences. He explained that whilst building upwards was favoured by Scotland and the Continent, building low blocks close to each other was far more common in England. This had resulted in the proliferation of the 'back to backs' and a repetition of '*monotonous*' building types and schemes that were *'at best dull, at worst offensive'*. Sheppard Fidler went on to advocate the benefits of mixed-development to achieve high densities, suggesting that *'housing is no longer considered in isolation and 'neighbourhood' planning is an accepted policy'*. He suggested that housing schemes should include *'accepted ancillaries such as schools, shops, open spaces of various kinds and service industries and roads'* (Sheppard Fidler, 1954: 3). In order to justify his argument, he went on to illustrate and support his case with reference to recent LCC development. This included a site of 93 acres that achieved an overall density of 136 ppa with a population of 9,143 achieved by housing 38per cent in properties up to three-storeys in height with the remaining 62per cent in flats of eight and ten-storeys. That this development required 36.37

acres of public space demonstrated the overhead required when building high, which Sheppard Fidler contrasted with the densities achieved at the Lansbury Estate that, with flats up to six storeys and greater reliance upon four-storey maisonettes, and consequently far less reliance on high building, achieved densities of 120 ppa

The clearest indication of Sheppard Fidler's preference for mixed-development at lower heights was further supported by the practical advantages of lower height buildings. The four storey maisonette was, he argued, more *'house'* like, didn't require expensive lifts and provided fifty per cent of occupants with direct access to gardens. The need to achieve high-density in Birmingham, particularly in the central areas, resulted in four of the central redevelopment areas being allocated densities of 120 ppa and a fifth at 140 ppa Sheppard Fidler went on to illustrate how high-density might be achieved with reference to three estates in Birmingham with 153, 121 and 68.6 p.p,a. densities respectively. The highest densities were achieved by utilising 12-storey blocks, the lowest where 80 per cent of development comprised six-storey blocks and the middle achieved by the use of four-storey maisonettes. Demonstrating his interest in contemporary architectural trends Sheppard Fidler referenced the 200 ppa densities achieved by Powell and Moya at Pimlico and Chamberlain, Powell and Bon's Golden Lane developments; both of these achieved high densities with a greater use of lower building. Acknowledging high blocks could deliver very high densities, he evidenced Rolf Jensen's plans for the Perkins Height Scheme in Paddington. This comprised 15-storey Point blocks on a 3.5 acre site that would house 1092 people at a density of 320 ppa and, whilst he acknowledged that high building did have its place, he believed it should only be considered in specific circumstances. He felt high-rise might be justifiable where land was relatively expensive and a subsidy was available to build high. He also conceded that the site might also dictate that high buildings were the only practical option when, for instance, they were situated adjacent to rivers, reservoirs, parks or main roads or where they could be used to provide special significance as landmarks. Lastly, they might be deployed when mains services were already available nearby or in specially-contained schemes. The City Architect used these arguments to articulate his preference for a lower height mixed-development model containing a smaller percentage of high blocks. He was realistic enough to concede that there would be circumstances where he would need to accommodate a growing proportion of high blocks but this would only be permissible in certain circumstances. His particular preference, despite the inevitability of an increase in high building, was clearly for high quality mixed-development able to provide an average density of circa 100 ppa. To illustrate his preference, he referenced the Alton Estate in Roehampton that had achieved this density with 40 per cent of building in two and four-storey development and 60 per cent in 11-storey

blocks. His own development in Ladywood had achieved 90 ppa with two-storey and three-storey flats and had been praised by the Housing Committee (Sheppard Fidler, 1954: 3).

The policy to build high was not entirely predicated on achieving high densities; there was also an economic perspective, experience in Birmingham suggested that cost increased in building up to seven-storeys and was then static up to 11, indicating a clear financial advantage in building to eight-storeys rather than six. Before committing to higher blocks there were many considerations not least the practical use of tower cranes, the cost of providing lifts, the supply of heating as well as the provision of fire escapes, the implementation of booster pumps required to deliver adequate water pressure above 10 storeys and the practical considerations of wind resistance (Sheppard Fidler, 1954: 4).

In Committee, to coincide with the introduction of the 1956 Housing Subsidies Act, the City Architect presented a report that considered the composition of housing developments and the resulting densities (HBC, 21 Mar 1957). In the light of prevailing policy that required densities at 100 ppa for inner city, 120 ppa for central redevelopment areas with the exception of Duddeston and Nechells with a targeted 140 ppa, Sheppard Fidler presented four sample schemes:

Scheme 1	Density 100 ppa	20per cent – 2-storey	80per cent – 4-storey maisonette/flats	
Scheme 2	Density 100 ppa	32per cent – 2-storey	16per cent – 4-storey maisonette/flats	52per cent - 11-storey
Scheme 3	Density 140 ppa	10per cent – 2-storey	48per cent – 4-storey maisonette/flats	42per cent – 13-storey
Scheme 4	Density 140 ppa		100per cent 5-storey maisonette/flats	

Figure 144: Comparative densities. Source: HBC, (1957).

The perceived attraction of high flats to achieve high densities was not always straight forward and the Committee was well aware that there were other drawbacks most notably in the ongoing cost of maintenance. Towards the end of March, they reviewed findings that suggested that whilst a standard two-storey house might cost £21 p.a. to maintain the comparative cost of a multi-storey flat could be between £40-50 p.a. Consequently, they were keen to ensure that construction only took

place when the full subsidy was available, the higher densities required could be achieved, and the resulting rents that would need to be charged to offset costs were affordable. Conversely multi-storey blocks did have some benefits, one being that groundworks for a high block were considerably less than for a more dispersed estate achieving the same density. It was also concluded for similar reasons that point blocks were more attractive than slab blocks as an *'economically attractive proposition'* (HBC, 21 Mar 1957). The discussion went on to highlight the difficulty of achieving high densities on smaller awkward shaped sites and that whilst tenants preferred two and four- storey homes it was often impossible to achieve the required 100 ppa densities without recourse to tall blocks. Sheppard Fidler suggested that Scheme 1 was preferable but unlikely to gain approval due to the need to achieve higher densities, Scheme 2 which included 50 per cent of tall blocks would have been preferable with 30per cent high-rise to *'achieve a satisfactory architectural layout'* (HBC, 21 Mar 1957). His report concluded that to achieve densities of 100ppa despite tenant preference for two- and four-storey blocks, the inclusion of 25-30 per cent of tall blocks would be inevitable especially on difficult sites. Should even higher densities be required Sheppard Fidler felt that Scheme 3 was the best option, delivering high-density whilst adhering to his preference for mixed-development to avoid architectural monotony.

This discussion highlighted the potential conflict between architect and councillor that would follow, the City Architect favouring a small percentage of tall blocks within a mixed-development contrasting with a political imperative to deliver more housing, higher densities and the inevitable increase in high building (HBC, 21 Mar 1957). This was reflected in the 1958 housing programme that set a target figure of 3,267 dwellings, taking into consideration the scarcity of land this figure could only be achieved by widespread use of high towers.

Despite a preference for the limited inclusion of high blocks Sheppard Fidler quickly submitted new type plans reflecting the need to achieve high-density with high-rise blocks. His new 16-storey blocks (ASF Type HB/58/16) reflected a high specification and were designed to suit a wide range of reinforced concrete type construction. They consisted of 15 floors with six flats (four, two-bedroom and two three-bedroom) up to a sixteenth floor that comprised two penthouse suites. These new designs incorporated two stairwells and two lifts up to the 14th floor with a walk up penthouse. They included electric underfloor heating, continuous glazing bands to the east and west elevations featuring a brick infill and gable ends with projecting balconies and a drying room on the roof (HBC, 6 Feb 1958).

Figure 145: Sheppard Fidler design for 16-storey flats. Source: Architects Journal (18.9.58).

The continuing pressure in Birmingham to build was once more brought to the fore in a meeting with Henry Brooke MP, Minister of Housing, on the 10 July 1958 with the Committee seeking an increase in their allocation. The annual average achieved during Sheppard Fidler's tenure was 2,985 per annum so quite reasonably the Committee felt that there was a notional requirement nearer to 3000 than the 2200 allocated. Explaining the reduction in allocations, Brooke confirmed this was largely an anti-inflationary measure and promised in the case of Birmingham to review within two to three months although the MHLG felt that with the 2,200 allocation coupled with the council's existing overspill and patching programmes, the higher annual figure could be achieved. The housing situation was at this time acute with an estimate of 40,000 homes required for families currently residing in rented rooms and a further 50,000 required to replace slums. The pressure on the Housing Committee was significant and received widespread negative coverage in the local press. The Birmingham Mail reported in early June a figure of 200,000 people requiring accommodation at a time when the Council was only providing 2,500 homes annually. Correspondent FO Anderson suggested that *'the same dynamic approach evident in laying Britain's first motorway from London to Birmingham must be brought to the task of home building'* (Birmingham Mail, 1958). Elsewhere an article in the Evening Despatch (Evening Despatch, 1958) suggested that a scheme reminiscent of the High Paddington proposal that sought to re-house 8,000 Londoners, could be applied to Edgbaston with a development incorporating 30 or 40-storey blocks overlooking the Golf Course. A continuing discourse that building high might effectively solve the housing problem suggested that: '*by*

extending upwards homes can be provided for Birmingham people reasonably near to the city and its industries and with little loss of countryside' (Evening Despatch, 1958). Discussed at Committee the Council felt the suggestion worthy of consideration. Consistent pressure resulted by the 19 August in the MHLG increasing the 1959 allocation to 2,700 but the Ministry reportedly expressed doubts that the Council would achieve the figure.

Unlike both his predecessor and successors, Sheppard Fidler was keen to formally record his thinking in Committee relating to all aspects of housing. He also took advantage of the opportunity for external speaking engagements to further clarify his strategy and preferences. Clearly he was an advocate of the mixed-development model pioneered by LCC and keen to limit within reason the wholesale implementation of high-rise in Birmingham, as he felt it jeopardised his architectural integrity. In an effort to communicate his thinking he would regularly produce reports, circulated to members that articulated problems facing the House Building Committee, described the options and presented his preferred solutions. One of these related to the growing need to raise densities and how best this might be achieved. His report of the 5 November 1959 entitled '*Central Area development - density and character of housing*' addressed concerns about achieving high densities in the Central re-development areas. By this time building had already been completed on 14 units, housing some 1789 families, with a further 19 under development. Sheppard Fidler was confident that *'the type of housing now being created offers a complete contrast to the back to back houses and other older property which has been, or is being demolished'* (Sheppard Fidler, 1959). He went on *'it is the aim to create a good environment in which families may live happily and in comfort, with their due measure of light, air and recreational space'* (Sheppard Fidler, 1959). However his frustration was evident: density targets were not set by the House Building Committee but imposed by Manzoni's Public Works Committee. Sheppard Fidler and the councillors on the House Building Committee had no say in density targets, and the City Architect was confronted by the challenge of meeting or exceeding targets on sites that were not always conducive to straightforward development. It is therefore perhaps admirable that the City Architect was able still to create designs that met or even exceeded these arbitrary targets.

Site	Target density ppa (1952)	Actual
Nechellls Green	140	154.44
Lee Bank	120	134.46
Ladywood	120	154.44
Highgate	120	146.88
Newtown	120	145.8

Figure 146: Target and actual densities achieved. Source: HBC, (1952).

In continuing to address the problem, present the dilemma and convince Committee of the efficacy of his approach Sheppard Fidler articulated the two extremes: either a) the whole population is housed in tall blocks or b) all families live in houses with small gardens and no communal space (typically represents 100 ppa with use of bungalows and low flats… this type of development inevitably becomes very dull and monotonous). In order to convince when setting out his case for mixed-development he referenced Ministry Publications (MHLG, 1958) that suggested that to achieve densities of between 100-160 ppa higher densities of all forms of housing were necessary including three-storey houses, four-storey flats and maisonettes and 16-storey blocks. He went on to explain that typically the variety of required accommodation would be set by the Housing Manager and communicated to the Architect. In this way Sheppard Fidler explained that *'design policy is a compromise between the desire to produce a fine open layout (but one in which all sizes and compositions of families have to live in multi-storey buildings) and a layout in which dwellings are related as closely as possible to ideal conditions for families: old people in bungalows, most families in houses, only a few in flats etc (but with no open space for pleasure or recreation)*'. Taking into account the complexity of a site he concluded that *'with this form of mixed-development, both from the point of view of type of accommodation, height and massing of buildings, the density of individual units within a large comprehensive scheme varies from say 90 ppa to 170 ppa.'* Within these constraints he pointed out that supporting structures such as play areas, tenants' rooms, drying areas and garages have to be accommodated without reducing density. His concern was also that in inner city areas in Birmingham, the smaller fragmented nature of the available space often meant that the only way to achieve required density was with high multi-storey accommodation. His view of this approach was clear, '*few would agree that living in a tall block of flats is ideal, or even convenient, for families of all sizes'* (HBC, 5 Nov 1959).

The City Architect summarised the dilemma, '*it seems to me that, if an average density of 150ppa and over is required over a large area, it is no longer possible for the architect to hold a reasonable balance between the 'landscape' layout and his desire to meet the needs of tenants as regards their accommodation requirements'*. Having articulated his concerns and expressly described the challenge Sheppard Fidler went on to provide a solution that would enable a higher quality of mixed-development to occur. *'My conclusion is that it would be reasonable for the average overall densities in the re-development Areas to be no higher than 130-135ppa'*. In order however to maintain the Corporation's building targets he advocated raising the densities in the outer suburban area's *'assuming they were close to tenant's work areas and in the neighbourhood of industry'*. At this stage the average target densities for these areas was in the region of 50ppa but in order to illustrate the

potential the City Architect quoted the actual achieved densities in a selection of recent developments (HBC, 5 Nov 1959).

Outer Development Area	Actual Density achieved
Lyndhurst Estate, Erdington	106 ppa
Firs Estate, Castle Bromwich	73 ppa
Millpool Hill Estate	75 ppa
Nazareth House, Longbridge	69 ppa
Wyrley Birch Estate, Erdington	95 ppa

Figure 147: Densities achieved in outer areas. Source: HBC, (1959).

Sheppard Fidler concluded that his proposed maximum density for inner-city areas could easily be achieved were the Public Works Committee and Manzoni to agree to raise the target density for suburban development from 50 ppa to 70 ppa. The Housing Committee welcomed the report and commended it to the Public Works Committee (HBC, 5 Nov 1959).

On 8 February 1960 there was a conference relating to densities in re-development Areas between the House Building Committee and the Public Works Committee. It seemed that Sheppard Fidler's concerns had been listened to when the Chair of the Public Works Committee; Alderman Price conceded that *'redevelopment areas could be regarded as a social experiment and recently there was a feeling that in some instances accommodation has been built at too high a density'.* There seemed to be some contrition *'if this were the case, shortage of land was no excuse and redevelopment should cater for proper living conditions for people and not merely an existence'*. Alderman Price conceded that *'high-density building affected family life and if densities were lowered the City Architect could design layouts that result in an improved effect on people and the families that they raise'*. The conclusion being that the Public Works Committee would look to reduce required densities in residential development in the city (HBC, 8 Feb 1960).

7.3.3 System build

Since the Manzoni era Birmingham had embraced non-traditional forms of construction as an antidote to a shortage of both materials and labour. Local firms were largely limited to traditional forms of construction and unable to scale their operations to meet demand. In turn this led to the establishment of the Corporation's Direct Labour Organisation, but the Housing Committee remained largely dependent upon a small group of national contractors that inevitably focussed their production on non-traditional methods of construction. Conscious of the conflicting challenge of meeting production targets while maintaining quality, Sheppard Fidler kept a close eye on technological developments. He was fully aware of the success of the Schools programme and the

potential that large scale pre-fabrication promised. He therefore proposed experimenting with new four-storey maisonettes with a steel frame and pre-cast reinforced concrete panels developed by Messrs Hills of West Bromwich and a non-traditional maisonette developed by Laing. Featuring balconies to the upper floors Sheppard Fidler believed these designs could potentially offer faster construction with less reliance upon traditional skills (HBC, 7 Oct 1954). Meanwhile, in order to meet demand and maintain output, the Committee had no option but to support a wide range of non-traditional building techniques: this was demonstrated when contracts were approved for 160 No-fines dwellings for the Rubery and Dowry Farm Estate, 160 Laing Easiform for the Pool Farm Estate, a further 240 Wimpey flats at the Ley Hill Estate and 105 flats at Jiggins Lane from Wates (HBC, 7 Oct 1954). Maintaining output was just one issue for the Committee though, the Government plan to end restrictions on building materials would according to Harry Watton have a detrimental effect on the Corporation's house building programme as building workers moved away from social housing provision to more lucrative private contracts. It was easy to see how a stressed Committee, faced with a continuing shortage of land and willing building contractors, had to adjust their plans to maintain output. The result was a growing dependency upon the larger contractors involved in non-traditional forms of construction and a reliance upon forms of construction that could achieve a higher density more quickly.

Figure 148: 8-storey blocks on the Dowry Farm Estate. Source: Phil Jones.

Meanwhile, Sheppard Fidler concerned by both the high cost of building high, particularly regarding steel-framed buildings, and the resultant high rents levied in these buildings, was particularly energised by advances in pre-fabrication.

Throughout his time at Birmingham, Sheppard Fidler continually exhibited a willingness to pursue innovative ways to reduce the cost of building. He saw new technology as an enabler, capable of reducing cost whilst maintaining and even improving architectural quality, something that was so often at risk when the Corporation budgets were consistently under pressure. Embracing new technology necessitated working with the larger builders and during 1955 Sheppard Fidler continued to work with Wates, Laing and Wimpey at various sites. Discussions also took place with Truscon regarding their system for high flats that featured a frame of reinforced concrete with a range of external treatments that could accommodate brickwork, varying surface finishes and balconies to provide variety. In an attempt to increase the range of builders that the Corporation could call upon Sheppard Fidler proposed that Truscon work with smaller firms to deliver their products. Developing such a proposition would enable smaller builders to have a share in a potentially lucrative market for higher flats whilst increasing output for the Corporation. The City Architect proposed that he provide the design and then Truscon should work with local firm Stubbings to deliver a contract. In order to test this new model he suggested a site at Millpool Hill Estate might provide an opportunity. He would continue to sponsor this relationship, resulting in a further 160 dwellings on the Firs Estate in Castle Bromwich. Despite its success this type of engagement was a rarity, smaller builders would typically exploit the smaller sites, leaving the larger operators to tackle the big estates with Wimpey, Laing and Wates in particular benefitting during this period.

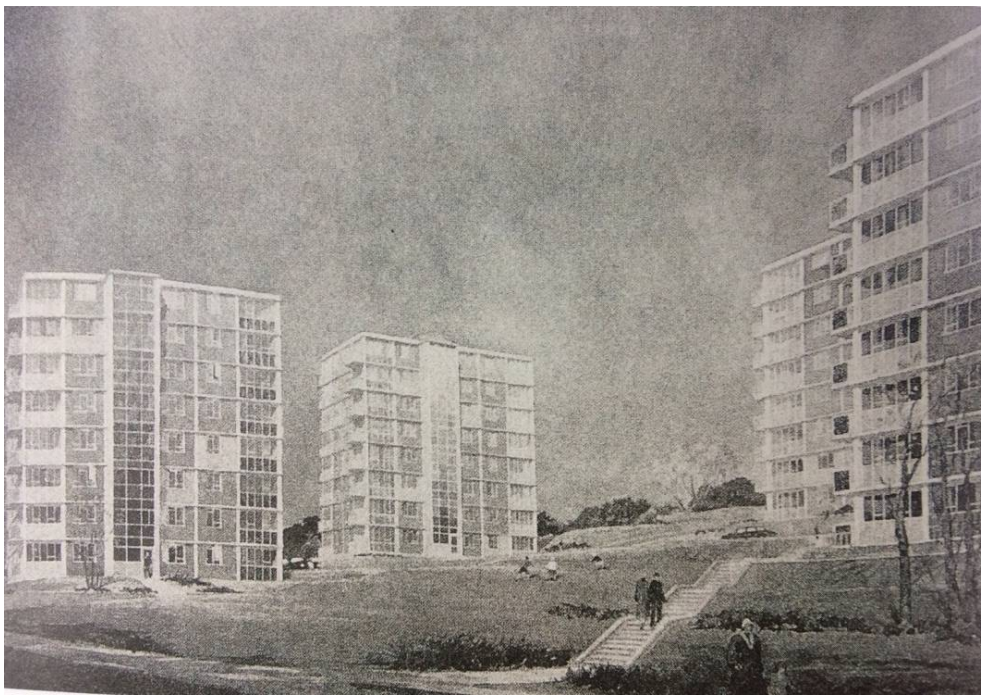
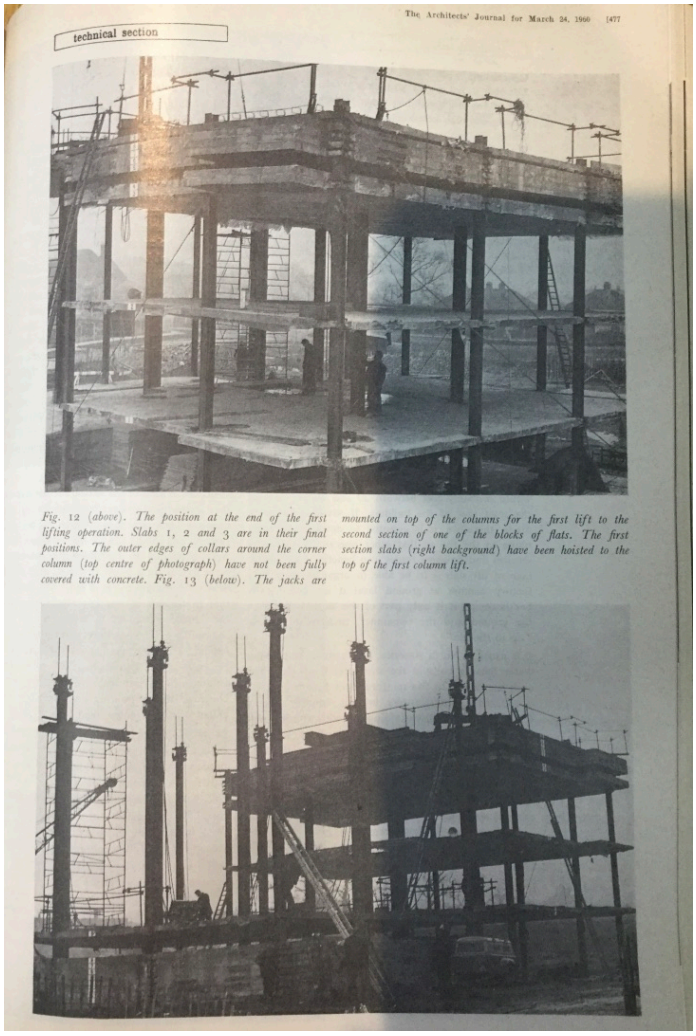


Figure 149: Image of proposed high blocks on Millpool Hill Estate (1956-7). Source: Architects Journal (16.2.56).

Sheppard Fidler remained open to the potential of early System build and throughout his tenure demonstrated a willingness to innovate to ensure Birmingham remained at the forefront when it

came to advances in construction. Following his earlier experimentation with Truscon another opportunity presented itself when considering a contract for multi-storey flats at Long Nuke Road, Northfield, Sheppard Fidler would go on to propose an early experiment with a new building technique (HBC, 16 Aug 1959). He commenced discussions with RM Douglas Ltd concerning the possible use of the 'lift slab' method, a system originating in the United States that the firm had acquired a licence to use in the UK. Explaining it to Committee, Sheppard Fidler described it as a *'system of building, which is quite unique and has not been operated in this country' concluding that 'I have no doubt of its soundness in principle and design' and 'flats built using the 'lift slab' method of construction are competitive in price'* (HBC, 16 Aug 1959). Rather than accept a contractor-derived design, Sheppard Fidler engaged with the contractor to build three blocks of nine- storey flats providing 108 dwellings to a standard design of his own. The design could be considered progressive for the period with mainly brick elevations in contrasting colours and reinforced glass balconies (HBC, 16 Aug 1959). The City Architect was clearly aware of the potential benefits offered by System build whilst taking care to not over-sell its potential benefits. At this stage, competitive did not necessarily mean 'cheaper' and the potential to provide equivalent quality with a faster implementation time was justification enough. Sheppard Fidler stressed that the system was in no way experimental and, when completed, indistinguishable from systems using plate floors and columns. He went on to describe the process of construction contrasting it with the more common method: *'A normal reinforced concrete frame building is built from the ground slab upwards, first the columns, one or two storeys in height…. And then each individual floor is cast in situ... And the process is repeated for each floor'. Conversely 'the 'lift slab' method of construction basically consists of casting the reinforced concrete floor and roof slabs one on top of the other at, or near, ground level, and after curing, lifting them to their final position by hydraulic jacks. Construction by this method permits practically all the structural work to be carried out within a few feet of the ground, with all its consequent advantage in speed of building, safety etc'* (HBC, 16 Aug 1959). Keen to experiment with new techniques Sheppard Fidler suggested that the Committee too would wish for Birmingham to be recognised in the vanguard: *'I am of the opinion that your Committee would probably wish to be associated with the introduction of the 'lift slab' method of construction for the first time in Great Britain'.* His proposal was agreed on 16 August 1959 with the consequence that a contract with RM Douglas was drawn up in September 1959 for the construction of three, nine-storey flats at a cost of £234,761,10s,9d (HBC, 16 Aug 1959).



technical section

The Architects' Journal for March 24, 1960 1477

Fig. 12 (above). The position at the end of the first lifting operation. Slabs 1, 2 and 3 are in their final positions. The outer edges of collars around the corner column (top centre of photograph) have not been fully covered with concrete. Fig. 13 (below). The jacks are mounted on top of the columns for the first lift to the second section of one of the blocks of flats. The first section slabs (right background) have been hoisted to the top of the first column lift.

Figure 150: Feature on the Lift Slab method used in Birmingham. Source: Architects Journal (24.3.60).

The implementation was widely reported and featured in an article in the *Architects Journal* of 24 March 1960 with particular attention being paid to the method of construction and features of the design, including the twelve supporting columns on either side of a central corridor that would enable each block to accommodate thirty-four flats. The treatment of the external walls with an outer brick face and inner breeze block layer to form a cavity and the inclusion of electric under-floor heating also drew attention as well as the reported speed of construction. The Journal concluded that the principal benefit was being able to perform work at ground level that resulted in quicker and also safer construction (Architects Journal, 24 Mar 1960). The method of construction was felt to have the potential in the longer term to deliver cost savings when more work could be scheduled to take place before lifting. There was some disappointment that the builders appeared reluctant to incorporate electrical and plumbing services into this phase of construction, an oversight that was excused by failings in coordination between architects and builders.

Figure 151: Advertisement for the Lift Slab system stressing the flexibility of configuration in contrast to large panel systems of the day. Source: Interbuild 3 (1965).

Figure 152: Camus and Bison entries in the Comprehensive Industrialised Building Systems Annual (1968) Source: Product Journals.

Frustrations with the slow pace of building in Birmingham in the early 1960s coincided with a growing interest in System build. Responding to Ministry concerns about the pace of building in the City Harry Watton, as Chairman of the General Purposes Committee invited contractors in to discuss the issue (HBC, 27 Feb 1962). In accepting that the '*speed and ratio of house building has declined in*

the last few years' he wondered *'whether there was anything which could be done by the introduction of different methods of producing houses: after the war, for example, quite a lot of dwellings had been constructed by means of pre-fabrication. Was there anything better today than the traditional methods of house construction?'* (HBC, 27 Feb 1962). Perhaps unsurprisingly the Contractors focussed their attention primarily on initiatives that might allow them to benefit from larger contracts. Citing a desire for greater continuity and larger contracts they suggested that a relaxation of the rules regarding sub-contracting might be beneficial. Allowing firms to sub-contract for labour without the need to directly employ the workforce could they believed increase their output. They also suggested that, in support of the work of the City Architect an increase in the size of his Department might speed construction and, in a surprising intervention they stressed the City Architect's commitment to the standardisation of both design and components greatly eased the process of construction that could not be guaranteed with external architects. Sheppard Fidler was also praised by Mr Smethurst of Laing's for his commitment to new technology: he suggested that the City Architect *had 'never closed his ears to the question of research into home building methods'* (HBC, 27 Feb 1962).

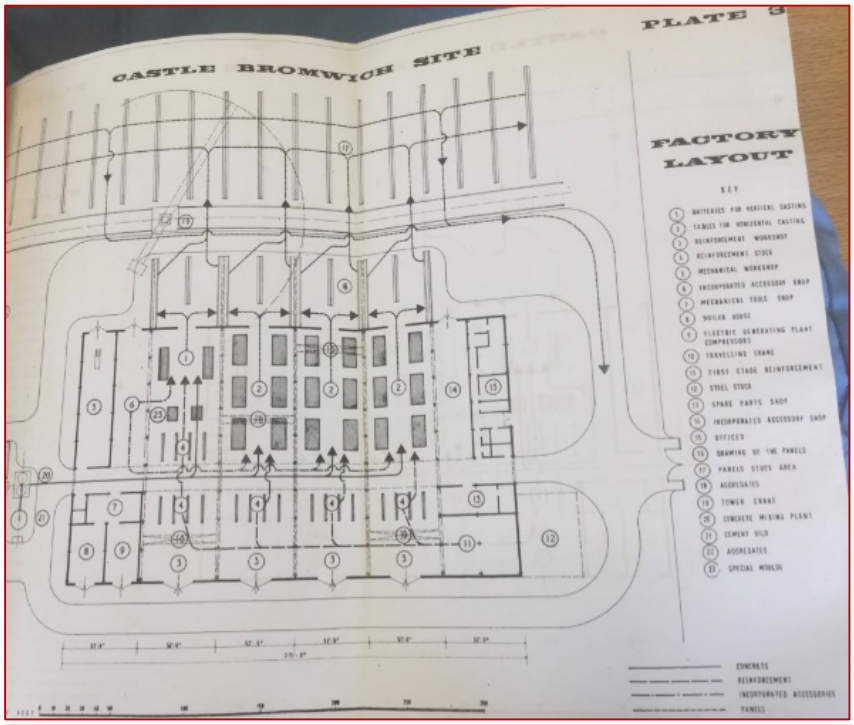
Evidence from Birmingham's key building firms confirmed the City Architect's willingness to consider and support System build. He believed that, so long as he could control the design the resulting product could potentially be more cost effective, faster to implement and have less reliance upon scarce skilled resources. The City Architect's forays into System build would see him engage with two providers at the forefront of the initiative. Working with Concrete Ltd and Camus would result in an early experiment with the former to erect a nine- storey block. He pointed out to the Committee that *'Concrete Ltd of Birmingham have made considerable advances'* and stressed that *'the size of the housing problem is such that it cannot be solved by any one system or any one firm, and it is only by the simultaneous use of all the available resources and harnessing the efforts of both national and local firms that a real impact can be made'* (HBC, 19 Apr 1962). His commitment to the potential of System build would result in an early investigation of the French Camus system that would provide a long running theme of the Housing Committee's discussions on the use of new systems. Keen to explore its potential, by April, Sheppard Fidler was seeking permission for one of his deputies, Ceri Griffiths, Principal Housing Architect, to visit Paris to inspect the Camus Building System (HBC, 19 Apr 1962).

Griffiths consequently travelled to Paris between 17-22 May 1962, and investigated and reported on his observation of two Camus factories and seven construction sites providing accommodation, ranging from single storey to 13- and 20-storey blocks. He would go on to produce a comprehensive and compelling report based upon a written questionnaire, submitted prior to his trip, and a

thorough personal examination of two factories and multiple construction sites. He split his final report into two sections (see Appendix C), the first that covered a general analysis and covered the main features of the system and its technical implications and, a second part that considered the possibilities of adapting the system '*to our own housing programmes together with a theoretical study of its application to our Castle Bromwich site'*. The conclusion was that it was the opinion of the City Architect and his Deputy that *'the large number of dwellings this site could accommodate was ideally suited to a system that offered the potential to provide significant economies'*. Griffiths's introduction described the Camus organisation in detail, describing its formation in 1949 and its extensive experience in multiple countries represented by some 42,000 completed dwellings. His narrative would provide a comprehensive justification for the concept of System building and the Architects Department's support for it in Birmingham. Describing in some detail, the features of the system, its production and construction method and its use of new technology such as the tower crane, he explained the system leant itself to *'a general arrangement of high buildings surrounded by lower blocks, such as four storey maisonettes and two storey houses, provided the layout allows the crane to work in a continuous manner'* (Griffiths, 1962: 5). Unsurprisingly this not only ideally suited the City Architect's preferred mixed-development model but had the stated benefit of providing *'a design that ensures that maximum efficiency is achieved, not only in the economic employment of plant and equipment, but also in the production and organisation of the factory in terms of output, delivery and erection'* (Griffiths, 1962: 6). Griffiths went on to describe the advantage of limiting dwelling types or at least the different elements within the buildings.

Clearly, advanced discussions had occurred with Camus and the report suggested a local factory could be justified for volumes of 2,000-3,000 homes with an annual production of at least 750-1000 units. This was considered easily achievable in Birmingham. It would appear that the Architects Department took at face value claims that Camus presented to them and elsewhere at the time relating to specific metrics. Griffiths repeated Camus' estimate that a typical unit using the Camus system would approximate to 1,000 man hours contrasting with 1,800 for traditional construction. He repeated that just 12-15 per cent of labour would be skilled and the repetition of unskilled tasks would ensure both greater efficiency and increased productivity. The impact on cost was estimated to be around 15 per cent although experience building 1000 dwellings in Lorraine resulted in actual savings of between 15-20 per cent. Speed of erection was also greatly improved helped in part by the removal of seasonal disruption and was estimated at between 25-50 per cent dependent upon local circumstances. To limit fears about adopting a foreign system that might have implications for local standards Griffiths continued*: 'Finally it should be stressed that there is no question of imposing a*

French design or adopting French practice in order to use the system, and no lowering of our standards, either in layout or dwelling design, would be involved.' (Griffiths' 1962: 16 Part II).



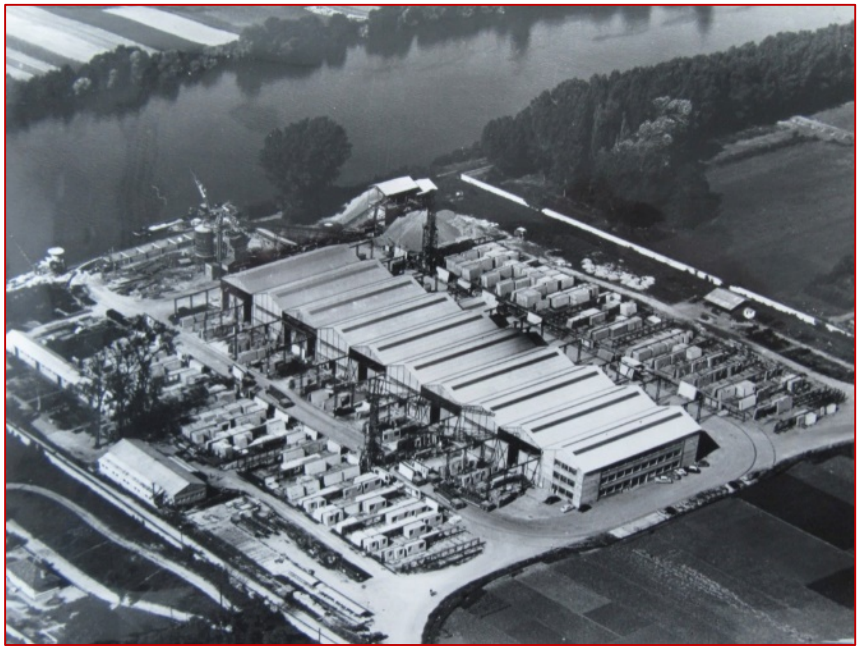


Figure 153: Sheppard Fidler's plan for Castle Bromwich Camus Manufacturing facility and image of the Camus facility at Montesson. Source: Housing Committee Minutes (Oct 1962) and Concrete Society (1963).

To provide to the Committee a practical illustration Griffiths went on to examine the viability of using the Camus system for the Castle Bromwich site, planned to incorporate 4,500 dwellings. For this exercise, Griffiths allocated 2,500 dwellings to Camus that would incorporate two, four and ten-storey buildings. Once the factory was completed he estimated this number could be completed within thirty-eight and a half months. He went on to provide comprehensive plans including the size

and cost of establishing the factory which would cover some 5.5 acres was estimated to cost £350,000 with the addition of a further £35k for site-works, an investment that would be made by the successful contractor (Griffiths, 1962).

Griffiths finished his report with a personal statement on the suitability of the French system for Birmingham: *'The Camus system, in my view, presents a well tried and efficiently organised method of house building. Its only limitations are an acceptance of a basic discipline of thought. From my investigations I am satisfied that this discipline will not have a significant effect either on layout and dwelling types designed to meet our own requirements, or that it will result in a monotony of external appearance.'* (Griffiths, 1962: 19). He then went on to appraise the aesthetic potential of the system *'From my observations of completed buildings, it does not appear that the aesthetic potentialities offered by the system have been fully exploited. There is nothing in the technique to suggest that a greater variety of expression cannot be attained…'* (Griffiths, 1962: 19). It would therefore appear that the system could accommodate Sheppard Fidler's aesthetic aspirations.

As regard to meeting the cost and output constraints of the Committee Griffiths *concluded 'In my opinion, the adoption of the system at Castle Bromwich would not only provide a valuable contribution in achieving the general aim of reducing building costs and increasing the tempo of building, but would add substantially to our present programme. The bulk of the labour employed is unskilled and the system can, therefore be regarded as supplementing and not competing with the labour demands of the building industry generally'* (Griffiths, 1962: 19).

The adoption by Birmingham of a fully-researched Industrialised system was just one constituent of Sheppard Fidler's plans. Energised by the relative early success of pre-fabrication in schools he recognised the potential benefit of Consortia. This was very much Ministry thinking and the City Architect felt the potential benefits well worth investigating. He therefore introduced the possibility of Birmingham forming a consortium with Liverpool and Manchester on a number of occasions in April and May. Originally permission to explore the possibility was given (HBC, 5 Apr 1962) followed by a further discussion at 'Officer' level attended by the Chief Architect of the MHLG (HBC, 11 Apr 1962). A further meeting on 14 April authorised a meeting *'strictly within terms of your Committee's authority and without any commitments being entered into'* (HBC, 14 Apr 1962). Clearly the House Building Committee were suspicious and keen to ensure they had the last word on any potential collaboration.

Nevertheless, Sheppard Fidler outlined the possible benefits:

- Improvements in efficiency and economy by pooling knowledge in design and techniques

- Possible adoption on a common basis of a system of Industrialised building which would make the least demands on available building trade labour, the aim being quicker and cheaper building'

(HBC, 14 Apr 1962)

Whilst the Ministry were keen to promote the potential of consortia the concept would have appealed to Sheppard Fidler. He would have been well aware that Liverpool in particular were in advanced discussions with Camus and participation in a Consortium with the city could positively influence Birmingham's adoption of the system. It also had the potential to strengthen Sheppard Fidler's own position as he recognised that: *'there are partially designed Industrialised systems requiring further work to develop a complete industrial process'* (HBC, 11 Apr 1962) and undoubtedly relished the opportunity to provide architectural input. In the quest to maintain a hold of production Sheppard Fidler and his deputy were pursuing two avenues of attack. The concept of a Consortium followed Ministry recommendations but also guaranteed the criteria for success for System build could be met. Namely that sufficient volume could be delivered to maintain consistent production. Sheppard Fidler, his Deputy and as it transpired his counterparts in Liverpool also favoured the adoption of Camus, a system that he felt confident could accommodate his own designs. These two arguments if successful would strengthen the City Architects position and allow him to maintain control not only of design but also production. What quickly became clear though was that powerful individuals within the Council had their own ideas.

The man who it would transpire was keen to remove control of production from the City Architect, Councillor Harry Watton, leader of the Labour Group in the Council, was quick to voice his objections to Birmingham participating in a consortium. For Watton the possibility of joining Manchester and Liverpool in a powerful consortium of local authorities was undesirable *'as he felt that Birmingham was large enough to take the whole production of an entire factory'* (HBC, 25 Jul 1962). Whether it was the risk of losing some element of control in production or, genuine concern that the benefits were questionable, Watton would be steadfast in his opposition to considering Ministry guidance and joining a consortium. The alternative view held by the City Architect suggested that the problems encountered in the three cities were consistent and comparable and so any challenges specific to Birmingham might be more easily alleviated if they had already been experienced elsewhere. Wholly in favour of the proposal Sheppard Fidler continued to report regularly on the perceived benefits of a consortium believing it might deliver:

- the regular exchange of technical information covering standards specification etc

- the possible standardisation of building elements fitting and equipment and 'such other factors as might contribute towards greater speed and economy of house building within the existing programme and resources (eg Industrialised Building).

(HBC, 6 Dec 1962)

The Committee generally accepted that further discussion was welcome and, although opposition continued further discussion should focus on *'actual experience in the use of specialised systems of building, materials employed, mechanical equipment'* (HBC, 6 Dec 1962). Despite Sheppard Fidler's enthusiastic support eventually the Committee would conclude that whilst technical exchange was valuable and could conceivably lead to a further rationalisation of techniques there was no need for a *'contractual consortium'* and due to differing circumstances each city *'must take charge of its own arrangements for contracts'* (HBC, 6 Dec 1962).

Sheppard Fidler, acutely aware of the challenge to meet housing targets believed that System build could offer exciting possibilities and its eventual adoption by local authorities was inevitable. His decision to take the lead in researching potential systems would allow him to both acquaint himself with the systems available on the market and potentially select one that would not threaten his control of design. A thorough investigation and the production of a compelling case in favour of Camus would potentially avoid him being corralled into a relationship that didn't suit him.

The production of his Department's report following the visit to Paris was certainly comprehensive and clearly designed to ensure the City Architect's case was compelling and few questions remained unanswered. Although clearly produced with the support of the Camus organisation it certainly included greater detail than many of the contemporary reports from either the Ministry or those emanating from the influential Cement and Concrete Society Housing. Both organisations were keen to sell the concept but were less detailed when it came to discussing implementation.

Figure 154: Unit Construction advertisement announcing selection of Camus System for 2,500 homes in Liverpool. Source: Interbuild (1963).

Having failed to convince the Committee of the benefits of forming a consortium, a factor that may have helped his case for the adoption of the Camus system, the City Architect continued to prompt negotiations. Liverpool, one of the potential members of the proposed Consortium, was already in advanced negotiations with Camus and a partnership may have sealed the deal with the French company for Sheppard Fidler and Birmingham. Nevertheless, Sheppard Fidler continued to report: *'that he was of the opinion that the only way of solving the slum clearance problem in the city would be by the use of mechanical systems of building in addition to conventional methods'* and therefore sought permission to commence negotiations with both Camus and Concrete Ltd, as Camus was *'already exciting interest from firms interested in using the system'* (HBC, 19 Jul 1962). Despite his personal preference, the City Architect was very much aware that Concrete Ltd and local firm Bryants were never far from the Housing Committee's thinking. Discussion relating to a Bison prototype nine-storey block at Tyburn Road, Erdington, would result in a closer inspection of the firm's work. In order for the Committee to fully appreciate their proposition, Concrete Ltd proposed a 'fully funded'

visit to a site in Hounslow. For the sake of appearances Harry Watton objected to the firm bearing the cost of transport, but put on record that he had *'no objection to accepting any hospitality which the company might wish to extend to the Committee'* (HBC, 19 July 1962).

Having already engaged in discussion relating to System build the Housing Committee was keen not to miss out on one of the key events relating to the subject and approved attendance for one officer and one Committee member at the Cement and Concrete Association '*Housing from the Factory'* Conference (HBC, 6 Sep 1962).

Councillor TW Matthews and Senior Housing Architect Ceri Griffiths attended the conference and provided feedback in the form of a report to the Committee (Matthew, 1962). Both would reliably communicate the key messages from the Ministry, highlighting Government support for the initiative along with general concerns about the state of the building industry. The criticisms of traditional practice were faithfully reported, referencing the *'hand to mouth method employed and the generally appalling conditions under which accuracy and quality are expected'* and the assertion that *'the older traditional skills were no longer applicable to the circumstances which demanded speed as well as accuracy'* (Matthew, 1962:1). The report also reported a general feeling of attendees that *'present methods adopted by the building industry were described as being obsolescent'* and that this, allied to the increasing cost of traditional building and the shortage of labour, heralded a *'new kind of expertise on which the machine would be fully exploited'* (Matthews, 1962: 2). Prescient to the concerns of the Trade Unions the report also noted that support from the Trade Unions would likely be forthcoming as they themselves recognised the need for change. In a concise and accurate report that faithfully captured the essence of the event according to the widely circulated transcript of the presentations, Councillor Matthews went on to explain to his colleagues the difference between Open and Closed systems and how one might follow the other. If any of the Committee was in any doubt before about the Ministry position, Councillor Matthews heralded the news that change was afoot and moves towards industrialisation would be welcomed and encouraged from central government (Matthews, 1962).

