June 2010

Plymouth Civic Centre

Feasibility Study

Final Report June 2010

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ENGLISH HERITAGE

Contents

1 Introduction

1.1 Overview

This study has been prepared by Avanti Architects with the support of a team of sub-consultants including Scott Wilson (Structure), Skelly & Couch (Services), Knight Frank (Property Consultants). It was initiated in the summer of 2009, following discussion between Plymouth City Council and English Heritage arising out of the consideration of the future of the Civic Centre in the light of its statutory designation in 2007.

It comes at a pivotal moment in the story of the Civic Centre, which was conceived as the centerpiece of the Abercrombie Plan that gave Plymouth its essential post-war form. Originally celebrated as a signature building of Plymouth, the Civic Centre has more recently attracted more negative perceptions, and its listing in 2007 was the subject of considerable local controversy.

The recognition of early post-war buildings as 'heritage' is still a difficult issue both in public perception and professional discourse, particularly where varying opinions on a building's architectural merits are compounded by problems of disrepair and maintenance cost. It is sometimes assumed that the only response is to demolish and redevelop, but in circumstances where the property is statutorily protected and represents a substantial asset in terms of embodied energy the issues are more complex.

It is also often (and wrongly) assumed that the listing of a building prevents interventions or adaptation, when in fact it should simply be regarded as entailing a more conscientious approach to the design and management of change.

Such considerations certainly apply to Plymouth Civic Centre, and this report is intended to assist in the process of finding answers to these questions. The enquiry considers not only issues of heritage significance, the building's physical condition and repair requirements, but also its latent potential and re-valuation. The aim is to go beyond a 'demolition-or-preservation' debate and explore the opportunities for both conserving the building and transforming it. These objectives should not be regarded as mutually exclusive. There is considerable potential to adapt, upgrade and re-present the Civic Centre in terms both of operational performance and also 'image' in order to make it fit-for-purpose and responsive to new needs without detriment to the heritage values for which it was listed.

Heritage issues aside, the embodied energy analysis indicates that retention of the existing building with upgraded fabric would represent a 12 year equivalent in terms of CO emissions, compared with a 60 year payback period for a new building.

Additionally the potential for significant new development on the adjacent site, which the study also explores, should be understood as an integral element in any strategy for the regeneration of the Civic Centre itself.

In sum, while the report is at Feasibility Study stage and does not prescribe a specific scheme it does aim, through opening up the possibilities within the current situation, to stimulate constructive consideration of a positive future for the Civic Centre that could attract support and consensus from those who may currently assume their positions are incompatible.

1.2 Acknowledgements

The consultant team wish to take this opportunity to record its appreciation of the generous assistance provided by officers of Plymouth City Council and English Heritage in the preparation of this study.

1.3 Site Address

Plymouth City Council, The Civic Centre, Armada Way, Plymouth PL1 2AA, Devon. The location and curtilage of the Civic Centre are illustrated in plans within the report.

1.4 Statutory Designation

Plymouth Civic Centre was listed at Grade II on 21st June 2007, LBS Number 495906, National Grid Reference SX4768254371. The full list entry is included in the Appendix to the report.

2 Executive summary

This section summarizes the key findings of the study and its structure accordingly mirrors that of the document itself. The full text should of course be consulted for a proper understanding of the issues concerned.

2.1 Introduction

This Feasibility Study was commissioned jointly by Plymouth City Council (PCC) and English Heritage (EH) in June 2009. Its remit is to assess the heritage significance of the Civic Centre, to advise on its general condition and to outline the extent of repairs and upgrade works necessary to bring it up to current standards and secure the complex for an extended future.

The study also includes exploration of a series of possible alternative uses for the buildings themselves as well as consideration of the opportunity for complementary development immediately adjacent. Additional advice has been requested on the market implications of the various re-use options, on the interim measures necessary to enable PCC to remain in occupation for the immediate future while long term decisions are reached, and also on alternative modes of implementing the main works of repair and refurbishment.

It is intended that the findings of the study will assist PCC in reaching decisions over the future of the complex. The consultant team will be happy to respond to any queries arising out of the report.

2.2 Heritage Assessment

2.2.1 Summary of the Original Asset

Plymouth Civic Centre was designed and executed by the architectural firm of Jellicoe, Ballantyne & Coleridge, based on earlier concept work of City Architect Hector Stirling. It stands in a central position in the Plan for Plymouth drawn up by Sir Patrick Abercrombie and Paton Watson in response to the devastation of the city through aerial bombardment in World War II. It was opened by HM Queen Elizabeth II in 1962 and provides for the public, municipal and ceremonial functions of the city authority.

The building complex, comprising of public reception facilities, the council chamber, an administrative tower, various departmental offices, and including suites of accommodation for the Town Clerk, the Elected Members and the Mayor, was integrated into its wider setting through a civic landscape design, also by Jellicoe, known as The Great Square. The Civic Centre was listed Grade II in June 2007, while the landscaped precinct has been designated in the Register of Parks and Gardens.

2.2.2 Alteration from original design

The survey of the Civic Centre in its current state (undertaken over the summer 2009) indicates that a variety of alterations has been carried out since the original buildings' completion. The principal changes have been in the environs of the tower, where a large extension has been added to the west on the ground and part 1st floor. Other interventions have occurred at the tower entrance and within the main foyer itself, as well as within the northern office block. Most prominent is of course the protective fan to the tower entrance approach, though this is only a temporary measure pending concrete repairs.

2.2.3 Statement of architectural significance

Study of the Civic Centre and its precinct, applying the EH protocols of Conservation Principles, reveals a range of heritage values, which in summation may be taken to constitute the cumulative heritage significance of the asset. Historical value is manifested in its central position within the Abercrombie Plan and related symbolic role in proclaiming the City's post-war recovery. In terms of building typology the Civic Centre also represents a particularly clear mid 20th century example within the long historical tradition of town hall building. Communal value is evident in the degree of pride and importance originally attached to the Civic Centre in public perception, though this factor - as a positive phenomenon - has diminished more recently to judge from the controversy surrounding its listing, albeit the building is still not without its supporters.

Architectural (aesthetic) significance may be identified in many aspects of the Civic Centre's design, including the group value of the overall composition, its original inclusion of public access to the tower rooftop, and the contribution of this element to the Plymouth skyline. There is architectural interest in the plan form, the overall massing of the complex and in certain material and formal details of façade treatment including mosaic and slate finishes and the patterning of concrete panel cladding.

Internally the tower element exhibits modest significance in the public spaces, the double height entrance foyer and rooftop restaurant, though the office floors themselves are neutral and generic. The lower level departmental offices are also of little internal heritage significance, except in the Town Clerk's section where quality finishes are used. The Civic Suite however is rich in architectural significance, both in spatial and material terms, and also in the extent and quality of bespoke art and craftwork, which together with the many valuable local artifacts are richly illustrative of the City's history.

The curtilage of the building is also of heritage value as a comparatively rare example of a modern designed civic landscape, its contrast of formality and informality being both emblematic of the emerging style of its period and also an interesting early work of Geoffrey Jellicoe who would become the leading English landscape architect of his generation.

This assessment of heritage values, which is not predicated on any specific scheme of proposals, should be used to guide an informed conservation response in any forthcoming project and should also continue to be used as a source of reference for the future care and management of the Civic Centre. At the same time, in applying the findings of this assessment, it should be understood that listed status and the existence of heritage significance does not preclude adaptation, intervention and upgrade - provided this is undertaken with due regard to the special interest and character of the building.

2.2.4 Structural significance

Ove Arup, consulting engineers, designed the insitu reinforced concrete framed structure, comprising various forms of floor slab (waffle, ribbed and solid) supported by columns, shear walls and pad foundations, which is unremarkable for its time. It is representative of the well-established and widespread forms of reinforced concrete framed construction being used during the 1960's. Standard reinforced concrete elements have however been put to a number of interesting uses that contribute to the building's unique character, including the cantilever gull-wing roof, the diagonal grid of beams forming the Council House rooflight, and the major second floor transfer structure, though the structure was not considered noteworthy in the construction press of the day and is deemed to be of minor heritage significance.

2.2.5 Services significance

The original services installations are generally typical of those in use at the time, with the exception of the heat source for providing space heating.

The building was originally heated via two large thermal stores with 11kV electric night storage immersion heaters. This method of heat generation is not unique although quite unusual for a building of this size.

It is understood to have been driven by a combination of influences at the time such as: the Suez disaster with its impact on oil supplies, the development of nuclear energy which was predicted to provide a cheap source of electricity and the provisions of the Clean Air Act introduced at this time. It is interesting that the drive to avoid the use of fossil fuel is once again influencing the design of energy supply in buildings today.