The role that the Cement and Concrete Association played in promoting System build to local authorities was further demonstrated when not long after the conference an invitation was received inviting the Committee to visit Paris to see for themselves the progress made in France with System build (HBC, 16 Oct 1962). The proposed agenda would take in visits to Coignet, Camus and Balency. Perhaps not wishing to cloud his Committee's judgement the City Architect is recorded as harbouring strong feelings that in the light of his Department's investigation and report into Camus, the time could be better spent exclusively with the Camus organisation. Whilst the Committee felt it

appropriate that just one of their number attend the Conference in London they had no difficulty approving the attendance of the entire Committee on a four day trip to France at an individual cost of £35 and a total expenditure of £700. The visit to Paris would see the Committee accompanied by representatives of the Birmingham Association of Building Trades Employers and the Birmingham Branch of the National Federation of Building Trades Operatives. Despite attendance, any hope that the visit might galvanise the Committee to adopt the Camus system was short lived, and discussions concerning the implementation of System build and possible approaches would continue.

Meanwhile Sheppard Fidler, this time in conjunction with the Housing Manager, JP Macey continued to press his case for Industrialised Building with a report addressing how the Corporation might get houses built more quickly and how Industrialised building might be appropriate for Castle Bromwich (HBC, 13 Dec 1962). Clearly feeling a need to state his objectivity, Sheppard Fidler was at pains to stress that there had been no *'half hidden promises of arrangements with any of the companies concerned'* (HBC, 13 Dec 1962). He nevertheless continued to extol the virtues of the Camus company, in his opinion the most advanced of any company with regard to pre-casting and transportation. With regard to Castle Bromwich he believed that circumstances there favoured the adoption of Industrialised Building. It was; both a large site able to provide the required volume, a flat site that aided transportation and had the benefit of being able to provide a ready-made facility in the old British Industries Fair building for the construction of a casting factory. He also pointed out that of all the Industrialised contractors none other than Camus had promised to refund any reduction in cost for implementing their systems, something that he believed evidence from elsewhere suggested was achievable. For the City Architect the Committee had a unique opportunity because he *'believed that by adopting the Camus system, buildings would be produced quicker and cheaper'*. He concluded that taking into account the *'thirty systems that could be considered 'in a bracket', in his opinion no existing system could compare with Camus in that all forms of building could be provided from bungalows to multi-storey*' (HBC, 13 Dec 1962).

Pressed to approve the French system, when it came to the final decision the Committee was able to demonstrate a mastery of obfuscation. Councillor Jackson conceded the City Architect had provided a balanced recommendation but was concerned that actual savings were not clear. He was also concerned whether the French system would be compatible with British standards and wondered why it was necessary to commit to a figure of 2,500 when perhaps traditional building could be delivered within a similar timeframe. The Housing Manager suggested that he was more concerned with speed of production and delivery than cost. The fact that all of these concerns had been handled by the City Architects Department reports and statements must have been a source of frustration not only for the City Architect. His Senior Housing Architect, Ceri Griffiths attempted to

address these objections but as soon as one had been clarified another would appear, often contradicting an earlier position. Having previously stated that potential cost savings were not clear the Committee proceeded to confirm that price was not the only criterion. Councillor Matthews was concerned that British systems had not been investigated fully and if there was a cost saving, building firms would be reluctant to engage due to the smaller returns. He was particularly concerned by reports in the Builder that suggested profits for the contractor were realised only after two years production. Councillor Matthews then recommended circulating a list of requirements to builders asking for pricing and their commitment to using an Industrialised system of the Camus type, or indeed a traditional system. Despite Sheppard Fidler's assurance that a number of large scale builders were interested in adopting Camus should Birmingham commit to it, little impression was made. Alderman Grogan said '*that he had not been convinced by anything he had seen up to the moment. He would not at all be enamoured of a system merely because it was cheaper'*. Alderman Watton was the first to openly suggest bias, suggesting that *'he had a feeling that there was some pushing of the Camus system…. That there might be some exaggerated statements being made in support of Camus'* (HBC, 13 Dec 1962). Alderman Apps said he would like to have comments from Camus customers. Eventually it was resolved that *'mechanised factory produced housing should be brought into being as a supplementary to their house building programme as quickly as possible'* (HBC, 13 Dec 1962) and instructed the City Architect to report on the conformity of Camus with British specifications, or present any other systems again in two months-time. It was clear at this stage that Sheppard Fidler's considered approach and his team's analysis would count for little, as he would say later '*I honestly think that some Aldermen and Councillors thought I was going to import hundreds of Frenchmen into Birmingham, which would not do at all!* (Sheppard Fidler, 1987).

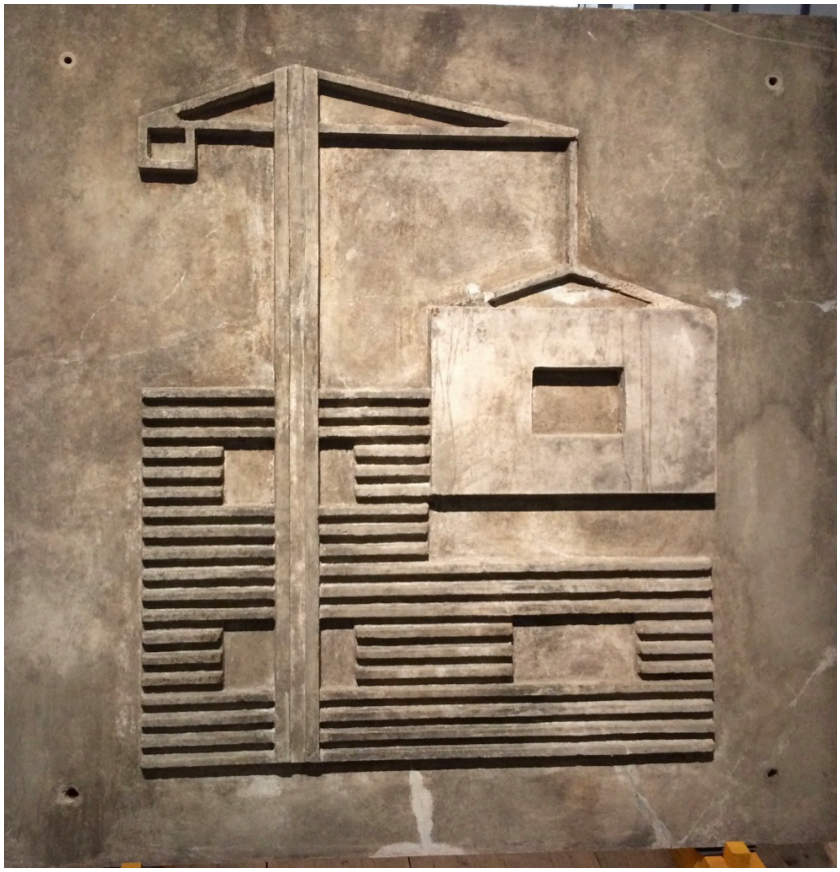


Figure 155: Camus sign removed from discontinued manufacturing facility. Source: Flying Panels Exhibition, Stockholm (2020).

The City Architect would dutifully report back as requested addressing a number of the concerns previously expressed (HBC, 13 Dec 1962) specifically regarding the cost of the Camus factory (which would be absorbed into the cost of production), the payment of fees to Camus (similarly absorbed into the cost of housing), the commencement of building bearing in mind the factory would take 18 months to complete (the same time it would take to complete ground-works). He also felt it appropriate to consider ancillary benefits that might be achieved. For instance, the factory could provide vital production for the smaller sites that were often found to be uneconomic, and that Birmingham might produce standard forms of its own design for other smaller authorities. Having clearly felt that he had made his case, Sheppard Fidler concluded by asking permission to formally adopt Camus for Castle Bromwich, to collaborate with Camus on plan forms and invite selected contractors to quote for the provision of the Camus system at Castle Bromwich.

Within just a few days the Committee would receive a report from the Housing Manager (Macey, 1962) relating to the maintenance, planning, services and appearance of Camus-designed buildings. He reported that no issues relating to maintenance had been reported after a decade but that the French fashion to repaint external blocks every six years would be inappropriate for Birmingham but the availability of self-cleansing mosaic finishes would render this unnecessary. The concern that

French systems were incompatible with British standards was also countered when he reported that regional variations relating to heating, size of lifts etc. were all surmountable by correct specification. Concerns relating to appearance were also concluded to be unfounded so long as monotony was avoided by the use of mixed-development. Councillor Webster, (Chair of Housing Management Committee) and JP Macey (Housing Manager) concluded that, from visits and discussion with other authorities*, 'all appeared to take the view that the Camus System was likely to prove the most satisfactory'*.(16/10/62) They concurred with this viewpoint, concluding that *'in effect the client and the clients architect virtually 'get what they ask for' 'there is no question of being saddled with flats of French design and with heating and other services not in accordance with our own requirements'* (Macey, 1962:2).

With the forthright support of the Housing Management Committee, Sheppard Fidler would continue to press his case for the adoption of Industrialised Building in Birmingham and would go into the New Year with new designs for multi-storey flats *'making every effort to accelerate the housing programme by further standardisation of design'* (HBC, 3 Jan 1963). His plans demonstrated a standardisation so far as is possible in *'both in plan type and arrangement of staircases, lifts and refuse chambers'* and were approved by both the Housing Manager and Building Surveyor as meeting all their requirements. His designs would incorporate 9-, 11-, 16- and 20-storey blocks.

Types 9/F/62 and 11/F/62	Four dwellings per floor of two, two bedroom and two, one bedroom served by one staircase and one lift in case of nine-storey block and two lifts for higher 11-storey blocks. The provision of an additional lift shaft in the lower blocks allowed an upgrade if necessary but facilitated identical structural layout
Types 16/F/62 and 20/F/62	Six dwellings per floor consisting of three, two bedroom and three, one bedroom served by one staircase and two lifts identical structural layout as before but with 'component elements being adjusted (not changed) to allow for the inclusion of two additional flats'
Types 9/MF/62	Three bed maisonettes and one bedroom flats served by two lifts and two staircases with central corridor on alternate floors giving access to eight maisonettes and four flats intended for nine-storey block. Designed to provide larger accommodation required by the Housing Manager

Figure 156: Sheppard Fidler proposed plan types. Source: HBC, (1963).

Sheppard Fidler was conscious of the opportunity of developing new plan types that might be suited to his preferred Camus system, and therefore engaged with them directly to ensure compatibility; he reported that he had discussed these new plan forms with Camus (HBC, 7 Mar 1963) who confirmed they could be built using their system. Meanwhile the Committee's reluctance to commit to Camus would be characterised by a range of delaying tactics. Concerns regarding the increased cost of multi-storey blocks surfaced when requesting comparative costs for traditionally-built homes in two, three and four-storeys for Castle Bromwich (HBC, 7 Mar 1963). At the same meeting they also expressed a desire tnbco learn more about British Industrialised systems and pondered whether, instead of giving a large percentage of the Castle Bromwich site to Camus, it would be better to divide it up amongst British Industrialised contractors. Sheppard Fidler responded that his intention was only ever for Camus to provide 50 per cent of the housing at Castle Bromwich leaving the remainder for Birmingham's established builders. He stressed that the *'fear expressed by some members that the larger firms in Birmingham would not have the opportunity of making their contribution at Castle Bromwich is, therefore, groundless'* (HBC, 7 Mar 1963).

Sheppard Fidler's commitment to Camus remained, whilst responding positively to often-repeated objections relating to adapting the French system to British specifications. In order to stress the imperative to make a decision he also provided a regular update on the state of System building within local authorities. Capitalising on the Committee's often witnessed reluctance for Birmingham to be left behind, the City Architect attempted to force a decision by highlighting other authorities' advances. He was able to confirm that Liverpool were now committed to Camus, the LCC to Larsen Nielsen and Manchester to SECTRA. As none had completed work he was unable to provide any form of cost comparison but was able to provide an update on the status of various industrial systems including Larsen Nielsen, Coignet, Reema, SECTRA and Skarne (HBC, 7 Mar 1963).

Figure 157: Sectra system in Heywood, Lancs. Laing adopted the Sectra system amongst others. Contemporary images often highlighted construction progress, in this case after 12 weeks. Source: The Concrete Society.

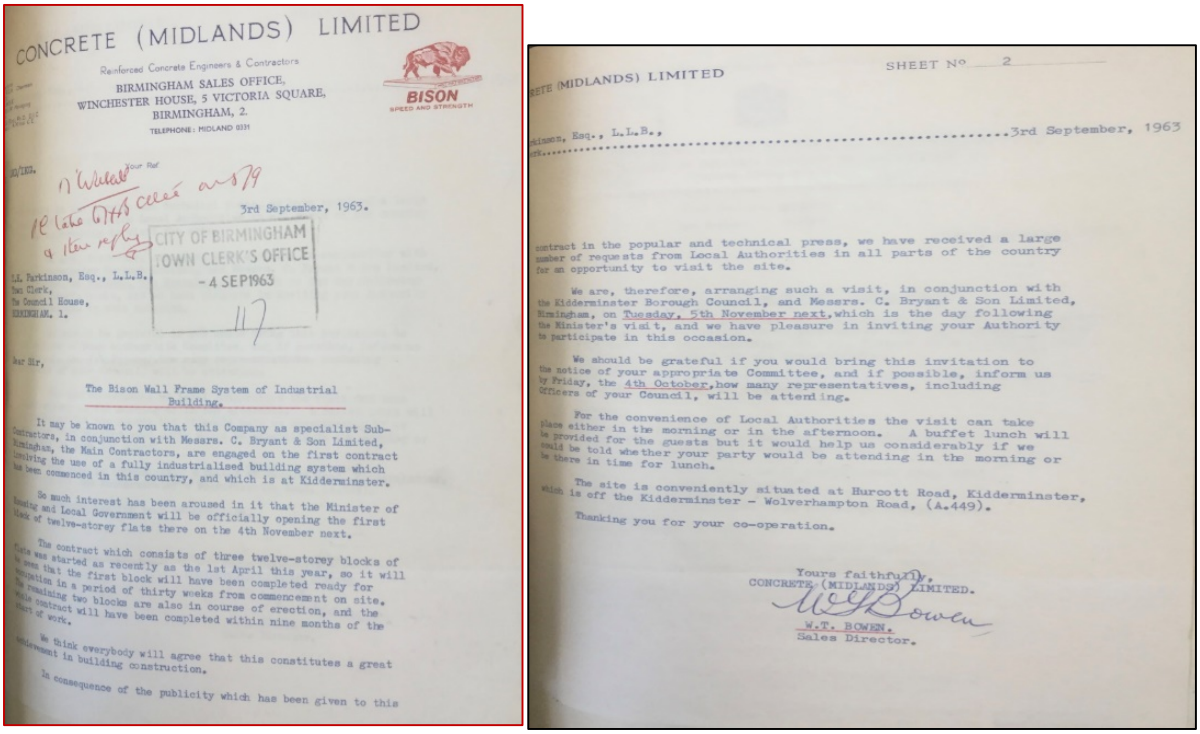
Figure 158: Partially-completed Sectra system flats by Laing at Heywood, Lancs. Source: The Concrete Society.

The City Architect's quest to see Camus adopted by Birmingham though would run up against a determined and powerful adversary in the form of Councillor Harry Watton. As Chair of the powerful

Public Works Committee the two had already clashed over conflicts of layout at Castle Bromwich. Watton had previously supported the City Engineer's desire to develop the layout with the City Architect inserting his homes. Sheppard Fidler had responded to the City Engineer *'You damned well won't, you know – we'll design the area and you'll put in the drains'* (Sheppard Fidler, 1987). This clash would characterise much of the interactions between Harry Watton and Sheppard Fidler in the coming months. Victim of the Committee's growing concern over completions Sheppard Fidler would become increasing vulnerable. In 1961 completions had been only 1,161 representing less than a quarter of the peaks achieved during the 1950s.

Figure 159: Harry Watton (right) with Housing Minister Richard Crossman. Source: Birmingham Mail.

Harry Watton was unsympathetic to Sheppard Fidler's *'elaborate mixed-development'* ethos (Glendinning and Muthesius, 1994: 248) and this view was gaining some sympathy within the Housing Committee. Watton was also fiercely opposed to the City Architect awarding contracts to national firms focussed primarily on design rather than output. The growing influence of Harry Watton energised the Housing Committee's reluctance to sanction adoption of a system of construction described by Sheppard Fidler as one that *'you could mould, could design'* but for Watton represented the apparently unnecessary '*deluxe engineering of Camus'* (Glendinning and Muthesius, 1994: 248).



CONCRETE (MIDLANDS) LIMITED

Reinforced Concrete Engineers & Contractors

BIRMINGHAM SALES OFFICE,
WINCHESTER HOUSE, 5 VICTORIA SQUARE,
BIRMINGHAM, 2.

TELEPHONE: MIDLAND 0331

BISON
SPEED AND STRENGTH

3rd September, 1963.

CITY OF BIRMINGHAM
TOWN CLERK'S OFFICE
- 4 SEP 1963
117

L.L. Parkinson, Esq., L.L.B.,
The Town Clerk,
The Council House,
BIRMINGHAM, 1.

Dear Sir,

The Bison Wall Frame System of Industrial Building.

It may be known to you that this Company as specialist Sub-Contractors, in conjunction with Messrs. C. Bryant & Son Limited, Birmingham, the Main Contractors, are engaged on the first contract involving the use of a fully industrialised building system which has been commenced in this country, and which is at Kidderminster.

So much interest has been aroused in it that the Minister of Housing and Local Government will be officially opening the first block of twelve-storey flats there on the 4th November next.

The contract which consists of three twelve-storey blocks of flats was started as recently as the 1st April this year, so it will be seen that the first block will have been completed ready for occupation in a period of thirty weeks from commencement on site. The remaining two blocks are also in course of erection, and the whole contract will have been completed within nine months of the start of work.

We think everybody will agree that this constitutes a great achievement in building construction.

In consequence of the publicity which has been given to this

CONCRETE (MIDLANDS) LIMITED SHEET No 2

...3rd September, 1963

contract in the popular and technical press, we have received a large number of requests from Local Authorities in all parts of the country for an opportunity to visit the site.

We are, therefore, arranging such a visit, in conjunction with the Kidderminster Borough Council, and Messrs. C. Bryant & Son Limited, Birmingham, on Tuesday, 5th November next, which is the day following the Minister's visit, and we have pleasure in inviting your Authority to participate in this occasion.

We should be grateful if you would bring this invitation to the notice of your appropriate Committee, and if possible, inform us by Friday, the 4th October, how many representatives, including Officers of your Council, will be attending.

For the convenience of Local Authorities the visit can take place either in the morning or in the afternoon. A buffet lunch will be provided for the guests but it would help us considerably if we could be told whether your party would be attending in the morning or be there in time for lunch.

The site is conveniently situated at Hurcott Road, Kidderminster, which is off the Kidderminster - Wolverhampton Road, (A.449).

Thanking you for your co-operation.

Yours faithfully,
CONCRETE (MIDLANDS) LIMITED.

W.T. BOWEN.
Sales Director.

Figure 160: Invitation from Concrete Ltd to visit their completed Bison block in Kidderminster. Source: Housing Committee Records.

The conflict would culminate in 1963 when Harry Watton would assume *'effective control of site development and contractual policy'* (Glendinning and Muthesius, 1994: 248), imposing a production led policy relating to both Castle Bromwich and the numerous gap sites for which Sheppard Fidler had Camus in mind. The Committee's refusal to concede to Sheppard Fidler's recommendations regarding the adoption of Camus in Birmingham would come to a head when the Committee accepted an invitation from Concrete Ltd's Sales Director, WT Bowen, to visit their recently completed twelve-storey Bison Wall Frame blocks in nearby Kidderminster (HBC, 3 Sep 1963). The three blocks would be formally opened by the Minister of Housing on 4th November with the Birmingham Committee scheduled to attend two days later. Sheppard Fidler later recalled his incredulity when Harry Watton returned from lunch with Bryant's Director Chris Bryant, local partner of Concrete Ltd. *'It must have been a marvellous lunch! – and Watton came back and said Bryants have the most marvellous type which they can put up in a few weeks – can you please find half a dozen sites where we can put them up straight away?'* (Sheppard Fidler, 1987). The comparisons with Sheppard Fidler's early days in Birmingham when he was instructed to find locations for Wimpey's Y-shaped blocks must have been all too obvious to the City Architect. He had quietly focussed his attention on ensuring Birmingham transitioned from a low quality, high volume ethos to one that celebrated well-designed mixed-development estates. At times this meant that the City Architect had to compromise his personal preferences and increasingly incorporate high blocks into his designs. The Committee's visit to Kidderminster would become a flashpoint and was vividly recalled *'In order*

to get to the block we passed through a marquee that was rolling in whisky, brandy and so on, so by the time they got to the block they thought it was marvellous….then as we were leaving, at the exit Harry Watton suddenly said, 'Right! We'll take five blocks'- just as if he was buying bags of sweets' (Sheppard Fidler, 1987). Subsequently Bryant's offered to erect 12 blocks in their 1964 programme. The resolution to accept this offer was swiftly carried with the instruction *'that the city architect be instructed to inform C Bryant and Son Ltd that it is this Committee's intention to place an order…. for the erection during the next twelve months on various sites in the city, twelve storey blocks of flats to the Committee's standard designs…. using the Bison Wall Frame system of construction'* (HBC, 21 Nov 1963).

Figure 161: The completed 12-storey flats in Kidderminster that so influenced Birmingham's commitment to local firm C Bryant and Concrete Ltd's Bison system. Source: The Concrete Society (1964).

Having expended so much energy on investigating System build and promoting the Camus system that had even incorporated advanced designs for a factory and the development of Camus specific plan types, this decision must have been the last straw for Sheppard Fidler. The Committee were

clearly signalling that the days of architect led mixed-development, championed by Sheppard Fidler, were over - production was the key objective, and this meant in future contractors would be given as much free reign as needed to deliver the results. The departure of Sheppard Fidler's trusty lieutenant Ceri Griffiths, reported on 16 January 1964, to take up a position at Dawley New Town, and the arrival of JA Maudsley as Deputy City Architect on 6th February 1964 might seem prescient. By 16 April, after twelve years as City Architect, Sheppard Fidler was on his way. His departure was announced by the Committee with a less than enthusiastic eulogy with a resolution for a vote of thanks for twelve years' service *'and the contribution he has made to the work of this Committee'* (HBC, 16 Apr 1964). That Sheppard Fidler had been something of an irritant in his pursuit of good design would be apparent by later comments. Certainly, the way that his departure was announced in Committee was in marked contrast to the praise that had been heaped upon JR Sheridan Shedden, Sheppard Fidler's deputy, by Alderman Grogan on 18 February 1960 when he left Birmingham for Leeds: *'The Chairman referred to the great assistance which Mr Shedden had always rendered to the Committee as a whole and to him personally during his term of office as Chairman'*. The Committee's preference for a more compliant officer was clear, one that shared their commitment to production and this became apparent on 2 April 1964 when Sheridan Shedden would be warmly welcomed back to Birmingham as the new City Architect. That architectural values would be subsumed beneath the need to increase production would quickly become clear.

7.4 A focus on Production

Figure 162: Early Bison Wallframe 11-storey block in Tynburn Rd Birmingham (May 1966). Tenants complaints about this block coincided with Sheridan Shedden's return to Birmingham. Source: The Concrete Society.

Perhaps ironically, Sheridan Shedden's arrival coincided with complaints about the first of the Bison Wall Frame blocks at Tyburn Road. From the Committee minutes it was now clear that they, and particularly Harry Watton, were taking a more proactive role in deciding the course of development. C. Bryant Ltd, despite the early complaints, would be the principal recipients of their largesse, although Wimpey, Stubbings and others were still active. Sheridan Shedden would re-join Birmingham with a reputation for achieving volume, having *'a formidable track record of type standardisation and production and could be relied upon to boost numbers, even if he had to ruffle designers' feathers'* (Glendinning and Muthesius, 1994: 251). Whilst acknowledging the need to complete 4,000 units, he would be focussed on delivering cheaper homes by taking full advantage of industrialisation and committing to even greater standardisation. Fully aligned with the Committee's new objectives, Sheridan Shedden would present to Committee his staffing requirements in order to meet the higher production targets (HBC, 19 Nov 1964). His revised Departmental structure

resembled more a Contractors than as Architects Office with the administration strengthened to take on more responsibility for delivery. Administrators rather than architects would be responsible for the programming, progress and general administration of contracts, leaving architectural staff responsible solely for research, design and ensuring standardisation. His focus would be entirely on the management and re-organisation of the Department in order to streamline production: no attempt would be made to introduce new plan types, instead he took Sheppard Fidler's designs, reduced their number and made them the basis for negotiated repeat contracts (Glendinning and Muthesius, 1994: 251). Fortuitously, Shedden's arrival also coincided with a marked increase in the land available for development, marking an end to the constraints imposed upon his predecessor. Despite this sudden premium, slum clearance would still remain a priority. Alongside Castle Bromwich, the new Water Orton site that would later become Chelmsley Wood provided an additional 1,540 acres of available land. Other newly available large sites would include Bromford Bridge Racecourse, Kingshurst and Tile Cross.

Figure 163: Bromford Bridge Racecourse with Estate in background. Bromford Bridge was just one of a number of new sites that boosted construction figures. Source: Birmingham Mail (Aug 1961).

This new availability of land would markedly impact the workload of the Architects Department. Despite his attempts to *'relieve the technical officers of as much administrative work as possible'* (HBC, 19 Nov 1964) he would highlight that of the 28 current staff in his Department comprising 13 qualified architects, his requirements necessitated the recruitment of a further 22 staff. In order to better cope with the increased volumes, Sheridan Shedden would propose greater computerisation within the Department, an increase in the number of quantity surveyors, alongside new tendering

and negotiating methods (HBC, 18 Mar 1965). The role of Deputy City Architect, Alan Maudsley, during this period cannot be underestimated. Sheridan Shedden's poor health was no secret and his Deputy would shoulder increasing responsibility, as it was reported that the City Architect had been admitted to hospital (HBC, 23 May 1965) and commenced his convalescence (HBC, 15 Jul 1965). Sheridan Shedden would return briefly on 2 September but would be taken ill again in October (HBC, 7 Oct 1965). With an anticipated return originally promised in December it would later be reported that he had been declared unfit for work in March (HBC, 17 Mar 1966). By April he was dead. His contribution to accelerating Birmingham's house building programme was formally recognised, having *'unsparingly devoted himself to the work of this Committee and contributed with such great success towards the acceleration of this authority's home building programme'* (HBC, 7 Apr 1966). The groundwork had been completed and the transformation was almost complete, *'By 1965, Watton and Sheridan Shedden had virtually completed the reorientation of Birmingham's programme towards production'* (Glendinning and Muthesius, 1994: 251) aided greatly by the sudden availability of land. The Committee having paid tribute to Sheridan Shedden, wasted no time in resolving to appoint the Deputy City Architect, JR Maudsley to be his successor at a salary of £6,260 pa from 19 July 1966 (HBC, 26 May 1966). Alan Maudsley, having worked for both Sheppard Fidler briefly and Sheridan Shedden, would recognise the direction of travel and commit his attention to delivering volume. The priorities for the immediate future would be highlighted in one of his first Committee meetings as City Architect when the adoption of Parker Morris standards was discussed. At the 16 June meeting, Maudsley questioned whether Birmingham should improve accommodation and adopt Parker Morris standards before they became mandatory (HBC, 16 Jun 66). In framing the discussion, he sought to argue that certain of the standards were already in place. However the inclusion of separate WCs, storage space, overall dimensions and the required flexibility of layout seemed fairly fundamental omissions. Tellingly he confirms that the still current standard Sheppard Fidler multi-storey plan types almost completely conformed to the new standards, unlike the more-recently adopted Bison Industrialised production that reflected standard contractor-designed plan types. Maudsley articulated his reluctance to increase specification and therefore cost, and argued persuasively for the retention of the standard contractor plan forms.

Figure 164: Bison wallframe construction in Bushwood Road, Birmingham. Source: The Concrete Society.

A further indication of the switch of priority from design to production was indicated by Maudsley's approach to the appointment of external architects. Whereas Sheppard Fidler had largely limited their involvement to smaller sites and exercised a tight control of their output, Maudsley appointed local firm Ebery and Sharp as commissioned architects for Areas 4 and 5 of Chelmsley Wood. This abdication of direct responsibility for design continued a trend commenced by his immediate predecessor that had witnessed Jackson and Edmonds appointed for earlier stages of development. Further highlighting his priorities, later in 1966, Maudsley would make representation that price should be the primary judgement when deciding competitive tenders and not completion time (HBC, 15 Sep 1966). The difficulty of judging the results of tendering for Industrialised building would be the topic of conversation in November when proposed schemes were not easily comparable. Here Maudlsey suggests working with the Ministry Regional Office to develop specifications and processes for the continued repetition of design that would have the immediate effect of reducing cost. The trend to focus upon production and cost would see the Council build ever higher with the approval of two blocks of 31 storeys 'the Sentinels' comprising 488 flats from C. Bryant at Holloway Circus. The site, originally designated for mixed and commercial development, was altered for economic reasons and it was proposed to press ahead with the erection of the tall blocks and grass over the commercial land for development sometime in the future.

At this stage, Maudsley's presence is still quite evident in Committee meetings, highlighted by his celebration of his time in post. He takes the opportunity to remind the Committee of the

rationalisation of his Department completed in 1964, and the resultant production figures of 1965 and 1966 that reflect 10,000 dwellings placed in contracts in the last year alone. The circumstances of this production success are less evident. Clearly the availability of land had played a major part as had the adoption of Industrialised building but Maudsley had also been able to call upon a much larger Department. To build upon this success he proposed a further wholesale restructure of his Department: *'It is therefore necessary for it to act as a nerve centre controlling the Corporation's construction programmes through the medium of advanced programming methods and co-ordinating services which operate across the whole field of Birmingham's construction requirements.'* (HBC, 15 Dec 1966). Proposing a small increase in staffing, Maudlsey pointed out that £1.4m in contracts had been put out to external advisors.

Value of Contracts	30th Sept 1963	30th Sept 1966
Housing	£29,364,576	£84,505,289

Housing Programme	Y/E 31/12/63	Y/E 31/12/66
Completed	2,508	5,000
In pipeline	4,179	13,714
In contract	4,024	12,152

Commissioned Architects Y/E 30/11/66	Value of work	Fees
Architects	£31,000,000	£1,200,000
Quantity Surveyors	£13,000.000	£200,000

Staff to Housing Programme	No of staff	Value of
	No of staff	Value of Programme
1963	229	£29,364,576
1964	215	£45,438,097
1965	226	£63,553,784
1966	281	£84,505,289

Figure 165: Value of contracted internal and external work. Source: HBC, (1966).

Of these staff, the 45 Architects and Architectural Assistants, would rise to 68 staff with the total staff explicitly involved in housing provision rising from 142 to 171. By the 29 November, Maudsley's request for an increase in staffing had been approved (HBC, 15 Dec 1966).

Maudsley's appearances in Committee have a distinctly different character than those of Sheppard Fidler. Whilst both back up their arguments with detailed justifications and statistics, the impression is that Sheppard Fidler realised that his approach might be at odds with the Committee's views and he therefore needed to seek their permission to take a particular approach. Conversely, the impression given by Maudsley is of an officer completely on point with his Committee's objectives, reporting the requirements for them to achieve their joint goals. As the City Architect and Committee were now both committed to achieving the same objectives, namely, increasing production and reducing cost, there is little disagreement. Maudsley's acceptance of a greater standardisation of designs was evident in a request to upgrade his personal membership of the Modular Society to a group membership extending to his whole Department. *'The Modular Society is a non-profit making Society whose aims are to increase the efficiency of building by promoting the development of modular co-ordination and to improve the architectural quality of standardised components'* (HBC, 5 Jan 1967).

Despite the commitment to industrialisation and the standardisation of design, experience in Birmingham would suggest that production in the region was not following the prescribed methods evident on the continent. In order to streamline production and construction, one of the key objectives of industrialisation was the production on a daily basis of the units immediately required for construction. This seamless process from manufacture to erection was designed to maintain production, minimise storage requirements, reduce damage through double handling and ultimately deliver cost savings. The 'just in time' method of production would be the key to Industrialised buildings potential to deliver efficiency and cost savings. The fact that the City Architect proposed that the Corporation paid for components being stored on the contractor's site gives an indication of this failure. Citing that it was usual practice for the Corporation to pay for units stored on Corporation building sites he suggests this concession be extended to stock held at the manufacturer: *'An approach has been made to the City Architect by C Bryant and Sons Ltd on behalf of their sub-contractors Concrete (Midlands) Ltd, Concrete (Southern) Ltd, Concrete Development Co Ltd who manufacture such concrete units in connection with Bison Wallframe flats, asking that payment shall be made by the Corporation in respect of such manufactured units stored at the manufacturers yard'* (HBC, 19 Feb 1967). Refusal to countenance such a charge must have been an unwelcome response for both manufacturer and contractor but the experience highlights the fact that the balance envisaged between production and construction was not being achieved.

Nevertheless, the number of completed homes in Birmingham continued to rise ensuring a satisfied Committee seemingly content with their City Architect's reduced attendance at Committee. Birmingham rather belatedly accepted the standards proposed by the Parker Morris report (HBC, 1

Jun 1967) and by July the Committee celebrated the 5,000th home to be completed for the year. The continuing commitment to Bison and local firm Bryants was highlighted as Maudlsey was authorised to negotiate with the firm for Areas 6, 7, 11 and 12 in addition to the previously authorised areas 4 and 5 of the Chelmsley Wood development. By November it was reported that the 7,500th home had been completed and the Committee were on track for a likely total of 8,000 for the full year (HBC, 9 Nov 1967). In reality, by the year end the Corporation had completed 8,500 homes and, enjoying this success, Maudsley would renew efforts to increase his staffing, finally agreeing on 32 new posts. By the end of the year it was reported that 107 new staff had joined his Department which now totalled 345 people and represented 92 per cent of his forecasted requirement. Maudsley would proudly report to the Committee *'I have recruited what I consider some very 'top flight' men and women'* (HBC, 21 Dec 1967).

Maudsley's achievement of production targets at this time were heavily dependent upon the increasing number of tall blocks that were being included in Birmingham's development plans despite growing evidence that tenants were rejecting high towers. Despite the availability of new land Maudsley was increasingly dependent upon high-rise development to meet his numbers. The percentage of approvals for high-rise in Birmingham reached a peak in the years following the departure of Sheppard Fidler.

High-rise approvals in Birmingham, 1951-1970			
Year	*High-rise approvals*	*All tender approvals*	*% of approvals high-rise*
1951	180	4654	3.9%
1952	306	3498	8.7%
1953	180	3249	5.5%
1954	698	3968	17.6%
1955	761	2687	28.3%
1956	524	2125	24.7%
1957	486	1775	27.4%
1958	1015	3195	31.8%
1959	1143	2018	56.6%
1960	1193	3704	32.2%
1961	336	856	39.3%
1962	809	2082	38.9%
1963	668	2292	29.1%
1964	2420	4077	59.4%
1965	4487	8741	51.3%
1966	3406	7559	45.1%
1967	1931	8989	21.5%
1968	2154	7877	27.3%
1969	430	1461	29.4%
1970	185	1589	11.6%
Total	23312	76396	30.5%
(Source: DOE files on Birmingham cited in Dunleavy)			
Dunleavy notes that details could not be found for 701 flats equating to 3% of stock			

Figure 166: High-rise approvals in Birmingham. Source: Dunleavy.

The Housing Manager, JJ Atkinson, reported to the Committee his concern at the difficulty of letting flats on the outer estates, to the extent that he proposed omitting them entirely on future schemes (HBC, 19 Dec 1967). In support of his argument he cited the overall percentages of multi-storey development since the end of the war.

Post-war housing by per cent		
Type	Number	Percentage
2 storey house/bungalow	23,121	39.99per cent
2 storey flats	4,644	8.03per cent
3 storey flats	5,494	9.50per cent
4 storey maisonettes	6,608	11.42per cent
Multi-storey	17,962	31.06per cent

Figure 167: Post-war housing by type. Source: HBC, (1967).

Citing more recent development he pointed out that '*for several years the proportion of flats rose as high as 85per cent and the current development at Bromford Bridge where multi- storey accounted*

for 46.6per cent (representing 862 dwellings of the overall development) and Castle Vale where it represented 44.1per cent (1,897 homes)' (HBC, 19 Dec 1967). He recognised that high flats were necessary to achieve higher densities in central areas but questioned the need for multi-storey development in outer areas where the specified density was less and more two-storey homes could be built. This was clearly another example of the Council continuing to build high when successive Housing Managers were reporting difficulty in letting high flats. What is more under both Sheridan Shedden and Maudsley the height of developments steadily increased.

Birmingham - High-rise approvals by storey height 1951-70												
	No of storeys				*% of High-rise*				*% of total approvals*			
Year	*5 to 9*	*10 to 14*	*15 to 19*	*20 +*	*5 to 9*	*10 to 14*	*15 to 19*	*20 +*	*5 to 9*	*10 to 14*	*15 to 19*	*20 +*
1951	180				100				4			
1952	306				100				9			
1953	180				100				6			
1954	698				100				18			
1955	761				100				28			
1956	524				100				25			
1957	486				100				27			
1958	733	67	215		72	7	21		23	2	7	
1959	449	154	540		39	13	47		22	8	27	
1960	442	593	178		35	50	15		11	16	5	
1961	268	68			80	20			31	8		
1962	301	136	372		37	17	46		14	7	18	
1963	347	228	93		52	34	14		15	10	4	
1964	136	1,156	1,012	116	6	48	42	5	3	28	25	3
1965	72	2,763	992	660	2	62	22	15	1	32	11	8
1966	70	2,100	182	1,054	2	62	5	31	1	28	2	14
1967	72	514	430	925	4	26	22	48	1	6	5	10
1968		1,146	494	514		53	23	24		15	6	7
1969				430				100				29
1970	36	43	106		19	23	57		2	3	7	
Source: Unpublished DOE files, cited in Dunleavy												

Figure 168: Approvals in Birmingham by storey height, 1951-70. Source: Dunleavy.

Figure 169: Castle Vale Estate, the mixed-development model replaced by rows of high towers. Source: Municipaldreams.wordpress.com.

This episode marked a realisation that whilst the House Building Committee was focussed on production there were others within the Corporation, not least those representatives on the Housing Management Committee, who were beginning to articulate their concern at Birmingham's over reliance upon high blocks. In concluding his appeal, the Housing Manager prophesied that the high blocks completed at Chelmsley Wood would prove difficult to let. Clearly there were developments such as Castle Vale where high flats were always intended but, at Chelmsley Wood they appeared to be an afterthought. Harry Noble (Deputy City Architect) recalled in a personal interview (see Appendix G) that on presenting the completed plans for phases in the Chelmsley Wood development, Alan Maudsley, on reviewing the plan, arbitrarily added three high towers to the perimeter of the development. Why Maudsley felt such an intervention was required begs interesting questions. Was the addition designed to raise density? Was it a genuine attempt to make more use of available land or was it the result of contractor pressure to maintain System build output and provide more work for local builders, C Bryant Ltd.

Figure 170: Chelmsley Wood Development showing at least three somewhat arbitrarily positioned high-blocks. Source: BirminghamLive.

Whether the realisation that the building and letting of Council properties deserved to be better integrated into production marked the demise of the House Building Committee and this would be the last meeting in this form. To mark its end, JA Maudsley would conclude by saying *'I thought it would be appropriate to place before you a very brief summary of the magnificent work which your Committee have achieved since its formation 18 years ago'.* He went on to outline the production of 59,627 homes and 678 shops with a total expenditure of £176m, as well as achieving two Civic Trust Awards in 1960 and 1961 and two MHLG Gold Medals in 1966 and 1967 (HBC, 19 Dec 1967). The new Committee would be a conglomeration of the existing House Building Committee with the Housing Management Committee. The perceived requirement to better integrate production and management might suggest a greater visibility of the City Architect in future meetings but the opposite was true, and attendances became even rarer.

Despite internal concern over the popularity of high blocks, Birmingham would, for the short term at least, continue to include them within their plans. When the early reports of the explosion in Newham reached the Committee, (HC, 22 May 1968), the City Architect recommended that no action be taken in either removing or specifying gas heating in Birmingham's high blocks until a full report had been published.

Figure 171: Castle Vale high blocks pictured in the early 1980s. Source: Birmingham Mail (1983).

Despite widespread unease about the explosion In Newham and a mounting uncertainty about System build, the City Architect maintained his commitment to Bryants, and his confidence in the Bison Wallframe system of construction appeared undiminished. A memo to the Housing Committee (HC, 19 Sep 1968) would raise the issue of the Committees commitment to the 1969 programme. *'During the last few years the rise of multi-storey blocks of flats in Messrs Concrete Ltd's Wallframe system has contributed very significantly to the rapid increase in the production of completed dwellings….. to secure a sufficient share of Messrs Concrete's planned production it has been the practice to write a letter of intent to the Company asking for an indicated number of dwelling units to be reserved for Birmingham during the ensuing year'* (HC, 19 Sep 1968). Despite accepting an overall reduction in high blocks, Maudsley conceded that he still required 1,118 units (HC, 19 Sep 1968). These would consist of two, 20 storey blocks for Newtown and Boulton, one for Highgate and a further seven, 14 storey blocks for various developments at Chelmsley Wood (HC, 19 Sep 1968).

By September 1968 it was becoming apparent that the reconstituted Committee seemed far more interested in Housing Management and the refurbishment of existing properties. They appeared content to leave building to the City Architect as long as the required production targets were reached. With the publication of the report into the Ronan Point disaster the City Architect, Housing Manager, City Engineer, Surveyor and Planning Officer, together with the Chairman of the Housing Committee, reported that, in Birmingham, there were *'no Larsen Nielsen system built flats of the type which had collapsed at Ronan Point'* (HC, 14 Nov 1968). Subsequently-written assurances were

provided to tenants that clearly stated that *'all blocks in the management of the Committee were safe and that there was no need to cut off gas supplies'* (HC, 14 Nov 1968).

However when advice became available from the Ministry, advocating the strengthening of large panel systems (MHLG, 1968), an assessment was requested and the Committee noted that cracks through which *'daylight could be seen'* had appeared at Normanton Tower (HC, 28 Nov 1968). By April of the following year the Committee's early assurances were to be proved short-lived as conversion works from gas to electricity commenced. These were estimated to cost £400,000 of which it appeared the Government would contribute 40 per cent (HC, 27 Nov 1968). Further work would be planned to rectify faults and strengthen existing blocks and by January 1970 the first block was being strengthened. Remedial work to the City's high-blocks would coincide with Maudsley's conferment of a CBE in the Queen's Birthday Honours List.

The City Architect would continue to celebrate his Department's successes whilst exhibiting an ever more dismissive attitude to requests from the Committee. A request for the City Architect to organise a conference with contractors to investigate ways that costs could be reduced was met with a short statement in response. The City Architect stated that his Department was in *'close contact with all the contractors and was putting to good use the experience gained during the last six years intensive housing programmes'* (HC, 10 Dec 1970). Reports to Committee from the City Architect during this period became much rarer suggesting that the Committee was content to leave Maudsley to get on with the task of production. So long as production figures were being met, Maudsley neither attended nor reported to Committee. Only when they began to fall would he reappear. With completions for 1971 down to 3,412 and the emergence of a shortage of new building land the tide began to turn against the City Architect. In July, Councillor Wilkinson queried the appointment of sub-contractors and specifically external architects. This was the first indication of concerns relating to Maudsley's motivations. Critical members of the Committee would express concern that due to professional ethics, firms of architects were unable to advertise their services and therefore the City Architect *'was in a position to exercise patronage'* (HC, 8 Jul 1971). Reports of contemporaries within the Architects Department suggest that it was an open secret that Maudsley was the recipient of the largesse of contractors as recalled in a personal interview with Joe Holyoak (see Appendix H).

Whether he was challenged about the coincidence of his new Mercedes being identical to, and, with a registration number consecutive to, that of one of the principals of external architects Smart and Ebery as recalled in a personal interview with Joe Holyoak (see Appendix H) is unclear. Although questions were beginning to be raised in Committee the Chairman mounted a robust defence: *'the City Architect was the Committee's professional advisor who knew the other members of his*

profession. The code of practice laid down by the professions was adhered to and there had never been any reason for the Committee to complain about the way in which firms were engaged' (HC, 8 Jul 1971). The overriding impression of the period is that whilst production was in the ascendency the methods the City Architect employed to achieve his numbers was rarely questioned. In his defence the City Architect stated that *'every effort was made to spread the work available to professional firms'* (HC, 8 Jul 1971).

more than steel

THURSDAY, JANUARY 18, 1973

By far the largest evening sale in the Midlands

BIG POLICE PROBE INTO COUNCIL DEPARTMENT

MAIL EXCLUSIVE

Enquiry by special squad revealed

A FULL-SCALE investigation into the affairs of Birmingham Corporation City Architect's Department has been launched by the city police.

I understand that it includes certain contracts within the city, writes Harry Hawkes.

Viewpoint

CITY CARS

Civil servants hit at freeze

Hand-picked

Personal visit

In charge

'All facilities'

Reluctant

£300m. work

'No details'

Gold medals

Wide experience

Integrated

Shares tumble

City Correspondent

Councillors in rent storm ordered to pay £635 each

MAN SHOT DEAD AT HOSPITAL

Bitter pill for Janette

CASHMORES

Walsall 20031

THURSDAY, NOVEMBER 22, 1973

By far the largest evening sale in the Midlands

£15,000 bail for City Architect

Evening Mail Reporter

BIRMINGHAM'S City Architect, John Alan Maudsley, made a nine-minute appearance in court today on a corruption charge. He was remanded on bail totalling £15,000.