The existing heating, LV distribution and mechanical ventilation plant is thought to be original and is generally still in use. The original ventilation ductwork and pipework is insulated with cork and plaster which would certainly be unusual today. The exception to this is the original refrigeration plant and ancillary equipment which has been decommissioned due to the risk of legionella growth in the heat rejection equipment.

2.3 Condition of the buildings

A condition survey of the listed buildings has been undertaken (within the limits of safe access and representative sampling.) Detailed reports are provided for the complex covering respectively -

- Architecture – ie. general building condition
- Structure – including invasive concrete test survey results
- Services
- Landscape

These are summarized here as follows.

2.3.1 The Tower

The roof coverings and roof drainage appear generally sound, though it would be reasonable to assume replacement and upgrade in any major refurbishment project. There is deterioration of the gull-wing canopy soffit and edges. The cradle inspection installation is defective. The high level terrace appears in sound condition, although the condition of the waterproof membrane is unknown. The parapet appears sound but worn, and has been overclad with a metal coping. The rooftop glazed enclosure is generally sound but non-compliant with current standards. The main tower façades are in variable condition. The window assemblies are generally sound, albeit worn, but are non-compliant with current standards. (For commentary on the cladding panels, pilasters, and window transom cill, see SE report.) Glazed screens around the tower base appear sound, where not obscured by temporary protection. The exposed soffit of the main tower volume shows local areas where the mosaic cladding has detached. The fabric of the western extension appears to be in generally good order. The tower interiors are variable, with original (unchanged) areas appearing generally worn, and more recently refurbished areas serviceable. Core areas, including the lift lobbies, are generally sound though tired in appearance. Original veneer finishes survive. (Environmental conditions are reported separately.)

2.3.2 Lower level blocks

The roof areas of the lower level blocks to the north and south of the tower appear in worn condition, with evidence of moss growth and local ponding. The building fabric of these blocks is in generally sound condition, with several elevations having been upgraded with new windows or curtain walling. Several areas where applied finishes are used, including slate cladding and mosaic, show local damage as a result of interference. Internally these blocks are generally functioning as working office areas and subject to normal wear and tear. In specific areas such as the Town Clerk's suite, superior finishes and veneered paneling have retained a higher standard of condition.

2.3.3 Council House

The condition of roof coverings appears similar to that of the other low level blocks. The exterior fabric is generally in fair condition, albeit locally weathered, and with local loss of mosaic and slate cladding as noted elsewhere. Internally this element of the complex is in notably better condition than the remainder, with quality materials and fine finishes all generally in an authentic and high standard of preservation.

2.3.4 Structural

A structural condition survey of the reinforced concrete framed tower structure coupled with on site and laboratory testing identified a number of reinforced concrete corrosion problems. The internal elements of the reinforced concrete frame were found to be generally in good condition, but the externally exposed reinforced concrete frame and pre-cast cladding elements exhibit widespread corrosion. High chloride content and carbonation were found to be the major causes of corrosion.

2.3.5 Services

The majority of the existing services installations have either reached or are nearing the end of their economic life.

2.3.6 Landscape

The original designed landscape scheme is largely intact, though a number of details such as lighting and seating have been altered and some of the planting has become overgrown.

2.4 Baseline Repair Scheme

The baseline repair scheme is conceived as the expected scope of works required to put the buildings into a sound condition that is fully compliant with current standards and fit for purpose for an extended future. The scheme is theoretical in the sense that an actual refurbishment project would most likely entail making various changes to suit new requirements – whether in a scenario of continued office use, or one of the other options that are considered below. The intention in this section therefore is to capture only the principal works needed to secure the essential shell, structure and services of the Civic Centre complex.

The scope of baseline repair works assumes replacement of roof coverings throughout, replacement of façade fabric - including windows - of the tower, and selective replacement and refurbishment of building envelope elsewhere; structural repairs to concrete frame and full replacement of services installations. The opportunity would be taken within the works scope to substantially upgrade the performance of the building in terms of energy use and sustainability. A well conceived scheme of works could achieve all this without detriment to the essential heritage significance of the buildings.

2.4.1 Structural aspects

The external elements of the reinforced concrete framed structure require large scale repair and protection if the structure is to be put to future use. Two repair options are put forward, either a regime of periodic inspections and temporary patch repairs, or a permanent cathodic protection system to prevent future corrosion. Internal elements of the reinforced concrete structure would probably not require significant repair or maintenance.

The poor condition of the pre-cast concrete spandrel panels and pre-cast transom cills on the east and west façades necessitates wholesale replacement, coupled with the re-fixing/refurbishment of the loose re-constituted stone pilaster panels.

2.4.2 Services

The site survey confirmed that the majority of the existing services installations are in need of renewal. Elements of the original installation are no longer operational and are redundant, in particular comfort cooling to the Council House wing and the ancillary controls to these systems. There are control inadequacies in the existing heating installation which are leading to excessive heating loads and poor thermal comfort performance. This is a function of the original design and poor performance of the thermal fabric. The existing lift installations are failing with poor reliability and increasing costs for ongoing maintenance. The main services supply infrastructure would appear to be adequate for supplying the proposed development options on the assumption that the thermal fabric improvement works detailed in Section 5.3 are carried out.

It is likely that the building will need to remain in operation for a number of years before there is a resolution on the way forward. Given the condition of the existing services we have proposed a regime of proactive and ongoing maintenance to sustain the services in operation. This includes recommendations on improvements to the efficiency and efficacy of the existing services that may prove to viable if the building is to remain in occupation for 5 to 10 years.

The Display Energy Certificate for the building indicates that the annual energy consumption for heating and hot water is approximately twice that of a typical building. This is not surprising considering the thermal fabric condition and services performance. The electrical demand is only marginally greater than that of a typical building. This is partly due to the optimised form of the building, in particular the tower, for natural day lighting. With the proposed thermal fabric improvements and replacement of the existing with new more efficient services it will be possible to more than halve the annual heating, hot water and electrical demand for the Baseline Repair Scheme.

If the Base Repair Scheme is adopted with a retained occupancy by the council there is an aspiration for the refurbishment to achieve BREEAM Excellent. A preliminary assessment has been carried that demonstrates that there is potential for achieving this with the level of thermal fabric improvements, efficiency of new services installations and inclusion of renewable energy technologies. The assumptions made in carrying out the calculation are included as an Appendix to the feasibility report. The costs for achieving this have been incorporated into the Baseline Repair Scheme cost plan.

In the context of a major refurbishment complete renewal of the existing services installations is proposed.
The new services installations proposed for the Baseline Repair Scheme will make substantial reductions in the running costs and CO_2 emissions for the building as well as significant improvements in occupancy comfort.
There is significant scope and opportunity for improving the performance of the existing thermal envelope to limit heat loss, control solar gain and overheating and minimise glare.
The services and fabric improvements for the Base Repair Scheme offer the potential to achieve BREEAM Excellent. This is substantially assisted by the optimised form of the tower and lower level blocks for natural daylight and ventilation.
Adopting a similar optimised form to the Ancillary Development, along with enhanced levels of thermal fabric performance, will enable an exemplar level of energy efficiency and potential for achieving BREEAM Excellent.

2.5 Option Studies

This section of the report considers a range of possible options for continued beneficial use of the buildings. These include office, residential and hotel alternatives, as well as a range of supplementary uses in various combinations with all of the above. Market advice is provided in respect of each of the options.

- Office / Office
- Office / Library
- Office / Commercial (A3 / Gym, etc)
- Residential / Office
- Residential / Commercial (A3 / Gym, etc)
- Student Residential (A3 / Gym, etc)
- Hotel / Conference Centre (whole complex)
- Council House
- Arts Centre

{ In combination with office / residential uses above

The studies indicate that apart from the Council House, which is more specifically tailored to a set of formal functions as well being more sensitive in heritage terms, the remaining elements of the Civic Centre, including the tower, lend themselves readily to several alternative modes of use that may all be achieved without detriment to their listed status and could result in an extended future beneficial use of the complex. The technical implications vary depending on the option concerned, but it is clear that any of the alternatives considered is technically feasible and that the choice is therefore likely to be largely governed by market factors and development policy.

2.5.1 Structure

Structural analysis and design has demonstrated a typical tower floor slab to have sufficient strength to carry the standard 2.5kN/m2 office imposed load. The slab operates at its structural design limit under these loading conditions.

In general, the options for future use would entail a reduction in imposed floor loading, but in some areas the load would be increased, for example for the proposed library, gymnasium and foyer uses. In these instances additional strengthening or structural support may be required.

Change of use would involve various structural alterations, including openings in slabs and shear walls. All are feasible, but some will require additional strengthening works. In addition, the building structure would have to comply with the current Building Regulations in respect of disproportionate collapse. Analysis and design calculations, record drawings and record photographic evidence demonstrate the tower structure to be compliant.