Maudsley (59) appeared in the dock with James John Sharp (55) of Grassmore Road, King's Norton, a Birmingham architect in private practice.

At the same time in Jersey a police application was granted by the island's Deputy Bailiff for a third architect, Evan Wilfred Ebery (57) to be escorted to Birmingham.

All three are charged that between July 19, 1965, and January 24, 1973 "they conspired together that Sharp and Ebery should corruptly make and that Maudsley should corruptly receive, gifts or loans of money as inducements or rewards to Maudsley, as an officer of the Corporation of Birmingham, for showing favour in respect of building projects in which the Corporation was concerned."

Maudsley and Sharp were remanded on bail until January 21 by the Birmingham Stipendiary, Mr. J. F. Milward.

Maudsley, formerly of Ladywood Road, Four Oaks, and now living in Staffordshire, was released in his own recognisance of £5,000 with one surety of £10,000.

Sharp was granted bail of £5,000 with two sureties of £2,500 each.

They were both ordered to surrender their passports.

Mr. Maurice Buck, Birmingham's Assistant Chief Constable (Crime), made the remand application and had no objection to bail.

Maudsley was represented today by Mr. David Pickard and Sharp's solicitor was Mr. Robert Orme.

Reporting restrictions imposed by the Criminal Justice Act, 1967, were not lifted.

In Jersey, Superintendent Peter Minchet, of Birmingham City Police, appealed to the island's Deputy Bailiff, Mr. E. F. C. Ereaut, for permission to leave the island with Ebery.

Ebery was expected to fly

Jobless under ½ million

FOR the first time since June, 1969, unemployment dropped below 500,000 in England, Scotland and Wales this month.

Figures issued by the Minister of Employment today showed the total fell by 16,069 to 492,561 representing 2.2 per cent of the working population.

With the inclusion of

James John Sharp after the hearing.

Mr Maudsley in Birmingham today.

Evan Wilfred Ebery.

Figure 172: Press Reports of the investigation relating to the City Architects Department. Source: Birmingham Evening Mail (1973).

Certainly the emergence of concerns about the City Architect's priorities coincided with a general reduction in construction volume in Birmingham. Not only was Maudsley suffering from a scarcity of available building land, but the Housing Cost Yardstick imposed by the Ministry was negatively affecting tender submissions as builders increasingly found social housing provision to be uneconomic. The Committee, aware of the pressures and keen to maintain production during difficult times, resolved to award tenders to any building firm willing to submit proposals and, also to look favourably at any Industrialised systems that might increase output. Despite murmurings about impartiality, the City Architect exercised free reign and maintained his authorisation to negotiate favourable contracts. It would not be until January 1973 that the possibility of corruption was raised when the Birmingham Mail reported a police investigation into the City Architects Department. The Committee reported that it might be some months before a report was available from the Police and, in the light of unease within the Architects Department a meeting was hastily convened between the Committee Chairman and 60 available staff (HC, 1 Feb 1973). Maudsley would continue to attend and report to the Committee when required, until February, when his Deputy took over this responsibility. By the 7 June 1973 the police investigation was completed and a report sent to the Director of Public Prosecutions. Meanwhile the Committee reported a steady exodus of professionals from the Architects Department, many of whom, were reported to be joining the private firms previously engaged by the Committee (HC, 13 Sep 1973). The report that, Alan Maudsley had appeared in Court to be charged alongside two private architects on charges of conspiracy and corruption was reported widely in both local and national press (Birmingham Mail, 1973). He would be bailed to appear again on 21 January 1974 and was subsequently suspended from the Council on full pay. By 28 March the Housing Committee would meet for the last time in its current guise. Councillor Canning as Chair referred to *'the councils outstanding record in slum clearance and new building'* and *'the best housing record in Europe',* suggesting that the Committee *'could be justifiably proud of all that had been done'* (HC, 28 Mar 1974). It is perhaps surprising that Maudsley exercised so much power. As Dunleavy (1981) points out, in two years Alan Maudsley went from third in line in the Lancashire Architects Department to being responsible for the largest public housing programme in Britain after London (Dunleavy, 1981:192). Unlike his predecessor He enjoyed almost absolute power, but he exercised his patronage in return for favours. The two man architectural firm of Smart and Ebery grew to just under 50 staff thanks to Maudsley and his largesse toward Bryants was rewarded with money, trips and holidays 'in a sustained programme of high style living paid for by Bryants directors' (Birmingham Post, 1976:7). The court case that followed sent Maudsley to jail witnessed the trial of four Bryants directors and exposed allegations in court that numerous Birmingham politicians were also the recipients of gifts (Birmingham Post, 1976).

7.5 Different Approaches - Manzoni to Maudsley

Considering Birmingham's initial reluctance to embrace the flat as a viable solution for working class living it is perhaps surprising that from the time of Manzoni to Maudsley, Birmingham was responsible for the construction of 464 blocks of flats over six-storeys. Jones suggests that Manzoni's early developments had something of the Swedish influence with *'point blocks, lower flats and traditional houses'*, although he concedes, *'these were unexciting developments largely featuring Wimpey No-fines houses and Y-shaped blocks bearing little resemblance to the Swedish landscaped mixed-development models'* (Jones, 2002: 8). The only really adventurous high-rise development that Manzoni oversaw was the impressive four towers at Duddeston, but their complexity and spiralling cost ensured that this experiment was never repeated. When Sheppard Fidler first arrived in Birmingham he was forced *'reluctantly, to build Manzoni's architecturally old-fashioned mud pies'* (Glendinning and Muthesius, 1994: 167). Gradually, he would introduce his own plan types featuring cottages, maisonettes, low flats and point blocks and incorporate these into his preferred mixed-development layouts. Whilst he appreciated that the high flat could provide architectural variety he was reluctant to see it introduced as a solution for families. Believing it was best suited to a more limited demographic when he was forced to lead with high blocks he tried to ensure that his developments featured children's play facilities and a range of community resources. His belief in the benefits of the mixed-development model and good design has led to Birmingham being described as *'insulated from any push to full-blooded multi-storey production by Sheppard Fidler's commitment to progressive design'* (Glendinning and Muthesius, 1994: 168). This would change when Harry Watton the powerful leader of the Labour Group within the Corporation would become exasperated by Sheppard Fidler's design-led approach and extensive lobbying for the adoption of the French Camus system of building. Seizing control of production, Watton would favour a *'production dominated short-term housing strategy'* (Glendinning and Muthesius, 1994: 248). This would result in the award of almost all multi-storey development in Birmingham to local firm C. Bryant and Son, with the remaining lower development going principally to either Bryants or Wimpey and a small selection of local firms. Watton's desire to mobilise the point block for gap sites and the Castle Bromwich development would finally result in Sheppard Fidler's resignation. The arrival of Sheridan Shedden as his replacement witnessed a strategy focussed exclusively on production. Adopting a subset of Sheppard Fidler's plan types, production increased exponentially, from 2,542 in 1964 to 4,065 in 1965 up to 9,023 in 1967. Much of this later success would be attributable to Alan Maudsley who Glendinning describes as '*one of England's organisationally most outstanding post-war public architects'* (Glendinning and Muthesius, 1994: 253). However, Maudsley would never have achieved these production figures if he had not been able to rely upon the sudden overwhelming availability of

development land. He was also able to call upon a growing team of staff focussed, since the return of Sheridan Shedden, on production. This was in stark contrast to the design-led ethos of Sheppard Fidler's Department. Maudsley's dubious relationship with Bryant's, and the enthusiastic patronage they enjoyed from the likes of Harry Watton undoubtedly 'oiled the wheels' and ensured Birmingham's experiment with high-rise System build would be almost exclusively enjoyed by the local firm. Considering that there had always been a scramble to attract more building firms to the Council's housing work it is perhaps surprising that one firm would go on to enjoy such a significant proportion of the city's high flat construction.

Figure 173: Mixed-development on the Lyndhurst Estate, Erdington. Source: Cambridge University Press.

That much of the Bryant production would consist of the firm's standard contractor specified designs contrasts strongly with the in-house high-rise designs produced by Sheppard Fidler. Despite having to initially accept the Manzoni-era Wimpey Y-shaped blocks the designs for his Firs Estate contrast vividly with these basic contractor designs. Although somewhat dated in appearance, designed and built in conjunction with Truscon, they benefitted from *'stylistic touches including brick faced façades and colourful glass infill panels'* (Jones, 2002: 5). These *'were far more representative of the kind of work Fidler was interested in undertaking'* (Jones, 2002: 4) and these innovative designs and layouts would go on to characterise most of his developments. Sheppard Fidler's enthusiasm for the Swedish-style, mixed-development in a mature landscape would certainly influence the City Architect's designs for the Lyndhurst Estate which, '*came closest to this ideal, and is comparable with those at Roehampton'* (Jones, 2002: 5). The estate built in mature landscape, previously the site of

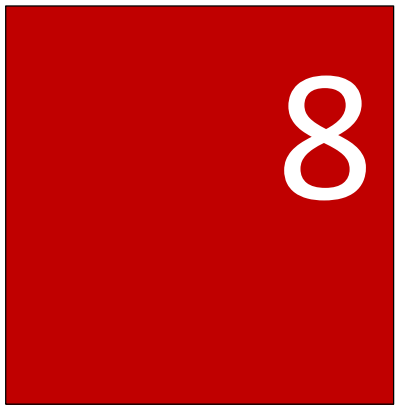
large Victorian Villas featured houses, maisonettes and point blocks *'co-ordinated with matching brickwork and fenestration'* (Jones, 2002: 5). The high blocks also featured an integrated laundry and drying room on the upper storey, a 'dramatic' vertical glazed stairwell together with an exposed concrete frame with brick infill (Jones, 2002). The estate would be the recipient of a Civic Trust Award in 1961. Jones suggests that there is a marked contrast between the Sheppard Fidler blocks and the *'unremarkable contractor designed blocks'* (Jones, 2002: 5) that were to follow. Even when Sheppard Fidler was forced to compromise and accept standard contractor designs he concentrated his efforts on ensuring the layout met his exacting requirements as in Lee Bank (Jones, 2002).

Figure 174: The Lyndhurst Estate high-blocks. Source: BirminghamLive.

Certainly Sheppard Fidler as Birmingham's first City Architect shared a design ethos that was directly comparable to both the products of the LCC Architect's department and of many of the celebrated private architects of the period. As Jones concludes, what Birmingham really *'lacks in its post-1960 and particularly post-Sheppard Fidler high-rise are any individual buildings of architectural note'* (Jones, 2002: 7). He suggests that the later period of Sheridan Shedden and Maudsley relied exclusively on a combination of contractor- designed Bison Wallframe 11-storey blocks and Wimpey 20-storey concrete-framed blocks. Even the 32-storey Sentinel flats in the city *'were built with an unremarkable concrete frame type of construction to a standard design…and represent the architectural paucity of housing'* when compared to Seifert's Alpha Tower just a short distance away (Jones, 2002: 7).

This chapter has looked in detail at the development and implementation of the high-flat in Birmingham between the period after the Second World War to the early 1970s. It has charted how Herbert Manzoni, the respected and influential City Engineer responsible for Birmingham's very progressive post-war planning policy gave way to the first City Architect. It has detailed how Sheppard Fidler sought to turn a production led ethos into one that celebrated design. He was responsible for ensuring that contractor offerings were built to his designs, the introduction of the mixed development model, the neighbourhood unit, a pioneering use of landscape as well as the innovative use of sculpture and art. He also embraced new building methods and enthusiastically promoted system build and the city's participation in consortia in an effort to improve design, reduce cost and eliminate the risk of over dependence upon a limited range of contractors. This research has provided a clearer understanding of the motivations and priorities of the various stakeholders involved in the development of high flats in Britain evidenced by the Birmingham experience. The next chapter will explore the demise of the high-rise flat. Charting the fall-out from the Ronan Point disaster (1968) it will recount a growing media and tenant backlash that challenged the viability of the high flat as suitable accommodation and provided a damning verdict on the success of the system build initiative. It will examine the trend to look for scapegoats responsible for the proliferation of high-rise development and what was by this time widely considered a failed initiative and the growing tendency to apportion blame to the architect. In considering the legacy of high-rise it will discuss how particular examples largely the product of celebrated private architects have escaped criticism and even achieved a position of reverence and protection.

The demise of high-rise housing



8.0 The demise of high-rise housing

Figure 175: Demolition of the Pruitt Igoe flats,St Louis, Missouri, USA. Source: blackpast.org

Whilst the demolition of the Pruitt Igoe flats in St Louis in 1972 was defined as the moment Modernism ended (Jencks, 1977), in Britain the collapse of a high-rise block at Ronan Point in Newham in May 1968 provided a symbolic marker for the demise of the high-rise system built block. In truth, high-rise construction was already in decline in the latter half of the 1960s. The Housing Subsidies Act of 1967 heralded the complete removal of the Progressive subsidy for flats six storeys and over and, whilst it may not have been the desired outcome, it made high-rise construction markedly less attractive for local authorities. The revision of the Housing Cost yardsticks when seen in conjunction with the mandating of Parker Morris standards meant that the cost of developing high-rise became untenable. Overnight it became difficult for local authorities to *'meet the costs of building high-rise flats to the required space standards' and building was curtailed significantly'* (Jones, 2003: 51). The curtailment of the large-scale development programmes featuring high-rise construction that had been needed to sustain Industrialised building techniques meant that the enthusiasm for Industrialised building rapidly waned. The fall in demand also coincided with a growing hostility towards high-rise living. Although tenants had previously articulated their preference for the house, a new level of hostility emerged, as Glendinning states '*during the 1960s and early 1970s the widespread enthusiasm for these blocks turned into an equally widespread hatred of them'* (Glendinning and Muthesius, 1994: 307).

8.1 Ronan Point

Figure 176: Ronan Point after the explosion. Source: Insidehousing.co.uk.

The disaster at Ronan Point in 1968 helped to crystallise a growing opposition to the high-rise block. Media criticism was widespread and reflected a developing rejection of modernist principles and the implementation and management of social housing provision. The block was constructed using the Larsen Nielsen large panel system adopted by Taylor Woodrow Anglian. The disaster was triggered when Mrs Ivy Hodge lit the gas stove on the 18th floor of her flat in Newham. The resulting explosion destroyed the four flats above hers and triggered the collapse of walls and floors of those below it. Surprisingly Mrs Hodge survived the ordeal but five of her neighbours lost their lives, and the subsequent fall-out from the disaster exposed critical issues relating to system built high-rise blocks. The subsequent enquiry criticised both the construction and adequacy of prevailing building regulations. The report concluded that the partial collapse was *'inherent in the design'* (Griffiths et al, 1968: 3) and continued with the instruction to disconnect the gas supply in similar flats (Griffiths et al, 1968: 55). The report of the Inquiry went further by calling for the strengthening of all blocks of similar construction. It also called for a review of building regulations and new and improved codes of building practice. The report included *'mild criticism of the architectural and structural engineering professions for failure to consider this risk'.* More specifically it suggested that *'the Ministry's Industrialised house building drive was launched in circumstances in which there had not been adequate examination by structural engineers of this form of building'*. It also made clear that the building regulations and codes of practice *were 'inadequate or out of date in certain respects'* (Griffiths et al, 1968).

Whilst Ronan Point was repaired and tenants moved back in, lasting damage had been done to the reputation of system built high-rise building, not limited to the Larsen Nielsen system preferred by the LCC and implemented by Taylor Woodrow Anglian. It resulted in the disaster becoming a long running matter of local government policy*: 'it rumbled on … in court cases, press investigations, architectural debate, theatre and amongst high-rise tenants'* (Smith, 2020: 4).

In 1983, a World in Action programme on Independent Television brought the issues related to high-rise to a wider audience, focussed this time on buildings of the type found in Birmingham constructed using Concrete Ltd's Bison Wall-frame system. The programme again highlighted severe quality control issues related to Concrete Ltd's production facilities. Mirroring the Building Research Establishment's investigations into non-traditional housing it found missing or incorrectly placed fittings a common occurrence, creating issues with structural performance and water ingress. This led to daylight being visible between panels and in the worst case large panels becoming completely detached. Four months after transmission, the Department of the Environment requested that local authorities carry out inspections of their Bison Wall-frame blocks, the conclusion being that issues were *'both serious and widespread'* (Currie et al, 1987: 3).

As a result of continuing criticism and an orchestrated campaign by tenants, Ronan Point and its sister blocks were finally de-constructed in 1986 which enabled a full investigation of its faults (The Times, 1985). Whilst the resulting report concluded that there was nothing intrinsically wrong with the design, concerns remained about the way that it had been constructed. Notwithstanding the inadequacy of the prevailing building regulations, the construction exhibited evidence of poor workmanship and inadequate supervision, demonstrated specifically by the absence of jointing material between wall and floor panels (Currie et al, 1987: 3). Perhaps most notable was the substitution of the required mortar between large panels held primarily by two bolts per-panel with *'newspaper rather than concrete'* (Boughton, 2018: 136). Interestingly the report suggested that similar large panel developments on the continent had escaped these construction issues and their peculiar occurrence in Britain could largely be explained by poor standards of workmanship and the absence of supervision. For a system whose primary benefit had been the eradication of skilled labour and its substitution with an unskilled labour force the absence of appropriate controls and the inadequacy of building regulation was illuminating and, suggested that the problems experienced had been inevitable. The dawning realisation that significant high-rise construction had been flawed meant that local authorities were suddenly faced with the huge costs associated with repair. On 26th October 1984 the Minister for Housing and Construction announced that he had asked the Building Research Establishment to investigate the problems associated with large panel systems of construction. The resultant BRE reports covered the structural behaviour of towers under normal and

abnormal loads, including wind, fire and explosion, as well as the general degradation of the structure including the condition of pre-cast concrete panels, fixings and the effects of rain penetration. Reflecting the Ronan Point findings and those of other Taylor Woodrow Anglian cases the general conclusion was that the structures were deemed to have coped well with these loads, but the jointing and the quality and method of construction were poor. Remediation consisted of recommendations to either institute an extensive programme of repair or the more extreme policy of reducing the overall height of remaining blocks by removing the top eight floors. (BRE, 1985). An earlier estimate by the Building Design Partnership (cited by BRE) on the already strengthened buildings had highlighted both the need and cost for further repair required for occupation. Considering just those works deemed essential they had estimated a cost of £3,144,000, when desirable alterations were considered this figure increased to £5,724,000 (*BRE, 1985*). Considering that Ronan Point was one of five identical blocks it is not difficult to see how Newham justified demolition as the only viable course of action.

Further BRE reports addressed all systems of large panel construction looking particularly at the inadequacy of jointing material that might advance corrosion as well as environmental issues such as water penetration, damp and thermal efficiency (Currie et al. 1987). Inspecting a huge range of buildings BRE concluded that the quality of workmanship was inconsistent, varying from building to building. In a substantial number of cases the jointing found varied from that specified in the design, being either missing completely or lacking vital components. It concluded that buildings completed after 1969 were generally of a higher quality but, in the case of repairs to earlier buildings, they were either entirely absent or *'partially or poorly installed'* (Currie et al. 1987: 4). It also found that, although most pre-cast concrete panels were manufactured as specified, there were instances of poorly-positioned reinforcement. The presence of Calcium Chloride in panels, a concern due to its tendency to promote deterioration in reinforcement as an agent of corrosion, tended to be limited to Skarne, Bison and HSSB systems, although it was detected widely in contemporary repairs to all systems. The widespread occurrence in both corner and edge repairs highlighted defects in the production process, but also the inadequacy of transportation and storage processes likely to inflict damage to components. The most concerning finding was deemed to be the placing and compaction of dry packed material in horizontal joints. Most joints were *'poorly executed'* and, in some cases, were *'omitted almost completely and in others friable, poorly compacted and severely voided'* (Currie et al. 1987: 5). The absence of jointing transferred load to high spots rather than spreading it along the edge of panels and whilst the BRE didn't single out any particular manufacturer, they concluded that all systems examined had 'examples of poorly made joints'. On a positive note, BRE concluded that they found no cases that *'gave concern for the safety of people, and none were identified where*

the construction had failed' (Currie et al, 1987: 6). What was clear was that authorities faced significant expenditure to improve their high-rise stock. Faced with the high cost of repair to homes that had become increasingly difficult to let and were associated with increasing social unrest local authorities found it easier to justify the case for demolition. In their study of the circumstances surrounding the demolition of high-rise blocks Bulos and Walker (1987) recited the main reasons local authorities had given to justify the policy:

1) Structurally unsound;
2) of unacceptable design;
3) inadequate in terms of the amenities provided;
4) inappropriate for the needs of tenants;
5) unpopular with existing and prospective tenants;
6) too expensive to maintain,
or
7) aesthetically unacceptable.
(Bulos and Walker, 1987: 15)

What was becoming increasingly clear was the unavoidable fact that high-rise had become an expensive way to provide homes and local authorities were seeking justification to rid themselves of the responsibility of housing often provided by previous administrations. The high cost of maintenance was just one other factor that contributed to its vilification, unpopularity and ultimate demise. The media supported by active tenant dissatisfaction reported extensively on the frailties of high-rise, its potential poor structural integrity and unsuitability, especially for young families. What had appeared to be an ideal solution to the housing problem, an inadequate construction industry and a shortage of materials and labour, was progressively shown to be a flawed approach. The issues that blighted high-rise would also come to be associated with an earlier initiative. The Housing Defects Act (1984) would be specifically focussed on defects uncovered in the construction of early post-war non-traditional housing.

8.2 Right to buy and beyond

To a widening audience high-rise had come to symbolise the worst example of the social housing provision of the late 50s and early 60s and successive government policies would further reduce the desirability of local authority housing provision. By the early 70s a zeal for the free market was replacing an earlier commitment to the merits of the Welfare system. Local Authority housing programmes had also shifted, partly as a result of the Deeplish Study of 1966, attention had been re-focussed on General Improvement Areas. This had shifted the priority to retention and refurbishment of existing stock rather than replacement (Jones, 2002: 53). The 1972 Housing Finance Act signalled a marked move away from the policy of subsidised accommodation underpinning the Welfare State, by substituting fair rents for reasonable rents. The 1974 Housing Act went further by

removing housing from direct local authority control in favour of transfer to Housing Associations that would henceforth be able to qualify for higher subsidies. The overall desirability of local authority housing was further destabilised by the 1977 Housing Act that mandated local authorities to prioritise the housing of vulnerable groups. With an absence of any additional funding, the effect was to signal that Council housing was fast becoming a service for the *'most-needy'* (Boughton, 2018: 143).

From the late 1960s the focus changed. Neil Wates, Managing Director of Wates Limited, talked in the RIBA Journal about the future and in particular the role of the private developer (Wates, 1967) noting a change in focus away from public development. He believed that a population less dependent upon social provision would ensure that the *'percentage of privately owned houses must rise'*. Supporting the view that most social housing was 'no frills' provision (Gold, 2007), he foresaw new customers demanding higher-quality and higher-specification homes and, therefore, a decline in system building, long associated with standard low-cost provision. The transition would, he believed, witness the seller's market of the previous fifteen years for both private and public housing switch to a buyer's market, with the developer tasked with creating demand and desire for new homes. Wates' vision was in contrast to the times when the social housing tenant was content to accept whatever the Council was offering, changing to a situation when the biggest task for the developer was understanding what the customer wanted, and what those that could afford it were prepared to pay. Budgeting for new housing would no longer be dependent upon affordable rents but affordable mortgages. The ability to offer attractive new homes at 2.75 times the annual basic salary, this being the maximum permissible mortgage, would be key. The RIBA Journal interview clearly demonstrated how, for the developer, the mood was changing. The drive that had endured for 25 years in favour of state-sponsored housing provision was evolving into an increased demand for private homes. The transition would be ultimately concluded by the 'Right to buy' initiative of 1980 when Michael Heseltine (then Secretary of State for the Environment, responsible for planning and housing) noted that '*no single piece of legislation has enabled the transfer of so much capital wealth from the state to the people'* (*Hansard* HC Deb 15 Jan 1980 Vol 976 cc1443-575).

The election of Margaret Thatcher in 1979 brought new initiatives that would have a lasting effect on local authority housing provision. Firstly, the Housing Act 1980, offered tenants the 'Right to buy' their Council homes at market value less a discount based upon the length of their tenancy. Those having rented their property for over 3 years were eligible for a discount rate of 33 per cent rising to 50 per cent for those with a tenancy of ten years or greater. The first to seize the opportunity, and benefit were often those with the most desirable properties, resulting in the steady depletion of not just the quality but the quantity of housing stock. Seen in conjunction with the 1977 Act, the

inevitable consequence was that the most socially vulnerable found themselves decanted into the most unpopular of available housing stock which in most cases was the high-rise block. Right to buy was a key constituent of Margaret Thatcher's desire to promote a property owning populace and, as Jones suggests, the residualisation of local authority housing was greatly advanced by successive Conservative governments of the 1980s and 1990s (Jones, 2002: 86). In 1980 Michael Heseltine, as Secretary of State for the Environment, responding to a national budget overspend informed local authorities that no further contracts for house building would be approved. Coinciding with a renewed concern relating to structural issues with high-rise this withdrawal coincided with less money being available for critical maintenance. This would result by 1986 in the Audit Commission estimating that there was a backlog deficit on repairs and maintenance of £20billion nationwide (Jones, 2002: 90). In 1984 the 'Right to buy' initiative would be extended with the introduction of new legislation that allowed tenants of just two years to buy their homes and the discounts available rising to a maximum of 60 per cent (Boughton, 2018: 171). These measures contributed to the removal by 1997 of over 1.8 million homes from local authority control as some 25 per cent of Council tenants took advantage of the initiative (Boughton, 2018: 171). Seen collectively, this legislation marked a dramatic change in thinking from the beneficent welfare system previously supported by both post-war Labour and Conservative governments to an intrinsically capitalist one that supported the free market and believed in free choice. Critics of social housing argued that it prevented mobility and it *'shielded tenants from the necessary choices which economic conditions or personal ambition might otherwise have promoted'* (Boughton, 2018: 172). Ironically to some extent 'Right to buy' enabled the original mixed-development ideal to finally be achieved, with a selection of owner-occupiers living alongside local authority or housing association tenants. What this transition effectively illustrated was the obviously widening gap between private dwellings and insufficiently-maintained local authority homes. On the poorer, less desirable estates, take up was inevitably low or non-existent and, in many cases these were the developments that included high-rise buildings. Under 'Right to buy' flats were particularly slow to sell, to such an extent that the government increased the discounts to 44 per cent and 70 per cent respectively to try to promote sales from 1986 (Boughton, 2018). The initiative, whilst reducing the available housing stock, also tended to increase social polarisation and contribute to the further residualisation of Council housing.

The Housing Act of 1988 would go further in driving responsibility for housing away from the local authority with the introduction of the new Housing Action Trust (HAT). These were organisations independent of the local authority that received their funding directly from central government. A new HAT contract was designed to last for ten years after which time the responsibility for the future lay with the tenants who could either elect to revert back to local authority control or continue with

a new HAT. Clearly designed to move control away from local authorities the Government enthusiastically proclaimed that their new initiative would *'open up the closed world of the local authority housing estates to competition and to the influence of the best housing management practices of other landlords'* (Boughton, 2018: 14). To encourage the shift to HATs the new organisations were able to borrow to fund much needed repairs, an option not available to local authorities who had to fund such work from existing budgets.

For those that might have hoped to return to traditional post-war values relating to housing provision, the incoming New Labour government of 1997 instead shared many of the values of their Conservative predecessors. In particular, they were keen to ensure housing costs did not impact Public Sector borrowing and actively supported both Housing Associations and the private sector in estate management and regeneration. The further residualisation of local authority housing occurred in 1990 when the 'Care in the Community' initiative required people with mental health problems to be rehoused in their own homes rather than institutions. Other programmes that saw estates being used a reception centres for refugees and asylum seekers further affected the negative characterisation of Council estates. To counter this perception, a policy of mixed demographic communities would gather pace as both central and local government pursued the concept in an attempt to raise the standards of failing estates and communities. This heralded a further reduction of local authority housing, increasingly replaced by either new housing association or 'affordable' homes. With falling or non-existent funding available for both maintenance and new build it became inevitable that local authority housing would gradually be replaced with private provision. In hindsight successive policies affecting social housing have tended toward the accusation that government and councils had been increasingly guilty of social cleansing. Boughton summarises the results of successive policies with the conclusion *'that poor people have been deliberately displaced to make way for more affluent newcomers and that truly affordable housing has been sacrificed for commercial profits seems inevitable'* (Boughton, 2018: 226).

8.3 Criticism and blame

The end of the 1960s marked a period of a *'growing loss of confidence in the architectural profession'* and more especially the local authority architects, increasingly beset by restrictive briefs and the growing influence of contractor package deals (Jones, 2002: 85). The period when the local authority architect enjoyed an almost unhindered opportunity to design and specify the exciting (rather than monotonous) mixed-development communities had given way to one where responsibility was largely confined to the layout of contractor designed homes on small gap-site developments. Increasingly answerable to powerful local authority Committees with limited budgets opportunities

to design homes were rare when the alternative was off –the-shelf contractor package deals where the role of the in-house architect might be limited only to site layout. Coinciding with an increase in private building, many local authority architects were enticed into private practice, many as in Birmingham's case moving to practices that had formerly enjoyed sub-contract work from local authorities. In Birmingham this resulted in a continued challenge to recruit architects with the relevant experience. (HC, 13 Sep 1977).

Following the Ronan Point Disaster, the initial response from the profession had seemed guarded. An editorial in the Architects Journal had urged caution *'Inevitably the catastrophe will arouse opposition to high building and System building, but we suspect this is unreasonable'* (AJ, 1968a). This initial response highlighted the fact that the profession had initially been supportive of Industrialised building, recognising that new methods of construction had been inevitable: *'the modern world is forcing the abandonment of traditional techniques in building and in the transitional period there are bound to be a few difficulties'* (AJ, 1968a). The profession's conclusion was quite prescient in the light of the Tribunal of Enquiry's eventual findings reported in the 22 May edition of the Journal *'the pre-cast slabs may need to be given extra restraints'* suggesting *'a more fertile approach to the problem would be to research into means of lowering the likelihood of explosion or to discover how planning and detailing can mitigate the effects'* (AJ, 1968b). A light-hearted opinion piece in the July 1968 issue entitled '*Systems go home'* though perhaps signalled the growing groundswell of distrust of Industrialised systems prevalent in the profession: *'Of course it's not as if I've really got anything against these pre-fabrication systems….they're all very well, but they should stay in their own countries. All these foreign systems coming over here!...I mean there's not enough work for your decent English traditional methods….we just haven't got the room for them all….and once a few of them get in they start bringing in all their relatives as well!....they go straight to the most crowded places, in all the worst slum areas they can find. Causing worse overcrowding than ever, with their dirty, high-density habits'* (AJ, 1968b). Later, having come in for minor criticism in the Tribunal of Enquiry report, the RIBA President Sir Hugh Wilson felt it appropriate to distance the profession from the disaster, suggesting in response that the architect *'was being edged out of the co-ordinating role between different parties involved in creating a building'* (Wilson, 1968: 11). In 1970, RIBA went public when it ran a series of advertisements in the Times to ostensibly promote the role of the profession, most famously featuring a high tower beyond a slum courtyard with the caption *'New slums for old'* (The Times, 1970: 3).The advertisement had a serious intent, suggesting that '*the perpetual backlog of slums has turned the housing problem into a political scoreboard – the annual tally of new homes being recorded as a criterion of success. Housing by numbers can have disastrous results. Too often the design of housing is conditioned more by production convenience than by*

human needs and satisfactions' (The Times, 1970: 3). The advertisement signalled a professional distancing from the high-rise initiative and the re-confirmation of a preference for the type of development suggested by Abercrombie and Forshaw with their mixed-development communities rather than the perceived reality of recent projects that *'take the form of one class ghettos. When people are forced to live in brutal, inhuman housing, violence and vandalism are bound to follow'* (The Times, 1970: 3). The advertisement marked a formal move away from the Modernist's Utopian view of high-rise flat development to a new policy that favoured the regeneration and rehabilitation of existing communities. Clearly *'after Ronan Point the high-rise block was something that the profession actively sought to distance itself from'* (Jones, 2002: 84).

Ronan Point signalled a turning point for the widespread criticism of high-rise that followed. This was not confined to issues with construction but cast light on problems related to maintenance, allocation, crime and vandalism imbuing it with a *'perfect storm of social ills'* (Boughton, 2018: 144). By the 1980s there was also evidence of a litany of opposition to 1960s and 1970s urban planning and especially Council estates when *'housing's actual form… came under attack'* (Boughton, 2018: 177). The message conferred by the RIBA advertisement certainly resonated with many of the arguments expounded and widely discussed in Jane Jacobs' 1961 book *'The Death and Life of Great American Cities'*. In it, Jacobs had argued in favour of the traditional US mixed use communities rather than the extensive public housing schemes that had replaced them. Refuting the claim that society could wipe out all the slums if it only had enough money, she reviewed what had been achieved with the first several billions: *'low-income projects that become worse centers of delinquency, vandalism and general social hopelessness than the slums they were supposed to replace'* (Jacobs, 1961: 4). Jacobs' philosophy stemmed from a repudiation of Ebenezer Howard's concept of the Garden City, to her an artificial vision of a real city, but the progenitor of so much modern urban planning. Instead, her ideal was the older higher density cityscape, albeit one that had been regenerated. Her studies discussed what made streets safe and examined the role of a traditional neighbourhood. Jacobs celebrated the vibrancy of these older communities and contrasted them with the '*projects*' that saw streets replaced by corridors that might be accessible but were not visible. Here originated the discussion of '*defensible space',* suggesting that areas not in public view would eventually become the focus of crime and vandalism. A decade later Oscar Newman would take up these ideas in *Defensible Space* (1972) contrasting the high-rise blocks of New York with similar density low-rise developments. Newman suggested the former were more prone to crime specifically because of their design and in this he adopted Jacobs' argument in favour of the *'natural surveillance'* that might prevent it. On a visit to the UK, Newman condemned contemporary English estates and his theory of Defensible Space quickly entered the architectural

lexicon. In Professor Alice Coleman, Newman would find a ready disciple. As head of the Land Use Research Unit at King's College, London, Coleman focussed her research in 1979 on the connection between design and what she referred to as *'social malaise'* publishing her evidence and argument in *'Utopia on Trial – Vision and reality in planned housing'* (1979). Her report stressed the extensive nature of the research, 4,009 high-rise blocks containing 106,520 dwellings and 4,172 houses *'thrown in for good measure'* (Coleman, 1979: 2). Coleman attempted to justify the efficacy of her research by claiming verbal research was impractical and official statistics unavailable before introducing her own measurement criteria. Coleman went on to attribute the design and layout of estates as the cause of lapses in civilised behaviour. Her definition of this 'social malaise' she characterised by evidence of litter dropping, graffiti scrawling, vandalism, pollution by excrement and family breakdown, including children being taken into care. Coleman went on to map 15 features that were '*commonly deleterious in blocks of flats'*, enthusiastically attributing high-rise as one of them before concluding that the type had *'already attracted so much revulsion that the pressure of public opinion has largely brought about its cessation'* (Coleman, 1979: 2.). Warming to her theme her report would go on to describe other forms of social malaise attributable to problem estates such as stress and trauma related to crime, fear, anxiety, marital breakdown and physical and mental disorders before concluding that these issues would have been avoidable if tenants had lived in more traditional houses. For her, the blame lay with the Department of the Environment and its predecessor, the Ministries of Town and Country Planning and Housing and Local Government who had issued directives and design guidelines that local authorities *'felt constrained to follow'*. She would offer no mitigation, *'it will seem clear that a verdict of guilty is fully justified'* (Coleman, 1979: 4). In presenting her evidence Coleman contrasted the housing of the first half of the twentieth century that *'was dominated by the age old system of natural selection, which left people free to secure the best accommodation they could*' with the '*Utopian ideal of housing planned by a paternalistic authority'* of the second half (Coleman, 1979: 4). Coleman's distaste for the Welfare State and the Housing Programmes it spawned is clear but her particular aversion to the high-rise block is a consistent theme of her work: *'Blocks like this are not only financially disastrous they are also human disasters that sear many lives with traumatic experiences'* (Coleman, 1979: 5).

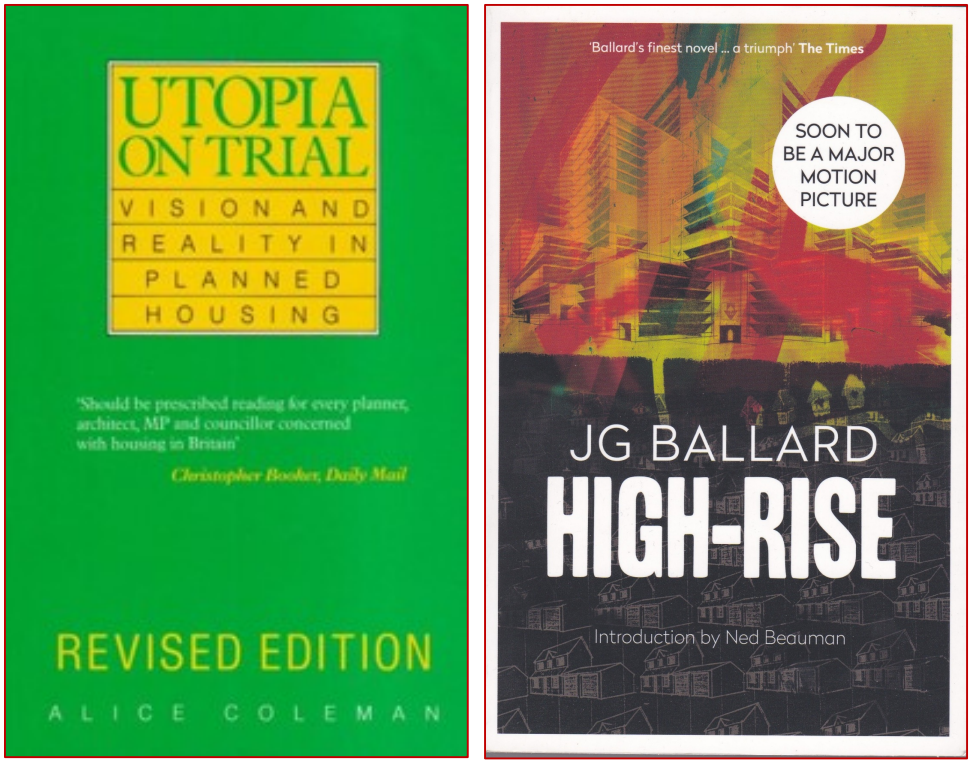


Figure 177: Fact? and fiction, academic studies and contemporary fiction cast a shadow on high-rise. Source: Author.

In tracing the history of twentieth-century housing Coleman describes the pre-Utopian residents, conveniently failing to mention the slum conditions from which they might have come, *'many of whom have been ruthlessly evicted from their little terraced houses, and sometimes mentally scarred by this process as severely as by the loss of a spouse or the loss of a limb'* (Coleman, 1979: 6). In her mission to attribute all social malaise to design, Coleman conveniently dismisses poverty and unemployment and fails to adequately address allocation policy, maintenance and security. In order to minimise the effect of poverty she cites the example of poor pensioners: *'pensioners belong to an age group which had the advantage of being brought up in houses and they retained their standards of behaviour after becoming flat dwellers'* (Coleman, 1979: 86). Unemployment was similarly sweepingly dismissed: *'even if it had been proved that unemployment was a proximate cause of vandalism it would not rule out design as the ultimate cause'* (Coleman, 1979: 87). Allocation policy was dismissed, along with the security provided by caretakers: *'the whole caretaker question highlights the ill wisdom of creating a brand of Utopia which forces people into dependence upon custodians instead of managing their own lives independently'* (Coleman, 1979: 92). Bewailing that *'we no longer have the resources to sweep away all the disastrous flatted Utopia's'* (Coleman, 1979: 123) Coleman concludes that no more flats should be built and there should be a renunciation of un-stabilising layouts followed by a programme of rehabilitation. This she describes as the removal of overhead walkways, the fencing off of individual blocks, the reduction of anonymity and escape routes by subdividing blocks and building additional staircases as well as improving entrances and

streetscapes to enable private surveillance. Coleman's arguments found favour with like-minded governments, keen to justify their policies with her supposed academic rigour, and in 1986 she was invited to Downing Street to meet Margaret Thatcher. To apportion blame to past administrations and attribute the ills of social housing to design resonated with a Conservative premier unwilling to accept that poverty, unemployment, lack of funding and factors that arguably she could control might be greater determinants of social problems. Professor Coleman became a favourite of the premier and was subsequently allocated £50m to implement her ideas in selected estates under the auspices of the DICE programme (Design Improvement Controlled Experiment) (Housing Review, 1990). It wouldn't be until later when a report by Price Waterhouse in 1991 examining the success of Coleman's intervention concluded that *'DICE was no more effective at improving social conditions…. than comparable Estate Action Schemes and that Coleman's environmental improvement had nothing like the dramatic impact that she claimed'* (Price Waterhouse, 1991). Political acceptance of Alice Coleman's view that design was the main cause of social malaise in social housing was convenient for both successive Conservative and Labour governments. Appropriating blame to previous administrations and civil servants meant that responsibility was effectively shifted from the policies that might have contributed to unemployment, poverty, crime and underfunding of housing provision. Narrowing responsibility to a group that no longer existed and was therefore unlikely to defend themselves meant was expedient and despite opposition, the enduring fallacy of poor design remained and energised policies that would successively contribute to the erosion of local authority housing provision.

The more enduring conclusion related to the failure of high-rise has been perpetrated by Jenck's (1977) contention that the demolition of the Pruitt Igoe flats in St Louis in 1972 represented the moment that Modernism ended. Jencks's contention seems conveniently to have entered folklore. In his study Jones concluded that high-rise became associated with a failure of the social housing initiative and *'the most commonly demonized actors have been the architects'* (Jones, 2002: 358), as they and the modern movement were identified as the promoters of high-rise living. In the United States too, the *Architectural Forum* (1965) used Pruitt Igoe and projects like it to attribute blame to the modernist architect for the social ills of high-rise housing. Criticism extended to include Le Corbusier's La Ville Radieuse, CIAM and the Athens Charter that promoted the high-rise flat. But, in the United States, Jencks's claim and those of the Architectural Forum have been more readily challenged. Commentators have pursued a more detailed explanation of Pruitt Igoe's failings in an effort to vindicate modern architecture. Created under the US Housing Act of 1949, funds had been provided to clear the slums and redevelop urban public-housing. Curiously, the circumstances mirrored experience in England. Initially the architects had proposed a mixed-development solution,

but this was quickly rejected on the grounds of cost and density considerations. Eventually this led to the construction of 33 identical 11-storey blocks, although the architects attempted to promote neighbourhood units by the inclusion of glazed corridors and skip-stop elevators that stopped every three floors. From the very start of construction, the development had been characterised by cost-cutting with the elimination of children's play area, an absence of landscaping and the specification of poor quality fittings (Bristol, 1991). Despite this paring back, early tenants reported their satisfaction with the overall improvement in their living conditions although take up was less than expected as prospective tenants found inner city private rental properties more attractive (Montgomery, 1985). The lower occupancy that the development suffered from had a direct impact on budgets and consequently maintenance was reduced and with urgent repairs lapsed (Meehan, 1979). This, in turn, promoted a wave of vandalism and associated crime. Seeking to illuminate the circumstances at Pruitt Igoe in *Behind the Ghetto* (1970), sociologist Lee Rainwater explained that vandalism and even violent crime were understandable in the circumstances, and that architecture had nothing to do with Pruitt Igoe's problems. Elsewhere Petty and Kotlowitz (2021) have recorded tenant's reaction to the Chicago Housing Projects that illustrate a similar experience. Petty records Mayor Richard M Daley heralding the effort to provide a decent home that stretched to 27,000 people in twenty-eight high-rise sixteen-storey towers. Petty and Kotlowitz (2021) then record 11 narratives from early tenants that tell of initial pride, community cohesion before crime and vandalism took over. Ironically, the author of the original *Architectural Forum* article had conceded at the time that inadequate maintenance and increasing poverty were contributory factors to the developments problems, but this factor had conveniently been ignored (Bailey, 1965). Bristol has argued that Jencks's claim has become a largely undisputed myth but the criticism of the project and the allocation of blame solely to the Modernism failed to locate Pruitt Igoe in its historical and social context and ignored the economic crisis and racial discrimination that played the greater part in the project's demise (Bristol, 1991).

8.4 Demolition or rehabilitation?

Figure 178: Tenants remove the name plaque following decision to demolish Ronan Point. Source: Smith (2020)

The incoming Labour government's investigation of difficult-to-let estates conceded that high numbers of children, poor maintenance and management, inadequate facilities and the sheer size of some estates sat alongside design flaws as common characteristics. It was, however, advantageous to conclude that it was the estates that had failed rather than the policies that had created poverty, crime and unemployment (Boughton, 2018). The underlying principle behind the multitude of initiatives that were introduced in the 1980s and 1990s was that local authority ownership and control was undesirable and the transfer to private landlords was a necessity. Underlying this belief was a strong desire to remove housing provision and all it entailed from the balance of payments and, with reducing housing budgets, local authorities were forced to compete with each other for scarce funds. The Priority Estates Programme was designed to target difficult-to-let estates, its successor the Urban Housing Renewal Unit established in 1985 was quickly super-ceded by the Estates Action Programme that focussed on improving management and security. For local authorities the lure of such programmes was difficult to ignore and, by 1991, some 350 Estate Action schemes were underway representing one fifth of total government housing spend (Boughton, 2018: 187). Local authorities had little option but to succumb to the pressure to apply for Estate Action funding when alternatives didn't exist. This invariably meant a reduction in local authority control over housing, with responsibility shifting instead to Housing Action Trusts. What success these Trusts were able to achieve was not so much down to a change in management and approach but more to do with, as Boughton concludes, an illustration of *'how properly directed funds could improve estates'* (Boughton, 2018: 195). The City Challenge initiative introduced by Michael Heseltine during the Major Government (1990-7) would again see local authorities pitched against each other to

compete for improvement funds for their most-needy estates. Whilst the result was of some value to the successful minority, the losers were more numerous, missing out, because a relatively small and finite budget rewarded only a tiny proportion and much needed funding was *'denied other estates and communities in need'* (Boughton, 2018: 199).

In 1994, the twenty or so programmes available to local authorities to improve housing were rationalised into the Single Regeneration Budget (SRB). This allowed a move away from the 'Colmanesque' mantra by finally addressing social and economic issues as well as design and management. Nevertheless, the common requirement for all the programmes designed to regenerate estates remained the removal of assets from local authority control in favour of Housing Associations or Trusts. The regeneration of this period focussed on general improvement featuring the identification of problem buildings, often earmarked for demolition and their replacement with shared ownership new homes. The introduction of shared ownership within estates was seen as an important part of the rehabilitation; it re-embraced the immediate post-war desire to develop mixed communities by introducing mixed tenure.

The Conservatives' last foray into housing reform before their 1997 election defeat was the Estate Renewal Challenge Fund (ERCF) that focussed on the transfer of problem estates to new landlords. Whilst the incoming New Labour Government would scrap it in 1998 due to concerns over cost, new policies would have much in common with the previous regime. A continuing theme of new legislation was that local authority ownership and management was bad with a belief that 'housing associations were better, more agile and responsive (Boughton, 2018: 211). New Labour's New Deals for Communities programme, launched in 1998, would once more seek to solve the issue of problem or sink estates. Invariably this involved removal from local authority control, partial or full demolition and replacement with either 'socially-rented' or a growing proportion of private homes. Whilst it could be argued that these policies represented a return to the post-war mixed tenure ideal it also signalled an end to local authority provision, an overall reduction in the socially rented accommodation and instead its replacement by affordable homes and private ownership. Classified as new homes available for up to 80 per cent of the local market value, affordable homes were really only viable for the more affluent. This inevitably meant the unemployed or low income tenants were systematically displaced and removed to less expensive accommodation often far from their original homes and communities. Whilst resolving the issue of problem estates a report on the success of the New Deal for Communities between 2002-2008 concluded that *'success was more likely to reflect 'positive place-related change than 'people related outcomes''* (DCLG, 2010). As Boughton suggests, the introduction of owner occupation was deemed to have had the effect of diluting the scale of the problem *'whilst displacing many existing Council tenants'* (Boughton, 2018: 227).

For high blocks the impact of these policies was considerable: often they represented the most difficult and expensive buildings to maintain and were generally the least popular form of housing. The difficulty of letting meant that tenants were commonly the most vulnerable and challenged who brought their own problems to the blocks. With much reduced budgets available for maintenance under both Conservative and New Labour governments, high blocks were invariably top of the list when demolition was on the agenda. Policy concerning high-rise remained a challenge, from the 'Right to buy' initiative of the Thatcher Government take-up for flats had been always been low. Consequently the proportion of flats had doubled as a total of available social housing, making the high-rise block and their problems synonymous with social housing provision. The policies designed to tackle the high-rise dilemma would increasingly fall into two categories, either accept and refurbish or renounce, demolish and replace. Often finance would be the decider and demolition would prove less costly than the large scale rehabilitation that was just beginning to be considered under the Estates Action Programme. In 1986 the Building Research Establishment published a report that considered the options of demolition versus refurbishment (Harrison et al, 1986). Focussed specifically on high blocks built using large panel systems it considered the viability of over-cladding and followed up this report with a second on the installation of pitched roofs (BRE, 1991). The BRE defined over-cladding as the application of a new skin to external walls, often including thermal insulation, in order to provide a durable watertight cover. Acknowledging at the time that actual examples of refurbishment by over-cladding were rare, the report sought to examine its viability. Based upon its research with local authorities, the BRE was clear that they had discovered a number of common approaches to the treatment of high blocks:

1	*Ignore the fact that problems are occurring*
2	*Carry out essential repairs only to make safe*
3	*Carry out essential repairs and some palliative internal renovation*
4	*Carry out essential repairs and full internal renovation*
5	*Carry out repairs to delay further deterioration*
6	*Carry out repairs to increase life expectancy (over-cladding)*
or	
7	*Sell off to a private developer (housing association, in return for an option to nominate a proportion of future tenants)*
8	*Decant tenants, secure site and leave derelict*
9	*Demolish*

Figure 179: Common approaches to treatment of high blocks. Source: BRE, (1991).

In order to provide definitive guidance to local authorities, many of which were experiencing issues with their high-rise housing stock the BRE recommended the local authority first analyse the extent of the problem. Unsurprisingly this was critical before deciding whether refurbishment could be a

viable option as the task of releasing sufficient funding to complete repairs was a critical consideration. The report went on to consider the potential benefits that over-cladding might deliver, not least the eradication of water penetration and its associated problems, but also the stabilisation of damaged concrete components that may have been exhibiting cracking and/or spalling and thus at risk of detachment. The report also explored the options related to meeting thermal standards either through internal treatment or over-cladding. Whilst internal insulation represented up to twenty per cent of the cost of over-cladding both the disruption it would cause and the likelihood of thermal bridging proved a major deterrent. For buildings that had experienced deterioration in appearance and had suffered from a poor reputation, perhaps the most significant benefit articulated was the opportunity to dramatically update and improve the appearance of the buildings. As many concrete buildings had suffered from more than anticipated weathering, over-cladding represented an opportunity to upgrade and renew vital building stock. The BRE concluded that over-cladding represented a means of resolving the technical performance of a building whilst at the same time improving its visual appearance and hence its acceptability to tenants: *'there is no doubt that it can provide both a visual and technical transformation for those estates which have become difficult to let'* (Harrison et al, 1986). In assessing the potential for over-cladding, the BRE suggested that it might only be viable for buildings whose expected lifespan was in excess of thirty years. In justifying a refurbishment it would be necessary to calculate the rate of return on investment against the cost of improvements added to any outstanding debt that remained, provided these were less than or equivalent to the residual value. The reason so many high-rise buildings of this period have been subject to over-cladding is because even when the calculations were unfavourable, the alternative was considered even less viable. The BRE had suggested that the cost of demolition, the need to purchase additional land and the cost of the construction of new homes represented a considerable investment that was unlikely to be possible for local authorities. Faced both with these challenges and a housing deficit, authorities were faced with a difficult decision when considering whether to demolish or renew. Often the result was yet another compromise, with those high-rise buildings considered to represent the greatest social challenge subject to demolition whilst the less challenging were refurbished. An example of the extent of demolition that occurred and the sometimes unclear policy of deciding which blocks should succumb to demolition is illustrated in the case of Birmingham where well over half of the blocks constructed have subsequently been demolished and the policy remains to eventually remove all examples (see Appendices 10.4 Remaining stock and 10.5 Demolished stock).

8.5 Rehabilitation and Conservation

Figure 180: Journal of the Thirties Society, pre-cursor to the Twentieth Century Society. Source: Twentieth century Society.

For those deemed to represent the very best examples of high-rise construction, there was another lifeline. The importance of conserving historically-important heritage dates back to the formation of the Society for the Protection of Ancient Buildings in 1877 and the National Trust in 1895; but it was not until the Second World War that the concept of 'listing' buildings of special architectural or historic interest was introduced (Delafons, 1997). Local RIBA offices developed '*salvage lists'* that highlighted buildings worthy of preservation in the case of enemy damage. The Town and Country Planning Act of 1944 introduced the principle of listing but concentrated effort on buildings originating before 1800. The creation of the Georgian Group in 1937 focussed attention on building of this period and the Victorian Society followed suit in 1958. It would not be until 1967 that the protection of twentieth- century buildings would be considered with Nikolaus Pevsner offering to draw up a preliminary list (Harwood, 2010). Most of Pevsner's top fifty buildings of the period 1922-39 had been recognised by 1971 and the formation of The Thirties Society in 1979 aimed to promote the importance of pre-WW2 buildings. A further survey of inter-war architecture would take place in 1981 largely predicated by the destruction of the Firestone Factory by its owners just days before it

was due to be considered for listing. Michael Heseltine as Secretary of State for the Environment at the time would go on to inaugurate the Historic Buildings and Monuments Commission under the terms of the National Heritage Act 1983 that would later become known as English Heritage. This gave national responsibility for the historic environment to a new semi-autonomous agency that would operate under ministerial guidelines and henceforth be responsible for making listing recommendations to the Secretary of State. Despite the greater attention and increased threat of losing important heritage, the cut-off point for twentieth-century buildings was still up to the commencement of World War Two. The extension to more recent buildings didn't take place until 1987 when Lord Elton, Minister at the Department of the Environment, introduced the thirty year rule and, in 1992 the Thirties Society was renamed the Twentieth Century Society. Thematic studies of types of building took place, with the study of housing eventually resulting in all the major estates recommended for listing gaining protection. Among those recognised were Alton East and West by the LCC, Park Hill by Sheffield County Council, Churchill Gardens by Powell and Moya in Westminster, the Golden Lane Estate by Chamberlain, Powell and Bon in the City of London. The sister estate to Golden Lane, the Barbican would be subsequently recognised along with the Byker Estate in Newcastle by Erskine.

8.6 Hostility or hurrah

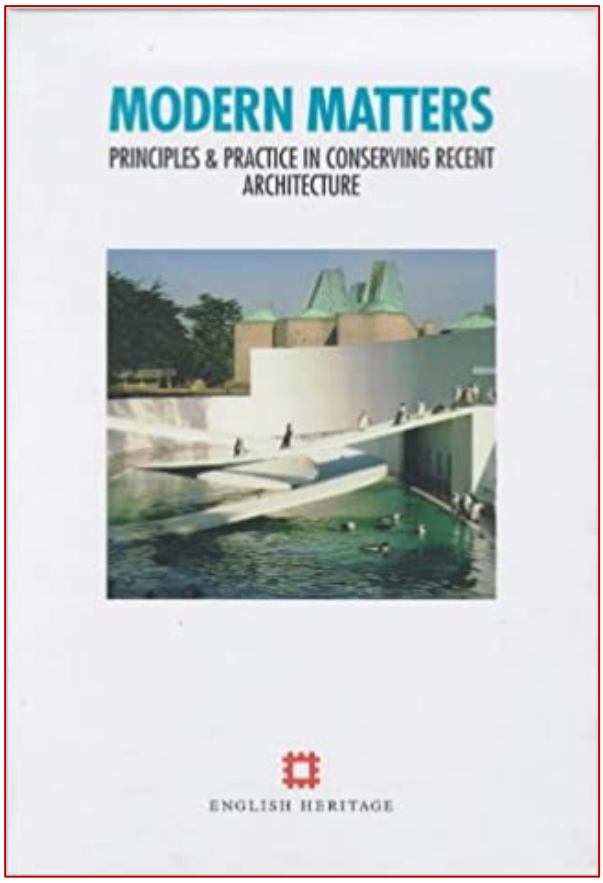


Figure 181: Modern Matters, English Heritage discourse on the conservation of twentieth-century buildings. Source: Historic England.

The challenge of recognising and protecting twentieth-century assets was considered at length in English Heritage's 1996 publication '*Modern Matters'.* In the forward MacDonald discussed the perceived problem *'the history of the buildings and the society that shaped their context have yet to be recorded and assessed, and we are only just beginning to understand their technology, the construction methods and materials'* (MacDonald, 1996: *xx*). MacDonald conceded that focus had been limited to the *'most innovative, often most entrepreneurial twentieth-century exemplars' suggesting a bias towards Modernism to the detriment of more 'mainstream architecture'* (MacDonald, 1996; *xx*). Conservation was beset with a dilemma with *'polarised opinions on values and approach, new technical challenges and, in the case of high-rise or large housing schemes, the largest scale of conservation we have yet had to face'* (MacDonald, 1996: xxi). Rather than celebrate post-war twentieth- century architecture, Modern Matters sought to bring the issues and challenges into the public discourse. Whilst comprehensively reporting the challenges the contributors largely failed to articulate a compelling future strategy. The overarching tendency was to suggest that hostility to the buildings of the period would eventually change, as it had for the protection of Georgian and Victorian buildings. Hostility was considered the greatest challenge, *'the listing of post-*

war buildings…does not yet appear to enjoy universal favour', alongside the absence of specialist thinking relating to the protection and conservation of post-war buildings (Cherry, 1996: 5). This had not developed to a level that was either '*intelligible or persuasive'* and whilst the introduction of public consultation was welcomed as an effort to democratise protection a compelling strategy did not yet exist.

In promoting discourse Modern Matters successfully presented a wide range of opinion. It explored the assertion that protection limited the opportunity for new development and therefore commercial gain, and that the high cost of repair of twentieth-century buildings posed a deterrent. Citing the example of the decision to list Lasdun's Keeling House in Bethnal Green with its high cost of repair, Cherry asks whether it was fair to direct a disproportionate budget to the repair of modern buildings. Other contributors expressed the view that despite the relatively small number of modern buildings that enjoyed protection (less than 1per cent at the time of publication) the survival of large numbers of examples meant the risk of loss was fairly inconsequential (Saint, 1996). This allowed a Darwinian approach to conservation, where only the best and most revered buildings would survive to be considered acceptable (Saint, 1996). Saint backed up his argument by suggesting that '*modern architecture is not popular*' believing that rehabilitation in much the same way as Georgian and Victorian architecture was unlikely. This he ascribed particularly to Modernist buildings because *'the aesthetic, technical and social intentions of those producing modernist buildings seem to me often to have been, and continue to be, too disassociated from the ideas and ideals both of the British establishment and of the population at large for them to be readily comprehended, accepted and appreciated'* (Saint, 1996: 27). Saint ascribed the products of Modernism to professional elites who built for the *'country at large'* but stressed that *'elites have always built differently from ordinary people'*, concluding that architects were universally *'unpopular and there is no present sign of that changing'* (Saint, 1996: 27). The illustration is completed with the statement that the Conservation Officer who *'advocates the restoration of a deck access housing estate'* is unlikely to encounter like-minded support. These arguments might have excited discourse but did little to advance the cause of twentieth-century building conservation and some twenty years later the survival of some of this thinking is still apparent with a reluctance to recognise post-war buildings for protection. Today in Birmingham the large-scale demolition of significant twentieth-century building proceeds in the pursuit of new development. In London, the controversial Robin Hood Gardens housing development by the Smithsons was repeatedly refused protection and has been demolished in favour of more-dense modern flat provision. Nevertheless, attendees at this first conference provided more hopeful glimpses of the successful conservation of twentieth-century assets, such as the listing of Nieve Brown's 500 home Council estate for Camden Council (Croft, 1996). Listed Grade II* in 1993 it

provided a practical example of conservation in action for an estate where Neave Brown's original design gained protection, but many of the ancillary buildings and the landscape in which it was built did not. Perceiving the risk of demolition or alteration to important parts of the estate, the decision to pursue Conservation Area status for the site was ultimately successful, thereby preserving the environment without conferring listing protection on all buildings (Croft, 1996). More positively, Modern Matters also included practical examples of repair and maintenance that highlighted previous failures and contrasted these errors with a more sympathetic approach to repair and alteration. After the publication of Modern Matters, in order to further the discourse, English Heritage published the proceedings of a second conference in 2001. '*Preserving Post-War Heritage'* contained a range of case studies of the conservation of mid-twentieth-century buildings with the welcome appreciation that *'local authority and publically funded bodies such as universities were the overwhelmingly dominant clients of the period'* (Harwood, 2001: 12). Harwood expressed disappointment that despite this fact, recognition remained largely limited to the work of a small number of predominantly private architects. She laments the perception that the '*whole story could also be paraphrased by a study of a small number of representative architects'* (Harwood, 2001: 12) rather than of the prolific ranks of public architects. Clearly the acceptance and celebration of private architects, with the possible exception of a sometimes begrudging acceptance of the role of the LCC Architect's department, underlines a reluctance to perform a holistic, qualitative assessment of the work of the period. That private architects enjoyed a positive press from the architectural journals of the period, and that their work was often won as a result of design competitions, seems enough to recommend it; and it seems that heritage professionals find it easier to rehearse contemporary opinion than make their own qualitative judgements. The result, with just a few exceptions, is that the bulk of public architects and their extensive output goes largely unnoticed and unappreciated. Harwood celebrates the minority, individuals like Jack Lynn who competed alongside the Smithsons in Architectural competitions before commencing work with Sheffield and therefore enjoys some celebrity, but, by and large, recognition remains rare for the public practitioner. Even whilst celebrating Lynn's work at Park Hill in Sheffield there remains a disdain for any form of non-traditional construction, with Lynn's design boasting a more traditional form of construction *'in having a concrete frame and cross-walls, which were then clad in brick'* (Harwood, 2001: 20). The differentiation is critical *'it is important to distinguish these one-off constructions from the rash of system-built tower blocks built in the early 1960s as part of a drive to meet housing targets….these vast developments built with pre-fabricated systems, many imported from abroad, which repeated standard designs across the country, have failed to interest the conservation world, and there is no indication, in England, that this will change'* (Harwood, 2001: 20). As such a vast proportion of public

housing completed in the post-war period that was of non-traditional construction, is unlikely to garner any immediate attention or even enjoy some form of qualitative assessment. Instead, the celebration of a more traditional architecture, is explored, commencing from 1957 *'when England's years of austerity at last gave way to a consumer boom'* (Harwood, 2001: 21). There is a conflict though with the suggestion that we are being directed to celebrate architecture rather than construction, although we may recognise new materials and standardised components: *'then began an exceptional period in British architectural history'* when buildings such as Park Hill represented a time when *'the most profound ideals of the infant Modern movement of the 1920s found fruition….the form of a building was inspired by how it was used; materials were expressed honestly; standardised industrial components were chosen not merely for economy, but actually in preference to special designs; steel and concrete spans, covering large areas, enabled the relationship between indoor and outdoor space to be redefined, as the external wall no longer had to be structural'* (Harwood, 2001: 21). Whilst we are encouraged to assess wider criteria when judging significance (English Heritage, 2008) it is perhaps disappointing that so little recognition is given to the political environment that enabled construction or the socio-cultural context of tenants for whom these buildings were built.

Coinciding with this period was the overriding concern that protection of modern assets might constrain new development. These concerns were voiced by the Urban Task Force in 1999 and echoed by the Civic Trust who called for new ways of using and adapting historic buildings (Gwilliam, 1998). This led to a suggestion that increasingly, the conservation of historic urban assets was being used as a vehicle for urban regeneration (Strange and Witney, 2003), with conservation activity moving away from the single aim of preservation to take on a broader urban regeneration and economic role (Delafons, 1997). Conservation was increasingly being judged upon its regenerative capacity, suggesting that 'the historic environment has become a key resource to be used in the regeneration process' (Strange and Witney, 2003: 220). An associated benefit was that important historic assets were also '*potential beneficiaries of funding regimes and programmes that support re-development whilst contributing to the economy and promoting social inclusion'* (Strange and Witney, 2003: 220). The ability to play a role in the regeneration of problem areas increasingly saw conservation become a key part of planning policy when seeking *'to improve the quality of that environment by making it a better place in which to live and work and empower community action, inclusiveness and ownership.*' (Strange and Witney, 2003: 220). The trend and growing potential for significant heritage to contribute to regeneration was further explored by Pickard (2001) who suggested criteria for a framework for heritage management allied to sustainable development-

- *Reflect local life*

- *Improve quality of life*
- *Maintain local identity, diversity and vitality*
- *Minimise the depletion of non-renewable heritage assets*
- *Develop collective responsibility for heritage assets*
- *Empower community action and involvement*
- *Provide a robust policy framework for integrating conservation objectives with the aims of sustainable development more generally*
- *Define the capacity by which historic centres can permit change*

(Pickard, 2001 cited in Strange and Witney: 224)

8.7 Conservation and cleansing

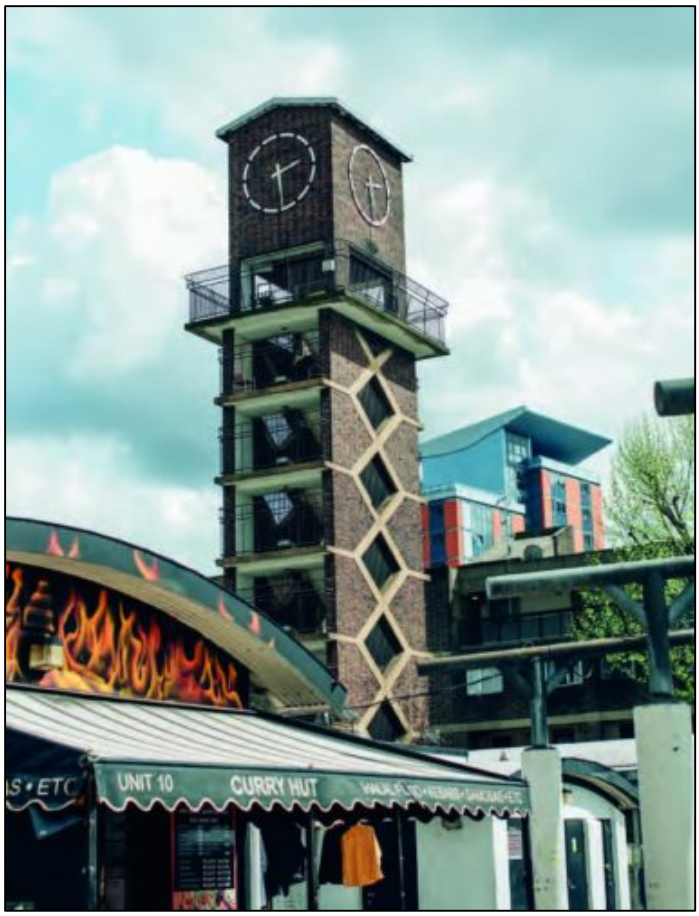


Figure 182: Lansbury Clock Tower. Source: Republiclondon.

A number of London estates with a poor reputation but a significant historic character would become the beneficiaries of this new regeneration approach. The Lansbury Estate had been the centrepiece of the Live Architecture Exhibition at the 1951 Festival of Britain but had afterwards suffered from neglect, unsympathetic repair and a poor reputation. With mixed-development housing by Geoffrey Jellicoe, the Chrisp Street market and clock tower by Frederick Gibberd, as well as the Ricardo Street

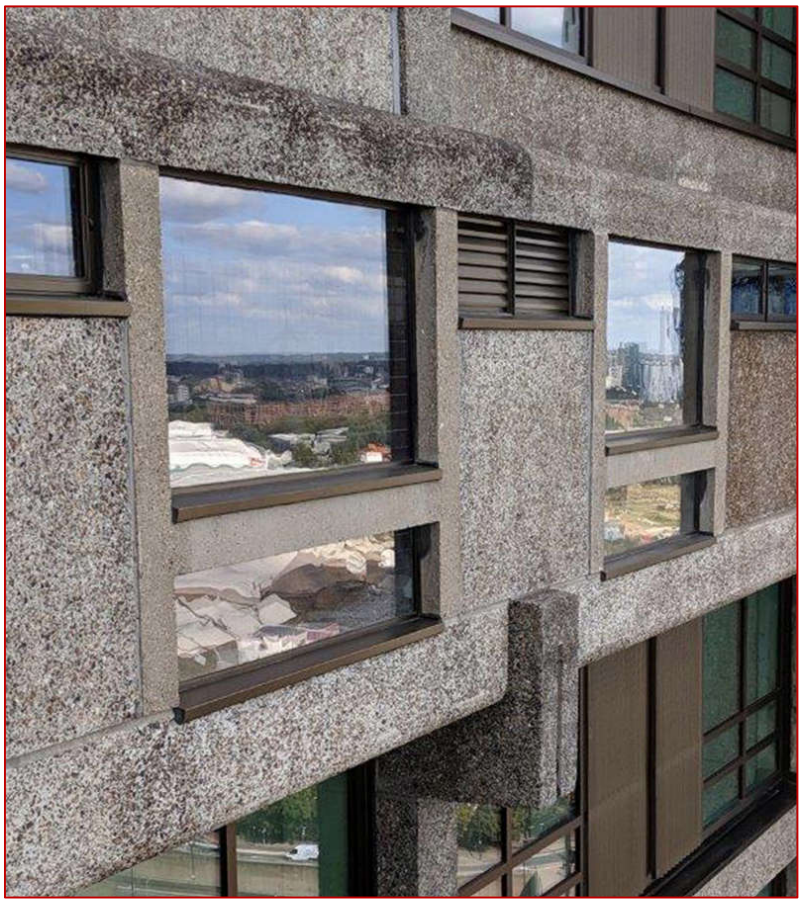
school and Trinity and Catholic churches by other noted architects, it qualified as significant and was designated as a conservation area. Featured in Modern Matters it was used as an illustration of the potential of historically-important sites to free up additional funds for regeneration: '*Lansbury is not a museum but a living community and after forty years of use it needs refurbishment and improvement'* (O'Rourke, 2001: 171). Discussion of the years of chronic underfunding that had contributed to the estates problems are not explicitly discussed but criticism of the *'alien types of cladding and window replacement'* that *'have damaged the estates' special values'* focus instead on readily observable aesthetics. Benefitting from an initial grant of £13.3m from the Estates Regeneration Challenge Fund, secured for repair and improvements, the Council designated the original Exhibition area Conservation Area status. This enabled its eligibility to apply for further grants from the Heritage Lottery Fund. Buoyed by plans for the repair and improvement of their homes, Tower Hamlets residents voted in 2006 to transfer the *management* to Poplar Harca, a new social landlord who announced a twelve-year plan to update, improve and replace homes. Subsequently concerns were raised about the proposed £280m make-over of the Chrisp Street market site by Poplar Harca and developer Telford Homes. This consisted of the demolition of existing housing and its replacement with 650 new flats in blocks of up to 25 storeys with 25 per cent designated as affordable. Poplar Harca set out its vision, keen to stress the importance of conservation and heritage-led development, *'Our proposal is to create a thriving, town centre – keeping the best of what's here while providing an improved retail offering, more homes; including more social and affordable; more services and amenities and a greater focus on heritage'* (Poplar Harca, 2019). A growing campaign against the development accused Poplar Harca of *'deliberately running down the area'* with plans that *'in reality almost completely removes any social housing from the market replacing it with a small number of 'affordable' homes and units for part ownership'* (The Canary, 2018). The developer justified the construction of 443 entirely new private sale homes in order to cross-subsidise a development which would still be able to benefit from a *'restored and accessible Festival of Britain clock tower'.* Residents and market stall holders fearing displacement mounted a robust defence, suggesting that councils and housing associations planned to desert social housing tenants in pursuit of more affluent residents. Despite a vociferous public campaign, the Chrisp Street Market redevelopment was finally approved by Tower Hamlets Council on 24th July 2018 (Tower Hamlets, 2018).

Figure 183: Erno Goldfinger's Balfron Tower before refurbishment. Source: Author (2017).

Erno Goldfinger's iconic Balfron Tower is situated between Chrisp St Market and the A12. Keen to witness the improvement of their homes, residents of the Tower had voted to transfer management control to Poplar Harca in 2007 following publication of a refurbishment plan for the block in 2006. Acknowledging that Balfron Tower had suffered from an historic lack of maintenance and had also experienced high levels of anti-social behaviour, the refurbishment was welcomed, especially as residents were given the option to move into newly refurbished alternative accommodation on the estate or remain in place during refurbishment. However, this promise was later rescinded on the grounds of Health and Safety considerations, resulting in the mass evacuation of the site, after which the possibility of return was ruled out. Poplar Harca blamed the financial crash for the new decision to sell all the flats to offset the cost of refurbishment. Ironically this included those residents who had originally exercised their Right to buy, who were presented with a refurbishment bill of £137,000 per flat, none of whom could afford it. The displacement of tenants at Balfron represents the increasingly common use of historically-significant examples of social housing to assist regeneration but it often has a negative effect for former residents who are displaced in favour of private tenants.

Consequently, the controversial and changing role of Housing Associations has been examined in the context of Balfron Tower *'nothing better shows their degeneration into an arm of the development industry than Poplar Harca's breathtakingly cynical treatment of that tower and its residents'.*

(Hatherley, 2019). The initiative to move artist groups into the tower whilst tenants were decanted was described as a cynical action *'so that affluent people start to visit and become familiar with an area that otherwise they might feel uncomfortable in'* before the Housing Association finally sells to '*the highest bidder*' (Hatherley, 2019). Hatherley does not necessarily seek to blame the Housing Association, seeing their strategy as an inevitable consequence of chronic under-funding that had resulted in an insurmountable repair deficit. He does however, find it ironic that Balfron was *'conceived in every respect as non-market housing, by an architect with explicit socialist commitments'* and with the express intention of giving tenants '*buildings of the highest standard*' (Hatherley, 2019). However, the architects involved in the regeneration do not escape criticism, Hatherley regrets the absence of appropriate examples of conservation related to Council housing *'there aren't any, because that would involve Council housing being treated as well as any other form of building, and that won't do'* (Hatherley, 2019).



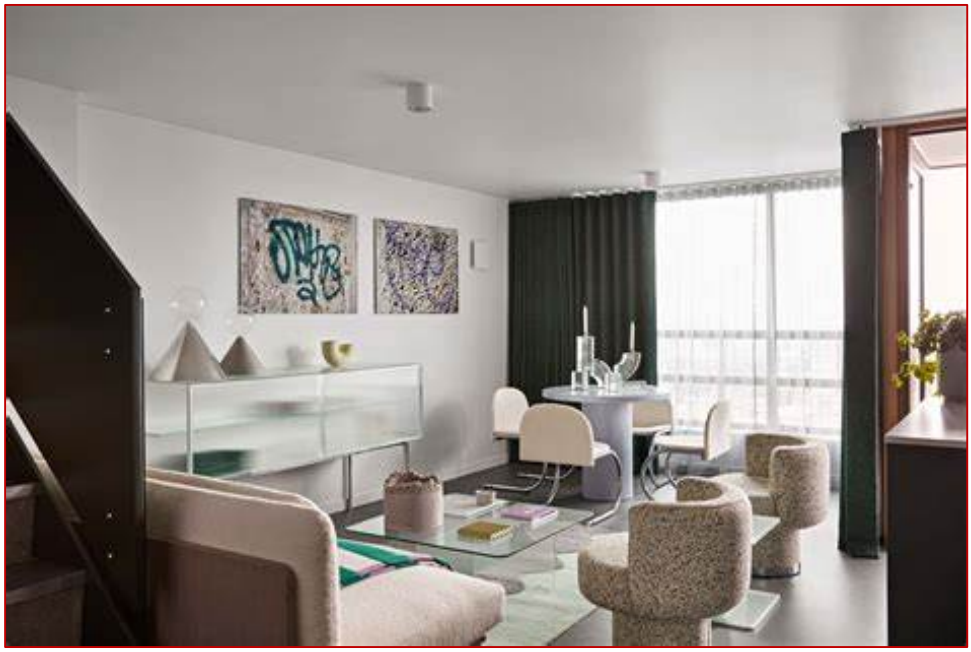


Figure 184: Balfron Tower, post-refurbishment. Source: LondonNewcastle.

The case of the Robin Hood Gardens, the brutalist, streets in the sky development by Alison and Peter Smithson a mere stone's throw from Balfron Tower, provides another example where commercial interest appears to have trumped heritage value. Following the expiry of the five year certificate of immunity from listing, heroic efforts to recognise the building were made by architects of the calibre of Richard Rogers and Zaha Hadid together with a host of well-known critics and commentators. Instead of listing, the Head of Designation at Historic England, Emily Gee concluded that it was not worthy of preservation. She felt that it was *'not innovative in its design'* although *'The building has some interesting qualities, such as the landscape, but the architecture is bleak in many areas, particularly in communal spaces, and the status of Alison and Peter Smithson alone cannot override these drawbacks'* (Gee, 2017).

Falling once more under the control of Poplar Harca, the 214 flats in the Robin Hood Gardens development were destined to be replaced by 1,575 new private and affordable homes. Simon Smithson, the son of the architects, described the decision not to list it as *'an act of vandalism'* and attacked politicians for tampering with the heritage listing system in a bid to erase examples of the UK's post-war architecture (Smithson, 2017).

Moss considers at some length the reasoning behind listing protection for these types of building and quotes the work of Smith (2006) in relation to the protection of historic assets. The *Authorised Heritage Discourse* (2006), a term coined by Smith to describe a dominant set of ideas about heritage, views listing as the protection of a recognised canon of heritage for a nation (Moss, 2016: 13). Moss suggests that it is predicated by a preference for '*aesthetically beautiful and/or monumental things'* that can *'exclude a whole range of popular ideas and practices relating to*

heritage' (Moss, 2016:13). The suggestion is that *'policies and practices….promote the experiences and values of the elite social classes'* (Smith, 2006: 13). This concept is taken further by Waterton (2010) who suggests that the acquisition of heritage *'is ultimately guided by the values and interests of the white, middle and upper classes and the symbols that it ultimately portrays are those of these classes'* (Waterton, 2010:13 cited in Moss). That the predominantly Bangladeshi inhabitants of Robin Hood Gardens felt that the '*streets in the sky'* enabled them to enjoy an inclusive neighbourly experience that reminded them of their homeland didn't appear to register as a consideration that might warrant retention. The suggestion that this type of decision making leads to *'a derisory marginalisation of the working class'* and in this case immigrant working classes certainly resonates (Waterton, 2010: 208-10).

Ironically there is a postscript to the protection of Robin Hood Gardens. Prior to its eventual demolition, the Victoria and Albert Museum announced that it had purchased a three storey section of the structure calling it a *'defining example of brutalist architecture and social housing'* (Ravenscroft, 2018). This slice of the original was subsequently exhibited at the Venice Architecture Biennale entitled *Robin Hood Gardens: A Ruin in Reverse* that presented the façade of one flat: *'the various elements of the structure… held in place by a complex scaffolding system, devised by Arup engineers. This makes it possible for Biennale visitors to climb up onto one of the raised walkways that were a key feature of the design'* (Ravenscroft, 2018).

Figure 185: The three-storey section of Smithson's Robin Hood Gardens development purchased by the V&A. Source: Author (2017).

Figure 186: Façade removed and assembled. Source: designboom.com.

Figure 187: Portraits at Robin Hood Gardens, photography exhibition featuring tenants in their flats prior to removal. Source: Kois Miah (2017).

The unfortunate conclusion is that despite widespread support from tenants and authoritative supporters there is little appetite in recognising and retaining for their original purpose any further examples of post-war social housing. In those cases, where conservation area status is awarded despite seeming to support conservation it has an unfortunate tendency to ultimately lead to displacement in the interests of regeneration.

This tendency is by no means limited to Britain and International studies of gentrification examine the role of conservation in enabling social cleansing. The extent to which the protection and listing of buildings and the creation of conservation areas effect gentrification is examined by Yeo and Han (Yeo and Han, 2010). The research centres upon the Jongmyo Shrine, one of Korea's ten World

Heritage sites, and notes the negative impact of capital-led urban regeneration featuring heritage conservation. The study examines the effects of the redevelopment on this erstwhile struggling environment through a *'typical top-down decision making process with mega funds and colossal investment of private and public developers, expecting visually upgraded urban landscapes….and increased property values'* (Yeo and Han, 2010). It suggests the improvement of challenging but historically-important sites is unavoidably linked to the eventual dispersal of the original tenants and their replacement with more affluent inhabitants. In these cases, conservation becomes an agent of displacement, with the commercial imperative deemed more persuasive than a continuing need to house lower-income groups. In this climate residents who have had to endure years of underfunding are suddenly considered unfit to enjoy the benefits of refurbishment and estates that were designed to provide homes for anyone who needed one succumb to the effects of gentrification.

The term 'gentrification', attributed to Ruth Glass in 1961 (Glass, 1961), was coined when studying the decanting of tenants that took place during Kensington's slum clearance from the late 1950s (Lees and Ferreri, 2015). It is therefore ironic that the term should once more find such resonance during a second wave of so-called slum clearance. Lees and Ferreri certainly use the same term to characterise what they see as the state sponsored gentrification of former Council estates recast by central and local government as slums. In pursuit of a policy of urban renewal Lees and Ferreri describe an escalation of state led gentrification from the 1990s. They describe a process recognised by Fenton et al (2013) that started with the provision of low-income housing being opened up to private profit. This application of a market logic leads to a change in consumer, attracting new more affluent tenants whilst resulting in the displacement of the inhabitants. Whilst on the face of it, the demolition of troubled estates and their replacement with either shared ownership or private dwellings might be seen as a welcome return to Abercrombie and Forshaw (1944) policy of mixed communities. Evidence seems however to suggest that this is merely a smokescreen for wholesale displacement and gentrification and often state-led gentrification and displacement go hand in hand. Studying the development that coincided with the 2012 London Olympics, Watt explored the implications of regeneration: *'the area of the Olympic Park and surrounding area will become revitalised for the benefit of only middle class communities as opposed to the regeneration for existing working class and immigrant communities'* (Watt, 2010: 273) resulting in the traditional manual working class being replaced by professional and management groups. Watt traces the development of the gentrification process back to the introduction of 'Right to buy' and the extensive stock transfers of local authority homes as a quasi-privatisation of low income housing provision. These policies coincided with a decline in both new building and the maintenance of existing stock under the Conservatives, and continued under New Labour who instead channelled

funding to the Decent Homes programme and stock transfer. The result was that much that moved to private control enjoyed some improvement, leaving the remainder in public sector control short of the Decent Homes Programme (2000) standards. Often in London, what remained of social housing stood on valuable land which represented a state-induced rent gap (Watt, 2009a: 235). The result was that local authorities had tenants paying low rents for properties that stood on land with a disproportionately high value, and the local authority could only realise this value by changing the tenant base. Conveniently decades of under investment, itself contributing to the classification of failed estates was capitalised upon to further a policy of regeneration that typically involved the decanting of tenants and the sale of land to private developers. Looking at land in the Docklands development, Watt concluded that, what may have delivered a 'spectacular physical impact' delivered only *'modest success in raising the economic and social well-being of deprived local populations'* (Watt, 2009a). Watt utilised a case study of a classic LCC mixed-development estate: the Carpenters Estate. Comprising 700 homes in total with three 22-storey tower blocks, low-rise flats and housing, the estate also included one school, a college, two community centres, a health centre and several businesses. Described by the London Borough of Newham as *'falling into disrepair'* (Watt, 2009a) this was hardly surprising as the estate had never benefitted from the Decent Homes programme. Newham had begun to decant tenants in 2005, and by 2012 more than half had left (Watt, 2009a). The tower blocks were the most affected with just 72 occupied flats compared to the 434 in 2005. Watt contrasted Newham's Sustainable Community Strategy (Newham, 2010:17) that clearly stated that regeneration opportunities for housing *'must never be at the expense of a cohesive community'.* The dilemma being that, whilst Newham advocated that housing should be mixed by class, ethnicity and tenure, the residents of the Carpenters Estate believed the estate already represented just that mix (Watt, 2009a). The emergence of tenant activist groups across London to protest at the break-up of their estates is underlined by Watt's findings in Newham where he encountered tenants with a pride in their homes and community, and an overwhelming desire, (88 per cent in an independent survey), to remain (Watt, 2009a: 4). As Watt confirmed, his experience contrasted with the more prevalent image that *'Council estates and their residents in the UK are routinely framed within a discourse of high crime, anti-social behaviour and joblessness'* (Watts, 2009a). What has become a routine perception of estate tenants was further challenged in the aftermath of the Grenfell Tower disaster of 2017 when heart-breaking stories emerged of the victims' lives, jobs, hopes and aspirations.

Similar policies and findings have been examined by Lees and Ferreri (2016) who suggest that state-led gentrification and social cleansing of low-income tenants from inner London has been ongoing since the late 1990s. Whilst primarily describing the resistance to proposed changes, Lees and Ferreri

provide an illuminating view of the Heygate saga. The Heygate is described as a medium-sized purpose-built Council estate in the London Borough of Southwark, south east of the Elephant and Castle. Housing 3,000 people in 1212 residential units, it was built on slum clearance land in 1974. Since the 2000s the Council conducted only minimal maintenance and began to decant residents who were promised new homes in the proposed new development. With the greater part of the estate being boarded up, a proportion of the remaining homes were used for emergency temporary accommodation. It might appear cynical to believe that what little remained to attract tenants was being eroded for the remaining 1033 Council tenants and 179 leaseholders. At the time tenants described how the Council *'just ran the estate down into disrepair'* (Lees and Ferreri, 2016). Characterised as a failed or sink estate, the Council declared it a slum in 2004, promising that new replacement homes would be built. Consequently, secure tenants were invited to bid for existing properties in the borough and non-secure tenancies were terminated. Leaseholders who were originally promised equity to assist them to purchase a new home in the development or a cost-free exchange to another property in the borough were instead offered shared ownership of replacement properties. Residing in a largely derelict estate, remaining leaseholders had little option but to negotiate individually. Many eventually realised below market-value compensation and were left with no option but to relocate to areas that they could afford, often outside the borough or even outside London (Lees and Ferreri, 2016). Similar instances of tenant decanting and estates being sold for private development have and continue to occur throughout the capital as hard-hit councils and housing associations seek to realise the value of their real estate and at a stroke remove the problems associated with problem estates.

The situation in Birmingham exhibits similarities albeit, unlike their counterparts in the capital, at the time of writing none of the post-war developments have captured the imagination of the heritage movement. As Jones declared *'Birmingham has no celebrated buildings equivalent to Sheffield's Park Hill megastructure or the slab blocks of the … Alton West Estate'* (Jones, 2002: 32). In support of this apparent lack of appreciation Jones cites Glendinning and Muthesius' (1994) assertion that the re-development of the Duddeston and Nechells area of the city *'bears a striking resemblance to the Soviet Pavillion of the 1937 World Fair'* (Jones, 2002: 36). This he suggests supports the theory that Manzoni actually exhibited a strongly derivative style which detracts from the radical urban redevelopment envisaged by Birmingham's City Engineer. This failure he suggests mitigates against the recognition of early developments in Birmingham although acceptance of this argument largely ignores the considerable and less appreciated efforts of the first City Architect.

The estates planned first by the City Engineer and Borough Surveyor Manzoni and, then the first City Architect, Sheppard Fidler certainly demonstrated a departure from inter-war development and a

new approach to urban living. As Jones concludes, these may have had more in common with a City Beautiful ideal than a Corbusian vision of the urban environment (Jones, 2002), but they did increasingly incorporate wide boulevards with an emphasis on landscape and introduced high-rise living. Failure to achieve the ideals of *La Ville Radieuse* though ignores the necessary compromise required when faced with the constraints of insufficient land, labour or budget. In this light there are many examples of both men attempting to adapt to difficult challenges with new housing solutions. Undoubtedly Manzoni was more willing to compromise when it came to design, but in terms of layout he was certainly able to exercise his vision albeit within limiting parameters. Jones cites one such early development, the Lee Bank Estate (1963-7); part of Manzoni's visionary redevelopment of *'a ring of decay around the city centre'* (Jones, 2002). It was one of five clearance areas identified by Manzoni and referred to as Bath Row for his 1941 redevelopment schemes. Prior to redevelopment the area consisted of 4,306 homes of which only 429 were deemed fit for occupation (Jones, 2002: 46). The piecemeal re-development of Lee Bank would incorporate the unremarkable but locally prolific Wimpey 6-storey Y-shaped blocks.

Figure 188: Lee Bank Estate. Source: Pinterest 1973.

Situated at the centre of the estate they would be joined by four- and six-storey balcony access flats on the eastern and southern perimeter. In maisonette form, these were considered suitable for families with small children. The Cregoe Street area to the North West and developed from 1960 would have a shopping centre as its central feature in a development that included 22-storey tower blocks, low-rise flats and a multi-storey car park all connected via elevated walkways. Despite its grand vision, Jones suggests the actual solution was *'little more than an unremarkable collection of*

contractor designed housing units' (Jones, 2002: 195). The estate would go on to attract the criticism rather than celebration within just seven years after its completion from none other than the editor of the Architectural Review. Nicholas Taylor launched his attack on the supposed '*failure of housing'* and as Jones (2002) explores, singled out Lee Bank *'as damaging the very communities they were supposed to be helping'* (Taylor, 1967). The supposed failures would be exacerbated into the 1980s largely as a result of massive under investment and poor maintenance by the Council (Boughton, 2018). Nevertheless, it wasn't deemed quite bad enough to warrant regeneration under HAT, Estate Action or City Challenge, but was an early candidate for the Estate Renewal Challenge (ECRF) (Boughton, 2018). Failing to gain support from the Labour Councillors because acceptance would mean ceding control to a Housing Association, disgruntled residents made sure the estate's problems remained in the public eye. The erection of a sign proclaiming '*Welcome to Lee Bank, Birmingham's Slum Quarter'* ensured national press attention, and was followed by a town hall demonstration conveniently planned to coincide with the city's staging of the Eurovision Song Contest.