2.5.2 Services

A spreadsheet is presented showing a scope of work for each of the generic option typologies (office / residential / hotel) outlining the proposed strategy in relation to each of the services disciplines including drainage, water supply, gas, fire protection, hot water and heating ventilation; power and lighting, data and communications, lifts, security and BMS.

2.6 Ancillary Development

In addition to the original buildings, there is a significant development opportunity to be exploited on the adjacent site immediately to the west of the Civic Centre complex which is currently used as an open car park. This site appears capable of generating a floor area equivalent to that of the administrative offices in the Civic Centre itself, and thus suggests the possibility of enabling the functions currently housed in the original buildings to be re-accommodated in a new building in a single decant operation, following which the original buildings could be refurbished for one or other of the options indicated above – should this be desired. It is considered that such a development, properly conceived in design terms, could be achieved without detriment to the setting of the listed buildings and indeed could greatly enhance the general environment of the Civic Centre and its relationship to the cultural precinct immediately to the west.

The proposed ancillary development on the adjacent car park site represents a relatively straightforward, repetitive framed office structure, which could be economically constructed as either a steel or reinforced concrete framed building structure. Site geology, the presence of a large public sewer, and the need for load transfer structures over the car park are identified as special issues for consideration.

Services installations would be specified to progressive current standards, taking full advantage of relevant sustainability strategies and providing an exemplary BREEAM Excellent performance profile. The scope of work for this new build development is included in the option studies spreadsheet (see above).

2.7 Interim Measures

It is clear that the Civic Centre will remain in occupation for at least the immediate future while decisions are being reached over its future use and also while measures are undertaken to permit any decanting of operations in readiness for a refurbishment project. The study has accordingly considered the extent of works required to maintain the buildings in viable use for differing periods, ranging from 2 to 10 years. From consideration of the issues it will be appreciated that the longer the period before refurbishment is undertaken the greater will be the extent and cost of interim works that would be covered anyway in a full refurbishment project.

2.8 Modes of Implementation

In conclusion the study considers briefly the various ways in which the refurbishment of the Civic Centre could be undertaken. Alternatives include refurbishment while in occupation, or various forms of decant – whether to the new adjacent building conceived as ancillary development, or into temporary accommodation or to alternative offices, either for the duration of the works, or permanently, as may be. From this analysis it is clear that both the disruption of remaining in occupation while works take place and also costs of a double decant can both be avoided.

Although it was not the remit of this study to consider possible development vehicles, it is suggested that the adaptability of the Civic Centre as indicated above, together with the potential for ancillary development on the adjacent site, opens up a range of opportunities for exploitation either directly by PCC itself, or in conjunction with a development partner in a Joint Venture, or as a disposal and leaseback arrangement.

2.9 Appendices

A copy of the List Entry and note of various References consulted in the production of this report are provided in the Appendix. Also included is a selection of original drawings for reference.

3 Heritage assessment

3.1 Introductory note

It is noted that considerable study has been devoted to Plymouth Civic Centre and the wider issues of planning and future regeneration in Plymouth over recent years. This platform of research and publication has been a valuable source of information for this feasibility exercise. Whilst the intention is that the present study is a 'stand-alone' document prepared for the specific assignment defined in our brief, we have not sought to duplicate large amounts of descriptive detail that are well covered in some of the above noted studies. For fuller historical information on Plymouth generally and the Civic Centre in particular the reader is referred to the list of reference documents quoted in the Appendix.

3.2 Purpose

This section of the Feasibility Study seeks to identify the principal heritage values that contribute to the special character of the Civic Centre and its setting. The evaluation, as well as assessing the qualities of the listed buildings and registered landscape as such, also considers the historical significance of the complex within the 1943 Plan for Plymouth, prepared by Abercrombie and Paton Watson, and its symbolic importance in the city's post-war reconstruction.

This appraisal should be used to inform the approach to repair works and consideration of possible future uses of the buildings and related adaptations, ensuring that any modifications and interventions are consistent with the key heritage values of the asset.

The preparation of a Statement of Significance is regarded as good practice in the early stages of considering the potential of a listed building, and should serve as an ongoing source of reference for the future in enabling change to take place with due regard to the building character and special interest which designation is intended to protect.

The assessment of elements generally begins by considering the original design, then identifies subsequent alterations and finally ascribes hertitage significance. In the summary table that follows, notes are included on the recommended heritage response.

3.3 Methodology

The assessment of significance is based upon English Heritage's Conservation Principles, Policies and Guidance (2008) which defines four principal categories of heritage value:

- Historical
  The potential of a site to reveal information about past people, events and aspects of life, by illustrating strands of both architectural and social history, and through its association with notable people and events.

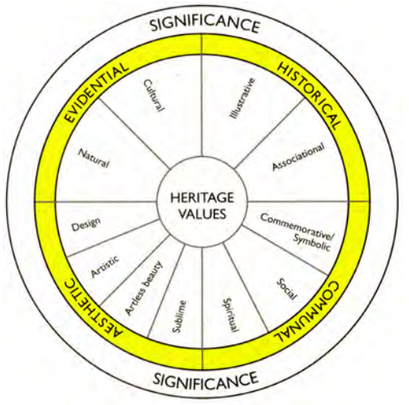
- Communal
  The value of the site in the collective memory.

- Evidential
  The potential of the site to yield primary evidence about past human activity.

- Aesthetic
  The ability of the site to give sensory and intellectual stimulation. This primarily embraces the architectural significance of the building/s and any integral art and craftwork.

The summation of these several values may be taken to constitute the cumulative heritage significance of the asset being considered. The evaluation of the buildings tackles each element in turn, dealing first with the exterior, then the interiors, describing the original design, noting any significance subsequent alterations and then identifying significance.

A summary table is included at the end to provide a quick reference guide. It should however be read and used in conjunction with the main commentary.



The significance of a place is the sum of its heritage values

Plymouth Guildhall - bombed

Plymouth 1941 - bombed city centre

Visit of the King and Queen, 20 March 1941

Giles Gilbert Scott
Church of Christ the King, 1961-62

Burnet Tait & Lorne
Dingles Dept Store, 1949-51

Whinney Son &
Austin Hall
SWEB, 1949-53

Tait & French
Pearl Assurance Building,
1950-52

Peter Moro
Theatre Royal, 1974-82

Le Havre Town Hall, 1957

3.4 Historical value

An historical synopsis of Plymouth Civic Centre reveals its place in the Abercrombie Plan, its value as a symbol of civic unification and recovery and its contribution to the evolving typology of town hall building.

3.4.1 The Abercrombie Plan

The seeds of Plymouth's post-war transformation were sown in 1941 when in a series of aerial bombardments, (only hours after a royal visit), so much of the central area of the city was devastated that piecemeal repair of surviving fabric was inconceivable and comprehensive renewal became a necessity. Whilst the task of reconstruction in the UK generally was a national challenge of unprecedented magnitude Plymouth was one of a select number of cities to become the subject of a systematic re-planning project by the leading exponent of British city planning of the period – Sir Patrick Abercrombie (1879-1957), here acting as consultant to the city engineer J. Paton Watson.

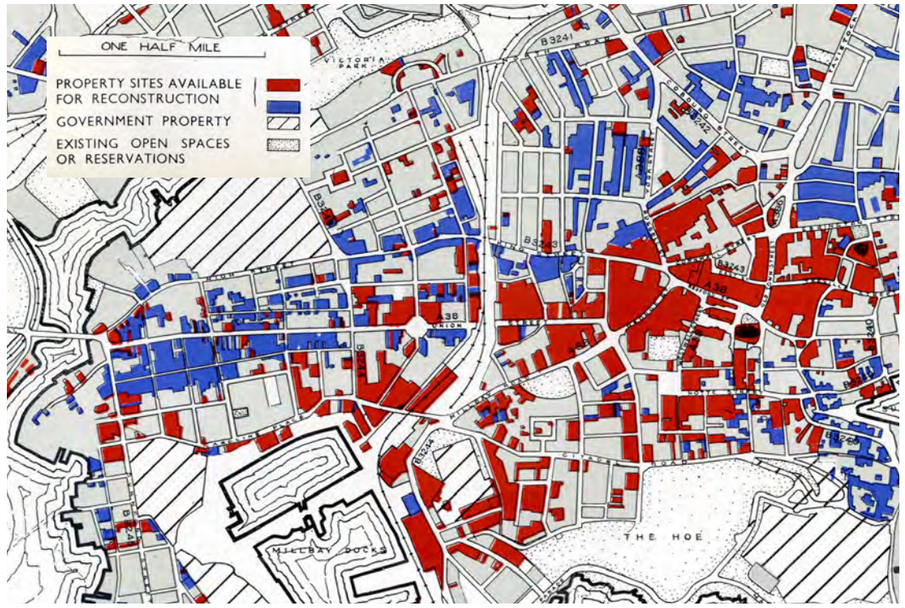
Abercrombie undertook a series of such assignments, including most notably The County of London Plan and The Greater London Plan. But his Plan for Plymouth, commissioned directly after the bombing and published in 1943, is widely regarded to be among the boldest and most distinguished of his achievements and represents a milestone in the history of British town planning.