Figure 189: Resident protest at Lee Bank. Source: Springerlink.

With the continuation of the ECRF by the incoming Labour government, opposition from Labour Councillors dwindled and residents finally voted to transfer control of the estate to Optima Housing in 1998. Some redevelopment had occurred earlier in 1994 with the demolition of unpopular four-

storey maisonette blocks built in the 1950s (Jones, 2002). The ECRF initiative to fund improvement through private investment resulted in early plans to completely remove the Cregoe Street development and witnessed the demolition of the first pair of 20-storey towers followed closely by a second pair. Perhaps surprisingly, the blocks were found to be in good structural condition; it was their poor reputation rather than their condition that had hastened their demise. The remaining seven 20-storey blocks were destined to survive subject to a comprehensive facelift facilitated by over-cladding. Like the estates in London, the replacement homes would only include a small proportion of socially-rented homes. Of 1,000, just 139 would be socially-rented with a further 60 destined for shared ownership, the remainder would be available for sale to private owners. The overall plan was to retain a 50/50 mix of tenancy but, to achieve this, many long term residents were decanted to other sites to make way for new owner-occupiers. The new development, undertaken by private developers Crest Nicholson went on to feature a major re-branding exercise as the Lee Bank site became known as Park Central (Jones, 2002).

Figure 190: Park Central development by Crest Nicholson. Source: Birmingham Mail.

Faced with issues of under investment and legacy issues related to poor construction methods, increasing number of estates continue to be re-developed in the way described. The inevitable consequence is that homes designed to provide accommodation for a predominantly working class population are disappearing. Displaced tenants are forced to either move, often far out of the area or fall back upon private landlords. The state is no longer concerned with the provision of social housing and increasingly as the argument for replacement with 'affordable' alternatives, estates and developments that may deserve some deeper merit are being sacrificed. Twelve years after the

publication of Preserving Post-War heritage Harwood would concede that private homes and planned housing schemes were under-represented as recognised heritage. But despite the constant threat of demolition or major alteration she concluded there appeared to be little appetite for further thematic studies related to the recognition of housing schemes (Harwood 2010).

The recognition through listing of a small number of celebrated developments has allowed them to join an '*authorised heritage discourse'* (Smith, 2006). Expensive refurbishment schemes invariably necessitate the displacement of existing tenants and their replacement with more affluent private tenants, proud to invest in a sanitized memory of a time when good design was considered appropriate for everyone. This, though, was a period when the *'aspiration to treat all its citizens equitably and decently lay at the very heart of the Council house building programme which improved the lives of many millions'* (Boughton, 2018: 6). In the quest to rebuild and improve people's lives after the hardship of war, this motivation, energised many public architects and was supported across political parties. The effort, whilst often compromised, was nonetheless remarkable in finally eradicating the slums and housing a population in modern, heated and sanitary accommodation.

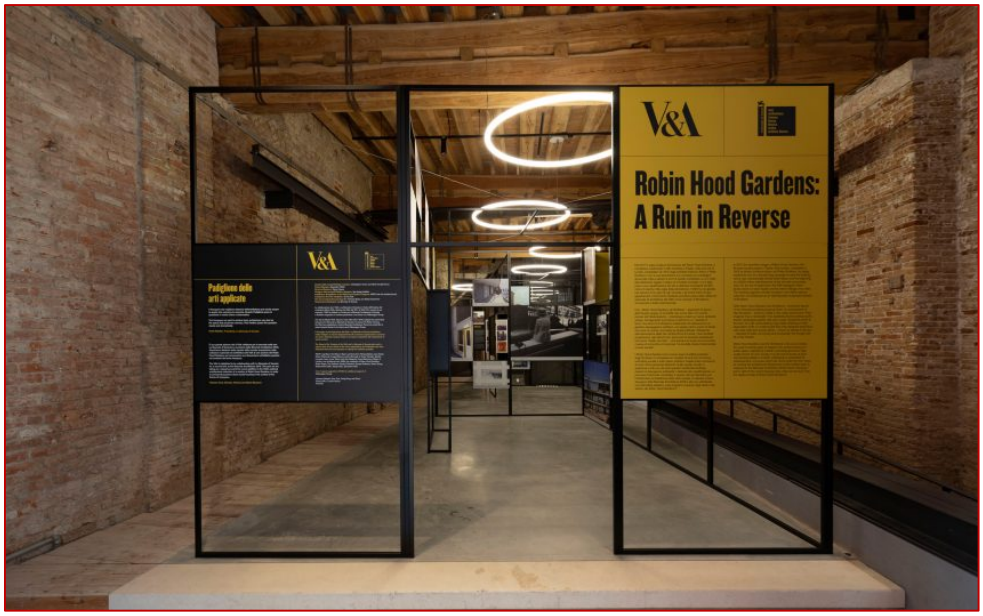


Figure 191: V&A Exhibition featuring segment of Robin Hood Gardens. Source: caddownloadweb.com

Whilst some of the best examples of Britain's high-rise experiment survive and can still be enjoyed by appreciative (albeit private) tenants, many other schemes potentially deserving of recognition have succumbed to demolition. Whilst Goldfinger's Balfron Tower remains, a stone's throw away in Poplar the demolition of the Smithsons' Robin Hood Gardens is almost complete. Despite a vociferous campaign it was not deemed worthy of protection or, despite the reputation of its architects or the form of its construction, deemed to be of sufficient significance to counter the developer's intention to redevelop the site. Despite no longer being worthy of serving its original purpose it was somewhat

bizarrely considered important enough for the V&A Museum to go the expense of dissecting a fraction of the development for future display, commencing with an appearance at the Venice Biennalle in 2020. Perhaps this is the history that will persevere, the product of progressive architects and committed politicians and the one-time homes of grateful tenants relegated to museum pieces. This is by no means a local phenomenon - in Stockholm at the Flygande Betong Exhibition (2020) the much-derided large panel systems utilized in high-rise blocks featured exclusively in the 'Flying Panels' celebration of the genre, enabling visitors to contemplate the global reach of systems that originated in Continental Europe and went on the accommodate people in all corners of the world.

Figure 192: 3-D printed reconstructions of LPS blocks. Source: Flying Panels Exhibition, Stockholm (2020).

The new-found, albeit limited, appreciation and celebration of industrialised high-rise has emerged whilst local authorities and developers are still actively engaged in demolition. Today, despite the exhortations of a minority of enthusiasts, the state-sponsored provision of housing has largely been discredited. Those tenants who continue to inhabit social housing, and especially high towers, are more often characterised as both responsible for, and deserving of, the '*problem or sink estate'* (Boughton, 2018: 195).

This chapter has explored the demise of the high-rise initiative commencing with the Ronan Point disaster (1968) that witnessed the commencement of an often vociferous campaign against high-rise

and those that were seen as responsible for its development. It has explored a range of material that sought to explain the failings of the high-rise initiative and apportion blame to the modernist architect seen as responsible for its implementation. The study has discussed the impact of the 'right to Buy' initiative and a series of rehabilitation programmes that sought to improve the reputation of high-rise estates. In the light of widespread criticism, it has assessed both the demolition of large numbers of blocks as well as the tendency to face-lift remaining high-rise stock. Amid these two reactions it has discussed the recognition, rehabilitation and conservation of some of the best examples of the type and the implications for tenants of such activities. Amid an appetite for further demolition it has considered the memory of high-rise and a growing movement that celebrates the initiative via museums and architectural festivals

Having explored the demise of the high-rise flat the final chapter will review the development of the high-rise flats and reconsider the role of the architect, both private and public as well as the success of the system build initiative. It will return to the theme of consensus and compromise and explore how what started as a widely held consensus amongst stakeholders was ultimately challenged by the need for compromise. The fact that public architects were constrained by budget, land and density considerations will be shown to ultimately adversely influence a commitment to high flats as suitable accommodation for a specific demographic and a viable component of the mixed development estate. The widespread consensus that ensured government were able to implement system build will then consider the compromises that meant architects were side-lined by contractors who struggled with the adoption of industrialised methods and failed to achieve consistent and sustainable production figures to guarantee success. These issues in turn will be shown to influence the quality of construction and the abiding perception of system build, high-rise and ultimately the provision of welfare state housing provision.

Conclusions

9

9.0 Conclusions- reviewing the high-rise narrative

The primary aim of this research has been to better understand the influences and actions that led to the large-scale adoption of high-rise social housing in England from the early 1950s to 1970. In order to achieve this aim, the research has considered two subsidiary but supporting aims. The first has been to understand the place of the system build movement in the development of high-rise housing. The second supporting aim has been to investigate the implementation of high-rise in Britain's second city to specifically inform the role of the public architect and their relationship with local politicians to gain a practical example of high-rise development outside the capital. In pursuing theses aims the research has contributed new understanding of the system build initiative and further informed the development of high-rise accommodation in Birmingham and provided new insight and appreciation of the role of the first City Architect.

In the immediate post-war period contractors were encouraged to experiment with non-traditional building methods in an attempt to remedy the challenge of insufficient labour and a shortage of materials. Following the varying success of non-traditional housing and the schools programme the Systems build initiative of the early 1960s was a further attempt to industrialise housing provision and modernise what was widely considered a less than progressive and inadequate construction industry.

The immediate post-war challenge to rebuild, and the decision by the incoming Labour Government to vest responsibility for housing with the local authority, encouraged the development of a new breed of public architect. These individuals, often enthused by Modernist principles, embraced new ideas concerning ways of living and building to plan and design modern communities in the aftermath of war. That this occurred during a period of growth characterised by high levels of employment and, consequently, significant labour shortages brought new challenges to local authority building programmes. The attraction of utilising emerging technologies and methods to modernise an industry hitherto reliant upon traditional crafts was therefore to prove particularly compelling.

9.1 The rise and fall

This study has set out to investigate and explain the growth of high-rise and the roles and responsibilities of the stakeholders including Ministers and local politicians, architects and contractors. Just as Summerson (1942) had written about the growing social and political awareness

of the architectural profession and the opportunity that presented itself to bring about change, the political classes were also united in their commitment to major post-war reconstruction. Philanthropic projects were nothing new but, as Bowley stated, *'Housing policy had become a national issue'* (Bowley, 1945: 183). Part of the motivation was undoubtedly the failure from 1919 onwards to build a '*land fit for heroes'*, and a concern that such a failing, if perpetuated, had the potential to result in civil unrest. This idea was based firmly on the principle that the war had engendered a *'notion that the working class was enduring deprivation and sacrifice to secure a more equal society'* (Finnemore, 1989; 27).

Well before the war had ended, the coalition government had commenced a dialogue about re-building. The form and type of housing had been examined by the Dudley Report of 1944 that articulated a vision for the design, layout, construction and amenity of new homes. This would be reflected in the work of Abercrombie and Forshaw in the County of London Plan (1944) which recommended the development of neighbourhood units featuring new forms of housing. This vision found consensus amongst architects and politicians who collectively appreciated the potential benefit of the mixed community, mixed-development model featuring the flat as a core component. This model incorporated all the amenities likely to be required by tenants on smaller developments, and represented a new ideal to replace the much-maligned monotony of inter-war development. The vision of social balance in mixed communities would eventually be compromised, but the promise of the coalition government to deliver 300,000 new homes within two years remained, and it was accepted that a good standard of housing was now a basic human right that needed to be addressed as a priority.

The defining objective of Modernism was the hope that it might transcend mere architecture and influence and change lives for the better. The influential movement embraced new building forms, new materials and new forms of construction and presented a new dynamic for all types of building, not least housing. As Banham proclaimed, *'it became necessary for architects to reconsider and re-assess the basic theme of their art, the dwelling of man'* (Banham, 1962: 18). Le Corbusier fuelled a dialogue among a new generation of architects of the inter- and post-war period that shaped thinking regarding post-war reconstruction, and this discourse resolutely incorporated the inclusion of the flat.

Modernism influenced a new generation of architects, many of whom found employment in the public sector and were not just encouraged but empowered to experiment with new forms of housing. From a planning perspective there may have been a frustration that opportunities to put the more radical ideas into practice were rare. Certainly, early post-war construction largely

continued along traditional lines and bore closer resemblance to Garden City principles than the modernist ideals proposed by Le Corbusier and his colleagues. Wholesale redevelopment was relatively rare, the amount of land available for such experiments was small and only the prospect of the New Towns promised a blank canvas (Gold, 2007). Progressive private architects and the early pioneers working for local authorities were not afforded the opportunity to plan Le Corbusier's 'la ville radieuse' and had to content themselves with implementing early examples of social housing (Gold, 2007). However, despite the absence of opportunity, modernist ideals proliferated and the architectural press celebrated continental and Scandinavian experience as well as early examples of landmark developments by both private architects and public architects. This was a period of idealism, when politicians and architects bought into a vision of improvement and a new aesthetic superior to the widely-criticised monotony of inter-war municipal and speculative development (Harris & Larkham, 1999). Many local authorities recognised the cachet in employing their own architects without any real understanding or attempt to support and encourage them. Architects would instead derive their inspiration from influential fellow architects and planners but be constrained by the more mundane practical considerations relating to the availability of land and required densities. The emergence of the mixed-development model represented a practical and modern way of approaching new development, an exciting opportunity allowing public architects to experiment with a palette of different housing types and styles to truly present different ways of living. The mixed-development model offered the possibility of combining traditional houses with bungalows, maisonettes, low and high-rise, slab and point blocks to form new estates often designed to take advantage of existing landscapes. Whilst the mixed community failed to materialise, architects were able to design estates for a wide demographic and deploy specific solutions for each type of tenant. The opportunity to transplant new estates into mature landscapes truly offered new ways of addressing housing and the incorporation of play areas, art installations and even the more mundane, but increasingly-necessary, garaging provided the opportunity to experiment and develop forms not previously contemplated. Despite constraints, the early public architects became pioneers of new forms of housing and necessary early adopters of new technology and methods. Nowhere was this more evident than in the development of high-rise. Suddenly, modern materials and building techniques combined with the introduction of new machinery to make the high block more attainable and quicker to construct. Progressive architects experimented with a wide array of different versions of the slab and point block in the quest to combine quality with the desired density of accommodation. As the impetus moved from general needs provision to redevelopment, there was often less land available for the pioneering projects and the imperative moved to the provision of high-density, low-cost housing that seemed to ideally suit high-rise. With a continuing shortage of

labour and frustration at an underdeveloped and inadequate building industry, a consensus formed around industrialisation that resulted in the emergence of system build.

Banham's suggestion that the Corbusian mantra that *'the house is a machine for living in'* (Le Corbusier, 1928: 8) had more to do with it being cheap, standardised, well equipped and easily serviced (Banham, 1962:19) might have recommended system building and, in turn, its eligibility for the provision of social housing. Post-war architects were certainly aware of, and excited by, the task that faced them in reconstruction. Non-traditional construction may have seemed logical but it failed to either capture the imagination of the profession or include them, while the later system build seemed to promise much more. Thanks to an active promotional campaign orchestrated by Ministers and enthusiastically taken up by their civil servants, architects were gradually convinced that they could play a pivotal role in the development of system build. Despite their initial support, it quickly became clear that contractors recognised that it was not in their interest to welcome participation. Financially it was preferable to market contractor-designed package deals, and claims of architectural freedom were largely limited to cosmetic detailing. Limited already by land constraints, scale and budgets, the local authority architects' role was largely reduced to deciding layout or the concession of being able to select from a limited palate of cosmetic variation. The largely unremarkable contractor package deals emerged as the standard with design and aesthetics relinquishing precedence to production. The profession complained: *'Architects should be able to advise…about the advantages and limitations of various Industrialised methods'* (RIBAJ, 1965). The desire for architects to be involved in the development of systems, much championed by the Ministry Chief Architect, Cleeve Barr, had little hope of success. It was neither in the best interests of the contractor focused on standardisation and their profitability, nor the local authority keen to drive numbers and limit cost.

By the mid-1960s it appeared that the die had been cast, the opportunity afforded by industrialisation for architects had not materialised. The ultimate aim of both Ministry and the profession to have Open systems was summarized by Eric Lyons at the RIBA Industrialisation of Building Conference when he lamented the *'failure of architects and industry to come together to produce component systems which would provide us with a flexible building vocabulary'* (Lyons, 1965). In contrast he presented the alternative: *'instead we are being asked to reconcile ourselves to the use of heavy, rigid, Closed systems'* (Lyons, 1965). Open systems remained an attractive prospect for the Ministry which was seduced by the prospect of greater flexibility and lower cost, but contractors, who had made significant investment in their own systems, were desperate to protect their investment and resistant to any suggestion of standardisation.

The RIBA conference would largely signal the professional deterioration of confidence in system build. Although enthusiastic supporters continued to articulate the opportunity, most opinion was reflected by Edwin Williams, who from the floor summed up the profession's view, *'Industrialised housing was a beautiful concept one could believe in, in much the same way one could believe in fairies'* (Williams, 1965). The ability of architecture and system build to combine to deliver a higher quality of housing was destined to be a forlorn hope: *'the race is on between quantity and quality and I am afraid that quantity is the technologists' and the politicians' favourite'* (Lyons, 1965).

Whilst modernist architects may have been responsible for the introduction of the flat into the building lexicon as could be seen in the case of Birmingham, the huge increase in high-rise construction had far wider influences. Similarly, the widely reported failure of high-rise estates would be the result of far more than design.

Increasingly unpopular with tenants and difficult and costly to maintain, from the mid-1960s flats became the most difficult properties to rent. Consequently, allocation policy became less stringent and reports of problem tenants were amplified. The discovery of poor standards of construction identified after the Ronan Point disaster (1968), combined with inadequate maintenance and management, nurtured a vociferous media and tenant backlash that contributed to the vilification of high-rise and a repudiation of state sponsored housing provision in general (Smith, 2020). As time went by, popularity was reduced further as a lack of finance that adversely impacted maintenance and security programmes resulted in *'more vulnerable tenants – precisely those whose needs pre-empted the choice that others were able to exercise'* (Boughton, 2015a) being placed in unpopular tower blocks. In the aftermath of Ronan Point, tenants' voices would increasingly be heard because they supported a contemporary political dialogue. Smith (2010) highlights how the emergent tenant protest unwittingly contributed to the demise of social housing. The disaster in Newham in 1968 and the tenant backlash *'fed into broader ascendant discourses around the political 'betrayal' of ordinary people by state elites and planners in the 1970s and 1980s, discourses upon which the new Right sought to capitalise'* (Meredith, 2018: 7-8). Certainly problems experienced with system built high-rise were used to undermine the status of social housing provision, as Finnemore stated: *'Thatcher's accession signalled the end of consensus politics and the year in which the Welfare State was jettisoned'* (Finnemore, 1989: 38). Thatcher's support for Alice Coleman's doctrine served to hammer another nail in the coffin of both high-rise and state sponsored social housing. Furthermore, as the take up of 'Right to buy' from 1980 favoured houses, the proportion of high-rise flats amongst the remaining social housing stock increased. Growing concern around problem estates and, in particular, those with high flats, resulted in a series of attempts at rehabilitation. A consistently bad

press that portrayed sink and problem estates invariably included high flats to such an extent that they began to symbolise the Welfare State's housing programme.

Daunted by the challenge of rehabilitating failed blocks, many local authorities and housing associations elected and continue to resort to demolition as the most appropriate solution to high-rise problems that emerged in the 1970s. Many have embarked on expensive rehabilitation programmes, most commonly comprising post-modernesque re-cladding schemes and the insertion of replacement uPVC windows. Now indistinguishable amongst more modern blocks, the observer cannot fail to wonder whether the intention was to modernize and improve or merely to disguise. Seen in conjunction with the fallout from the Grenfell Tower tragedy in 2018, where commercial interest triumphed over safety concerns, the motivation to modernize could be interpreted as a final attempt to disguise and eradicate the memory of social housing provision where demolition has not yet been possible.

9.2 System build - new insight

This research has provided an in-depth study of the system build initiative utilising, amongst other sources, a selection of informative records in the Concrete Society archives. The study has highlighted the motivations for system build's adoption, the nature of its implementation, the long-term success of the movement and, ultimately, the reasons for its failure. The original contribution of this research has been the in-depth analysis of the failure of the initiative and, in particular, the commercial considerations that led to over-supply, inadequate volumes and the failure of economic production and construction.

Research has shown how non-traditional construction originated primarily from a shortage of materials and labour. Whilst sharing these drivers, system build had wider motivations relating to confidence in the construction industry's ability to meet the growing challenges of house building. The study has looked at how system build was promoted in Britain and specifically the role of the Ministry in convincing stakeholders to invest in the concept. It has studied the major players in the industry and how they approached the market and to what extent they learnt from the experience of their continental counterparts. It has demonstrated how the Ministry convinced contractors, architects, local politicians and trade unions of the inevitable and compelling impact that technology might play in the construction industry. Promises of a sustainable market encouraged many contractors to make the significant investments required to enter the market. Early agreement on the need for industrialisation and the role that each stakeholder might play in its successful implementation was, however compromised as contractors rushed to capitalise on the opportunity and further their own interests. Over-supply, self-interest and a lack of co-ordinated stake-holder

engagement meant that the compelling aspirations of lower cost and higher quality housing failed to materialise. Associated predominantly with high-rise construction, the push to embrace system build would result in a local authority over-dependence upon high-rise to solve their housing deficit which, in turn, created many more problems. The political imperative to maintain the supply of homes and, in particular, eradicate the slum posed a major problem from the early 1960s. Those in government responsible for housing enjoyed a very close relationship with the construction industry, and clearly recognised that the building industry was unlikely to be able to meet the demands placed upon it. They were also reluctant to direct labour to an industry that would not contribute positively to the economy. Following success in Europe and Scandinavia, politicians were rightly encouraged by the potential of system build. Coinciding with Harold Wilson's 'white heat of technology speech' (Wilson, 1963) the Ministry was convinced that the only way to meet housing demand was to apply technology to the problem. So began the drive to convince stakeholders of the efficacy of system build. Geoffrey Rippon's revision of Building Regulations in 1962 paved the way for increasing dimensional standardisation and a charm offensive launched by the Ministry of Housing and Local Government mobilised a willing servant in the form of Ministry Chief Architect, Cleeve Barr.

Contractors were rightly concerned that there would be no sustained requirement that justified their investment in systems. Architects saw their involvement reducing as standard designs prevailed. The unions were concerned that the promise of a system requiring only unskilled labour would have a detrimental effect on the traditional skills of their members. In this context it was only Government, both central and local, that seemed likely to benefit from the further development of Industrialised building. What ensured that stakeholders maintained an open mind was the prevailing belief that technology provided the answer to all modern problems and a realisation that the building industry lagged behind others in its use of technology. Stakeholders required some convincing, but ultimately a consensus was achieved that resulted in widespread support for the initiative following the *Housing from the Factory Conference* in 1962. With adoption inevitable, each group remained determined to extract maximum benefit even if the ultimate success of the initiative was challenged.

Ultimately it would be these personal vested interests and the complete absence of any real oversight on the part of the Ministry regarding how systems might be adopted and promoted that resulted in compromises and the ultimate failure of system build to deliver on its promises. Continental contractors and established local system builders had stressed the challenges of adoption and the market conditions required to make modernisation of the industry a success. A Conservative administration, confident of the free market, felt that it was enough to encourage adoption and leave the market to both generate sufficient business and decide how it would be

implemented. That a more hands-on approach regarding implementation was deemed unnecessary ultimately compromised the success of the project and set back the industrialisation agenda.

In Britain there was little real experience of Industrialised systems: those firms that had attempted factory production in the immediate post-war period had largely failed to achieve volume production. Others who had embraced new techniques, like Wimpey, relied upon in-situ production methods so were similarly unaware of many of the factors that would determine success. Reema, the one company that had pioneered early factory-based production, sounded a note of caution, stressing in much the same way as their continental competitors the preparation effort required before high-tolerance manufacturing could be mastered and an efficient momentum achieved between production and construction. The consensus amongst continental operators was that it normally took two years to acquire the necessary expertise. Nevertheless, heartened by Government promises of volume, contractors moved into industrial production hoping that, by licencing an existing continental system, they could shorten the time and expense involved in gaining experience. Rather than invest in expensive dedicated factories, many chose instead to make the smaller investment in less-advanced in-situ facilities. Whilst cheaper and arguably more flexible, they did not represent the fully-automated factory production envisaged by government. Quality inevitably suffered, and the economies of scale that might have delivered volume and cost reduction were never realised. Contractors in pursuit of profit minimised their investment, failing to appreciate the prerequisites of successful industrialised building. Others made significant investments in large purpose-built factories, for example Concrete Ltd who boasted of five regional facilities able to produce high volumes. However they, like others who made the investment in dedicated off-site factories, overestimated a demand that never materialised in a sustainable way. Factory production, that was supposed to align seamlessly with transport to site and subsequent construction, rarely materialised. Instead facilities were forced to allocate space for huge storage yards that enabled continuous production within the facility, but no onward transport to sites which invariably were not ready to receive completed components. Concrete Ltd's attempts to persuade Birmingham to pay for manufactured but non-delivered components demonstrated a failure in the production/construction cycle and failed to find sympathy with Birmingham, which promised payment only on delivery to site. Camus, a particularly vocal advocate of just-in-time manufacturing, was forced to provide facilities at its factories enabling the storage of many weeks-worth of production. The whole concept of just-in-time manufacturing that dictated a seamless process between production and construction rarely happened in the UK. The train that delivered scheduled components for the LCC's Morris Walk development appeared to be an anomaly in English industrial production.

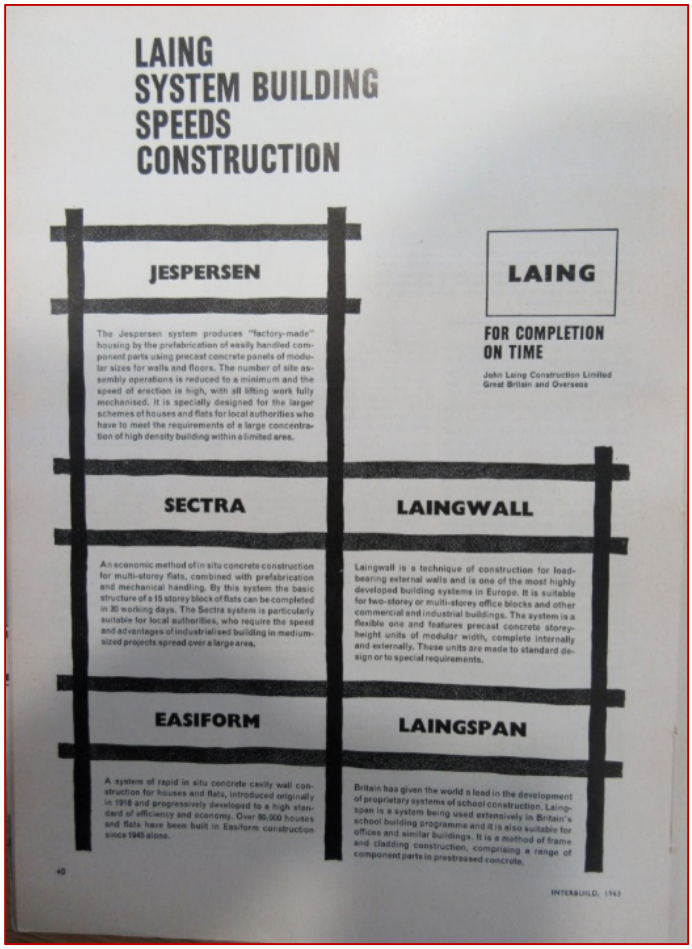


Figure 193: The range of systems offered by Laing. Source: Interbuild (1963).

Government and contractors also failed to appreciate that many of the vast number of local authorities in England were too small to be able to commit to the volumes required for efficient Industrialised production. A reluctance, like that seen in Birmingham, to form consortia failed to replicate a solution to achieving volume of the sort witnessed in the Schools Consortia. Contractors were therefore forced to contemplate smaller, less-profitable, contracts unless they could benefit from pooled orders delivered via a consortium. It was a situation exacerbated by over-supply that witnessed a multitude of suppliers fighting for a diminishing market share and being forced to reduce their profit margins to win business. In many ways, both the Ministry charm offensive and the '*Housing from the Factory*' conference organised by the Cement and Concrete Society in 1962 had been too successful. Convinced of a lucrative future, contractors had rushed to adopt systems and the market had been flooded with a bewildering selection of systems. These were extensively marketed in the building and architectural press and featured exclusively in publications such as *Interbuild* and the *Directory of Industrialised Systems*. The free market thinking of the Conservative Party resulted in many more systems being launched onto the market than had any chance of delivering a return for their investors. Some vendors marketed a confusing range of options including Laing which promoted five systems including Jesperson, Sectra, Easiwall, Laingwall and Laingspan,

three of which presented systems for high flats. The extent of choice in the market was evident from contemporary trade directories. The NBA was set up in 1965 to assist local authorities to implement system build, and initially featured 110 systems in its Directory. Of this number only 49 had produced more than ten units, resulting in subsequent editions reducing the number to just twelve worthy of recommendation (Gold, 2007: 200). As contractors struggled either to win sufficient business or to maintain production in expensive facilities, it was the local authorities that appeared to benefit. Birmingham was reported to be very successful in achieving competitive pricing for Bison units from Bryant (Glendinning and Muthesius, 1994). Faced with a competitive market and low margins it is, perhaps, understandable how contractors, used to providing the hospitality for which Wimpey was renowned, could be tempted into more direct methods of encouragement. Certainly a light started to be cast on the role of elected officials (Grindrod, 2013). The contemporary reports that emerged relating to T Dan Smith in Newcastle, Alan Maudsley in Birmingham and, perhaps the most extensive case, that of the widespread corruption uncovered in Dundee, did little to enhance the reputation of industrialised building and the close relationship enjoyed between public servant and contractor.

System building had all the attributes of a sound proposition. There was a definite requirement, the building industry was largely ill prepared to meet it and there was a compelling reason to harness new technology in order to lower cost. Ultimately a sound idea was compromised by oversupply which, in turn, adversely affected firms' abilities to invest and develop systems. Quality inevitably suffered, and there were insufficient controls both on-site during construction or in the form of enforced building regulations that would ensure standards were being met. The potential to develop the quality product envisaged by the Ministry was also compromised by contractors' reluctance to engage with architects, instead preferring their own package deals. The type of collaboration reported by the LCC at Morris Walk and promoted with Camus by Sheppard Fidler failed to materialise. Limited to cosmetic input, architects quickly lost faith and voiced their frustrations (RIBAJ, 1965).

Already unpopular with tenants, following the Ronan Point disaster, high-rise and particularly system build suffered a further blow and consequently local authority confidence quickly waned. Kenneth Wood, Chairman of Concrete Ltd, spoke to *Concrete* (Wood, 1969) and reported that 1968 had been, even without the Ronan Point disaster, '*superficially at least, a bad year for industrialised building'*. This was a significant understatement, but his intervention was illuminating considering his position in the industry. He summarised some of the issues that, he perceived, were adversely affecting system build. Amongst these he reported widespread problems caused *'due to miscalculations in costing and pricing'*; suggesting that, in larger contracts especially, contractors were struggling to account for their costs; and reporting that *'many contractors have become disenchanted with the*

prospect of contracts for a thousand dwellings or more' (Wood, 1969). Bearing in mind the supposed 'sweet' spot for successful industrialised output was reportedly double that number suggests just how far British contractors had failed to comprehend the economics of their business or adequately prepare for optimum volumes. At the opposite end of the scale he reported widespread over-commitment by smaller contractors with the consequence that they found themselves challenged to deliver on account of insufficient technical and commercial skills. At both ends of the spectrum it appeared that contractors were ill-prepared to capitalise on the promised opportunity and build a successful, sustainable business.

Wood went on to lament the negative impact on confidence of system building after the Ronan Point disaster which he believed had provided *'a rallying point for the spasmodic and often ill-informed criticism of high building'*. Wood was correctly identifying the emergence of a negative response to high-rise accommodation that would ultimately represent a reduction in demand and would seal the fate of system build high-rise construction. Wood seemed aggrieved that all systems had been badly affected by the Ronan Point disaster: *'its criticisms have tended to stick not merely to the system with which it was supposed to deal, but to all concrete panel systems of any kind'*. Wood's belief was that, in future, system build would be forced to adopt higher safety standards '*than is economically possible'* and that contractors would ultimately *'depart to focus on medium and low-rise in the hope that Industrialised building had some future for this type of housing'* (Wood, 1969).

From the early 1970s, when the market for high-rise virtually disappeared, remaining production lines closed leaving just the smaller site-specific in-situ facilities. What had, in principle, been a sound proposition had failed to deliver. System build may have eradicated the slums and provided high-density housing more quickly than before, but it failed to do so more economically. Parker Morris had brought about improved standards but the quality that Cleeve Barr had hoped might be achieved with architects' collaboration had also failed to materialize. Whilst space standards may have been improved, system build had failed to deliver the 'functionally superior buildings' (Gold, 2007: 201) that closer cooperation with the architectural profession might have delivered.

Nevertheless the construction problems would continue to haunt system built high-rise, as post-construction concerns relating to allocation, security, maintenance and management would combine to ensure an unwelcome legacy. Any prospect of better, cheaper buildings, a modernized, efficient building industry and the emergence of open systems within the construction industry would remain unfulfilled.

9.3 The Birmingham experience – new insight

This study has brought an up to date perspective on the development of high-rise housing in England and the respective roles of the stakeholders in its implementation and has made a unique contribution into our understanding of System build. But this study of the development of high-rise and the roles and priorities of the major stakeholders has also provided a unique contribution into our understanding of the development of high-rise in Birmingham and also the role of the City Architect. Previously, much greater attention has centred upon the pioneering work of the LCC Architect's department, but this research has made an original contribution by taking a closer look at Birmingham and, in particular, the ideology, efforts and output of the first City Architect, Alwyn Sheppard Fidler. It has specifically illuminated the experience in Birmingham, contributing to our understanding of the role of the public architect in that city and the complex relationship between the design professional committed to provide quality accommodation and the politician who was more commonly motivated by production volume. This research has contributed a new understanding and appreciation of the public architect, often seen as the poor relation to their colleagues in private practice. It has shown how, in the case of Alwyn Sheppard Fidler, Birmingham benefitted from a City Architect who reflected modernist principles, was committed to mixed development and neighbourhood communities, but was appreciative of new technology and supportive of initiatives to modernise the provision of housing. The challenges that he faced from production-led politicians provide an insight into the compromises required by the public architect in the face of national and local political priorities. He has been shown to have been a singular, if under-appreciated participant, motivated and determined to champion prevailing architectural mixed development theories and support a progressive approach to the adoption of new technology, whilst consistently prioritising quality of design. The challenges he faced when confronted with a political imperative to increase densities and implement ever taller high-rise flats provide a unique insight into the conflicts between architect and politician. The experience does, however, demonstrate the presence of dedicated public architects who maintained a commitment to design whilst having to accept compromises on densities and production. The experience in Birmingham clearly demonstrates the struggles of the design professional when confronted with politicians motivated by these and, in some cases more dubious, priorities. In providing this detailed contribution this study complements and adds to Larkham's contribution to the Oxford Dictionary of National Biography (2019) that provides a valuable insight into Sheppard Fidler's career away from Birmingham. This presents his educational achievement, studying under Abercrombie his Victory and Rome Scholarships and subsequent career as Chief Architect to Barclays Bank and Crawley New Town. Post-Birmingham it discusses his contribution to the planning of Telford New Town, involvement in major

housing projects at Brize Norton and Shannon New Town as well as his involvement in various professional committees. This study builds upon this evidence to present an additional appreciation of Sheppard Fidler from his time at Birmingham.

Although initially reluctant to embrace the flat, Birmingham eventually constructed 464 blocks of greater than five storeys between 1950 and 1971 (Jones, 2005: 308). Despite not being 'flat minded' (Sheppard Fidler, 1955), by 1952 Birmingham appeared to have wholeheartedly adopted the flat as an important weapon in its housing arsenal. The flat had emerged slowly in Birmingham as a solution both to inner-city slum clearance and as a means of increasing density on suburban sites. As Jones (2005) explains, Birmingham was somewhat unique in siting flats on suburban sites but Manzoni, the City Engineer and Surveyor, believed that they represented an ideal opportunity to modestly increase housing densities whilst making the most of the available land. After the not altogether successful experience of the over-engineered and over-budget Duddesdon and Nechells flats, Manzoni had fallen back on the much more utilitarian Wimpey No-fines Y-shaped blocks. It these *'mud pies'* that greeted a dismayed Sheppard Fidler on his arrival as City Architect as he witnessed the Deputy City Engineer *'putting up as many Wimpey Y-shaped blocks as he could*'. It led him to observe that *'in Birmingham the House Building Committee could hardly care about the design as long as the numbers were kept up'* (Sheppard Fidler, 1987). Unfortunately, despite his best efforts to assert a design-led ethos, the preference for production would re-establish itself by the end of his tenure. In the meantime a number of Civic design awards would provide compensation for a Housing Committee in lieu of an acceptable, if not startling, production rate. Jones (2005) suggests that the City Council had decided that Birmingham needed a City Architect to *'co-ordinate the rapidly growing redevelopment programme and take the burden off the Public Works Department'* (Jones, 2005; 319). Based upon available records and subsequent personal testimony, this seems an accurate assumption. The motivation for his appointment certainly had something to do with the volume of work, but was undoubtedly influenced by other, smaller, cities already having a City Architect including neighbouring Coventry. Although Birmingham may be considered to have been pioneering in terms of planning, in terms of house building they rarely led the field but certainly resented any suggestion that they might be left behind. Uncertain what a City Architect might contribute, for the first two years Sheppard Fidler was required to report directly to Manzoni. As Jones points out, Birmingham councillors were used to Manzoni's preference for standard designs and high output and were consequently less motivated by good design than achieving production targets. Sheppard Fidler, arriving with *'impeccable architectural credentials'* (Jones, 2005: 319) was initially relegated to finding sites for Manzoni's ubiquitous Wimpey blocks. Well respected in his profession, he was quite willing to express criticism of what he saw as the monotony of Birmingham's inter-war development

(Sheppard Fidler, 1955) and, despairing of the prevailing plans, he set about raising the quality of design by developing standard plan types and working with contractors to develop them. In the process he succeeded in garnering plaudits for his Department's output which managed to counteract any vulnerability he might have felt from '*any pressure from production-minded members and officers'* (Glendinning and Muthesius, 1994: 166).

Sheppard Fidler forged ahead with progressive mixed-development designs that bore more than a passing resemblance to contemporary LCC sites, his preference for the Swedish model finding form in his plans for the Lyndhurst Estate in Erdington (Jones, 2005). Here he incorporated the standard high blocks together with four-storey maisonettes and standard cottages to form an estate that Jones describes as '*a fair equivalent of Alton East'* (Jones, 2005: 321). Like many of his designs it exhibited common Sheppard Fidler aesthetic motifs, a consistent theme being a mix of façade materials with either concrete, brick or tile to provide variety. Sheppard Fidler was also particularly keen on the use of colour themes, in the case of Lyndhurst a contrast of yellows and browns. He would also commonly incorporate glazed stairwells to provide vertical features and similarly glazed upper floors intended as drying rooms. As Jones suggests, his designs were meant to be seen and celebrated *'and admired for the quality of their planning and architecture'* (Jones, 2005: 321).

As a passionate advocate of mixed-development, Sheppard Fidler was determined to ensure the success of his proposals by utilising scale models, something that was enthusiastically welcomed in the Housing Committee. He would use these models to showcase how he planned to use different building types to meet the desired density and projected tenant profile requirements, including a range of community facilities whilst making use of established landscapes. The theme of his plans bore more than a passing resemblance to Abercrombie and Forshaw's (1944) neighbourhood units and the LCC's celebrated developments. As a matter of course, from the outset they would incorporate space for police and medical professionals as well as the more commonly included schools, churches, allotments, public houses and community halls. These were often features that had had to be hastily added to previous plans. As he established himself, he gradually increased the size of his team to exert more control over design and deliver his vision for Birmingham estate development. In doing so he continually demonstrated an appreciation of the latest trends. His appointment of Mary Mitchell as landscape architect to the Department required some effort, as Councillors failed to understand how the role differed from staff available within the Parks Department.

Throughout his tenure Sheppard Fidler remained firmly of the opinion that high blocks should only ever be used for a limited demographic. Attempts to raise densities due to the scarcity of land meant

that he gradually had to compromise and reluctantly admit a higher percentage of families to his high-rise developments. In an effort to make this more palatable, he sought to make the best use of available green space by inserting bespoke play equipment as well as sculpture. His request to allocate funding for artworks and murals for each of his estates was reluctantly agreed after lengthy discussion and councillors had been informed that it was common practice in London. Reflecting on his time in Birmingham, he observed that Birmingham was 'an engineering city' which 'felt that it didn't need a City Architect' (Sheppard Fidler, 1987). The House Building Committee remained far more interested in production numbers rather than design details. Any concession to design was fiercely won and likely to be accepted if the Committee could be persuaded that some other city had already adopted what was being proposed.

Sheppard Fidler also consistently demonstrated an ability to adapt to new challenges and take advantage of new opportunities. Faced with a shortage of building firms to maintain production he showed a willingness to experiment with new technology in order to both speed production and attempt to lower costs. His early experimentation with Truscon signalled a willingness to explore new forms of building that eventually led to him conduct an exhaustive analysis of system build. He experimented with an early Bison block and, conscious perhaps of the possibility of accusations of partisanship, he utilised his deputy to visit Paris to explore the potential of the Camus system. The result was a Departmental report that explored how Birmingham might implement system build techniques to deliver the potential benefits ultimately envisaged by the Ministry. This ultimately recommended the Camus system and involved a comprehensive plan for the Castle Bromwich site. Preparation included the development of plan types that were optimised for the Camus system and even the selection of a suitable site a dedicated production facility, complete with a plan of the proposed factory. The fact that local MP Dennis Howell handled public relations for Camus competitor Bryants, and Alderman Bowen sat on the Board, did not particularly augur well for Camus' and Sheppard Fidler's chances of success.

He was also progressive when proposing that Birmingham might form a consortium with Liverpool and Manchester that could have delivered the required volume necessary with system build to achieve cost savings. These actions may not have been pioneering, in fact they reflected contemporary Ministry aspirations for local authorities; but the response that the City Architect received from the Housing Committee demonstrated that personal interest and insularity triumphed over innovative new proposals likely to prove beneficial to the City. The ultimate rejection of his plans, the poorly-informed decision to pursue Bryants and Concrete Ltd as Birmingham's preferred system builder and what promised to be the wholesale insertion of standard Bison blocks in any available space eventually led to his resignation.

Looking back on his time at Birmingham, Councillor Doris Fisher, interviewed by Anthony Sutcliffe in 1968, accused Sheppard Fidler of building *'monuments'* (Fisher, 1968) and Sir Charles Burman highlighted the committee's biggest frustration,

> *'he was a very nice chap, but he was a perfectionist, he like to get things just so. This meant he did not push the housing programme along as quickly as he might have done, because building and planning well and carefully was more important to him than building a lot of houses'* (Burman, 1967).

Clearly this tendency proved too much for Birmingham's so called Little Caesar (Reed, 1989) Councillor Harry Watton, who snatched control of production and thwarted Sheppard Fidler's attempts to either get Camus selected or form a consortium with Manchester and Liverpool. Ultimately enraged by Harry Watton's purchase of Bison blocks from Bryant and the instruction to find sites for them, Sheppard Fidler resigned. Perhaps, after all he had contributed, it might seem that he had gone full circle. He began by finding sites for Manzoni's Wimpey Y-shaped blocks and finished by being instructed to find sites for Watton's Bison blocks. Clearly his successors would be more successful at increasing production volumes and placating local councillors even if they had to adopt unorthodox measures. Glendinning and Muthesius (1994) are complementary about their production statistics and, despite Maudsley's conviction, seem willing to forgive this indiscretion. Boughton suggests ironically that Bryant's 2,000 strong Christmas gift list was merely a sign of their *'festive spirit'*. William Reed, Maudsley's eventual successor and one time deputy reflected on the period,

> *'it was exciting to be part of that particular period. There may have been things going on in the background – graft and so on – but they weren't the things at the top of people's minds. What was in people's thoughts was – for God's sake get on and build those houses, and get these people out of the slums!'* (Reed cited in Glendinning and Muthesius, 1994)

Clearly there were two distinct phases in the provision of housing in Birmingham, one a design-led phase and a second exclusively focussed on production that saw a significant increase in high-rise construction and the implementation of system build. This trend is certainly reflected nationally.

The enduring poor reputation of the majority of public architects who succumbed to production-led politicians is perhaps understandable but, in Birmingham for a while, Sheppard Fidler did at least succeed in turning the tide in favour of design. As Bullock suggests, he did this in three ways; firstly by taking control of the design of contractor production; secondly by replacing the ubiquitous six- and eight-storey blocks with mixed development and lastly by introducing landscape architecture to

his developments (Bullock, 2002). Whilst Sheppard Fidler continued to build flats, Bullock suggests that his achievements '*are best understood in terms of the improvements these flats represented over the quality of the blocks built by Wimpey and Wates, as such they are an important step to modernising the design of the city's housing programme'* (Bullock, 2002: 237). As this research has demonstrated, Sheppard Fidler did so much more than build flats, he was entirely committed to delivering quality in design utilising innovative and progressive approaches that did not always find favour with his political masters. This research has contributed a much clearer understanding clearly enabled a wider appreciation of the public architect.

9.4 Future study

The new insight into Sheppard Fidler's approach in Birmingham should promote further study of the role of City Architects in other cities. Similar studies would be informative relating, for instance, to RAH Livett's tenure in Leeds, Walter Bor's in Liverpool and JL Womersley in Sheffield. Even Gibson in Coventry is known better for city core reconstruction than the much wider and innovative housing he oversaw. A comparative study of Sheridan Sheddon's time as City Architect in Leeds also would throw more light on the production-led approach that he was reportedly so successful developing. Similarly a study of Walter Bor's opposition to the growth of high-rise construction in Liverpool that ultimately led to his resignation would also be illuminating when set against the experience in Birmingham. A more in-depth study of the proposals to form a consortium consisting of Birmingham, Liverpool and Manchester would require further archival research but could provide real insight into how or why the largest cities avoided these relationships.

The enduring appreciation of the private architect over their publically employed colleague has been discussed at length in this study, it is hoped that the greater appreciation of the public architect in Birmingham will to some extent re-dress the balance. There is evidence though of further conflicts between public and private design professionals. Harrison (2018) reported upon a *'divide in the post-war architectural profession'* recounting Gold and Calder's assertion that commercial architects were often cold-shouldered by the wider profession and *'dismissed as traitors to the welfare state ideal'* (Harrison, 2018:1). Whether such a divide really prevailed would be informed by further study of public architects although the author has found no evidence during Sheppard Fidler's tenure.

Sheppard Fidler was convinced that the Camus system was the preferable system for Birmingham and more detailed qualitative investigation of that system would be instructive. Was, for instance,

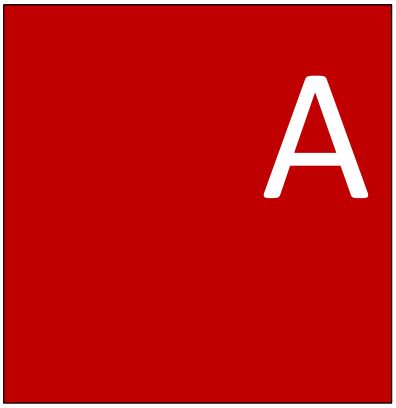
Liverpool's experience of Camus better than Birmingham's of the Bison Wall frame system? A comparative study of Liverpool's implementation of the Camus system could provide greater insight into the system and would also compliment research completed by Nicholas Bullock on the French experience of the system (Bullock, 2009).

Recent research has discussed the recognition, protection and conservation of twentieth century assets and it is hoped that knowledge will continue to increase with more qualitative assessment of types of construction and of individual estates. As the appreciation of large panel systems goes global (Alonso & Palmarola, 2020) it would be informative to learn more about the Continental experience of high-rise to enable informed comparison of the initiative.

Study in the United States has already suggested that high-rise suffered from similar problems and, initially at least, similar conclusions have enjoyed widespread acceptance. The more robust repudiation of the Pruitt Igoe myth in the United States should encourage similar research in Britain that builds upon Jones' (2003) research in Birmingham and highlights the wider social and management problems associated with high-rise development.

Further research is already planned with post-graduate students from Birmingham City University and the Manchester School of Architecture. The first relates to the recognition and conservation of C20th social housing and the second focusses on a wider examination of the use of landscaping in Birmingham's mixed development estates during the tenure of Sheppard Fidler.

Appendices



Appendix A – RIBA Symposium on High Flats, 1955

Symposium on High Flats: Part I

Held at the R.I.B.A. on Tuesday 15 February 1955

Dr. J. L. Martin, M.A., Ph.D. [*F*], Architect to the L.C.C., in the Chair

THE CHAIRMAN, having welcomed members on behalf of the President, who was unable to attend, said that unfortunately the Minister also could not be present, but that Dame Evelyn Sharpe, Deputy Secretary of the Ministry of Housing and Local Government, was representing him and would speak. The Minister had sent the following letter:

'My dear President,

'I had been looking forward to making the opening speech at your Symposium on High Flats and I am therefore extremely sorry that, as you already know, it will be impossible for me to come. The subject is one of great importance for both housing and planning, and its significance will increase as the schemes for re-developing our cities and towns gather momentum.

'It is true that a symposium of this kind cannot be expected to cover all the relevant problems of planning, land use, traffic and the like. But a discussion in which architects, engineers, builders and students of social questions take part must bring under review a most useful body of information and perhaps suggest the way to some solutions of the architectural and social problems of building high flats.

'There are two points on this subject which specially interest me. The first relates to the schemes of mixed development of flats, houses and maisonettes, which have already been adopted and which show many advantages—in providing a variety of accommodation to meet the diverse needs of individual families, in securing a more attractive townscape and in making the most economic use of land at a given density. How the proportions of the mixture should be varied according to circumstances is a question on which your symposium should provoke valuable discussion.

'The second point is the all-important one of costs. Many people are advocating the building of high flats: some because they want to save land, others because of the aesthetic opportunities which high flats offer. But building high is expensive. I hope that your discussion may be able to throw up some suggestions for reducing costs.

'I shall look forward to receiving an account of your conclusions from Mr. Forshaw who, I understand, has been invited to sum up the papers and discussion.

'With kind regards,

'Yours sincerely,

(*Signed*) DUNCAN SANDYS.'

Dame Evelyn Sharpe said that the symposium was regarded by the Ministry as singularly well timed. Local authorities were now starting on a very large campaign of slum clearance, in the course of which they would have to build a number of flats, maisonettes and other dwellings in blocks, and possibly high blocks. She assumed that high dwellings were acceptable, as was the pattern of urban housing which high dwellings implied. But high dwellings were not necessarily accepted by the whole of the public. From the aesthetic point of view, however, high dwellings interspersed with low and middle-sized dwellings were a thing of beauty. There was nothing more appalling, more deadening, in the urban landscape than a uniform mass of low buildings covering acres and acres. Dame Evelyn here referred to Osbert Sitwell's book, *Four Continents*, which contained a chapter about towers. It was a lovely piece of writing and a most stimulating essay on the whole subject of towers.

Dame Evelyn went on: I see that I am falling into the trap which perhaps besets architects in thinking that what matters is what it looks like. That is not what matters primarily in this question of building dwellings. Obviously what matters first is that people should have the sort of dwellings they want and the sort of dwellings which make for a good social and family life. Our Ministry believes that for families of small children dwellings near the ground —the cottage or maisonette—are the sort of home which is required, and the home which enables them to have the best sort of family life. But one of the things which we sometimes overlook is that less than half of the families in the country, according to the 1951 census, are families with children under the age of 16 years. Over half are young married couples without children, old people with grown-up children and single people, and it is plain that in the building of dwellings for the people of this country what is needed for the social pattern is real variety and a real mixture. Just as that is good for the urban scene so it is, it seems to me, the thing that matches the needs of the very varied family structure for which architects have to cater.

Dame Evelyn said she hesitated to mention the word 'density', but, nevertheless, she thought we could not escape from the fact that the redevelopment in our older cities would have to take place at a fairly high density, in view of the enormous problem of decentralising industry and the necessity for housing people where they wanted to be housed (and even then it would not be possible to rehouse all the inhabitants of the cities within the city boundaries). She knew, she said—and she thought this might emerge in the papers—that one did not save as much land as some people thought by building in high blocks; nevertheless, there would have to be quite a proportion of dwellings built in high blocks if we were to avoid the ghastly uniformity of six or eight storeys over the whole scene.

Dame Evelyn went on to deal with the question of the greater use of maisonettes, about which she said Mr. Forshaw had talked to her. He thought that the greater use of them in tall blocks, giving greater privacy and greater quiet, might do much to overcome the prejudice that existed in this country against flats. Mr. Forshaw thought we had a long way to go in this country before we found the best form of flat or dwelling in a block, and, said Dame Evelyn, I think that is true. Here, again, we seem to be very conservative, and when we build a flat we are a little apt to think of a cottage, squash it down into as small a space as possible and say, 'There you are. It is a flat'. I am sure that out of this discussion there will emerge many ideas for designing dwellings in blocks in a way which will make them very much more attractive to the families who are to live in them.

She went on: Perhaps the most important subject you are to discuss is that of cost. When I suggested that dwellings in high blocks might meet the needs of families without children, single people, and so forth, I meant to point out that that is only so if they are provided where they are wanted and at a price which compares with that of the cottage. This whole question of the cost of these flats is very puzzling to me and I hope that we shall get some illumination from the discussion about it. I am told that the cost of building accommodation in tall blocks of flats in this country is practically 50 per cent higher than providing equivalent accommodation in houses, and the difference, I am told, is not all accounted for by the extra cost of units of common access, amenities and additional structural requirements. At the same time I am told that it is different on the Continent, and that there comes a time when they are building abroad where they can find some point of height and a method of design at which dwellings in the tall block do not cost substantially more—perhaps not more at all—than the single dwelling on the ground. It is really a critical point. It is no good talking about the beauty of tall blocks or their suitability if they are cripplingly expensive. There is nothing more important than to find out

MARCH 1955 195

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of architects than of the Government departments, which would not delegate sufficient responsibility to qualified men, and to planning authorities who concerned themselves too much with detail and too little with principle.

On the Continent and in the United States, he said, it was almost the universal custom to have all details complete before tenders were invited. He thought that if pre-planning was to be achieved, a full three-year programme, together with full devolution of technical responsibility, was essential.

He concluded: If simultaneously contractors will take a greater advantage of technical equipment such as cranes, silos, batching plant, vibrating precasting machines, vacuum and autoclave concrete equipment and prefabrication techniques, all of which are available, and will streamline their organisations to deal specifically with the special problems of high building —and if they can bring continued pressure to bear with a view to obtaining higher productivity—then I do not think it is unreasonable to expect flats in future costing not more than an average of £1,500 net and let at a rent of approximately 30*s*. per week.

That this is all possible of achievement is fully borne out by the experience of a number of continental countries where it has been shown conclusively that net costs of construction of these high blocks are little higher than the 3-storey terrace or small house. If we would take advantage of this experience, yielding as it does positive evidence as to the high standard of family life which can be achieved at higher densities, we can largely solve inter alia what today is one of our most urgent and intractable problems—slum clearance—a problem which is otherwise likely to remain with us for a long time to come.

A. G. SHEPPARD FIDLER [*F*]. 'General Architectural Problems Involved in the Use of High Flats in the Reconstruction of City Areas.'

MR. SHEPPARD FIDLER said that in the past many British cities had been reluctant to accept the need of building high blocks of flats, but during the last 30 years, and especially since the war, the general acceptance of the planning of land use as an essential part of our activities had produced development plans for towns laying down residential densities which made the building of forms of dwelling other than houses a direct necessity.

At most middle densities it was hardly necessary to build tall flats, and the present ideal of mixed development could be successfully accomplished with 2- and 3-storey houses and flats and maisonettes of reasonable height. Only at really high densities was it necessary to include a high proportion of tall blocks.

Mr. Sheppard Fidler continued: It is common experience that flats are more expensive and take longer to build than houses, and it is worth while looking at

Tile Cross, Birmingham. 6-storey no-fines flats. A. G. Sheppard Fidler [*F*], City Architect. Illustrates the influence of site grouping on easy contract arrangement and use of mechanical aid

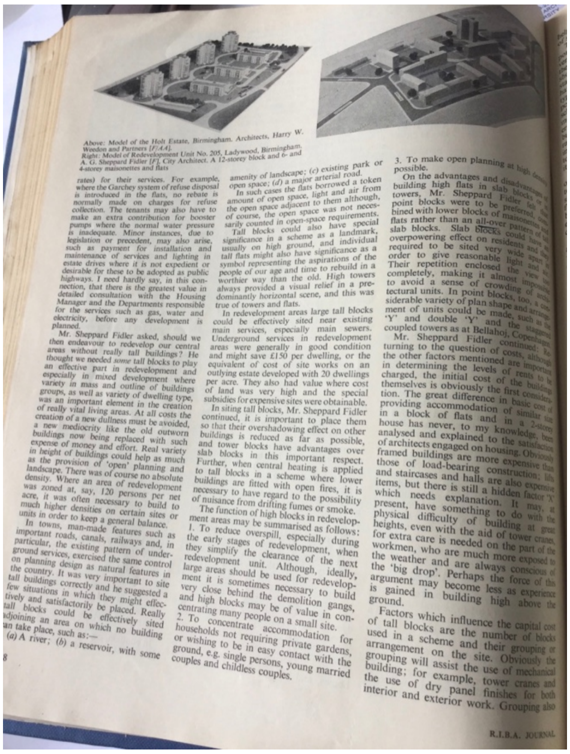
this point of cost in a little more detail. The capital cost of building a 3-bedroom 5-person house in a group of say 50, in an outlying district of a city, may be £1,500, including paths, fences, services and site works but excluding cost of land and roads. In a similar district, 6- or 8-storey flats with individual heating and other facilities, plus lifts, landscaping and access estate roads, cost in the region of £2,100. The difference in capital cost is therefore approximately £600 for each dwelling. This means roughly another 8*s*. 9*d*. per week rent.

But the actual rent charged is even higher than this figure suggests. The additional difference between rents for houses and for flats, quite apart from the cost of building, is due to the additional charges necessary for management and maintenance. Housing managers will all agree that management of flats produces far more problems than that of houses. In large blocks of flats management involves the lighting and cleaning of public staircases and halls, the provision of a caretaker and a flat for his family.

The question of maintenance is also much more involved. For example, windows have to be made accessible for cleaning and painting from inside and the use of extra durable materials at heights might do much to reduce this factor. The open ground round the flats has also to be carefully maintained on a communal basis if it is to look well. Compare this with the case of a house where there is no management problem and, in the main, tenants look after their own gardens.

In addition, cases arise where tenants of high blocks must pay twice (in rent and

207



High-rise flats in Birmingham, 1974

	Dwellings				% of High flats			
Storey	No of bedrooms				No of bedrooms			
Height	One	Two	Three	All	One	Two	Three	All
5 to 9	1,583	4,160	795	6,538	6.6	17.3	3.3	27.2
10 to 14	3,845	5,739	60	9,644	16.0	23.9	0.2	40.2
15 to 19	1,629	2,495	198	4,322	6.8	10.4	0.8	18.0
20 and over	1,868	1,641		3,509	7.8	6.8		14.6
All storeys	8,925	14,035	1,053	24,013	37.2	58.4	4.4	100.0

Source: City Of Birmingham Housing Department (cited in Dunleavy)

Appendix C – Report on Camus Industrialised System of Building

17.

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The City Architect presented the following Report :

CITY OF BIRMINGHAM

CITY ARCHITECT'S DEPARTMENT

HOUSE BUILDING COMMITTEE. 5th July, 1962.

Camus Industrialised System of Building.

In considering the attached report, prepared by Mr. Griffiths, I would suggest that the Committee regard the contribution which the adoption of this system could provide, in the light of the whole housing programme and our general efforts towards achieving a substantial increase in annual completions of dwellings.

A pursuance of the Committee's policy to negotiate large schemes such as their recent decision agreeing to Messrs. George Wimpey & Co. Ltd., carrying out some 1,100 dwellings at Lee Bank and Primrose Hill, will ensure that the large national firms are given every opportunity to make a substantial contribution. In the near future, I shall be recommending negotiation with Messrs. John Laing Construction Ltd. for a further 170 dwellings at Metchley Grange, Harborne, where the Committee have already agreed to negotiate with this firm one 16-storey block and three 9-storey blocks comprising 216 dwellings, making a total of 386 dwellings to be erected on this site. It is also hoped that a substantial scheme can be negotiated with Messrs. Wates Ltd. A continuance of this policy will give contractors a worthwhile programme over the next two or three years with every incentive to increase productivity.

Messrs. Concrete Ltd. of Birmingham have made considerable advances towards an industrial process for house building, and they have produced a one-storey 'mock-up' at their factory in Hounslow, based on principles similar to those of Camus. This firm is anxious to erect a prototype block and perhaps the Committee would give their agreement to one of our standard nine-storey blocks being adapted to the system and erected on a suitable site. Should the Committee be satisfied with the results achieved, they might consider that a worthwhile programme could be allocated for building in this system.

- 1 -

- 2 -

The size of the housing problem is such that it cannot be solved by any one system or any one firm, and it is only by simultaneous use of all the available resources and harnessing the efforts of both national and local firms that a real impact can be made. It should be borne in mind, therefore, that the adoption of the Camus system would in no way compete with or supersede other forms of construction, whether it be traditional or 'system building' employed by the national firms.

CG/GMA.

CITY ARCHITECT.

REPORT ON THE CAMUS INDUSTRIALISED SYSTEM OF BUILDING.

I N D E X

Ceri Griffiths.
Senior Housing Architect.

INTRODUCTORY.

Scope and Method of Investigation.

Following my visit to France from 17th - 22nd May, I am now reporting on the results of my investigations into the Camus Industrial System of Building. It will be appreciated that the limited time available did not permit every aspect of the system to be considered with the same degree of thoroughness. It was necessary, therefore, to confine detailed analysis to the more important features, and those either of special interest or significance, and to direct my main researches towards a general appraisal of the system as a whole. These included a study of basic principles, the factory process, the type of buildings produced and the general basis of construction. The itinerary was arranged with these objectives in mind, and inspections of factories and buildings were limited to those regarded as being representative of the system generally. Variations due to local or special requirements were ignored as having no significant effect on the principles of the system.

The programme included inspections of factories at Montesson and Couchelette, completed schemes at Pantin, Alfort, Bougival, Athis-Mons and Fontainebleau, and projects in course of erection at Douai and Yerres. Schemes included blocks varying from single-storey to thirteen and twenty-storeys in height, and during visits every opportunity was taken to interview tenants and janitors to find their reaction to the accommodation provided, and to discuss practical problems of site organisation and management with Building Operatives.

My preliminary enquiries were conducted on the basis of a questionnaire, forwarded to Raymond Camus & Co. prior to my visit, in order to establish the scope and technical implications of the system. The information subsequently received from their Scientific Director, apart from indicating avenues for further investigation, established a useful background to my site inspections, where the reasons for certain details were not always apparent. It also provided a valuable index to my own impressions and prevented conclusions being drawn which might have proved unfounded had they been limited to site observation only. Information made available during discussions with their Scientific and Technical Directors, together with an examination of plan types and current projects, further supplemented my own investigations and research.

For the purposes of this analysis I have divided the report into two parts. Part I is a general analysis and covers the main features of the system and its technical implications. Part II has been devoted to considering the possibilities of adapting the system to our own housing programme, and a theoretical study of its application to the Castle Bromwich Site. It was considered that this exercise would be of interest to the Committee because the large number of dwellings that can be accommodated on this site presents an unique opportunity to take advantages of economies offered by an industrial process of this nature.

PART I.

MAIN FEATURES.

1. General Background of Camus Organisation.

By way of introduction it is considered useful to mention briefly the nature and scope of the Camus Organisation and some of its achievements in house building. The Camus Company was established in 1949 to implement the industrialised building process devised by Raymond Camus. The system was directed at rationalising house building and evolved from much the same type of approach as that applied to factory production of the motor car.

From the early beginning in 1949, when the system was in its pioneering stage, it has gradually gained impetus and it is significant that it has been adopted in many countries as a proven method of achieving speed and economy house building. Since that date, buildings in the Camus system have been erected in countries with economies as divergent as Algeria, Germany, France and Russia, and have been adapted in each case to meet varying climatic conditions and national requirements.

The erection of these buildings is sponsored mainly in three ways, namely, granting a licence direct to a contractor; establishment of a new society, also operating under licence, in which Raymond Camus is a partner; and by the formation of a society in which the Client (in some cases a municipal corporation), Raymond Camus and the Contractor hold shares amounting to 50%, 27% and 23% respectively. The Camus Organisation is continually extending its sphere of activities, and up to the present time some 42,000 dwellings have been successfully completed by this system, of which approximately 35,000 are in France.

The Camus Organisation has wide technical resources at its disposal. An organisation known as C.R.I.C. (Centre for Research and Development of Industrial Construction), established and financed by the various companies using the Camus process, has research teams, well equipped laboratories and extensive technical facilities. This organisation is responsible for correlating information relating to projects both in France and in other countries where the system is employed. Its activities are also directed to adapt the system to comply with widely diverging national requirements, to investigate the economic possibilities of new materials and further the development of the system by improving techniques of production and organisation.

2. Basic Principles.

It should be explained at the outset that the Camus system applies only to the superstructure of buildings, but in some cases, where economy permits, external walls to basements (a normal feature of French dwellings) are cast in the factory, providing their profiles are not too complex. The system is easily adaptable to any type of foundations, and it is immaterial whether they consist of column and pad, piles or

The Camus process is based on two main principles, namely:-

(i) Factory production of large concrete panels, comprising complete wall or floor units, manufactured under controlled conditions, and incorporating as many as possible of the building elements such as windows, doors, heating, [illegible] floor and wall finishes, etc.

(ii) Limitation of site work and secondary processes to an absolute minimum.

In this process two types of work must be distinguished, namely, (a) Finishing off work, integrated in manufacture, (i.e. either included in the actual casting of a panel or carried out in the factory workshop), and, (b) Finishing off work carried out on site.

(a) Work integrated in manufacture and incorporated within the casting of panels includes window and door frames (metal or timber) tile coverings to floors and walls of bathrooms, lavatories and kitchens, entrance to staircase halls and finishes to external walls, such as ceramic tiles, glass mosaics, etc. Finishings are placed in the bottom of moulds on the casting table, except in the case of exposed aggregate finishes, which are applied on top of the slab and subsequently hosed down with water applied in a fine spray.

Also incorporated within panels are insulation; heating coils; horizontal and vertical ducts for hecting pipes, plumbing stacks and electrical wiring, including insets for switches, junction boxes and socket outlets. Work undertaken within the factory, but not incorporated in panels, includes prefabrication of galvanised steel, copper or plastic service pipes. Thorough and detailed design of plumbing stacks and mock-ups of full scale models enable ducts to be formed accurately within panels.

Work carried out in the factory also includes prefabrication of staircases and landings, including their floor finishes; walls to lift shafts, either in separate wall units or as complete storey height shafts, incorporating fixings. Ventilating shafts, chimney stacks and refuse shutes are also incorporated within panels, and these elements are usually formed contiguously so that the special moulds involved are limited to the construction of one panel only in each dwelling. It is a point of interest that in France national requirements demand that every dwelling must be provided with a chimney stack for emergency use, but the application of the shunt flue system (i.e. flues from different dwellings entering the same flue) permits these elements to be accommodated in a comparatively short run, usually within the length of kitchen walls.

(b) Finishing off work on site comprises handling and assembly of panels, installation of lift, heating pipes, plumbing stacks, sanitary fittings and kitchen equipment; wiring electrical cables through prepared ducts; fixing of electrical accessories, and making all final connections to services.

Sitework also includes glazing, hanging doors (which are interchangeable), fixing skirtings, laying soft finishings to living rooms, bedrooms and halls, and decoration of dwellings.

External work comprises laying roof finishings and forming parapet flashings, copings, etc.; painting of concrete surfaces (if required) and finishing off external joints to panels, these last two operations being carried out by cradles suspended from the roof in the case of blocks over five storeys in height.

From the previous analysis, a number of operations carried out on site seem capable of being carried out in the factory, but it is apparent that handling and site assembly impose limitations on the degree to which complete prefabrication can be carried out in the factory. Problems of making effective weather seals limit factory work on roof panels, for example, and although some roof finishes could be incorporated in the manufacture of the panels, weatherproofing would still require site work, particularly in the case of monolithic finishes such as asphalt. Further prefabrication in these cases offers little advantage, and the Camus system accepts the discipline imposed by practical considerations.

Similar practical difficulties apply to the fabrication of floor finishes within panels, and those incorporated in the factory process are confined to hard floorings, such as tiles or aggregates. Softer finishes such as Tapiflex, used in living bedrooms and halls are applied on site, because of the risk of damage, not only in assembly, but also from exposure during transit. For similar reasons, site welding of threaded ends to flow and return heating pipes is necessary, because they would project beyond the face of the panel and would be liable to damage.

These conditions also apply to prefabrication of bathroom lavatory units, complete with fittings, which apart from providing weight problems, involve the risk of damage during hoisting and assembly. It is possible, nevertheless, to design a 'sanitary block' comprising a complete installation, including plumbing stack, branch connections, etc., and this has already been carried out in certain schemes. The cost of making moulds for such units, however, is extremely high, quite apart from problems involved in transport and assembly. It also presumes large numbers of identical designs for production, and only a detailed study of dwelling types would enable the advantages of such a mould to be assessed.

3. Flexibility and Impact on Layout and Dwelling Design.

Ideally, the general layout of buildings should be such that a crane can work at its maximum rate (two dwellings per day) with a minimum of dismantling and re-erection operations. It is possible to have a general arrangement of high buildings surrounded by lower blocks, such as four-storey maisonettes or two-storey houses, provided that the layout permits the crane to work in a continuous manner. Groups of high blocks can also be provided separately from groups of two-storey houses but definition of each particular group of dwellings has obvious advantages in handing over various sections of the scheme. The use of tower cranes for high blocks and cranes on caterpillar tracks for groupings of 4-storey blocks will take full advantage of an arrangement on this basis. A detailed study of the layout at the initial stages of design ensures that maximum efficiency is achieved, not only in the economic employment of plant and equipment, but also in the production and organisation of the factory in terms of output, delivery and erection.

To achieve worthwhile economy it is an advantage to reduce the number of dwelling types, or at least the number of different elements within dwellings. The number of different dwelling types that it would be economical to provide

can only be assessed after study of a particular project. As a general guide it can be assumed that in a scheme comprising 2,500 dwellings, it is possible to provide five different types of dwellings in two, four and multi-storey development. Variations are also possible within each dwelling type, not only in elevational treatment by re-arrangement of window positions and changes in window sizes, but also in plan arrangement. It is possible, for example, to add accommodation to a basic plan for a one-bedroom flat, to provide a three-bedroom dwelling, provided that the sizes of the main perimeter walls and main internal partitions remain unaltered.

With regard to the type of building, this system can be applied, and has, in fact, been adapted for buildings as varied as a single-storey structure to twenty-storey blocks of flats. There appears equal flexibility in the plan arrangements that can be provided, due to the fact that both transverse and longitudinal walls can be load bearing. In terms of structure, although external walls are cast as heavy panels, regardless of whether or not they are load bearing, they could be of lightweight construction if required, as a means of varying external treatment.

It is also possible to provide traditional roofs, either of double or monopitch, but the introduction of an element which is outside a process primarily directed at factory production of concrete panels, must have some effect on economy.

In the single-storey dwellings at Douai, however, monopitch roofs were provided without having any significant effect on economy, but the principles of prefabrication were applied inasmuch as the trusses arrived on site complete. Cross-bracing was delivered to site already cut to lengths and sitework was limited to fixing the trusses by grouting steel hoops into prepared sockets cast in the slab.

PRODUCTION AND ORGANISATION.

1. Principles of Manufacture.

Underlying the manufacturing process there are certain principles which reflect various problems which had to be resolved before the technique could be finalised. Implicit in the Camus system is an acceptance of a premis that the main objective is the accuracy of the finished building, and this only in its visible parts. This may appear an anachronism and may even imply a reduction in structural standards. Analysis of the system, however, reveals that this is not so, and that in fact, a realistic balance has been achieved between accuracy of the product and the labour required for assembly. It has been accepted that accuracy can be obtained by direct assembly of less accurately manufactured parts, providing they have scientifically known tolerances with suitable means of absorbing them. The accuracy of these parts, therefore, has been adjusted to be compatible with erection techniques and with the degree of training of the labour force carrying out assembly; a factor particularly important with heavy components.

Another factor which has been considered in the process is that a high degree of precision in manufacture assumes an accuracy and mechanical quality of the mould, which is

costly to provide. It also implies a relative fixity of the mould, and it is possible that this could prove a disadvantage during the development and evolution of design, by imposing limitations on both plan arrangements and elevational treatments.

These considerations directed Camus towards a more flexible technique, and their manufacturing process is not, therefore, based on such scientifically designed plant (i.e. push button control) characteristic of some continental systems.

Within the factory process design and structure are closely related to achieve the minimum number of concrete panels per dwelling, bearing in mind the economic limitations on size imposed by handling and transport. Panels comprise a complete floor or wall, and because of site crane limitations and vehicle gauge their weight is restricted to approximately 7 tons and their maximum sizes, which are given below determine the overall dimensions of the casting tables.

Floors 23'4" x 10'8" or 19'0" x 12'8"	thickness	5"
External walls 21'8" x 10'0"	"	9"
Partition walls 23'4" x 10'0"	"	5"

These dimensions are not rigid and can be modified according to the dwelling types to be constructed. Because of the comparative flexibility in mould exchange, it is possible for a certain number of different types of dwellings to be manufactured simultaneously.

The maximum dimensions of openings in external walls depends on whether or not they are load bearing and the amount of reinforcement required within the panel. Large openings of about 50% of the panel area can be provided, and it is possible to reduce lintol depths to 10 inches and jambs to 6 inches.

2. Type of Factory, Output, Layout and Operational Sequence.

The type of factory and plant required varies with the type of building programme, and the number and variety of building types, e.g. whether two-storey, four-storey or multi-storey, and with special conditions prevailing in the locality. When a factory is erected to serve a number of building sites its position relative to any one site is not very important, provided the maximum distance does not exceed 35 miles. If the factory is established to develop one large site, a reduction in the distance from factory to site will result in appreciable economy.

Where production is required over a long period and where there is a substantial building programme, a permanent factory is provided with all the facilities for a large project, namely administrative departments, engineering, plumbing, electrical and mechanical shops. These conditions are reached when a programme of 2,000 - 3,000 dwellings is required and where the production is phased to provide 750 - 1,000 dwellings per year over a period of 3 to 3½ years; the minimum number of dwellings provided on any one site being not less than 150 dwellings.

Based on average output, and assuming one dwelling comprising 25 panels, a production rate can be based on 25 man hours per panel, and the following gives an approximate breakdown of the

labour content in a typical dwelling:-

Panels	690	man hours.
Various trades	210	" "
Foundations (average)	100	" "
Total	1,000	man hours

The Camus Technical Director confirms that this figure compares with an estimated 1,800 man hours for traditional building. The French Ministry's calculation on this basis is nearer 2,000 man hours.

Although there are differences in layout of factories, there are certain common features, and the factory at Montesson can be regarded as representative of the general process. Here the factory consists of 10 bays, approximately 50'0" wide, which are divided into one bay for offices; 4 for stocking materials to be incorporated in the panels; 5 for prefabricating panels, with a total area accommodating 30 tables (24 were provided originally) for casting horizontally, and 8 batteries (each containing 10 to 12 panels) for vertical casting. In this particular layout an upper storey occupying 4 bays was provided for the assembly of steelwork required for panels.

In the factory at Couchelette, near Douai, 26 tables were provided. The layout was similar to that at Montesson, but all panels were cast on tables and furnaces were provided for curing of slabs in lieu of heating cowls as in Montesson. Casting tables were also hydraulically controlled to bring them into a vertical position prior to removal of panels, and they were also provided with runners for the purpose of conveying the panel to the furnace.

To illustrate the factory process the following is a typical sequence of operations:-

1. Delivery of aggregates and cement.
2. Delivery of reinforcement and steel mesh and steel coils for heating.
3. Delivery of doors, windows, tiles, insulation, etc. to shop and store.
4. From steel stock to assembly bays and cutting and bending shops.
5. From steel shops to assembly bays; also steel coils for heating.
6. From assembly line to stock of completed reinforcement mats.
7. From stock to moulds.
8. Concrete to moulds - pumped for vertical moulds - mobile overhead skips to horizontal casting tables.
9. From material stock to moulds.
10. Fabrication within moulds including placing of tiles, doors, windows, electrical conduit to form ducts, etc.
11. Cement mortar on tiles.
12. Placing first 2¼" thickness of concrete.

13. Placing of reinforcement and heating coils.

14. Placing of Polystyrene insulation.

15. Placing second thickness (5¼") of concrete and reinforce

16. Placing mortar and buffing of concrete to smooth surface.

17. Curing of slab by steam heated cowls or furnaces.

18. Removal of formwork.

19. Removal of panel from table either by hoisting or by hydraulically powered table.

20. Replacement of formwork.

21. Panel to stock (temporary - 24 hours) by overhead crane.

22. Removal from temporary stock to main supply stock by tow crane.

23. Loading on to trailer by mobile crane.

24. Delivery to site.

Note: A typical time schedule for casting one panel illustrated on Plate I.

3. Labour.

It is estimated that the system requires approximately 55% of labour required for traditional building, and of the labour force employed 12% - 15% only is skilled labour. The figure is only an approximation because of the difference between French and English interpretation of trade categories, but by our own definition the percentage is likely to be even less. The proportion of labour employed on site is about 50% of the total force employed, but this figure includes skilled operatives whose attendance on site is limited to making final service connections. The work of assembling panels is carried out by unskilled labour.

The process enables the factory labour force to be organised into teams of ten specialist workmen led by one foreman for carrying out fixed operations. This division of labour produces expertise in both speed and quality of workmanship because of the repetition of the same operations by the same workmen. By the same token the initial training of duties is very rapid. Because the greater part of the process is carried out in the factory working conditions promotes the retention of labour, and sheltered conditions for the operative, together with efficient means of manufacture, result in high productivity.

4. Economy.

The degree of economy which can be achieved is dependent on many conditions, but one of the main requirements is a large building programme. It is axiomatic that with a process requiring such a large capital outlay, the bigger the programme the more substantial will be the saving.

Accurate comparisons are difficult, but compared with traditional building the process shows at least a saving of [illegible]. This has been proved in countries of widely diverging economy. Development carried out at Lorraine, however, can be quoted as a specific example where a true comparison was possible. An initial programme of some 1,000 dwellings had been carried [illegible]

in traditional construction, and when the same dwellings were subsequently erected by the Camus system, a 15% to 20% saving was achieved based on the same dwelling types and specification. While such specific examples of true comparisons are rare, an analysis of the system leaves no doubt that substantial savings over traditional buildings can be achieved.

5. Speed of Erection.

The system enables considerable savings in time to be made over traditional methods, particularly as construction is largely independent of weather conditions. It is estimated that completion time required for traditional building can be reduced by 25% - 50% depending on the circumstances. Under certain conditions, for example, where a programme of 2,500 to 3,000 dwellings can be provided, it would be possible to produce in the factory 2 - 10 completed dwellings per day. As actual production will depend on the type of programme, the degree of repetition and the period over which the dwellings are required, it will be appreciated that there can be many variations in output between these two limits.

Under normal conditions completion of the superstructure can be calculated on the basis of one week per floor, plus three to six months for finishing, depending on the number of storeys involved. The following schemes indicate completion times which have been achieved. It should be borne in mind that the speed of erection is very much a question of predetermining the rate of production in the factory (e.g. whether the process is based on one or two shifts.) Completion times can, therefore, vary considerably, and do not always reflect the maximum speed at which the contract could have been carried out.

Pantin. A scheme of 108 dwellings in 3 thirteen-storey blocks (each block comprising 3 flats) was completed in 8 months. These were erected simultaneously and the total completion period, including foundations, was 10 - 11 months.

Lieven. A group of 240 dwellings in three-storey blocks (plus basements) was completed in 8 months, and the total contract was completed in approximately 11 months.

Douai. A scheme comprising 200 single-storey dwellings, including foundations, was completed in 4 months.

TECHNICAL ANALYSIS.

1. Structure - assembly, strength and stability.

When lowered into position, panels are maintained temporarily by telescopic vices until they are linked together. Junctions between external and internal walls and junctions between internal partitions are made by reinforcement bars incorporated in the panels, some of which are hooked together, and the vertical cavity left between panels (which allows a generous margin of tolerance) is filled with insitu (vibrated) concrete poured from the slab above. Floor slabs are set on timber or steel wedges bedded on supporting walls, which serve to give tolerance for correct alignment. Fine aggregate concrete is then inserted between the slab and the wall after accurate bedding has been achieved; the wedges being subsequently removed. A similar method is used in fixing wall panels, but in some cases they are bedded in mortar baths without the use of wedges. Expansion joints are provided

at distances of about 90 ft., the material used being normally a plastic compound (similar to Flexcell) or in some cases a three-quarter round section copper tube.

Due to the control of their manufacture, panels are of high quality in terms of strength, finish and accuracy, so that when they are erected on site and connected to each other horizontally and vertically by reinforced concrete 'joiners' as the work proceeds, the whole building presents a monolithic structure of great strength and stability. Because of their construction, Camus buildings are able to withstand considerable stresses and it was interesting to learn from their Scientific Director that when subjected to tests comparable to those experienced by mining subsidence and earthquakes, they have shown remarkable stability.

Tests carried out in the factory ensure a consistent quality of concrete and in addition to tests by the Schmidt Gun (compression tests) and Pacometer (for checking position of reinforcement), some panels are tested periodically to destruction, each factory being provided with testing facilities. There is an additional safeguard in the fact that when hoisted off the casting tables, panels are subject to stresses sufficiently great to expose any weakness in manufacture.

External walls are normally 9" thick, comprising an outer thickness of 2¾" of reinforced dense concrete, a 1" Polystyrene sandwich and an inner thickness of 5¼" of reinforced dense concrete. Partition walls and floor slabs are 5" thick. Concrete cover to reinforcement in external walls is 1" and to internal walls ½" - ⅝", but evidence of staining observed on a few panels suggests the need for a little more accuracy of placing reinforcement in the mould.

2. Weatherproofing and Jointing.

The method of jointing used between panels has been a subject of intensive study by the C.R.I.C. Organisation, and has been considered from aspects of strength and weatherproofing, thermal insulation, thermal movement, corrosion, durability, economy, simplicity of workmanship and appearance. Their studies prompted the use of mechanical joints (i.e. formation of splayed profiles within the concrete panels themselves, designed to throw water away from the building) in lieu of plastic materials, the latter being considered doubtful in performance in terms of durability, thermal movement and reliance upon quality of workmanship on site. A single joint placed in front of a small cavity which runs vertically the whole height of the building and a 3¼" splayed cill provide effective weather barriers. The only difficult detail is the vertical and horizontal junction where a tray of synthetic material known as Poselem is inserted, but this construction has proved satisfactory in practice and has given conclusive results during full scale industrial tests.

Four types of joints are normally used, only one of which incorporates a special synthetic material, namely a strip of Katex gripped between two panels on erection, the role of which is to provide an extra precaution in extreme climatic conditions. All joints have proved absolutely weatherproof in practice.

3. Thermal and Sound Insulation.

The material most extensively used for providing thermal insulation is expanded Polystyrene chosen for its stability and resistance to temperature conditions. The thickness used varies not only with the location in a particular building, but also with the locality in which buildings are erected. In relatively severe climates, as for example in the Lorraine region, a 1" thickness of the material is used, but for most French regions, a lesser thickness of ¾" is satisfactory. The Polystyrene is incorporated in all external walls as a sandwich between two thicknesses of dense concrete. Thermal bridging is avoided because the insulant provides continuous protection over the entire external shell. At junctions between external walls and partition walls, this continuity is maintained by placing vertical sheets of Polystyrene in the cavity to provide insulation to party walls. A similar principle is applied to the protection of floor slabs where although the insulant within the panels is not continuous over the edge of the slab, the detail is such that the face of the slabs are adequately protected. The thermal value of external walls is 0.25 compared with 0.30 for an 11" cavity wall in traditional brickwork.

Insulation against aerial noise is provided by the weight of the walls themselves, and by the absence of a separate frame. The construction also guarantees that party walls and floors provide adequate insulation against direct aerial noise from one dwelling to another. This form of building also has another important advantage arising from the type of construction. Insofar as direct transmissions are concerned, a 'concrete panel' building of this type should be distinguished from other forms of construction which comprise frame and infilling. In the Camus building the incident energy - the noise - strikes directly on large surfaces of solid and heavy parts, which are difficult to put into vibration due to the absence of any light framework and because of the monolithic nature of the structure.

With regard to impact noise, accurate site tests carried out by C.R.I.C. confirmed that polyvinyl flooring on felt provides adequate insulation and tests carried out on linoleum with a Perla underlay (a recent advent into the French market) have given results equal to those of a floating floor. Rubber floorings on cellular underlays and moquettes on hair cloth have also proved satisfactory. On the other hand, linoleum or parquet, and asphalt tiles particularly, laid directly on adhesive have proved particularly unsuitable. Insulation of tiled floors to bathrooms and kitchens have also proved unfavourable and tests now being carried out by C.R.I.C. suggest that floating floors may have to be considered if the tiled floors are provided. C.R.I.C. are also pursuing other alternatives which will fit more economically into the Camus process and they are directing their main researches on underlays which are watertight and resilient, which they consider will be more economical solutions.

4. Internal and External Finishes.

It should be mentioned that the accuracy and quality of surfaces of floor and wall panels are such that the

Provision of plasters and screeds are unnecessary. Floor finishings can be applied direct on the slab and decoration direct on to wall and ceiling surfaces.

Internal Finishes.

Wall and floor finishes to bathrooms and kitchens and communal staircases and halls consist generally of ceramic tiles of different sizes and colours. Coloured aggregates have also been used in floors of staircase halls. Painted finishes are provided to living rooms, bedrooms and halls. The paint used and the method of application adopted up to some 18 months ago consisted of rubbing down, filling with a plastic filler and decorating with two coats of cellulose paint known as Faserite, spray applied. Varieties of surface treatment were obtained by adjustment of the spray nozzle. A roller applied to the surface evened out paint globules to give an attractively patterned surface. This specification produced a first class finish as evidenced during an inspection of thirteen-storey blocks at Pantin.

The type of paint used and the method of filling has now been changed and a new material called Caracas-Bertrand is used. This material which contains a mineral filler, has sufficient body to eliminate almost entirely the preparatory work previously necessary. This paint is also spray applied but one coat is adequate to provide a good and durable finish. An additional coat of clear spray is applied in kitchens and bathrooms as a protection against condensation. This specification was adopted at Maison Alfort (20-storey block), and while a high standard was obtained, there seemed little appreciable difference from the standard achieved with the previous specification at Pantin.

A certain amount of making good is necessary between walls and ceilings prior to decoration, where fine aggregate is inserted during assembly of panels. These are filled and then covered with a strip of glass wool tape, an application of viscous paint proving an adequate adhesive. Because of its grid structure this tape can distribute the effects of expansion and contraction and can absorb movements of between 3/32" - ⅛".

Floor finishes to living rooms, bedrooms and halls mainly comprise a felt backed vinyl tile known as Tapiflex, linoleum, rubber floorings on cellular underlays, moquettes on felt and parquet.

External Finishes.

In addition to various paint finishes (mainly Polyvinyl Acetates) applied on site, materials incorporated in panel manufacture consist of ceramic tiles (4" x 4", 2" x 2", ¾" x ¾" glass mosaic, washed pebbles, dressed stone and aggregates of various sizes and colours. Brick tiles 1¼" thick have also been used, but these are expensive in France and are unlikely to be used extensively.

Finishes to roof panels are normally asphalt or a number of layers of felt backed aluminium sheeting, known as Paxalumin. A similar material known as Veral is now being increasingly used in this country.

These finishes are usually provided on insulating screes or other material depending on the structure. Roof finishes to traditional pitched roofs are Asbestos Cement Tiles or Sheets.

5. Services.

The extent to which services installations are prefabricated at the factory or incorporated within the process of panel manufacture, has already been considered. Further analysis of actual standards provided relating to plumbing, ventilating, electrical services and refuse disposal was not considered necessary because they do not affect the principles of the process. It was of interest to note that the cross-sectional areas provided for chimney flues, vent shafts, etc. are very similar to our standards. It may also be of some interest to note that in blocks up to five storeys a refuse shute was accommodated within the kitchen of each dwelling, so that in each block a number of separate discharge points were provided at ground floor level. A small number of bins were, therefore, required, which were only about 5 cubic feet in capacity due to the limited number of dwellings discharging into one shute. In the twenty-storey block at Alfort, communal shutes were provided. They discharged direct into large chambers and the method appeared primitive by our own standards.

The question of heating, however, merits further consideration because it is an integral part of the process and contributes to the economy of panel construction. In France space heating is provided from a central boiler plant; hot water being generally provided either by gas heaters, fixed above the kitchen sink or by electrically heated storage cylinders suspended from the kitchen ceiling. The steel coils for heating are 15/21" in diameter, and are generally placed 12" apart. These are then attached to welded reinforcement and placed in the concrete. Manufacture of these coils is easily carried out on an industrial scale, and the system is very economical.

Dwellings in France are not metered individually as it is regarded as more important that the whole building shall be kept warm. Dwellings are heated both from above and below in proportions varying between 35% and 55%, but the loss of heat from one dwelling to another is not a material factor. Camus are now studying the possibility of providing ceiling heating with electrical tubular heaters, cast in the slab, the tubes being mounted together with suitable spacers on the reinforcement. They would then be placed on the layer of concrete at a suitable depth (some 1½" - 2½" from the ceiling) and positioned by a system of stretchers, the remainder of the concrete making up the slab is then poured on top. This alternative method is being considered in the light of demands for the system to be adapted to provide individual metering, and it should have the same advantages of metering provided in electrical underfloor warming.

6. Maintenance.

There is no statistical information available regarding the amount of maintenance that has been required buildings erected by this system. It has been confirmed the C.R.I.C. Organisation that buildings erected over the past 10 years have not revealed any defect other than some minor difficulties experienced in the early days of development during the construction of the first 4,000 dwellings.