The Abercrombie Plan, still the city's most enduring and visible manifestation of this renaissance, is rich in evidential and communal heritage values deriving from this transforming episode in its modern history. The key features of the Plan survive and many of the ensuing central city buildings were designed by eminent architects of the day - including Giles Gilbert Scott (Church of Christ the King) and Thomas Tait of Burnet, Tait & Lorne, also later, Peter Moro. In short, a sufficient corps of urban design and architecture embodying the principles of the Abercrombie Plan remains to confer a coherent mid-20th century identity on the central area that is probably unequalled by any British city. It may be noted that the nearest comparable example of post-war city re-planning resulting from aerial bombardment is Auguste Perret's Le Havre in France, which was declared a UNESCO World Heritage Site in 2005.

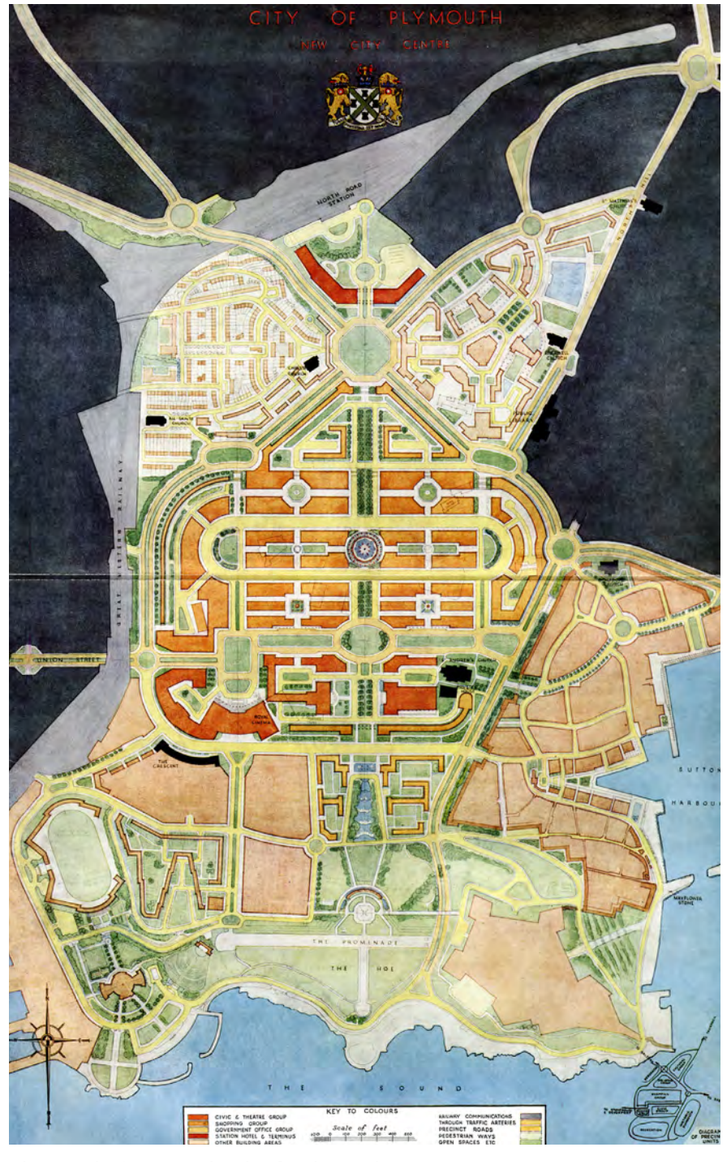
3.4.2 Symbol of civic recovery

Although aerial attacks on civilian populations had been foreshadowed in the Spanish Civil War in the 1930s, the bombardment of British cities as a deliberate military strategy not only to inflict physical damage but also to erode national morale was unprecedented before the Second World War. The fortitude with which the destruction was endured came to symbolise the resilience and determination of the British people, which in turn became translated into the material demonstration of national recovery when the time came to rebuild.

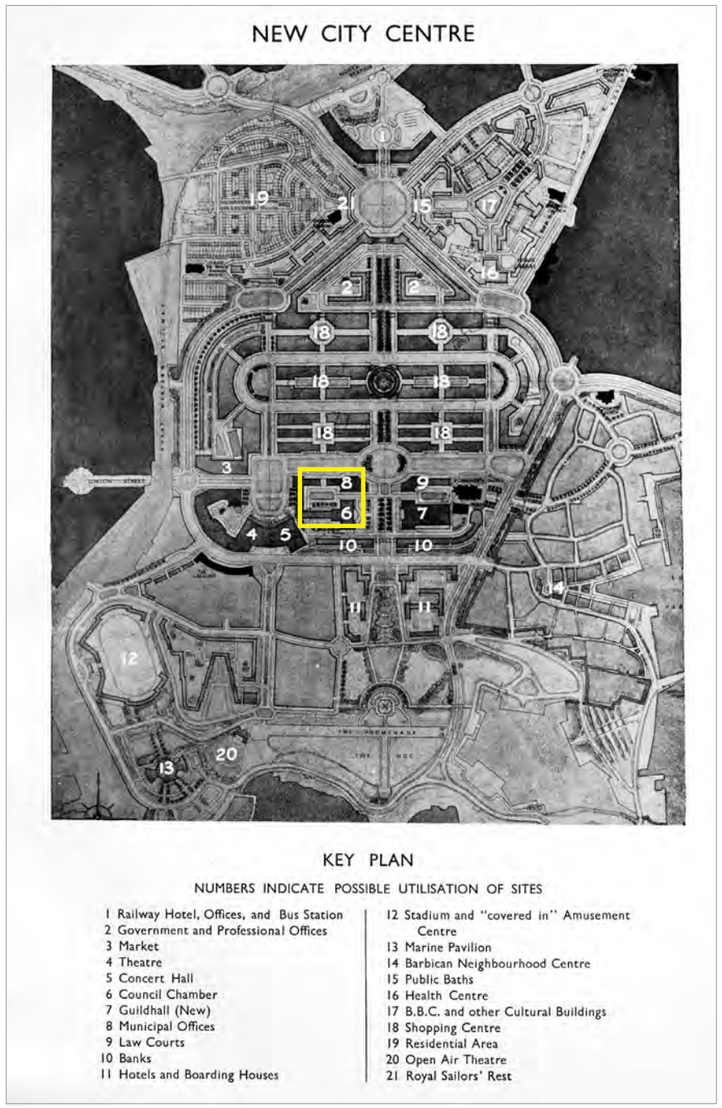
Paton Watson and Abercrombie



Plan showing extent of derelict areas / land for redevelopment (red / blue) 1943



Abercrombie's vision - The Plan for Plymouth, 1943



Abercrombie's utilisation of sites - 1943
Note: plots 6-8 designated for Council Chamber and Municipal Offices

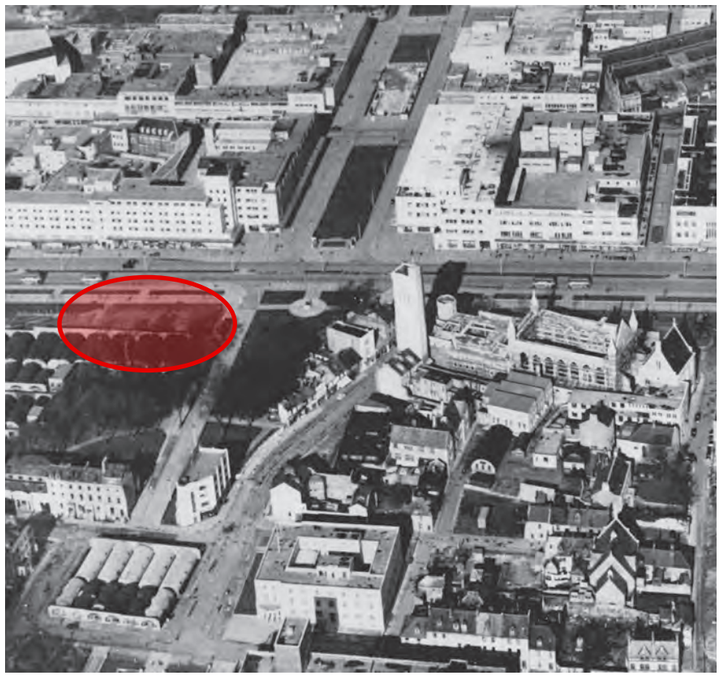
The grand axis of Armada Way - from The Plan for Plymouth

Coventry Cathedral bombed

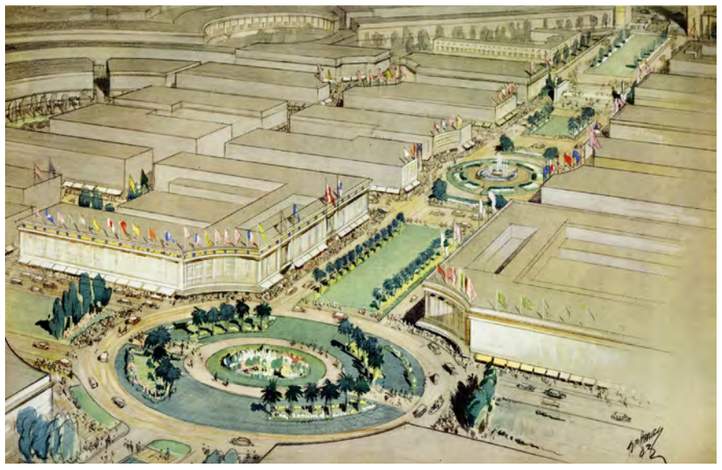
Coventry Cathedral rebuilt

Plymouth Civic Centre

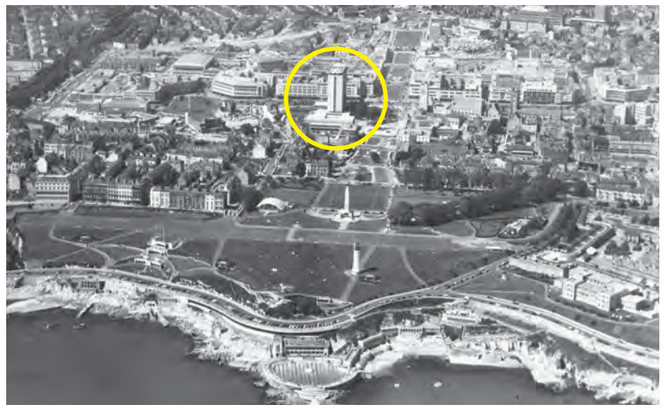
Feasibility Study



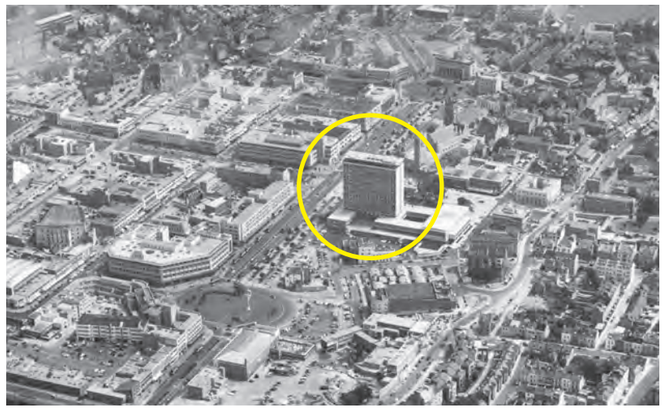
Plymouth Civic Centre site before development



Artist's impression of the proposed shopping precinct looking north from Guildhall Tower, 1943



Plymouth Civic Centre - the urban marker central



Plymouth Civic Centre - the city's symbol of recovery

Whilst post-war reconstruction was a nationwide, indeed Europe-wide, challenge the association of such values with specific individual buildings is relatively rare in post-war Britain – the example of Coventry and its celebrated modern cathedral coming most readily to mind. The Grade I listed Royal Festival Hall in London (a clear architectural antecedent in other respects) might also be cited, though even it cannot be regarded in quite similar terms as a direct response to aerial bombardment. In fact the group of buildings which had formerly functioned as Plymouth's municipal offices and council chamber were largely destroyed on the night of March 21st 1941, leaving the city with no centre of local government and involving the Corporations' departments in considerable makeshift arrangements in alternative scattered accommodation until the new Civic Centre opened.

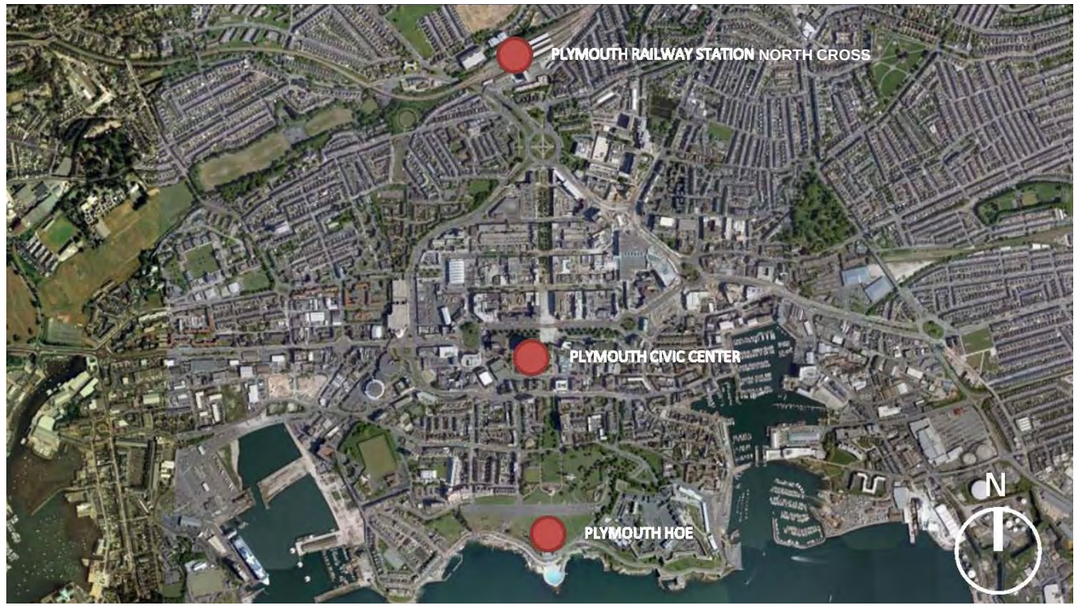
It is not only the severity of the Plymouth Blitz that lent a particular heroic quality to its post-war civic renaissance. The new Civic Centre complex also brought together for the first time the administrative operations of the three townships of which it is composed – Plymouth, Devonport and East Stonehouse. These were amalgamated in 1914 and in 1928, by Royal letters-patent, Plymouth achieved designated city status.

Plymouth Civic Centre accordingly embodies the unification of its historic constituents and stands as the single most specific architectural symbol of the city's post-war recovery, as is witnessed by the carved stone tablet displayed in the Council House foyer recording the key dates and names of those participants in the reconstruction. The fact that the project was inaugurated by King George VI (29th October 1947) and the building itself opened by his daughter Queen Elizabeth II (26th July 1962) is an index of the importance with which it was regarded both locally and nationally.

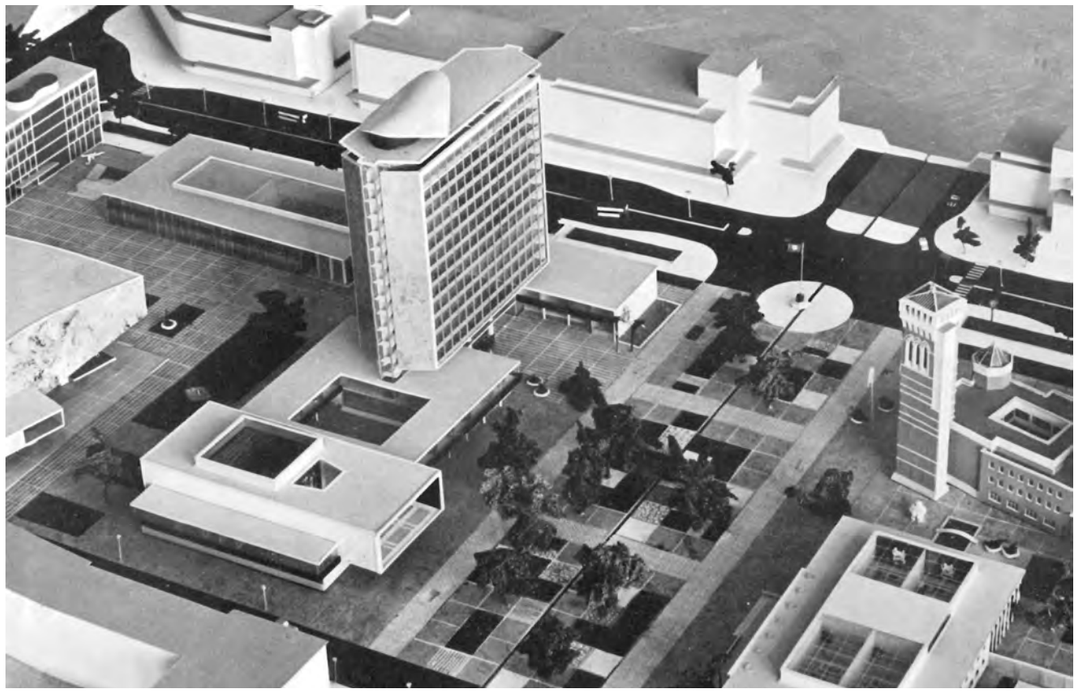
3.4.3 The place of the Civic Centre in the Abercrombie Plan

The centrepiece of the Abercrombie Plan was the establishment of a grand axis connecting the railway station at the north end of the central city zone with the Hoe and the outlook to Plymouth Sound beyond. This axis, Armada Way, was to be bisected by Royal Parade, an east-west route of almost equal status, in what is regarded as a contemporary application of Beaux Arts principles.