It is important, however, to differentiate between maintenance attributable to elements or the design of elements, which are an essential part of the system, and those which are attributable to materials incorporated purely from choice or as the result of client demand. For example, during inspection of one scheme it was noted that detailing of parapet walls and balconies had resulted in extensive surface staining, and in another case, failure of infill panels under windows had affected the appearance of the whole block. None of these items relate to the system, and they would have involved the same degree of maintenance had they been incorporated in a traditional building.

It will be appreciated that there have been some changes in detail, such as joints, for example, over the period during which Camus buildings have been erected, but these reflect refinements, and developments in technique, and not a departure from basic detailing on grounds of previous failure.

One of the earlier schemes comprising 208 dwellings built by the Camus system, was a project at Fontainebleau included in the programme to investigate at first hand what maintenance problems had been experienced. Discussion with the janitor responsible for the management of the scheme revealed that apart from filling of an expansion joint, (to seal off the narrow cavity between the double walls forming the structural separation), no defect had been reported, maintenance being confined to internal redecoration of dwellings.

There is every indication that incorporation of durable finishes within the casting of panels, together with the precision of the structure itself, produces buildings involving less maintenance than traditional building.

PART II.

APPLICATION OF SYSTEM TO BIRMINGHAM HOUSING REQUIREMENTS.

Application of System to British and French Building Practice.

1. Variations between British and French Building Practice and Adaptability of System.

French requirements at present are contained in the Technical Memorandum for the Application of Building Regulations, which it is regarded is an authorised interpretation of standards contained in the Decree of 1955. While there appears considerable licence in the practical application of these regulations, certain basic standards are generally accepted, which show some divergencies from British practice. It should be noted that buildings in France are required to have a minimum life of 50 years, but it is evident from the construction of the Camus buildings that their life is at least comparable to our own traditional building.

When considering differences between British and French practice, it is important to distinguish clearly between those which effect economies of the process and those which do not. It is vital to stress this point because upon this distinction depends a proper understanding of how far it is a system (in the sense that it has basic limitations) and how far it is purely a rational process applied to building. Difference in standards relating to plumbing, electrical and mechanical services, for example, as previously explained, have no significant effect on the process. On the other hand installation of electrical floor warming with individual metering, involves additional operations in the casting of panels and, therefore, affects economy.

The Scientific Director and his Technical Staff have studied various British Codes of Practice, and in their opinion the only matters which might present difficulty are those relating to fire escape and underfloor electrical heating, because they could complicate the structural form. In the opinion of the Camus Scientific Director none of these difficulties are insurmountable, and should not have a significant effect on the overall cost of dwellings. This opinion was confirmed by my own observations and research.

Finally, it should be stressed that there is no question of imposing a French design or adopting French practice in order to use the system, and no lowering of our own standards, either in layout or dwelling design, would be involved. My investigations have proved conclusively that the employment of this system in practice means the acceptance of a basic discipline, utilising the extensive experience of the Camus organisation in building by their system and their practical 'know how'.

2. Application to Castle Bromwich Airfield Site.

In order to give the Committee some idea of the application of this system to our own housing programme, a study of the above site was carried out with the Camus Organisation. This site will accommodate some 4,500 dwellings and for the purposes of this exercise it has been assumed that of this number 2,500 dwellings in two, four and ten-storey development could be carried out in the Camus system.

From my discussions it was established that this number of dwellings provides a sound and economical basis for factory production.

On the basis of this programme the Camus Technical Director prepared a phased chart, showing target production and completion dates (see Plate II) for the whole scheme. The number of panels required for maisonettes might be exceeded in practice, but an increase in number would not alter the production dates shown. It will be appreciated that the number and types of dwellings quoted on the draft programme are provisional only. It should be noted that the period of 3 years 2½ months shown as the contract period is an addition to the period required for the erection of the factory.

It is estimated that a site of approximately 5½ acres will be required to accommodate the factory, which should be not more than 15-16 miles from the Castle Bromwich site. A preliminary plan of the factory layout required has been prepared by the Camus Technical Director and a copy is attached to this report (see Plate III). A larger print will be available at the meeting to enable members to study the layout in more detail.

The cost of the factory would be about £350,000 with a probable addition of £35,000 for siteworks, approach roads etc., making a total of approximately £385,000. It should be pointed out that the cost has been mentioned merely to indicate the substantial capital investment involved. The cost of erecting the factory and plant required would in fact be the concern only of the contractor nominated to undertake the contract and would be absorbed within the cost of the whole scheme. Similarly the factory design would be solely the contractor's responsibility, and the object of showing the factory layout is merely to illustrate the process.

DRAFT FACTORY PRODUCTION PROGRAMME.

CASTLE BROMWICH AIRFIELD SITE.

ASSUMED PROGRAMME OVER A PERIOD OF FOUR YEARS COMPRISING:

	1,000	two-storey houses
	1,000	four-storey maisonettes
	500	ten-storey flats
Total:	2,500	dwellings

COMPOSITION OF FACTORY

3 Workshops each containing 6 Tables

1 Workshop containing 2 Batteries, (each containing 12 Berths) and 2 Special Moulds.

THEORETICAL FACTORY PRODUCTION BASED ON ONE SHIFT WORKING.

On 18 Tables	48	Panels per day.
In 2 x 12 Berths	34	" " ""
In 2 Special Moulds	2	" " "
Total:	84	Panels per day.

BASIS ASSUMED FOR CALCULATING PRODUCTION:

860 sq.ft. as average area for all dwellings.
30 panels for construction of houses.
23 panels for construction of flats.

PRODUCTION TIME FOR THE WHOLE PROGRAMME BASED ON A 250 WORKING DAY YEAR.WOULD BE AS FOLLOWS:

For 4 & 10-storey Blocks : $\frac{1,500 \times 23}{84 \times 250}$ = 1 year & 7½ months.

For 2-storey houses: $\frac{1,000 \times 30}{84 \times 250}$ = 1 year & 5 months

Total Production Time = 3 years and 2 weeks.

PHASING OF THE BUILDING PROGRAMME IS SHOWN ON THE ATTACHED CHART (SEE PLATE II).

CONCLUSIONS

The Camus System, in my view, presents a well tried and efficiently organised method of house building. Its only limitations are an acceptance of a basic discipline of thought. From my investigations I am satisfied that this discipline will not have a significant effect either on layout and dwellings types designed to meet our own requirements, or that it will result in a monotony of external appearance. From observations of completed buildings, it does not appear that the aesthetic potentialities offered by the system (apart from one or two notable exceptions, namely, Saint Germain-en-Laye and Bougival) have been fully exploited. There is nothing in the technique to suggest that a greater variety of expression cannot be attained, particularly as plan forms in this country show much wider range than in France, where the majority of accommodation is provided in flats.

In my opinion, the adoption of this system at Castle Bromwich would not only provide a valuable contribution in achieving the general aim of reducing building costs and increasing the tempo of building, but would add substantially to our present programme. The bulk of the labour employed is unskilled and the system can, therefore, be regarded as supplementing and not competing with the labour demands of the building industry generally.

Should the Committee decide to pursue the matter further in the light of this report, the next stage would be for the Committee to authorise discussion to proceed with Camus (Great Britain) Ltd., to investigate further the general application of the system at the Castle Bromwich site. The Committee will appreciate, however, that the layout has not yet been finalised, but discussions with Camus at this stage would not commit the Committee in any way, and would not prejudice their consideration of the final scheme.

Assuming the Committee approve of the ultimate layout, the detailed layout and dwelling types would then be prepared in conjunction with Camus (Great Britain) Ltd., together with the preparation of a full specification and schedule of basic requirements of the process. These documents could either form the basis for inviting tenders from a selected list of firms or for negotiating direct with a firm selected from a number of firms prepared to undertake the project.

In view of the close relationship between manufacture and erection, it would be essential that the firm finally nominated should either have a precasting organisation with its own establishment, or that it should be prepared to form a partnership with a specialist precasting concrete firm, while still accepting contractual responsibility for the scheme.

Appendix D - Birmingham High-rise development - remaining stock (06-02-2017)

Birmingham high-rise development - remaining stock (06-02-2017)

Name	Location	No of flats	Storeys	Architect/System	Builder	Approved	Built	Refurbished	Notes
Adelaide House	Shardway, Shard End		9						
Albany House	Buckland, Shard End	50	13		DL	1964	1966		Brunswick, between Bromford 20 blocks and Chelmsley Wood 51 blocks
Alnwick House	Jarvis Rd, Erdington	42	11	Bison	Bryant	1964	1966		1 of 5
Arundel House	Jarvis Rd, Erdington	42	11	Bison	Bryant	1964	1966		
Ascot Court	Abdon Ave, Bournville	36	9			1960's			Built by Bournvile Village Trust aquired by council in 1975
Ashfield House	Yardley Wood	32	8		DL	1958	1960		Wareham House
Ashford Tower	Highgate	36	9		DL	1959	1961		
Auckland House	Welsh House Farm	36	10		Wates	1962	1964		
Audleigh House	Lee Bank Estate	36	9		Bryant	1966	1967		Re-furbished mid 2000's
Avery House	Chamberlain Gardens			Sheppard Fidler			1960's		MR Davis and B Leicester also architects
Avon House	Lee Bank Estate		6	Y shape			1950's		Nash and Lansdown House
Bakeman House	South Yardley	120	12		Token	1965		2008	Shopping Centre beneath called Tivoli Centre demolished 2008 (Tesco)
Baldwin House	Newtown, Aston	58	15		Morris and Jacombs	1965	1968		
Balfour House	Chamberlain Gardens		9	Sheppard Fidler			1960's		
Banbury House	Kitts Green	30	6	Y shape	Wimpey	1951	1952		
Barberry House	Primrose Hill Estate	42	11	Bison	Bryant	1964	1966		
Barn House	Washwood Heath	50	13	Bison	Bryant	1966	1967		
Barratts House	Baverstock Estate	50	13	Bison	Bryant	1965	1966		
Barrow House	Meyrick Walk, Edgbaston	36	9	Bison	Bryant	1970	1971		Part of Phase II for Chamberlain Gardens
Barry Jackson Tower	Estone Walk, South Aston	118	20		Wimpey	1969	1972		Scheduled for demolition, uneconomical/meets modern standards
Beale House	Chamberlain Gardens		9	Sheppard Fidler			1960's		
Beech Hill House	Bartley Green	36	9		DL		1962		
Bellfield House	Druids Heath	50	13	Bison	Bryant	1965	1966		
Berkeley House	Jarvis Rd, Erdington	42	11	Bison	Bryant	1964	1966		1 of 5
Boundary House	Hollies Croft	50	13		Wates	1966	1968		2011 Century and Wicketts Tower, refurb 2011, inc overdad, re-roof, Upvc windows, enclose balconies
Bowater House	Aldgate Grove, Hockley	40	11		Bryant	1963	1965		
Bradbeer House	Chamberlain Gardens		9	Sheppard Fidler			1960's		
Bradfield House	Mapledene Estate	30	6	Y shape	Wimpey	1952	1953		Greenfield House
Bramber House	Stokesay Green, West Heath	32	8		Wates	1957			
Brandwood House	Kings Heath	34	9		Stubbings	1962	1964		Cocksmoor
Bransford Tower	Highgate	36	9		Wimpey	1959	1961		
Brecon Tower	Guild Close, Ladywood	93	16		Wimpey	1962	1965		Wells Tower
Bridge Meadow House	Bromford Bridge		13				1967		
Bridport House	Bartley Green	42	11	Bison	Bryant	1964	1965		
Brinklow Tower		116	20		Wimpey	1965	1967		
Broadheath House	Overpool, Hodge Hill	30	6		Wimpey	1954	1956		
Brookpiece House	Druids Heath	50	13	Bison	Bryant	1965	1966		
Browning Tower	Overbury Rd, Northfield	70	12		Whittall	1960	1963		Shelley Tower
Brunswick House	Buckland End, Shard End	50	13		DL	1964	1966		
Burdock House	Primrose Hill Estate, Kings Norton	42	11	Bison	Bryant	1964	1966		
Cadbury House	Hockley, NewTown	40	11	Bison	Bryant	1963	1965		
California House	Bartley Green	42	11	Bison	Bryant	1964	1965		
Cambridge Tower	Brindley Drive, Civic Centre	62	16	Bison	Bryant	1966	1968	2009	
Campion House	Primrose Hill	42	11	Bison	Bryant	1965	1967		Saffron House

Camrose Tower	Cromwell St Estate, Nechells	33	9	Sheppard Fidler	Morriss Jacombs	1959	1961		Shops at ground, drying room at top. Dark exposed aggregate with biscuit brick and mosais spandrel panels, balconies with curver stove enamelled fronts. South facing balconies
Canterbury Tower	St Marks St, Ladywood	116	20		Wimpey	1965	1967		
Cantlow House	Ketley Croft, Highgate	37	8		Langley	1960	1962		
Carisbrooke House	Stokesay Green, West Heath	32	8		Wates	1957			1 of 3
Century Tower	Dollery Drive, Edgbaston	116	20		Wates	1966	1968	2011	Wicketts Tower and shorter Boundary Tower
Chadwick House	Overpool Estate, Hodge Hill	30	6	Y shape	Wimpey	1954	1956		
Chamberlain House	Chamberlain Gardens		9	Sheppard Fidler	Bryant		1960's		
Charlbury House	Highgate	36	9		DL	1958	1960		
Chiswick House	Lee Bank	36	9		Bryant	1965	1966	2000's	
Chivenor House	Drem Croft, Castle Vale	42	12		Bryant	1964	1965		32 of 34 blocks demolished, reprieved due to primary school at ground level, refurbished by BM3 Architecture alongside Topcliffe House
Claverdon House	Holly Bank Rd, Moseley	30	6	Y shape	Wimpey	1954	1956		
Clayton House	Chamberlain Gardens		9	Sheppard Fidler				demolished 2007	
Cleveland Tower	Holloway Head		32			1967	1970	2000's	Clydesdale Tower to form the Sentinels tallest tower block in UK, followed concillors visit to Chicago, since refrubished with new cladding, entrance, roof features and windows
Clydesdale Tower	Holloway Head		32			1967	1971	2000's	forms the Sentinels tallest tower block in UK, followed concillors visit to Chicago, since refrubished with new cladding, entrance, roof features and windows
Cocksmoor House	Kings Heath	33	9		Stubbings	1962	1964		Brandwood
Collings House	Chamberlain Gardens		9	Sheppard Fidler			1960's		
Coney Green House	West Heath	42	11	Bison	Bryant	1964	1966		
Coniston House	Metchley Grange Estate	40	11		Bryant	1964	1966		
Coppice House	Fox Hollies Park, Acocks Green	70	12	brick trad?	Morriss Jacombs	1961	1964		
Copsehill Court	Mount View, Reddicap	51	9		Stubbings		1967		Opened by Duchess of Kent
Courtway House	Bushwood Rd, Weoley		8		Bryant	1958			
Crabtree House	Giles Close, Stechford	52	13	Bison	Morriss Jacombs		1967		
Cranleigh House	Goosemoor Lane Estate	34	9		Stubbings	1963	1964		Repton Tower
Crescent Tower	Brindley Drive, Civic Centre	62	16		Bryant	1966	1968	2009	
Danesmoor House	Hobmoor Rd, Yardley	24	6		Cox		1953	2006	
Derwent House	Metchley Grange Estate	40	11		Bryant	1964	1966		
Dixon House	Chamberlain Gardens		9	Sheppard Fidler			1960's		
Dovey Tower	Duddeston Manor Rd,Nechells Green	92	16	Bison	Stubbings	1964	1967		
Dowry House	Dowry Farm Estate	40	8		Wimpey	1955	157		
Drews House	Druids Heath, Brandwood	50	13	Bison	Bryant	1965	1966		
Dunedin House	Welsh House Farm Estate	36	10		Wates	1962	1964		
Durham Tower	Acorn Grove, Ladywood	80	20	FRAM system	DL	1968	1970		
Edmonton House	Benmore Estate	40	11				1965	1990's	Optima
Elizabeth Court	Berryfields Estate		9	Brick			1980's		Margaret House, built long after boom period
Epsom Court	Abdon Ave, Bourneville	36	9				1960's		Built by Bourneville Village Trust and transferred to Birmingham ib 1975
Essington House	Sladefield Rd, Washwood Heath	60	15	Bison	Bryant	1967	1969		
Fairbourne Tower	Lyndhurst Estate		12				1961		Won Civic Award for Housing 1961 along with rest of estate
Fallows House	Ruddington Way, Aston	50	13	Bison	Morriss & Jacombs	1965	1967		
Faraday House	Lea Bank Estate	36	9		Bryant	1961	1963	2000's	Hogarth House, Optima
Frogmoor House	Hobmoor Rd, Yardley	24	6		Cox		1953	2006	

Galton Tower	Civic Close, Civic Centre	58	15		Bryant	1968	1969	2006	
Geach Tower	St Georges Estate, Hockley	90	15		Wimpey	1963	1965		Rea Tower, Teviot Tower
Giles Close House	Giles Close, Stechford	50	13	Bison	Bryant	1965	1967		
Glendale House	Beechmount Drive, Lyndhurst		12				1959		Civic Award 1961
Gosmoor House	Hobmoor Rd, Yardley	24	6		Cox		1953	2006	
Gower House	Lockington Croft	36	9		DL	1965			
Greenfield House	Mapledene Rd Estate, Sheldon	30	6	Y shape	Wimpey	1952	1953		Bradfield House
Greenford House	Wyrley Birch Estate, Erdington	48	8		Wimpey	1955	1957		
Gresham Tower	Shawbury Grove, Highgate	36	9		DL	1958	1960		
Halifax House	Benmore Avenue	40	11				1965	1990's	Optima
Harrison House	Britford Close, Baverstock Estate	50	13	Bison	Bryant	1965	1966		
Heath House	Baverstock Rd, Baverstock Estate	50	13	Bison	Bryant	1965	1966		
Heather House	Primrose Hill Estate, Kings Norton	42	11	Bison	Bryant	1964	1966		1 of 4 identical blocks along Shannon Rd
Heron Court	Little Green Lanes, Wylde Green	50	13	FRAM system	Stubbings	1966	1968	2005	Paint, windows, concrete repairs, new roof in £1m refurbishment
High Tower	Duddeston Manor Estate, Nechells		12	Brick X shape			1955	1990's	1 of 4, Queens Tower, Home Tower and South Tower, expensive to build incorporated central heating in Queens Tower from central boiler, Garchey waste disposal system and seven staircases
Highgate House	Southacre Ave, Highgate	36	9		DL	1961	1963		
Hillcroft House	Alcester Rd South, Baverstock Estate	50	13	Bison	Bryant	1965	1966		
Hillside House	Dowry Farm Estate	40	8		Wimpey	1955	1957		
Hobbis House	Kings Norton	42	11		Stubbings	1966	1967		now Sheltered Housing for elderly
Hodgson Tower	Newtown	118	20	Bison	Bryant	1968	1971		Brooks and Wiggin Tower
Hogarth House	Lee Bank Estate	36	9		Bryant	1961	1963	2000's	Faraday House, Optima
Holbrook Tower	Bromford Bridge Estate		20				1968		Intention to demolish
Holland House	Great Hampton Row, Hockley	40	11		Bryant	1963	1965		
Hollowmeadow House	Bromford Bridge Estate		13				1967		
Hollypiece House	Fox Hollies Park, Acocks Green	70	12		Morriss & Jacombs	1961	1963		
Home Meadow House	Fox Hollies Park, Acocks Green	70	12		Morriss & Jacombs	1961	1964		
Home Tower	Duddeston Manor Estate, Nechells		12				1954		1 of 4, Queens Tower, Queen Tower and South Tower, expensive to build incorporated central heating in Queens Tower from central boiler, Garchey waste disposal system and seven staircases
Humber Tower	Duddeston Manor Estate, Nechells	92	16	Bison	Stubbings	1964	1965		refurbished
Huntingdon House	Faulkners Farm Drive, Wyrley Birch Est	48	8		Wimpey	1955	1957		
Inkerman House	Newtown	144	15		Whittall	1966	1968		Above Newtown shopping centre, very wide slab block
James House	Newtown	50	13	Bison	Bryant	1966	1967		
Jordan House	Bromford Bridge Estate		13				1965		
Kempsey House	Field lane, Woodgate	34	9		Bryant	1964	1965		
Kendal Tower	Metchley Grange Estate, Harborne	91	16	Sheridan Sheddon/JA	Laing	1963	1965		
Kenilworth House	Holly Bank Rd, Moseley	30	6	Y shape block	Wimpey	1954	1956		
Kenrick House	Huntley Rd, Chamberlain Gardens		9	Sheppard Fidler			1960's		
Kentmere Tower	Beechmount Drive, Lyndhurst Estate		12				1960		1961 Civic Award
Kineton House	Holly Bank Rd, Moseley		6	Y shape block	Wimpey	1954	1960's		
Kingsbridge House	Wyrley Birch Estate	48	8		Wimpey	1955	1957		
Kingspiece House	Bromford Bridge Estate		13				1967		
Kingswood House	Baverstock Estate, Brandwood	50	13	Bison	Bryant	1965	1966		

Landown House	Lee Bank Estate		6	Y shape block	Wimpey		1950's		Queen Mother visit, Avon and Nash House, refurbished Optima
Lavender House	Primrose Hill Estate	42	11	Bison	Bryant	1964	1966		1 of 4 identical blocks
Ledbury House	Kitts Green	30	6	Y shape block	Wimpey	1951	1952		
Leominster House	Kitts Green	30	6	Y shape block	Wimpey	1951	1952		
Lincoln Tower	Gilby Rd, Ladywood	67	12		Wimpey	1958	1960		
Little Hill House	Pitts Farm Estate, Erdington	36	9		Stubbings	1962	1965		
Lloyd House	Newtown	50	13	Bison	Bryant	1966	1967		
Loweswater House	Pool Farm Estate, Kings Norton	32	8		Laing	1958	1960		
Ludlow House	Holly Bank Rd, Moseley	30	6	Y shape block	Wimpey	1954	1956		
Lynton House	Faulkners Farm Drive, Wyrley Bridge Est	48	8	balcony access	Wimpey	1955	1957		refurbished
Manderville House	West Heath	42	11		Wimpey	1966			Risborough and Wendover identical previously had prefabs on land
Manor Close	Melville Rd, Erdington	88	8		Simms Sons & Cook	1956	1959		Four T shaped blocks of 22 flats each, next to private Holly Mount development, St Helier, St Lawrence, St Dennis, St Michael Houses
Manton House	Newtown	50	13		Wimpey	1966	1968	2011	
Margarets Court	Berryfields Estate, Sutton Coalfield		9	red brick			1980's		Elizabeth House
Martineau Tower	St Georges, Hockley	90	15		Wimpey	1963	1965		Rea and Teviot completed previous year, one of nine towers on estate
Medway Tower	Cromwell St, Nechells	90	16		Wates	1959	1961		3 x 16 storey blocks similar to ones on Lyndhurst Est
Metchley House	Metchley Grange Est, Harborne	40	11		Bryant	1964	1966		
Middlefield House	Baverstock Est, Brandwood	50	13	Bison	Bryant	1965	1966		
Mill House	Washwood Heath	50	13	Bison	Bryant	1966	1967		
Moat House	Stokesay Green, West Heath	32	8		Wates	1957			
Monmouth House	Shirestone Rd, Kitts Green	30	6	Y shaped block	Wimpey	1951	1952		
Montreal House	Benmore Ave, Benmore	40	11				1965		Optima in late 1990's
Moor House	Druids Lane, Druids Heath	50	13	Bison	Bryant	1965	1966		
Muntz House	Skipton Rd, Chamberlain Gardens		9	Sheppard Fidler			1960's		
Nash House	LeeBank Estate		6	Y shape	Wimpey		1950's		
Nedwood House	Woodcock Hill	32	8		DL	1958			
Netley House	Woodhouse Farm Estate	42	11	Bison	Bryant	1964	1966		
Norfolk Tower	Boulton complex, Soho		18				1971		Scheduled for demolition
Normanton Tower	Lyndhurst Est		12				1959		Civic Award 1961
Norton Tower	Civic centre	58	15		Bryant	1968	1969	2006	
Oast House	Gumbleberrys Drive, Washwood Heath	50	13	Bison	Bryant	1966	1967		
Osbourne Tower	Gladstone Rd, Nechells	92	16		Wates	1965	1966		destined for demolition, eye sore on Aston Expressway
Ottawa Tower	Murrell Close, Benmore	92	16	Sheppard Fidler	Laing	1963	1965	1999	Calthorpe Park development, Optima 1999 and refurbished
Park Court	Fir Tree Grove, Boldmere	35	6			1961	1964	2001	refurbished for elderly at cost of £1.2m by David Cauldwell Architects with common room constructed on side instead of earlier ground floor room converted from flat but too small
Parker House	Baverstock Est, Brandwood	50	13	Bison	Bryant	1965	1966		
Pennycroft House	Rattle Croft, Stechford	52	13	Bison	Morriss and Jacomb	1965	1967		
Perry Green	Perry Villa Drive, Perry Barr	32	8		Stubbings		1958		
Pitmeadow House	Pound Rd, Druids Heath	50	13	Bison	Bryant	1965	1966		
Pleck House	Winterborne Croft, Druids Heath	50	13	Bison	Bryant	1965	1966		
Pritchett Tower	Arthur St, Small Heath	118	20		Wimpey	1969	1971	2010	new windows, overclad, white paint and blue strip lighting to modernise
Quarry House	Dowry Farm Estate	40	8		Wimpey	1955	1957		
Queens Tower	Duddeston Manor Estate	88		brick built			1954		one of Duddeston 4, opened by Harold Macmillan, see above, costly but heralded search for cheaper alternatives

Radcliffe Tower		36	9		DL	1958			demolition?
Rayleigh House	Woodcock Hill	32	8		DL		1958		
Rea Tower	Mosborough Crescent, St Georges Est	90	15		Wimpey		1962		
Redditch House	Kitts Green	30	6	Y shape block	Wimpey	1951	1952		
Redway Court	Reddicap, Sutton Coalfield	51	9		Stubbings	1965	1967		Duchess of Kent, (the Mount Housing scheme)
Redworth House	Lea Walk, Dowry Farm Estate	40	8			1955	1957		
Repton House	Goosemoor Lane Estate, Short Heath	34	9		Stubbings	1963	1964		
Reynolds House	Newbury Rd, Newtown	50	13		Wimpey	1966	1967	2011	
Risborough House	Walnut Way, West Heath	42	11		Wimpey	1966			
Rushmore House	Dowry Farm Estate	40	8		Wimpey	1955	1957		
Ryland House	Great Hampton Row, Hockley, Newtown	40	11		Bryant	1963	1965		
Sadler House	Newtown	50	13	Bison	Bryant	1966	1967		
Saffron House	Primrose Hill Estate	42	11	Bison	Bryant	1965	1967		
Salisbury Tower	Middleway View, Ladywood	116	20		Wimpey	1965	1968		Album Cover Led Zeppelin IV
Sandhurst House	Pool Farm Estate, Kings Norton	32	8		Laings	1958	1960		
Sandown Tower	Coleys Lane Estate, Turves Green	36	9		DL	1959	1962		1 of 3
Sapphire Tower	Park Lane, Aston	116	20		Wimpey	1969	1971		plans to demolish
Saxelby Tower	Baverstock Estate	50	13	Bison	Bryant	1965	1966		
Scholefield Tower	St Georges, Hockley	90	15		Wimpey	1963	1965		Rea and Teviot Tower
Severn Tower	Cromwell St, Nechells Green	90	16		Wates	1959	1962		
Shakespeare House	Fairfax Rd, Longbridge	38	10		Bryant	1963	1965		Tennyson and Wordsworth
Shelley Tower	Overbury Rd, Northfield	70	12		Whittall	1960	1963	1982	
Sorrell House	Pype Hayes Estate, Erdington		9	Bison	Bryant	1963	1965		elderly residents
South Tower	Duddeston Manor Estate	88	12	Brick X shape			1954		Duddeston 4
Southam House	Holly Bank Rd, Moseley	30	6	Y shape block	Wimpey	1954	1956		
Speedwell House	Pool Farm Estate, Kings Norton	42	11	Bison	Bryant	1965	1967	1995	EU funding to refurbish, lifts, windows, cladding, cctv
St Albans House	Woodhouse Farm Estate	42	11	Bison	Bryant	1964	1966		
Stafford House	Tile Cross Rd, Kitts Green	30	6	Y shape block	Wimpey	1951	1952		
Standleys Tower	Stonall Grove, Erdington	36	9	Brick	DL	1959	1960		
Stokesay House	Jarvis Rd, Erdington	42	11	Bison	Bryant	1964	1966		
Stoneleigh House	Woodhouse Farm Estate	42	11	Bison	Bryant	1964	1966		
Studley Tower	Highgate	116	20		Wimpey	1967	1969		
Summer Court House	Bushford Rd Estate, Weoley		8		Bryant	1958			
Sycamore House	Rectory Rd, Northfield		12				1964		
Tenby Tower	Coleys Lane Estate, Turves Green	36	9		DL	1959	1962		
Tennyson House	Fairfax Rd, Longbridge	38	10		Bryant	1963	1965		1 and 2 bed flats for elderly, Shakespeare and Wordsworth
Teviot House	Mosborough Crescent, St Georges	90	15		Wimpey	1960	1962		Rea Tower
Thames House	Cromwell St Estate, Nechells	90	16		Wates	1959	1961		
Thirlemere House	Roman Way, Vincent Drive Est, Selly Oak	42	11	Bison	Bryant	1965	1967		Windermere House
Thistle House	Bromford Bridge Estate		13				1967		
Thornton House	Newtown, Aston	50	13	Bison	Morris & Jacombs	1965	1967		
Tintern House	Woodhouse Farm Estate	42	11	Bison	Bryant	1964	1966		
Topcliffe House	Castle Vale Estate	42	12		Bryant	1965	1967	2003/5	BM3 Architecture, refurb and re-clad because built over two schools along with Chivenor, cost £2.7m
Topfield House	Druids Heath Estate	50	16	Bison	Bryant	1965	1966		
Trent Tower	Duddeston Manor, Nechells Green	92	16	Bison	Stubbings	1964	1968		
Truro Tower	Ledbury Rd, Ladywood	93	16		Wimpey	1963	1965		

Vancouver House	Benmore Estate	41	11				1965	1990's	Optima
Victor Tower	Cromwell Street Estate	116	20		Wimpey	1968	1969		tallest block in Nechells Green
Waltham House	Pool Farm Estate, Kings Norton	32	8		Laing	1958	1960		
Ward End House	Perrins Grove, Ward End	36	9		Bryant	1961	1963		
Wareham House	Yardley Wood	32	8		DL	1958	1960		Ashfield House
Warstone Tower	Bromford Bridge Estate		20				1967		2011 intention to demolish
Wellington House	Welsh House Farm	36	10		Wates	1962	1964		
Wellington Tower	Coleys Lane Estate, turves Green	36	9		DL	1959	1962		
Wells Tower	Rodney Close, Ladywood	93	16		Wimpey	1962	1965		Brecon Tower
Wendover House	Walnut Way, West Heath	42	11		Wimpey	1966			Manderville and Riscborough, replaced pre-fabs
Weston House	Newtown, Aston	50	13	Bison	Morriss & Jacombs	1965	1967		
Wheeldon House	Clay Lane Estate, South Yardley	43	11	Bison	Bryant	1970	1971		
Whitbourne House	Overpool Estate, Hodge Hill	30	6	Y shape block	Wimpey	1954	1956		
Wickets Tower	Wyatt Close, Edgbaston	116	20		Wates	1966	1967	2011	Century and Boundary House, refurb windows, cladding, re-roofed, enclose balconies, lighting drawn up by Urban Design Team
Willow House	Duddeston Manor, Nechells Green	36	9		Wates	1963	1964	1990's	
Wilmcote Tower	Highgate	116	20		Wimpey	1965	1967		Brinklow Tower
Windermere House	Vincent Drive Estate, Selly Oak	42	11	Bison	Bryant	1965	1967		Thirlemere House
Windsor House	Jarvis Rd, Erdington	42	11	Bison	Bryant	1964	1966		1 of 5
Winslow House	Bushwood Rd Estate, Weoley		8		Bryant	1958			
Woodstock House	Holly Bank Rd, Moseley	30	6	Y shape block	Wimpey	1954	1956		
Wordswoth House	Fairfax Rd, Longbridge	38	10		Bryant	1963	1965		Tennyson and Shakespeare
Wyrley House	Scafell Drive, Perry Common	50	13	Bison	Bryant	1966	1967		
Sources: ukhousing.wikia.com (acc 6.2.17), towerblock.eca.ed.ac.uk (acc 6.2.17) and Birmingham City Council HBC Minutes.									

Appendix E – Birmingham high-rise development - demolished stock (06-02-2017)

Birmingham high-risedevelopment - demolished stock (06-02-2017)

Name	Location	No of flats	Storeys	Architect/System	Builder	Approx Built	Demolished	Notes
17-63 Paynton Walk	Lee Bank		6	Sheppard Fidler	DL	1959	1961	
Abingdon Tower	Castle Vale	92	16		Bryant	1964	1967	
Ainsworth House	Wychall Farm Estate	48	8		Wates	1955	1957	
Albert Shaw House	Castle Vale		16	Bison	Bryant	1968	1969	
Allensmoor House	Ladywood		6		Morriss and Jacombs	1957	1959	
Andover House	Castle Vale	42	13		Stubbings	1965	1967	
Appleton House	Ley Hill Farm		8	Y Shape Wimpey No Fines	Wimpey	1954	1957	
Argosy House	Castle Vale	42	13		Bryant	1964	1966	
Arley House	Lea Estate	34	9		DL	1966	1967	
Arlington House	Woodview Estate	52	13		Bryant	1968	1969	
Ash Tree House	Nechells Green/Duddeston	30 maison	6		Laing	1958	1959	1990's
Auster House	Castle Vale	42	13		Bryant	1965	1967	
Avro House	Castle Vale	42	13		Bryant	1964	1966	
Aylesbury House	Turves Green	24	6		Deeley	1952		
Barford House	St Lukes	50	13	FRAM system	DL	1967	1969	
Bartley House	Athol Farm	50	13	FRAM system	DL	1965	1968	
Baskerville Tower	Kenstone Croft, Highgate	36	9		Laing/Langley	1959	1961	
Bayley Tower	Bromford Bridge		20				1967	
Beaumaris House	Frankley Lane, Bartley Green	34	9		DL	1964	2002	
Bewdley House	Lea Estate		9		DL	1963	1965	
Birchfield Tower	Birchfield Rd, Perry Barr		16				1962	
Blakemore House	Ladywood		6	Deck access		1957	1959	
Blythe House	Ladywood	34	9		DL	1963	1965	
Boulton Point	Holte and Priory, Nechells		12	Brick Y shaped			1956	
Bovingdon Tower	Castle Vale Centre 8	92	16		Bryant	1964	1967	
Bower House	Pannel Croft, Newtown	50	13	Bison	Bryant	1966	1967	
Bradwell House	Ley Hill		8	Y shape Wimpey No fines	Wimpey	1954	1957	
Bridgenorth House	Meadway	36	6	Wimpey No fines	Wimpey	1956	1959	
Brisbane House	Kitsland Road, Shard End		6	Y shape footprint in brick	Simms Sons & Cooke	1955	1957	
Broadmeadow House	Athol Farm	50	13	FRAM system	DL	1965	1969	
Broadway House	Staple Lodge, West Heath	34	6	Y shape	Wates	1954	1955	
Brook House	Falcon Lodge						1968	
Brooks Tower	Clifford Walk, Newtown	118	20	Bison	Bryant	1968	1971	
Buckingham House	Turves Green	24	6		Deeley		1953	
Buckland House	Woodview Estate, Attwood Green	52	13		Bryant	1968	1969	
Burcombe Tower	Lyndhurst Estate, Erdington	68	12	Wimpey	Wimpey	1958	1960	

Demolished	Notes
1997	
2000	
1997	
1999	
2004	
2000	
2010	
2007	
2011	stripped in 2007, discussion over turning into private development
2002	Radnor and Conway
	Tenbury
2010	1 of 3
2002	Kenchester House also demolished
2001	3 sister towers and 3 x 4 storey super blocks, Carbrooke, Normansell, Osborne, demolished for factory
1997	
2001	
2004	one of six Padbury, Saunderton, Appleton, Standlake and Windrush
2008	
	9 tower blocks in Shard End, next to Chelmsley Wood that had 51 blocks, to North is Bromford that had 20 tower blocks
2007	
	replaced with low rise
2002	Wiggin and Hodgson towers
2010	Won Civic Award for estate, demolished for regeneration

Calder Tower	Birchfield Road, Perry Barr		16				1963	2010	1 of 3
Canberra House	Kitsland Rd, Shard End		6	Y shape brick	Simms Sons & Cooke	1955	1957		
Carbrooke House	Aston Hall Rd, Nechells	24	6		Whittall	1954	1955	2001/2	zig zag windows around elongated sides with purple corrugated infill panels below
Castle House	Meadway	42	7	Wimpey No fines	Wimpey	1956	1959	2008	
Cavell House	Ladywood, St Vincent St	34	8		Wimpey	1957	1959		replaced with low rise development
Cavendish Tower	Pool Farm, Kings Norton	83	14		Laings	1959	1961		replaced with semi detached houses
Cedar House	Upper Firs, Hodge Hill	32	8	Truscon	Stubbings	1956	1957		structurally deficient
Charlecote Tower	Lee Bank	116	20		Wimpey	1963	1965	2000	Chatsworth Tower
Chatsworth Tower	Lee Bank	116	20		Wimpey	1963	1966	2002	Charlecote Tower
Chestnut House	Rupert Street Estate, Nechells Green		12		Wates	1962	1964	1995	one of four along with 4 x 6 storey blocks alongside Nechells Parkway
Chillinghome Tower	Bromford Bridge		20				1967	2004	Stoneycroft Twoer and Bayley Tower
Churchfield House	Duddeston Manor, Nechells	68	12		Wates	1963	1965	1990's	rest of estate re-furbished along with Cromwell St Estate, Kellett Rd and Ruper St completely demolished
Cleeve House	Erdington	32	8	Truscon	DL	1958	1960's	2011	awaiting demolitiion, having been used as shelter for homeless after refurb in 2009, empty since 2011
Clovelly House	Egghill Estate, Northfield	36	9		Wates	1960	1962	2001/2	Devon and Exeter part of 3 blocks
Clyde House	Birchfield Road, Perry Barr	116	20		Wimpey	1965	1967	2002	Wiggin Tower, site undeveloped
Colette House	Ladywood,	59	8			1957	1959		replaced with low rise development
Comet House	Castle Vale	42	13		Bryant	1964	1966	2000	
Compton House	Meadway		8	Wimpey No fines	Wimpey	1955	1959	2008	
Concorde Tower	Castle Vale	116	20	Bison	Stubbings	1966	1968	2000	
Conway House	Frankley Lane, Bartley Green	34	9		DL	1964		2002	Radnor and Beaumaris
Cornwall Tower	Boulton complex, Heaton Street		18				1970	2014	Modern standards, uneconomical to maintain par to f 8 tower block demolition
Cosford Tower	Castle Vale Centre 8		16		Bryant	1964	1967	1997	
Cotswold House	Moundsley Green, Warstock	32	8		Morriss and Jacombs	1956	1959	2002	structurally unsound, one of five blocks
Cranwell Tower	Castle Vale, Centre 8	92	16		Bryant	1964	1966	1997	police station on ground floor
Culworth Tower	Staple Lodge	34	6	Y shape brick	Wates	1954	1955		replaced with low rise development
David Cox Tower	Long Nuke Rd, Bartley Green	36	9	British Lift Slab/Sheppard Fidler		1959	1960		replace with low rise development
Desborough House	Moundsley Green	32	8		Morriss and Jacombs	1956	1959	2003	structurally unsound
Devon House	Egghill Estate	36	9		Wates	1960	1962	2000/1	Clovelly and Exeter House
Donnington House	Meadway Estate		8	Wimpey No fines	Wimpey	1955	1959	2008	
Dorset Tower	Boulton complex, Soho	106 (36 on	18	Large Panel			1971	2009	sold for Tesco store
Douglas House	Hodge Hill Firs Estate	32	8	Truscon	Stubbings	1957	1958	2002	Spruce, Lebanon, Oregon, Sylvester, unable to let due to flooding caused by high water table
Dovedale House	Jiggins Lane, Bartley Green	35	6	Y shape	Wates		1955		replace with semi detached houses
Dovercourt House	Lee Bank	32	6	Sheppard Fidler	DL	1958	1960		Ingleton House also JR Sheridan Sheddon and JA Maudsley?
Dunchurch House	St Lukes, Highgate	50	13		DL	168	1969	2010	
Earlswood House	St Lukes, Highgate	50	13	FRAM System	DL	1967	1970	2010	
Elizabeth Fry House	Ladywood	51	8		Wimpey	1957	1959		replaced with low rise development
Elm Tree House	Rupert St, Nechells	71	12		Wates	1959	1961	1990's	
Elmbridge House	Wychall Farm Estate	27	6			1955	1957	2000's	
Elmstead Tower	St Lukes, Highgate	36	9	Brick	Stubbings	1958	1960	2009	
Elsworth House	Wychall Farm Estate	48	8		Wates	1955	1957	2000's	replaced with low rise development
Ensign House	Castle Vale	50	13	Bison	Bryant	1965	1966	1996	
Evesham House	Kellett Rd, Nechells Green	30 maison	6	Sheppard Fidler/Sheridan Sheddon	Laings		1959	1990's	Strensham House
Exeter House	Egghill Estate	36	9		Wates	1960	1962	2000	Devon and Clovelly

Fairfax Court	Falcon Lodge	52						1990's	Wilmott Court
Farclose House	Woodview Estate	50	13		Bryant	1966	1967	2006/7	
Ferndale House	Jiggins Lane Estate, Bartley Green	35	6	Y shaped	Wates		1955	2000's	replaced with semi detached development
Firs House	Upper Firs, Hodge Hill	32	8	Truscon	Stubbings	1956	1957		structurally deficient
Fleetwood House	Shenley Fields	32	8		DL	1958	1959		
Flint Tower	Icknfield Port Rd, Lady wood	76	20	Bison	Bryant	1969	1971	2004	
Freemantle House	Kitsland Rd, Shard End		6	Long Y shape	Simms Sons and Cook	1955	1957		
Grantham House	Shenley Fields	32	8		DL	1958	1959		replaced with low rise development
Greenbank House	Rupert Street, Nechells	51	7		Laing	1958	1960	1990's	included and welfare centre
Haddon Tower	Lee Bank	116	20		Wimpey	1965	1967	6	
Hamilton House	Benmore Estate	40	11				1965	2003	
Hampden House	Castle Vale	42	13			1965	1967	1999	
Harlech Tower	Lyndhurst Estate, Erdington	91	16			1958	1960	2011	won civic award 1961, for architectural qualities, exposed concrete frame. Full height glass staircase, false upper level to hide laundry and detailing on exterior
Hawker House	Castle Vale	42	13			1965	1967	1999	
Hercules House	Castle Vale		13					2002	
Hereford House	Ladywood, Knollcroft		6	Deck access	Morriss and Jacombs	1957	1959		
Hermes House	Castle Vale	50	13	Bison	Bryant	1965	1966	1996	
Hollow House	Wychall Farm Estate	27	6		Wates	1955	1957	2000's	replaced with low rise development
Ingleton House	Lee Bank Estate	25	6	Sheppard Fidler	DL	1958	1960		Dovercourt House also JR Sheridan Sheddon, JA Maudsley?
James Watt Point	Holte and Priory Estate		12	Brick, y shape			1956	2001	1 of 3
Javelin House	Castle Vale	42	13		Bryant	1965	1967	1999	
John Ash House	Bell Barn Rd, Lea Bank Estate	24	6	Sheppard Fidler, Sheridan Sheddon, JA	DL		1959		
John Feeney Tower	Long Nuke Rd	36	9	British Lift Slab/Sheppard Fidler	Douglas	1959	1960		
Juniper House	Hodge Hill	32	8	Truscon	Stubbings	1956	1957		
Kemble Tower	Centre 8	92	16		Bryant	1964	1967	1997	
Kenchester House	Ladywood		6		Morriss and Jacombs	1957	1959	2002	
Kents House	Meadway		8	No fines	Wimpey	1955	1959	2008	inadequate for modern life
Kesterton Tower	Wyrley Birch Estate	93	16		Tersons	1962	1964	late 1990's	
Kestrel House	Castle Vale	42	13		Bryant	1965	1967	1999	
Kingstone House	Staple Lodge	34	6	Y shape block	Wates	1954	1955		low rise development
Kitwell House	Kitwell Farm	28	6		Stubbings	1952	1953		Southwell House
Lakehouse Court	Fosseway		13					2007	
Lamport House	Moundsley Green Estate	32	8		Morriss and Jacombs	1956	1959	2003	judged structurally unsound, one of five blocks all demolished
Lappath House	Athol Farm Estate	50	13	FRAM system	DL	1965	1969	2007	
Lapworth House	St Lukes, Highgate	50	13	FRAM system	DL	1967	1969	2010	
Larch House	Upper Firs, Hodge Hill	32	8	Truscon	Stubbings	1956	1957		structurally deficient
Lea House	Woodview Estate	50	13		Bryant	1966	1967		
Lebanon House	Firs Estate, Hodge Hill	32	8	Truscon	Stubbings	1957	1958	2002	damp and water table flooding
Longdale House	Jiggins Lane, Bartley Green	35	6	Y shape	Wates		1955	2000's	1 of 3
Longlands house	Beach Rd, Balsall Heath	32	8		Five Oaks	1958	1958		surface car park
Longleat Tower	Lee Bank	116	20		Wimpey	1967	1968	2000	
Lyneham Tower	Centre 8, Castle Vale	92	16		Bryant	1964	1967	1997	
Lysander House	Castle Vale	42	13		Bryant	1964	1966	2000	