The most prestigious sites would be alongside and at the intersection of these two major thoroughfares and the Plan clearly designated the east and west sides of the great axis as the intended locations for the redevelopment of Plymouth's seat of governance and principal administrative institutions. On the south west quadrant of the intersection would be the municipal offices and council chamber; to the south east the Guildhall and the law courts.



The Civic Centre - on axis between North Cross and The Hoe



Early model of Plymouth Civic Centre - The Stirling Scheme
note: shell form of rooftop canopy and extended development to west of tower

The Civic Centre derives additional significance from this position at the very heart of the Plan, standing as the central manifestation of the city's post-war renewal, its tower together with the Guildhall's campanile, serving as the central civic marker reinforcing Abercrombie's north-south axis that connects North Cross with the Hoe.

3.4.4 Project Development

Whilst the above summary, and indeed the built outcome, might give an impression of untroubled inevitability it is clear from more detailed investigation that the definition and development of the Civic Centre project was far from straightforward. The site assembly process involved some controversial land acquisitions and clearances and the initiation of a project of such significant expenditure for the Council's own accommodation in a period of scarce resources was politically sensitive in itself. The brief was the subject of much debate and reconsideration, and settling the appointment of the architects was also a circuitous process.

A pivotal moment came in the spring of 1957 when the City Architect Hector Stirling, who had undertaken the main concept development work was replaced (in circumstances that remain slightly unclear, but included issues of cost and departmental resources) by the firm of G.A. Jellicoe & Partners, later Jellicoe Ballantyne & Coleridge, Alan Ballantyne serving as Project Architect. Following this reassignment the rest of the consultant team was assembled and several uncertain aspects of the project were settled quickly – most notably the omission of the extensive law courts and treasury departments which had been planned immediately to the west of the main complex. Other original elements - a theatre, concert hall and restaurant - were also uncoupled from the scheme to become the subject of separate later projects.

These reductions are still evidenced in the conspicuously undeveloped plot to the immediate west of the complex which has served as an open carpark ever since. (See Ancillary Development section). However, the other main features of Stirling's core building design remained albeit with the material vocabulary altered from an ambitious glass curtain wall proposal for the tower to the more solid panel cladding solution we see today.

The attribution of the building design and construction is normally stated as:

- **Architects:** Hector Stirling 1954-57, Jellicoe, Ballantyne & Coleridge 1957-62
- **Structural Engineers:** Ove Arup & Partners
- **Quantity Surveyors:** HS Haughton & Partners
- **Contractors:** Richard Costain Ltd (Excavations); Saverton Builders Ltd (Foundations); Humphrys Ltd (Superstructure)
- **Acoustic Consultant:** Hope Bagenal
- **Heating & Ventilation Consultant:** Hoare, Lea & Partners


Palazzo Vecchio, Florence 1322


Leeds Town Hall 1853-9


City Hall, Swansea 1930-4


Newcastle Civic Centre 1968


Northampton Town Hall 1861


Manchester Town Hall 1868-77


Devon County Hall 1958-64 connecting to house 'Bellair' circa 1700


Hornsey Town Hall 1935


Southampton Civic Centre 1932

3.4.5 Building typology

The town hall, as a generic building type, has a considerable and architecturally distinguished history. The Medieval, Renaissance and Victorian ages have all left significant examples of the genre - in each case a reflection of their formative cultures. Within the considerable stylistic variety common themes include the expression of civic pride and the attempt to portray the aspirations and achievements of the town or city in question through its principal public building. This is characterised by conspicuous architectural ambition, ceremonious planning, the high quality of construction, the use of valuable or rare materials and further enrichment through art and craftwork – the latter typically designed to represent or symbolise an illustrious local history. The task of such buildings has thus been to paraphrase in architectural terms the official portrait of their town or city – both to their own community and to visitors.

Unlike continental Europe, where they had been built from medieval times, town halls (as distinct from guildhalls) were only developed systematically in England following the Municipal Corporations Reform Act of 1835. By the middle and latter 19th century major examples appeared in cities like Liverpool, Birmingham, Leeds and Manchester.

Although there had been a further spate of town hall building in England during the inter-war period, (e.g. Swansea, Southampton, Hornsey etc), the immediate demands of housing and infrastructure after 1945 seem to have diverted the use of scarce resources away from this particular building type in the early post-war period. Newcastle Civic Centre (eventually opened in 1968) had originated before the war, as its architectural character arguably suggests, while Devon County Hall (1957-64) was deliberately traditional.

Another distinguishing feature concerns the use of the tower. It will be noted that the incorporation of a dominant vertical element has been a recurrent characteristic of most examples through the history of the genre. In the majority of cases however, this component has incorporated only a clock and bellfry and been used primarily as an urban gesture to give a signature to the town skyline. Plymouth is one of the few cases where the tower element has been used both as civic landmark and as a key component of the operational programme - the municipal offices.

Plymouth Civic Centre, an early post-war outcome of dramatic historical circumstances, is thus a relatively rare application of modern architecture to a major civic headquarters and makes a notable contribution to the evolving town hall typology.

July 2007

Society challenges backlash over Plymouth Civic Centre listing

Image: Plymouth Civic Centre, courtesy Andrew Cromar
For further images see http://www.niceBuildings.com

The listing at Grade II of Plymouth's Civic Centre has caused a furore in the city. The Twentieth Century Society asked English Heritage to assess it in April 2006, due to its innovative design, important art collections and its historical significance to Plymouth's rebirth after the devastation of WWII—we were convinced that it was a nationally important example of post war architecture.

The result of the decision by EH to list the centre, has meant that The Twentieth Century Society has come under fire from local people, the local press and local politicians, three of whom have recently handed a petition to Downing Street to get the decision overturned.

A flood of emails, and letters, many using language not suitable for a press release, have come into the office expressing acute displeasure about our actions but on the flip-side, we are pleased to note that we have also had a great deal of support from people in Plymouth.

The Twentieth Century Society - 16 July 2007

Plymouth Civic Centre to be demolished?

The Civic Centre in Plymouth - regarded as an ugly eye-sore by many city residents - could be knocked down and the site sold off.

Plymouth Civic Centre - should it stay or should it go?

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Drake Circus webcam
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FACTS
Plymouth Civic Centre was opened by the Queen in 1962.
It cost £1.1 million to build.

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have your say

It's been dubbed "the worst council building in Britain," and now Plymouth Civic Centre's days could be numbered.

The building may be knocked down because the working conditions for council staff aren't up to scratch.

And the estimated cost of bringing the offices up to required health and safety standards is £10 million.

So one possible solution would be to sell the site for redevelopment, with a landmark building going up in its place.

Meanwhile, the council offices would be transferred - possibly to rented or purchased accommodation at Millbay.

Quite apart from concerns over the working conditions at the Civic Centre, there is an increasing feeling that the building is just too ugly to fit into the new-look Plymouth which is currently being developed.

www.bbc.co.uk - 18 February 2005

Some of the press coverage for and against the listing

3.5 Communal value

Much of the foregoing historical analysis may be transposed into the assessment of communal values associated with this building. It is clear that at the time of its completion and for a period afterwards the Civic Centre featured strongly in the local perception of, and pride in, Plymouth's new civic identity and even now there is evidence that it is not only older residents in the town who witnessed its construction that regard the centre with affection and respect.

The listing of the building in 2007 was the subject of much controversy and antipathy – as is often the case with modern buildings of such relatively recent vintage that are not immediately apprehended as 'heritage' in the conventional sense. But against the widespread opposition the range of responses also revealed local support for the building and appreciation of its significance in the history of the city. Contributions posted on the web indicated an acknowledgement of the Civic Centre's significance for Plymouth even from observers who might not have been especially enamoured of its architectural merits.

Apart from the architecture itself the wide range of commemorative and heraldic material, local art and craftwork with which the building is enriched is evidently valued as a visible embodiment of Plymouth's civic narrative. The role of the Council House in providing a setting for the city's electoral and democratic processes and important local events – not least celebration of successes by the city's football team – is also bound up with the communal value that may be ascribed to the Civic Centre. These values all contribute to the overall heritage significance of the building.

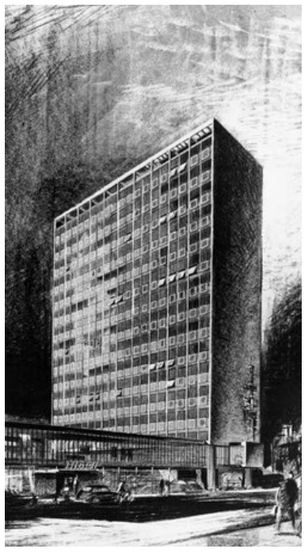
3.6 Evidential value

This category of heritage significance relates primarily to archaeological remains and sites of great age where written records do not survive. An investigation of any archaeological residues that may exist on the site or its immediate environs has not been undertaken as part of this study, but any material that does survive would make a further contribution to the asset's overall significance. As it is the Civic Centre conveys a great deal of information about the emergence of Plymouth from World War II and the importance accorded to the establishment of its centre of local government. In this case therefore as copious written and material evidence of the buildings and their origins exists these aspects are better addressed through the descriptions of historical and aesthetic value.

Plymouth Civic Centre

Lever House, New York, 1952

United Nations Headquarters, New York, 1953



Thorn House, London, 1959

Castrol House, London, 1960

3.7 Aesthetic value

The search for aesthetic value begins by considering the contribution to the wider townscape made by the Civic Centre complex. It then considers each element of the Civic Centre in detail, noting the original design, principal subsequent alterations and heritage significance.

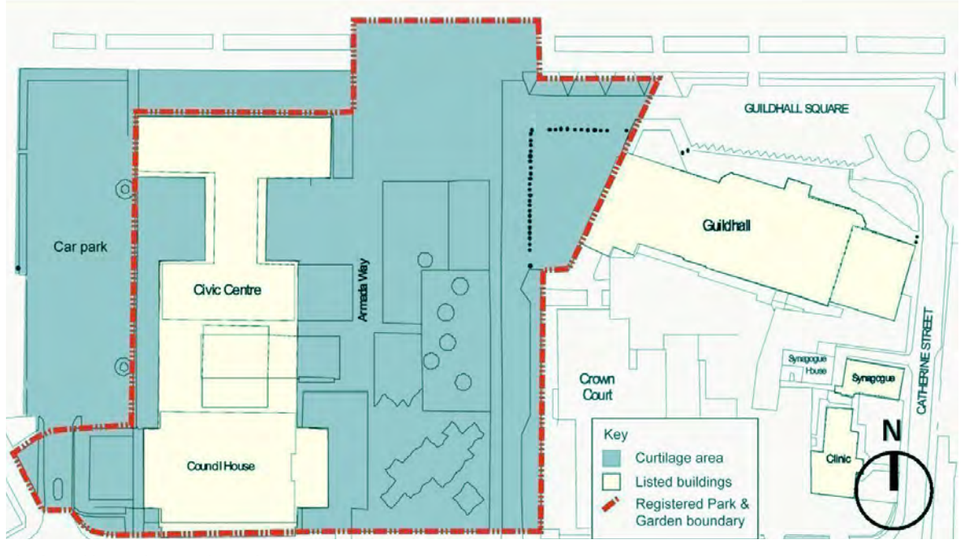
3.7.1 Group value

Plymouth Civic Centre, both in its original iterations by Stirling and its eventual realisation by Jellicoe, Ballantyne & Coleridge, was always conceived as a composition of a series of discrete but interrelated elements each of which was designed to accommodate and express its particular purpose. The principal components comprise the Council House or Civic Suite, the Town Clerk's quarters and related blocks of administrative offices, and the Civic Centre (Town Hall) itself – all set within a carefully designed curtilage that connected it with the wider context.

Various architectural strategies are employed to achieve this effect – the concentration of the main office floorspace in a tower and the visual separation of this tower from the administrative accommodation below; the elevation of the Town Clerk's quarters as a linking device above a continuous ground plane; and likewise the visual elevation of the ceremonial Civic Suite as a piano nobile by means of a columned undercroft with dark slate cladding to the ground floor façade to dramatise the shadowgap effect and counterbalance the tower. In compositional terms therefore all the components need each other for the integrity of the whole.

This interpretation of a municipal headquarters complex is highly characteristic of mid 20th century modern architecture with its focus on the discrete formal expression of a project's range of programmatic functions. Specifically, the counterpoint of tower and podium had by now been established as a modern archetype through such internationally renowned exemplars as Lever House and the United Nations complex in New York, also central elements of Brasilia. In England schemes like London Wall (1955-), Thorn House (1959) and Castrol House (1960) in central London adapted these international models to a British (commercial) application.

Plymouth Civic Centre belongs clearly within this formal typology, but acquires some rarity value through the lack of specific municipal precedents, and its distinctive rooftop design. Whilst each part of the complex may be read off in terms of its particular programmatic function the totality coheres as a whole composition of significant group value. The tower's unusual combination of the functional and rhetorical has already been noted, and the sense of ensemble is further strengthened through the continuity of its surrounding setting with its interior courtyard and re-entrants and through the landscape treatment generally. (See below).



The listed boundary and curtilage

Relationship with Guildhall

Aerial view of the setting

The fountain pool

This approach to the design of civic headquarters may be contrasted with examples from earlier periods, where an equivalent range of functions is more typically fitted into a pre-conceived overall form, often derived from another established building type such as a fortified palace, classical temple, gothic church or mansion. The dominant aspect of the modern version of the town hall is its secular character, whereby the obligation to impress is modified by the desire to explain, and awe is tempered by accessibility. Plymouth Civic Centre is a particularly clear example of this change of emphasis, indeed arguably the most distinctive of its period in articulating clearly the respective constituents of a municipal seat of governance whilst knitting these components into a cohesive architectural ensemble. This historical aspect constitutes a clear contribution to its aesthetic value.

3.7.2 *Setting*

The symbolic significance of the Civic Centre's location in the centre of the Abercrombie Plan has already been noted. Several nearby buildings, including the Guildhall, St Andrews Church, the Court house and the Theatre – together with their landscape precinct - combine to establish a civic and cultural quarter appropriate for a city of the importance of Plymouth. The Civic Centre makes a key contribution to this cumulative aesthetic value.

The detailed design of the Civic Centre's setting is also of interest as a comparatively rare example of an early post-war civic landscape. Here the skills of Geoffrey Jellicoe are seen in the organisation of the immediate precinct – The Great Square. The use of water, fountains, a variety of paving materials, contrasting axial and arabesque planting enclosures, bespoke seating, trees and lighting all combine to produce a distinctive civic environment that complements the architectural character of the buildings and extends their impact by embedding them in a wider urban setting. The significance of this work is confirmed by its designation as a Registered Park and Garden and its contribution to the ensemble was intended, and must still be understood, as an integral part of the whole Civic Centre composition. (See further below – Landscape Works)

3.7.3 *Public access*

In addition to the secular quality of the Civic Centre generally, the allocation of the roof level for public use and enjoyment of the spectacular views (superseding initial proposals for a staff canteen) could be seen to be of particular significance in the sense of 'giving the city back to its inhabitants'. The achievement of the building was not only to provide for all the programmatic functions of civic governance but also to enable the citizens themselves to experience a sense of ownership of the city through being able to access its summit and survey its entirety from the best vantage point available.