Maitland House	Kitsland Rd, Shard End		6	Brick Y shape	Simms Sons & Cooke	1955	1957		
Malvern House	Rupert St Estate, Nechells	42	6		Laing	1958	1959	1990's	
Melbourne House	Kitsland Estate, Shard End		6	Brick Y shape	Simms Sons & Cooke	1955	1957		
Meteor House	Castle Vale,	50	13	Bison	Bryant	1965	1967	1996	
Moundsley House	Baverstock Estate	50	13	Bison	Bryant	1965	1966	2003	difficulty finding tenants
Murdoch Point	Holte and Priory, Nechells		12	Brick Y shape			1956	1990's	James Watt, Priestley and Boulton, demolished to make way for Star City Entertainment Complex
Naseby House	Moundsley Green, Warstock	32	8		Morriss and Jacombs	1956	1959	2003	structurally unsound
Near Oak House	Athol Farm, Bartley Green	50	13	FRAM system	DL	1965	1969	2007	
Newlands House	Rupert St, Nechells	42 maison	6		Laing	1958	1959	1990's	one of four
Nightingale House	Ladywood	36	6	slab block	Wimpey	1957	1959		replaced with low rise development
Normansell Tower	Waterworks St, Holte and Priory	106	18	Bison	Bryant	1970	1972	2012	poor appearance blamed for demolition, 240 tower blocks visible from M6, 80-100 on M5
Northfleet Tower	Egghill Estate	36	9		Wates	1958	1960	2002/3	1 of 4 Seaton, Pershore and Taunton
Northholt Tower	Castle Vale, Centre 8	92	16		Bryant	1964	1967	1996	
Oak Tree House	Kellett Rd Estate, Nechells Green	68	12		Wimpey	1961	1964	1990's	
Oakham House	Moundsley Green Estate	32	8		Morriss and Jacombs	1956	1959	2002	structurally unsound
Oakington House	Castle Vale, Watton Green	42	13		Stubbings	1965	1967	1999	
Offenham House	Kellett Rd Estate, Nechells Green	36 maison	6	Sheppard Fidler/Sheridan Sheddon	Laing		1959	mid 1990's	Wickham House
Ombersley House	Wychall Farm Estate	27	6		Wates	1955	1957	2000's	replaced with low rise development
Orchard Tower	Long Nuke Estate, Bartley Green	36	9	British Lift Slab/Sheppard Fidler	Douglas	1959	1960		replaced with low rise development
Oregon House	Firs Estate, Hodge Hill	32	8		Stubbings	1957	1958	2002	damp and water table flooding, Spruce, Lebanon, Douglas, Sylvester
Oscott Court	Fosseway Estate		12				1970	2007	
Oxford House	Turves Green	24	6		Deeley		1952		
Packwood House	Lee Bank Estate	46	12		Wimpey	1964	1965	2000's	
Padbury House	Ley Hill Estate		8	No fines Y shape block	Wimpey	1954	1957	2004	Bradwell, Saunderton, Appleton, Standlake, Windrush
Pembridge House	Staple Lodge Estate	34	6	Y shape block	Wates	1954	1955		replaced with low rise development
Pershore Tower	Egghill Estate	36	9		Wates	1958	1960	2003	Taunton, Seaton, Northfleet
Pine House	Upper Firs Estate, Hodge Hill	32	8	Truscon	Stubbings	1956	1957		structurally deficient
Pioneer House	Castle Vale	42	13		Bryant	1965	1967	1999	
Ploughfield House	Ladywood, Bellcroft		6	Deck access	Morriss and Jacombs	1957	1959		replaced with low rise development
Priestley Point	Holte and Priory Estate		12	Brick y shape			1956	2001	
Primrose Tower	Primrose Hill Estate, Kings Norton	91	16		Wimpey	1964	1966	2004	
Princethorpe Tower	Highgate, Conybere St	80	20	Bison	Bryant	1968	1970	2003	
Purley House	Bangham Pit Estate, Bartley Green	48	8	Y shape block	Wates	1955			defective under Housing Defects Act 1984
Quebec House	Benmore	40	11				1965	2003	demolished for student accomodation
Radnor House	Frankley Lane, Bartley Green	34	9		DL	1964		2002	Conway and Beaumaris
Redhill House	Bangham Pit Estate				Wates	1956			Sandhill, defective 1984 Act
Rednal House	Tinmeadow Close, Longbridge	68	12		Wimpey	1961	1963		

Sandfrod House	Staple Lodge Road	34	6	Y shape block	Wates	1954	1955		replaced with low rise
Sandhill House	Bangham Pit Estate		6		Wates	1956			Redhill, defective 1984 Act
Saunderton House	Ley Hill, Northfield		8	Y shape no fines block	Wimpey	1954	1957	2004	Bradwell, Padbury, Appleton, Standlake, Windrush
Sayer House	Pannel Croft Estate	50	13	Bison	Bryant	1966	1967	2001	
Seaton Tower	Lower Beeches Rd	36	9		Wates	1958	1960	2003	
Shawbury Tower	Centre 8 Castle Vale	92	16		Bryant	1964	1967	1997	
Shrawley Tower	Wychall Farm Estate	27	6		Wates	1955	1957	2000's	
Souters House	Athol Farm	50	13	FRAM system	DL	1965	1969	2007	
Southdown House	Rupert St Estate, Nechells	42 maisor	6		Laing	1958	1959	1990's	
Southwell House	Kitwell Farm	28	6		Stubbings	1952	1953		Kitwell
Spruce House	Firs Estate, Hodge Hill	32	8	Truscon	Stubbings	1957	1958	2002	damp, flooding
Standlake House	Ley Hill Farm Estate		8	Y shape no fines block	Wimpey	1954	1957	2004	
Stephenson Tower	New St Station	80	20		Bryant	1965	1967	2011/2	
Stoneycroft Tower	Bromford Bridge		20				1967	2011	Bayley Tower, evicted 2007, private purchase considered 2011
Strensham House	Kellett Rd Estate	27 maisor	6	Sheppard Fiddler/Sheridan Sheddon	Laing		1959	1990's	Evesham House identical, had been refurbished
Sycamore House	Rupert St Estate, Nechells	68	12		Wates	1962	1964	1990's	identical block Chestnut House
Sydney House	Kitsland Rd Estate, Shard End		6	brick Y shape/balconies		1955	1957		
Sylvester House	Firs Estate, Hodge Hill	32	8	Truscon	Stubbings	1957	1958	2002	damp, flooding
Taunton House	Lower Beeches Rd, Frankley	36	9		Wates	1958	1960	2003	Seaton, Pershore, Northfleet
Tenbury House	Lea Estate		9		DL	1963	1965		Bewdley House
Ternhill House	Castle Vale, Drem Croft	42	13		Stubbings	1965	1967	1999	
Trident House	Castle vale, Farnborough Rd	42	13			1965	1967	1999	
Tweed Tower	Birchfield Rd Estate, Castle Vale		16				1962	2010	1 of 3
Valiant House	Park Lane, Castle Vale	50	13	Bison	Bryant	1965	1967	1997	
Vanguard House	Castle Vale, Farnborough Rd	42	13			1964	1966	2000	
Vaughton House	Woodview Estate, Attwood Green	50	13		Bryant	1966	1967		
Viscount House	Castle Vale, Farnborough Rd	41	10		Bryant	1964	1965	2000	
Vulcan House	Castle Vale	42	13		Bryant	1965	1967	2002	provided temporary accommodation for 2 years for doctors and nurses from Heartland Hospital only 40 willing to occupy
Wellesbourne Tower	Hope St, Highgate	93	16		Tersons	1962	1965	2014	
White House	Pannel Croft, Newtown	50	13	Bison	Bryant	1966	1967	2001	
Wickham House	Kellett Rd, Nechells Green	36 maisor	6	Sheppard Fidler/ Sheridan Sheddon	Laing		1959	1990's	Offenham House identical
Wiggin Tower	Clifford Walk, Newtown	118	20	Bison	Bryant		1970	2002	Clyde Tower
Wilmott Court	Falcon Lodge, Sutton Coalfield	52					1965	1990's	
Windrush House	Ley Hill Farm		8	Y shape No fines	Wimpey	1954	1957	2004	one of six demolished on Estate
Woburn House	Woodview Estate	52	13		Bryant	1968	1969		

Sources: ukhousing.wikia.com (acc 6.2.17), towerblock.eca.ed.ac.uk (acc 6.2.17) and Birmingham City Council HBC Minutes.

Appendix F – Interview with AG Sheppard Fidler.

Interviewed in Surrey by Miles Glendinning and Stefan Muthesius, 28-10-87

Early career/Crawley:
I came back from Rome in 1936. My classical education in Rome was very important in my career. I changed the policy of what people did when they went there. First class 1930s architects: I knew Piacentini there. I then became architect of the Land Settlement Association. The chairman of Barclays Bank rang up. In the war, I was a Senior Technical Intelligence Officer of the Ministry – assessing bomb damage to see what was the most damaging way of bombing Germany. Prior to Crawley, I went to see the chairman of Barclays Bank and said, 'Where are we in the list of priorities?' and he said, 'We're at the bottom'. Housing and schools are at the top. Just then the New Towns programme was announced. I went to see Lord Reith (a gloomy chap - from Hemel Hempstead), Clough Williams-Ellis, and Sir Thomas Bennett. I took to him and he took to me immediately. He said, 'You can be the Chief Architect of Crawley'. I was keen on preservation of old streets there – I had an appreciation of the old, because I am a 'Roman', and of the new, because I'm of this age. Only a handful of people went back to London. [?] In Crawley, I was designing a town of 60,000 and then the Ministry says, 'Make it 100,000!' I would say, 'It'll be a brick town – it'll be a two or three storey town with many flats. Harlow: half of Harlow has fallen down. Milton Keynes is even worse: little houses strung together.

Did working in Crawley make you pro-cottages?
I don't think that's quite true. We were working to relatively low densities, following the Abercrombie plan. I had a relatively small team of hand-picked chaps, most people wanted to work for the New Town – I was a sort of father confessor to them. Instead of just building rows of houses, I went to the Scandinavian countries to see what they were doing, and they were either building three-storey things about half a mile long, gigantic things, or very attractive 6-8 storey blocks in rocky, pine clad sites. So the idea of mixing lower blocks and something taller to give a contrast was very much in my mind.

What were your general ideas about multi-storey blocks?
The fact that you built a tall block gave you more space on the ground, for grass and so on. That was very important in a city like Birmingham, where you had a lot of back-to-back houses, three storeys high, in blocks of four, with narrow passages. The densities were simply colossal. The people in Birmingham were dead set to get rid of this terrible blight, which came from the time when Birmingham was the 'workshop of the world'. The other important thing was that the government of the time gave a special subsidy for tall building.

Tell us about the special Birmingham subsidy – how did it happen?
We were building three storey maisonettes – to the committee, they didn't see this as very wonderful stuff. Having been told by me that if they built more tall building they could get more ground, when I told them that when the subsidy arrangements would prevent more than three storeys ….. There were the Duddeston Nechells towers, but they were the lumpiest things you'd ever seen – there was a staircase to almost every flat, so the means of escape provision was magnificent!

When I went to Birmingham, on the outskirts of the town they were using Wimpey and Wates's house designs – in 6 or 8 storey blocks – I built some of those in Crawley – they were very popular. In Birmingham, those things were going on like great guns, but there was very little architectural quality about them – a sort of pattern-book design.

When I went to Birmingham, you could have called it Wimpey Town or Wates Town. The Deputy City Engineer came into my office the very first day I arrived, shoved all these plans on my desk, and said, "Carry on with these!" I either had to let it run and hope to bring in changes - which is what I did - or go to the Council and say "Stop everything for two years while I change things!" Then I'd have been out, not them!' It was quite a shock to be confronted with all these things with which I disagreed – I wanted to have architect design.

By 1955, I was wanting to go higher, and when I explained to the House Building Committee that there was a subsidy limit, they said, 'We've got to change things!' So we had a small delegation, three or four people and me, and we went to see the Minister, Harold Macmillan, and said, 'Look, Minister, we're the City of Birmingham, we're not some tiddly little country town, we want these rules changed! And he did! I thought it was fabulous! It gave me, as an amateur in these financial matters, the feeling that a big city was a very strong force! Macmillan never specified anything about sites.

Manchester and Liverpool were very different to us. Manchester was a very backward place, very behind the times. They didn't do anything, just cleared sites – just like Liverpool – it was a desert, I've never seen anything like it. It was difficult clearing large areas, but they did nothing with them! I knew all those fellows, because I was Chairman of the Association of Architects. Bradbury, in Liverpool, was quite forceful.. He built multi-storeys en masse. The same thing was the hallmark of the Ackroydon estate (?) I didn't think that was the right sort of thing – people are made up of different-sized families, aren't they? I also knew Kenyon in Newcastle – his civic centre there was very good, though a bit dated, Swedish-style.

In Birmingham, Macey was a very good housing manager – he very much supported my idea of having a mixture of accommodation more suited to the needs of the people who were to go into them. But the Deputy City Engineer was letting contracts as fast as he could go, didn't know what he was doing, just putting up as many Wimpey Y shaped blocks as he could! This rather shattered me, because we'd had very careful schemes prepared at Crawley, with very great interest on the part of the Development Corporation, whereas in Birmingham the House Building Committee could hardly care about the design as long as the numbers were kept up - I'd been used to gentle Southern people! But I couldn't have a 'D-Day' and say, 'No more Wimpeys, no more Wates, no more Laing!'

And in order to get time to build up a department and get a team of good designers, we used private architects for a bit. Except that I was a bit shattered by Sam Cooke's mountainous things [Duddeston-Nechells] – he did about 6 or 8 of them – I didn't like them personally – they didn't look very happy! There were already private architects being used in Birmingham, so I decided to spread the work, while I built up a good department. While I was there, 40% of all housing work went to the private architects – it meant a lot of work for me, because I had to vet them – we picked good architects like Madin, Multon. It was about a partnership. In Elizabeth Layton's book, there's a lot about Birmingham in there.

What I found very strange about Birmingham was that it was the last major city to have no City Architect. The Town Clerk had persuaded them they needed a City Architect – which threw the private architects in a tizz. But the City Council took no damn notice of me at all! Birmingham were an engineering city and felt they didn't need a City Architect. It was funny to find I wasn't really wanted –I thought "What the hell am I doing here?" It was the Town Clerk and myself versus the rest - and then when the Town Clerk suddenly committed suicide, that wasn't much help!!'

But the HBC were very willing to go along with me in experiments. If I persuaded them to deal with an experimental building, like the Lift Slab system, and said, 'Let's do half a dozen,' they never disagreed.

I got a very good architect called Griffiths from Coventry – a very good chap, excellent – he became Chief Housing Architect, and eventually went on to be chief architect at Telford, then Southwark. He knew how to tame the builders. Griffiths, backed by me, kept Wimpeys and Laing going, but they'd modified their attitude to design. They weren't just slamming in Model 3B, they were prepared to let the architect do the design, and fit the system to it. Whereas in Glasgow, Wimpeys weren't prepared to modify their system – their standard blocks, I used to call them 'mud pies'.

There were three elements to my policy in Birmingham. First, good private architects working in collaboration. Second, my own department, which I thought was very good. Third, modifications of prefabricated things, and supporting experiments. I thought maisonettes were a very good idea, but we never went flat out for any of those things.

In Aston [Duddeston], there were already those great big things, and I put these three storey blocks against them.

Then Bryants came in. Chamberlain Gardens – that was a very nice one, I thought.
At Duddeston-Nechells, everyone gets their own staircase, which I thought was terribly wasteful. Alongside these damn great things, I put some lower blocks.

Leonard Multon & Partners – he helped quite a lot. Lee Bank – that looks quite good.
Long Nuke Road – that was the first time that the Lift Slab system had ever been done.
Lyndhurst: we had a number of tall blocks, but mixed with these shorter fellows. The other thing I did – it seemed to me that the real landscaping of sites was very important indeed – was that I was the first City Architect to have landscape architect, Miss Mitchell – she was very good – I had a hell of a time explaining to the Committee why I required such an unusual being... that what we wanted was a landscape designer and not a "Parks Department person"! She was very good interested in children's playgrounds and ground-levelling.

At Tile Cross, there were six of these Y shaped things – very little architectural quality about them, but they're still there, they don't leak, and they haven't fallen down – that's quite a help!

I wasn't officially in charge of housing design for the first six months after I arrived – Manzoni got all the damn credit for everything we did!

At Ward End, there were three more of these damn Y blocks. They were just monotonous blocks, just on the edge of the city, chewing up nice countryside.

I could see that, within a short period of time, we were going to run out of land – we couldn't keep up these numbers – I'd have about 200 projects going on at once. There was the central area stuff, and there were miles and miles of semi-detached houses. Those sites weren't available! I tried to get the Committee once to take down an area of semi-detached houses, in the Erdington area - the famous 12-to-the-acre houses - and build up the density, in the modern idiom, with some tall blocks mixed with lower blocks, but they wouldn't wear it.

Eventually they were getting really desperate for land and it seemed the only hope was going outside the city. Warwickshire said, 'We don't want you,' whereas Staffordshire and Worcestershire were sympathetic. The Woodgate Valley was sacrosanct. Manzoni was very much against it. Castle Vale – he was very much against that.

I either had to go to the City Council and say, 'You're doing the wrong damn thing – you're fogeys!' I couldn't do that! There weren't flags flying all round the city when they appointed a City Architect – it had to be done by stealth.

The Deputy City Engineer was letting contracts to Wimpeys faster than speed! Didn't know what he was doing, just letting contracts, putting up as many Wimpey Y blocks as he could. Bath Row was a 'pure Wimp' – the Queen Mother came along to open them and the blasted lift stuck!

What an uphill fight I had, to establish the need for the City Architect – I even had a period of probation – not many architects would stand for that!

Birmingham was virtually all built-up when I got there – they'd built more 12-to-the-acre housing than anyone else. There was no open land inside their boundaries, except precious pieces of land they wouldn't touch, like Woodgate Valley, and large pieces belonging to the Bournville Village Trust – that was holy ground. An example of what happened as a result was Lyndhurst – these were designed, not taken off a catalogue. But as soon as the rest of the city knew that the HBC were thinking of buying that land, the Post Office and the schools people said, we want a chunk, everyone wanted to get in there. The result was as if you'd had just one tower block. Everyone was very happy with matters as they were. The Public Works Committee was largely made up of building contractors who thought it was a great idea. What surprised me very much was that having discovered an advert for the City Architect in Birmingham – the last great city to appoint an official to deal with their architectural matters – I found that there was very little interest in all this. Wooing these people [councillors etc]…. I always got on with them very well indeed. It was my personal quality – nothing to do with them – it was my way of handling committees. For example, we had elections – with new members – I thought housing was important, and I said to the committee at the first meeting, when the new people were there, if any of the new people would like to come to the office and see what I was doing, they'd be very welcome. None of them ever did! The chairmen of the HBC were dominant, but not….. Bond was quite a young fellow, seemed all right. Harry Watton was leader of the Labour Group – they didn't take an interest in architecture.

The caucus system operated quite strongly in a place like Birmingham. I found that out when I introduced certain schemes. They'd very much made up their mind.

One of the reasons I left was due to the rise of Bryant. I left largely due to them starting to dictate what and where I could build. When I went there, you could have called it Wimpey Town or Wates Town or Laing Town. They were using the standard block 'BQ'. We couldn't go to them and say, 'Stop all this!' I had to devise ways of dealing with the situation, by altering designs as far as we could, until we could make our own designs. Eventually we got things in order. The HBC were very happy with the status quo because, of course, damn great numbers of houses were being produced: the Deputy City Engineer handed the plans over to me the very first day I arrived – he said, 'There you are!' Life went along in the usual way. Some of the Tory chiefs thought that the City Architect should be a sort of professional god over what was going on, and not do anything himself – like the LCC Architect. I asked Leslie Martin and he

said, ‘I only sign five letters a day’, and said ‘I only design one scheme at a time’. He said ‘They’re one in a thousand – the rest are rubbish!’

In general I was perfectly happy with the councillors, with Bond and the others. But one day Chris Bryant took Harry Watton out for lunch - it must have been a marvellous lunch! - and Watton came back and said, "Bryants have the most marvellous type which they can put up in a few weeks - can you please find half a dozen sites where we can put them up straight away." I thought this was a funny way of proceeding with design, choosing sites and so on. Then Bryant said, "We'll take the Committee to see a block at Kidderminster." But in order to get to the block we passed through a marquee which was rolling in whisky, brandy and so on, so by the time they got to the block they thought it was marvellous - they wanted to change over the whole programme! I said, ‘I’ve had enough!’ - and I resigned.

Then they did a very foolish thing - they asked Sheridan Shedden to come back from Leeds. He’d had one lung removed! I told the appointment committee and they said, ‘It’s very kind of you to tell us, but it’s none of your damn business - goodbye!’ He had all this bashing around with Bryants and that finished him. Then there was Maudsley – geisha girls in Japan and so forth!

At Roehampton, the first scheme I thought was very good. The reason this was coming about was my interest in landscape architecture. Having point blocks meant that you had more ground. I was able to convert all my staff over to my thinking – it was a case of slowly slowly catchee monkey!

In the inner areas, they were absolute devils. You couldn’t make a park there. Lee Bank was the hope, but they’d already covered that with Wimpey’s Y shaped blocks.

Were point blocks an ‘easy’ way to develop difficult sites? I don’t think that ever quite came about. We’d get a piece of land with 10 acres here – we’d always in the end get a reasonable amount of land to play with – we never just slotted them in. Partly this was due to having the five redevelopment areas. When I started, the first thing I could see was these damn great blocks in Duddeston-Nechells and nothing all around them.

At Liverpool, I think Bradbury wasted time – he tried to get Camus there. I couldn’t get the committee to go for the Camus system – I was looking for a system you could mould, could design.

Regarding Wimpey, Griffiths used to say, 'I'll design it, and you can Wimpify it!'

At Chelmsley Wood, I had a great battle with the new City Engineer, Neville Borg. The Public Works Committee was a very powerful committee, the House Building Committee not so powerful, but we thought: "This is where we dig our heels in!" The City Engineer said, "We'll do the layout and you can fit the houses in." We said, "You damned well won't, you know - we'll design the area and you'll put in the drains!" - and we won! Griffiths largely did that.

I used to shudder every time a damn good advertisement appeared in the Architects Journal, because if they were asked ‘Have you got any multi-storey experience, have you got any redevelopment experience?’ of course they had – and they’d get the job!

I was surprised when Harold Buteux went to the Scottish Special Housing Association, though, because I thought that was rather a tough job.

Buteux would say, 'Will you agree to use the Wimpey system?' I had to still use these contractors, otherwise the numbers would have dropped out of the bottom of the can. I couldn't afford to throw them away. Bryant - would have been all right if he'd come to me and worked with me. But he didn't, he went round the back to the Chairman. Morriss & Jacombs and Stubbings, on the other hand, they couldn't cope with the multi-storeys.

Among the large contractors, Wimpey and Wates and these people had a wonderful sales department – when I went there Wimpey and Wates and all these people were delighted to see me – they said, 'Come out for lunch', and I said, 'No, I can't'.

I'm very conscious of landscaping – I do my own garden, ever since my wife died.

Pros and cons of high flats?
In Scandinavia, I thought point blocks looked very attractive. I forget who it was that said, 'Man is not happy to live above the treetops'. I thought, 'Damn it – that limits me!' So I never went for 20 storey blocks. I kept away from the sort of thing they were doing in Glasgow – I didn't like them, I didn't think that was very successful. I was against deck-access flats: I was interested in the thoughts of the Housing Manager, who was a first-class fellow. I used to listen to him – he was a very sensitive, nice chap. Birmingham people, so everybody in Birmingham says, are not flat-minded; but they had to become flat-minded to a certain extent. If you've got very young children, it's difficult 25 storeys up.

The City Architect's job is interesting because it covers every damn thing within the city. The Deputy City Architect (R Ash) became the County Architect of Surrey. I said to him, 'That's virtual retirement – there's no housing there!' Housing was the top thing.

There was a funny situation. Within the City of Birmingham, the last big city to appoint a city architect, decided to do so, I was a happy chap designing a lovely New Town at Crawley. But here was a great city, at last deciding to have a City Architect. I thought – here's a thing – I'd love to do it! But when I was appointed, although I was doing all this damn work, Manzoni was still in charge for over a year. The Education Department had a complete section designing schools, headed by Steele – a bull-headed chap, absolutely awful, spent absolutely all his time playing golf. I said, 'This can't go on!' When Steele went, Sheridan Shedden took over schools. Then I took over the schools. Sheridan Shedden was a damn good chap, but he'd lost a lung, damn it!

Manzoni was a very proud man, but a very nice chap – a real, dyed-in-the-wool engineer. He said to me, 'You run your thing, I'll run mine, and we'll never fight! He wanted to do all the roads – pick the sites, put the roads down for the houses to go round – culs de sac and so on, still very old-fashioned. About the City Centre and Ring Rosd, I said to Manzoni, 'This is a bloody awful thing, you're putting a noose round the city, why don't you spread it out?' He said, 'Look, it took me six years to get this through Parliament, and it can't be changed!'

I inherited the densities from my professor, Abercrombie. He forced them through the Public Works Committee.

Later on - the PWC was very powerful and the HBC less so - at Chelmsley Wood we thought that this was where we would dig our heels in against the engineers.

Stevenson was a lame man, he didn't exist as far as we were concerned. No idea about 'design' – they wouldn't have known what I was talking about! There was a complete change on the council when I arrived – a brand-new Labour committee. Bradbeer: it was difficult to tell what his attitudes were. He certainly was not very keen on the Camus business. He was an 'honest Christian' – didn't like main contractors doing things. He never rang me up, never came to see me. He never did his homework. That coloured my view of local government – the biggest damn swiz – get rid of them!

Councillors were not interested in design – never – they didn't quarrel with me and I didn't with them. The only thing that went wrong was that Watton had a drink with Bryant, and they started to give me orders to build Bison blocks. At the Kidderminster visit, we not only passed through the marquee on the way in but on the way out too! I've never seen people in such a state as that committee, drunk as you like – it was a rough ride back!

The Direct Labour Organisation worked on repairs, and Macey also had his own repair department.

Outside influences on you?
I liked the LCC Ackroydon estate, I always thought that was very nice.
Park Hill I thought was dreadful! Womersley was a very tough sort of man, a toughie, a Yorkshireman, he has no soul – he saw it just as a problem architecturally, whereas I start with what kind of people are going to live there, what do they want? They'd think: 'I'd like to live in a nice place, I get to know the neighbours, but don't get too close with them.

Relations with adjacent authorities?
Birmingham took the lead. Manzoni, who was descended from Alessandro Manzoni, had never been to Italy, I said, 'You ought to go!' He got as far as Naples, and was very ill!
When I asked him about Smethwick, Wolverhampton and those places, he said, 'I've never been there – I haven't bothered'. I didn't keep in touch with Smethwick.

The Camus episode:
The HBC didn't think a French-engineered thing was quite the thing for England. Camus had a high quality factory – I was attracted to the scientific idea of it – it wasn't because Messieur Camus took me out to lunch!. Wimpey hasn't got any of that delicate engineering – it's rough stuff. Camus had doors and windows built into them. [problems of Camus in Liverpool] Very few things are completely successful in Liverpool – they have a tremendous vandalism problem.

MISCELLANEOUS END-OF-INTERVIEW REMARKS:

I did the town planning for Crawley and Telford – we never had arguments with the engineers until we had Chelmsley Wood. Most of the sites in Birmingham were 10 acres, 15 acres, already serviced with roads and sewers.

Purdew was already over there when we went – a really good control – from Birmingham.

That's what narked me in Birmingham – to be a qualified planner, and Manzoni was only an engineer – he was a very political man.

Norwich was a city without [housing] problems.

Swansea was always in a mess – they haven't got a powerful architect or anyone to take charge – Cardiff was a bit better.

I was very patient in Birmingham. There were many things I'd have liked to get my hands on.

Birmingham is a high and windy city – good for planting and shrubbery – ask Mary Mitchell! Bellahøj was very good – I went there in 1950 – the planting was OK – they've been doing it for longer.

My favourite Birmingham estate is Metchley Grange – I started it. The siting of buildings – space between – with a pond – I like to see water around.

My deputy, Ash, was in Newcastle, then was my deputy in Birmingham. Kenyon was a bit mad, a bit batty!

APPENDIX 1:
EXTRACTS FROM LETTERS FROM AG SHEPPARD FIDLER TO M GLENDINNING, 22-7-88 and 30-7-88

CONTRACTOR-DESIGNED BUILDING

Wimpey certainly were using industrialised construction as early as the very late 1940s, for, when I went to Birmingham as the first City Architect in May 1952, I found that the large housing effort was under the control of the Deputy City Engineer (who happily and to his great relief passed the whole programme – over 3000 a year I believe – over to me during my first day!), and that Wimpey were busy putting up Y shaped blocks in various parts of the city (some in cleared central areas) – mostly on land unbuilt on within the outer suburbs. Laing and Wates were also busy I believe, but at that time with four-storey blocks. I was, of course, dismayed by this state of affairs as there was no 'planning' in relation to all this activity and I had to let it go (imagine my dilemma – I couldn't cay to the HBC, "Stop it, I want to get off", and wreck the production of 3,000 dwellings a year, of which they were very proud. So I set about designing schemes of mixed development and modified the details of the Laing, Wates, Wimpey designs as far as possible (I recruited a good architect from Coventry to help in this tricky work) and designed new layouts to accommodate them.

LANDSCAPE ARCHITECTURE

In the landscaping of our developments, a professional element was involved, with a proper design element – not just planting, trees, bushes and flowers (municipal park). I was the first local authority architect to recruit a real landscape architect (Miss Mary Mitchell). I had great difficulty explaining to the House Building Committee in Birmingham why I required such (to them) an unusual being. They felt that all I needed was someone from the Parks Department. But I had my way, and most architectural offices followed by having landscape architects – most essential to housing layout.

PACKAGE DEAL BUILDING

A very strong influence was played by the persistence and salesmanship of housing contractors in persuading council members (and some architects) to buy blocks of flats, tall and small, from their 'pattern books'. Who can blame them? They made the most of their opportunity – houses and flats were needed, and 'we can provide them!' I suppose that this effort was a foretaste of Thatcherism – it certainly worked. But their efforts must have retarded the advance of good planning and design of council housing – certainly it was so at that time.

COMMENTS ON BIRMINGHAM CHAPTER IN PATRICK DUNLEAVY'S 'THE POLITICS OF MASS HOUSING IN BRITAIN' (1981)

Prior to May 1952, when I went to Birmingham, The House Building Committee under Sir Charles Burman had let a great many contracts – for houses, three-storey flats and flats of 6-8 storeys. For 1952 the housing output was 4800. After this a decline took place which was not reversed until 1966. After a very short time, a few weeks I think – having reviewed the general situation I made a report to the HBC reviewing the programme and pointing out that sites within the city were being rapidly built up and the clearance of sites in the Redevelopment areas could not possibly make a large contribution as this programme was behind schedule. I wish that Patrick Dunleavy, in his 1981 book (see e.g. p.261), had found and mentioned this report, as it gives the key to much that occurred subsequently: I was pointing out that the number of completions was bound to fall unless we found land. The HBC took little notice of this situation! It is true that blocks of flats were built in the suburbs, but not tall blocks on medium size sites. I was introducing new designs for houses and flats as fast as I could, but I had to keep the wheels turning and accept Wimpey blocks etc., against my design judgement.

As far as the Camus story is concerned, I had taken a great interest in industrialised building and as the Chairman of the City and Borough Architects Committee had been able to confer unofficially with city and borough architects and collect their ideas. After much study I came to the conclusion that the Camus system was the best and offered great benefits – especially as it lent itself to adaptation of design, and a good architect could influence the structure of blocks (and houses) without much difficulty. Dunleavy (p.273 et seq.) goes into great detail about the many meetings which took place, and our visit to Paris, etc. It was naturally a disappointment to me when the HBC did not accept the scheme, although I had support from the Housing Manager and some committee members. I honestly think that some Aldermen and Councillors thought I was going to import hundreds of Frenchmen into Birmingham, which would not do at all!

The sad story of bribery and corruption is very well and fully set out in Dunleavy's book (this happened after I had left the city in early 1964 – though I was at the infamous visit to Kidderminster (p.285), which is covered in Dunleavy's description – although he omitted to mention that after leaving Kidderminster the coach called at various hostelries on the way to the Civic Centre. What a day! I can't forget it even now!

Alderman Watton's observations on my decision to leave my interesting and prestigious post of City Architect are too succinct. My reasons were many but it is certainly true to say that the decision stemming from the Kidderminster visit and the gathering storm of Bryant's influence did not help. I was patient and tolerant and under tremendous pressure – perhaps not fully appreciated as I was responsible for civic buildings, police buildings, schools and colleges etc etc. I gently told Watton that it would be unwise to appoint Sheridan Shedden as my successor as he (SS) only had one kidney and was an ill man. He (Watton) told me to 'mind my

own business', and, as you know, Ron S.S. (of whom I was fond) virtually collapsed under the strain, and died in a very short time. Please forgive my bad writing, and I hope my observations are of some interest, but naturally after more than thirty years and as an observer of reports, etc., my memory of certain issues is not as clear as I would hope. I was happy in Birmingham but, looking back, I was happy to avoid the deluge – though I could see the storm gathering.

Appendix G – Interview with Harry Noble.

(Interviewed by author, 04/07/17 in Coventry)

Harry Noble was Chief Architect at Coventry was an Assistant City Architect in Birmingham under Maudsley. He was the youngest architect to gain RIBA qualification and his career embraced a number of roles in public practice. He later trained as a town planner in order 'to become a better architect' and was closely involved in new town development and expansion (Skelmersdale and Droitwich)..

1/ Can you explain how you came to study architecture and describe your route into the profession?
At school I was good at drawing and having gained good grades and School Certificate I was able to progress quickly and was attracted by a vacancy as an Articled Pupil with Lunn & Lunn in Huddersfield. After 3-4 weeks I realised this role was just cheap labour so Professor Norman Culley convinced me to transfer to the School of Architecture where I trained qfrom 1950. My first job was in Private Practice doing Building Society Valuations but I left to take up role in Barnsley that offered more variety.

2/ Where did you train and what were the prevalent architectural theories/influences during your training?
Trained at School of Architecture in Leeds where we were encouraged to study latest movements and travel widely which I did. One of first trips was to Unite and that set me against high rise.

3/ Did you travel abroad to study architectural styles?
We were encouraged to travel and I recall going to Marseilles to view Unite which didn't impress me. Even at this time it was difficult to find people willing to live there and it seemed to be populated entirely by Algerian immigrants. I was more impressed with Scandinavia and travelled extensively to Sweden, Norway. The Swedish Empiricism impressed me more because of its use of local materials, brick and tile. Russia made little impact on architectural influence as classicism seemed dated.

4/ What was the thinking around Private v. Public practice for graduating architectural students?
Public practice seemed to offer more opportunity, my experience of private practice centred on pretty mundane tasks whereas public practice offered more in the way of experience.

5/ Did the range of work/opportunity presented by Public practice influence students at the time, to what extent was the motivation to work in Public space a political one?
It's fair to say that upon graduating most architects of this period had something of a social conscience and I was certainly more left wing (my sister was a communist) so the attraction of public practice offered more to assuage my social conscience as well as expose me to a greater variety of work.

6/ Can you describe your development as an architect in Public practice, eg supervision, range of work, responsibility?
I deliberately chose to work in smaller councils such as Barnsley, Wakefield and Dewsbury where I would be working under a Borough Engineer as very few councils at the time had a dedicated Architects department. The work was very varied and you got the opportunity to work on schools, housing, health centres, libraries and even public toilets.

7/ How do you think work in private v. public practice differed at this time?
You certainly got the opportunity to work on a wider range of projects as there were fewer people in the department so there wasn't the specialism and you even got to do jobs such as Quantity Surveying which extended your experience.

8/ To what extent were you aware of an overarching political vision to the work you were engaged in?
Architects of this period shared a social conscience so we felt we were making our contribution to the formation of a 'Brave New World' but as far as interaction with politicians this was minimal. In local govt politics only appeared when the press were present or at election time, otherwise it was business as usual and you had relative freedom to get on with the job. We tended to share a longer term vision of what we were trying to achieve whereas the politicians were governed by re-election.

9/ What level of interaction did you have with politicians and citizens?
If you did your job and learnt how to handle the politicians in council meetings you were largely left alone. Central Government had more control as they decided strategy and were responsible for allocations and subsidy so they made greater impact plus they needed regular reports. We were encouraged to talk to tenants to gauge what they thought of homes and we found that many didn't like upheaval of moving away from their communities and support structures. In Birmingham tenant interaction was hands on as there were so many handovers each week it fell to us to liaise with builders and introduce tenants to homes and handle hand over. I would get called on a Saturday when a tenant couldn't switch their heating on so we always had a good idea what tenants wanted.

10/ How did the local authority work with architects in private practice?
It tended to be that the Private Architects got the good jobs and we did the day to day stuff. The difference was they could design to a standard and we had to design down to a price which invariably was too low so we had to make compromises that didn't make long term sense. Only when we were allowed to apply 'cost in use' were we able to justify increased expenditure due to long term savings.

11/ Were you aware of a difference in approach (motivations/ideals) between architects in private v. public practice ie RIBA described the Public architect as the administrator and the Private architect as the aesthete, to what extent is this a fair description?
We were aware of this and to a certain extent accepted our jobs were different in as much as budgets were always constrained and we didn't have complete freedom as everything was centrally ordered (allocations and subsidies) and we were required to complete reports and submit monthly.

12/ Academics have suggested that Public architects were compromised by their political masters with the suggestion that this in turn resulted in a different type of professional in public practice. To what extent do you believe this is fair?
Public architects were more controlled by Central Government policy about what you could build and what the budget was, outside this we had a level of freedom to experiment and define what we built. We were responsible for some very large projects though, in Birmingham it was common to be involved in projects for 1,000 homes at a time.

13/ What was your view of first non-traditional construction and later systems build or industrialised building?

There was clearly both a labour and materials shortage added to which we were told that we had to achieve a certain percentage of system or IB. I never got involved with High Rise because I was never convinced by it but I did trial non trad systems using timber frames in particular which was very effective and this continued with the Midlands Housing Consortium. The difficulty though was achieving the projected cost savings, in my experience these systems were always more expensive.

14/ Glendinning suggests there was no such thing as System build because public architects modified designs to suit their own purposes, is this your experience? To what extent was customisation of designs available and promoted?
We worked with contractors to design housing but my limited involvement with System build suggests it was all 'off the shelf', certainly in Birmingham.

15/ What was your experience of high rise and the role it could play in housing provision in the 1960's, what if any criticisms would you levy relating to its implementation and management?
I was never convinced about high rise and felt that it was possible to achieve similar densities with low rise housing. I achieved this at Area 3 at Chelmsley Wood by adopting a 16 foot frontage to housing instead of more normal 24ft. We built that with Wimpey and won a Gold Medal for it but not before Maudsley had dumped a number of high rise blocks on the perimeter because he was getting kick-backs from Bryants. (They had set up a factory and needed constant orders to keep it busy and break-even which resulted in them promoting it and Maudsley taking advantage. That said BCC were never worse off because Bryants invariably ran at a loss on these projects because BCC always beat them down on price). Whenever high rise was mentioned wherever I worked people justified it by explaining the need for a new development to be 'punctuated by high blocks', there was also the need for something monumental and certain politicians had a particular zeal to see high rise included in their projects which I resisted.

16/ Ronan Point signalled the demise of high rise, what was your experience of quality control and standards of construction at this time?
For us Ronan Point pretty much signalled the end of high rise and we didn't engage in new orders after that. I was not directly involved with high rise but I recall the major issue with System build of any type using concrete large panels was condensation. The same issues were the case with Wimpey No-fines and this was only solved when we started insulating interiors.

17/ Do you believe that experience of system build can inform current building strategies and it has a place in solving the housing deficit problem?
System build was an initiative born out of housing shortage linked to labour and material shortages. We certainly don't have the labour force today capable of building traditional homes so systems build has to be the way forward although I can't see large panel concrete making a comeback instead light panels using aluminium, timber and plastics will replace them. There is a Chinese factory doing this now in England.

18/ What is your feeling about the appreciation and conservation of C20th building particularly the products of the local authority architect?
Concrete buildings have not faired well, Corbusier has a lot to answer for although I never recognised him as an architect. We were tasked with building down to a price so that always limited our ability to produce top class architecture. I was latterly involved in the 'rehabilitation' of Victorian terraces and felt that provided something that tenants really wanted. For the 50th Anniversary of the RTBI I wrote a piece on Social Housing where I said we had let down a generation.

19/ What do you think we can learn from this period particularly related to social housing provision.
System build and prefabrication must be a lesson for us and it seems this is the only option to solve the housing problem.

20/ Would you say your opinion of high rise has changed?
I was never an advocate of high rise and in my career I never implemented a single block, I was more convinced that you could achieve comparable densities with housing. I always thought that tenants perceptions of what they received was based upon where they came from.

Over a period of some 2.5 hours Harry openly discussed his time at Birmingham having been poached from his previous job to join the Architects Department. They even invented a new job title for him of 'Master Architect' that would allow him to get the doubling of his salary offered to him. He later became one of a number of Assistant City Architects in Birmingham working under Maudsley who fired him twice but couldn't get rid of him. Harry was scathing about Maudsley's corruption which was plain to see to everyone in the department and who knew of the kick-backs he received from Bryants, the job his daughter enjoyed, his house and mistress in Ireland, all financed by Bryants and the money he got from the British Gas to specify gas central heating in new council homes.
Harry described Maudsley as a 'bully' with a temper who would stop at nothing to get his way. The result was that few people resisted him and he was feared by his staff which probably explains their motivation to achieve. Harry does believe though that there was a good team at Birmingham who worked hard and delivered. This differed from his experience elsewhere where local authority architects departments were characterised by 'capable but idle staff' where 'time was not of the essence'. That said Birmingham tended to pay at least a third more than anyone else in this period and in Harrys case double what he was getting before. When asked about his major achievements he believes getting the NEC to Birmingham, the regeneration of the Birmingham Canal System and his work on rehabilitating Victorian terraces as a means of providing tenants with what they wanted stand amongst his four Gold Medals.

When presenting his Canal regeneration project to Maudsley he was told it needed a slogan. He came up with the statement that 'Birmingham had more miles of canals than Venice'. At the time he wasn't sure whether this was true and was gratified to learn after his statement had become folklore that it was, after verification by the Birmingham Mail.

Appendix H – Short interview with Joe Holyoak.

(Interviewed by author, 11/07/17 in Birmingham)

Joe Holyoak was a newly qualified architect working under JA Maudsley towards the end of his tenure as City Architect. A brief conversation was undertaken on 11/07/17 at Birmingham Central Library, primarily to follow up some of the comments made by Harry Noble.

1/ *As a newly qualified architect working in the Architects Department under Maudsley was there a defined architectural style imposed by the City Architect?*
If there was it certainly wasn't communicated to the staff, you got the impression that any style that emerged was strictly down to the architects involved in developing the plans and any particular style that emerged originated from the senior architects involved in the design. Input tended to be limited to external treatments and layout anyway as so much development featured standard contractor packages.

2/ *You were employed at the time when revelations emerged about corruption within the Architects Department. How apparent was it that something questionable was going on?*
It was an open secret within the department that Maudsley was closer than he should have been to both Sharp and Ebury and Bryants. That is was so apparent within the department made it difficult to believe that suspicions weren't also held elsewhere within the Council but it appeared that so long as production numbers were achieved the Council were content to turn a blind eye. You could hardly miss the evidence that Maudsley and Sharp and Ebury were close, Maudsley drove and identical Mercedes to James Sharp and the vehicles had consecutive registration numbers and were commonly parked next to each other in the car park.

3/ *Was there ever any suggestion that the corruption went further than Maudsley?*
No, there was never any suggestion of impropriety by either other members of staff or the elected officials. Councillors may have enjoyed hospitality from contracting companies but this was considered acceptable and above board. Nobody within the Housing Committees was ever implicated in the corruption.

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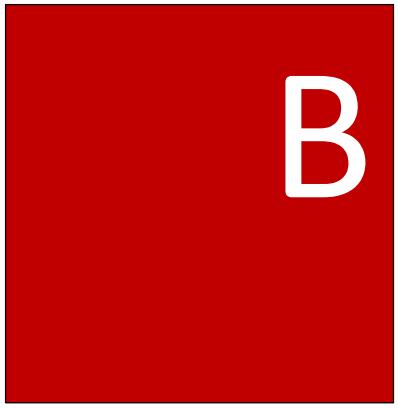

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