Plymouth Civic Centre

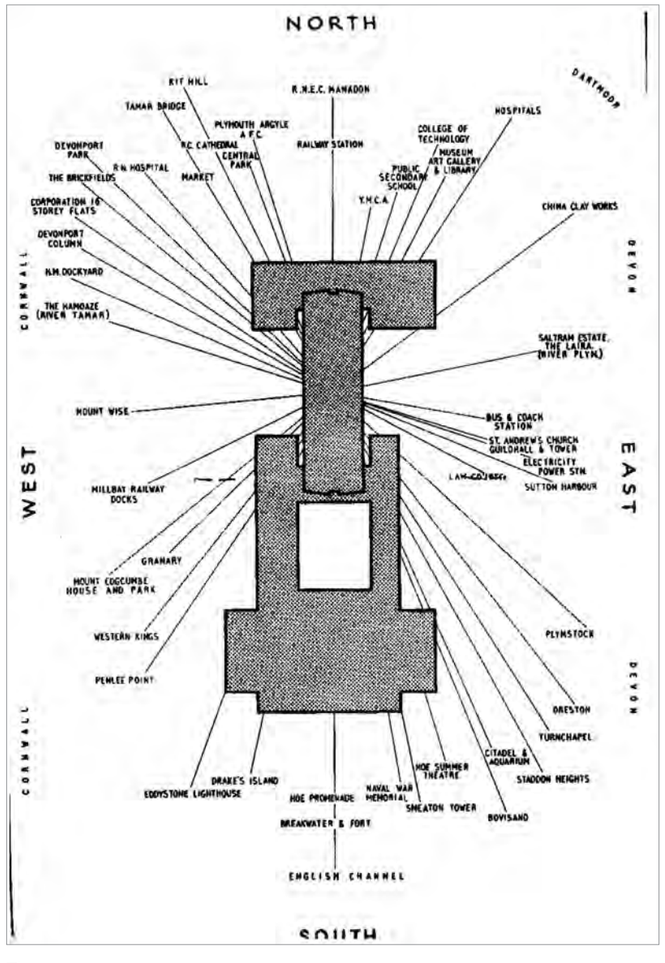
Feasibility Study

Views from the tower

Golden Lane tower, London

Plymouth Civic Centre tower

Guildhall campanile and Civic Centre defining the axis of Armada Way



The tower panorama

Although this facility was closed in 1975, Plymouth Civic Centre may be the first example of this design device of allowing an electorate to 'stand above' their representatives – an architectural gesture now made familiar by such larger examples as the Australian Parliament building in Canberra, the rebuilt Reichstag in Berlin and the Welsh Assembly in Cardiff.

An additional feature at Plymouth Civic Centre was the introduction of an exhibition gallery at first floor within the tower – another gesture of public inclusion.

3.7.4 *Skyline*

It is evident from the early scheme design by City Architect Hector Stirling that the Civic Centre was always conceived as a composite of podium and tower and that the latter should have a distinctive roof treatment. In fact it seems clear from an early model that the initial proposal by Stirling – a hooded shell-like form of Festival of Britain provenance - whilst sculpturally assured in itself, would have made a more modest impact on the skyline than the eventual scheme, extending as the built version does over the full tower footprint and therefore reading equally clearly from any direction. There are few contemporary equivalents where a separated roof canopy has been used to such positive effect on an otherwise regular tower, the celebrated 'sail' at Golden Lane, London appearing almost whimsical by comparision.

When it was completed the Civic Centre with its signature gull-wing roof was the dominant landmark on the Plymouth skyline, visible from many points in the city as well as from ships in Plymouth Sound. That this most prominent feature of the city's post-war skyline was also its centre of municipal governance only added to its civic significance. Even now, despite the more recent appearance of other tall buildings around the city, its distinctive silhouette – rather like the dome of St Paul's in London - continues to serve as Plymouth's central urban marker, sustaining and reinforcing the axis of Armada Way and indicating its mid-point between North Cross and the Hoe.

3.7.5 *The Civic Centre/Town Hall (EXTERIOR)*

The assessment of aesthetic value now considers each element of the Civic Centre in detail, noting the original design and any principal subsequent alterations and then identifying heritage significance. The exteriors of all buildings are considered first, followed by the interiors.

Tower

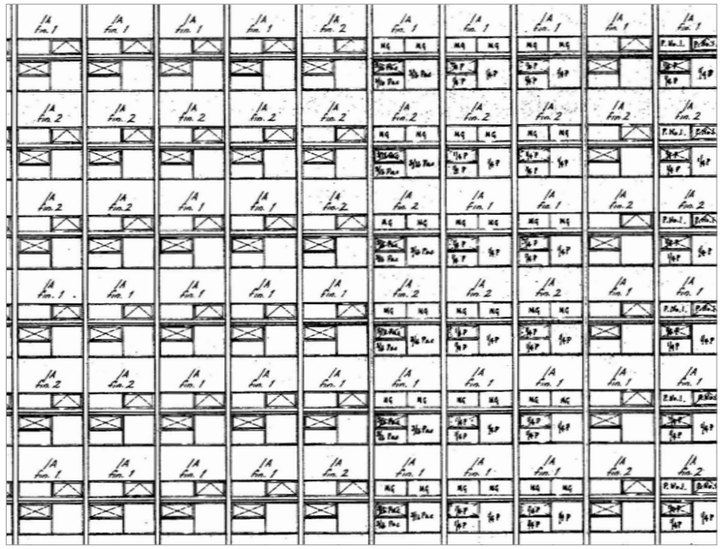
Original design

The tower, containing the bulk of the administrative accommodation, is composed as a bilateral twinned cabinet, almost exactly square in its principal façade ratio, each side being encased within a panelled frame and visually separated from both the podium and the roof canopy by deep shadowed recesses.

Plymouth Civic Centre

Feasibility Study

AVANTI ARCHITECTS



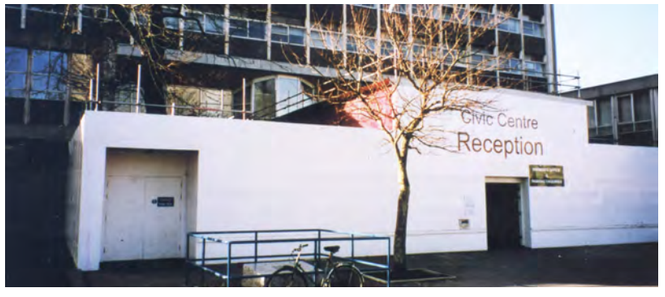
Elevation pattern, original drawing

West façade showing the spandrel panel pattern

Close up of window details, current

Original east entry courtyard - note City Coat of Arms over doorway

Amended entrance, 1995



Entrance enclosure now

Subdivided by the central indent of recessed windows on the north and south gables, which effectively reduces its perceived girth, the block presents as two distinct halves. The main façade grid comprises twelve stories by eighteen bays, each bay being subdivided as two windows, with a clerestorey tier set back above a deep concrete lightshelf or lintol which introduces a measure of modelled relief into the main façades. The tower windows are of steel. (In other locations in the complex frames were variously of afrormosia hardwood or polished aluminium.) The typical fenestration format comprises two offset top-hung openers with fixed lights in lower half and opposing quarters. The upper tier was glazed in prismatic glass.

The spandrel cladding panels on either side are faced with two colours of granite aggregate and arranged in a series of geometric progressions based on the Fibonacci scale. The bays are framed by continuous vertical Portland stone clad mullions which stand slightly proud of the lightshelf lintels to give a vertical emphasis to the façade modelling.

The top floor is expressed separately as a glazed penthouse, the accommodation enclosure being recessed deeply from the perimeter edge of both the main building and the roof canopy, serving to suggest the unsupported appearance of the latter. Here the screen frames are of aluminium.

At its base the central portion of the tower presented an open and transparent aspect, being extensively glazed on both east and west façades, with the entirety of the block above being cantilevered out and 'visually' carried on only four columns by virtue of the transfer structure at second floor level. (In fact four further columns, two at each end are concealed within the lower level buildings.) These generous re-entrants, originally on both sides of the ground floor, proclaimed the main entrance point, public foyer and west courtyard and relate the transverse axis of the building to the Guildhall to the east across the Great Square.

Alterations from original design

Various alterations to the main tower have taken place over the half century since its completion. Attachments at roof level, relay aerials and the like, compromise the lightness of the canopy by giving the impression of acting as supports – which of course they are not. Ideally they would be reconfigured in such a way as to avoid this effect, or removed altogether. A stand off guarding has been added around the terrace parapet.

At low level a large plywood construction has been erected in front of the entrance, intended to protect visitors entering the building from the possible risk of loose fragments of concrete falling from above. This temporary enclosure detracts very considerably from the original entrance experience. Prior to its erection a projecting glass porch and entrance canopy had

Middle distance view of tower with its façade pattern

Spa Green Estate, London 1950 - one of many dynamic façades by Berthold Lubetkin

already been extended from the main east facing doors. This intervention, undertaken in 1995, clumsily detailed and corrupting the tower soffit line, also involved the removal of an etched City Coat of Arms by artist Alan Collins in the original glass entrance screen. The original separate means of entry into the north office block (to the Housing and Children Departments) also appears to have been closed off as part of the above alterations – all visitors now being channelled through the reception system in the main foyer. (The ply covering currently conceals these sides of the entrance re-entrant.)

Other main alterations include the replacement of cladding panels and windows on the north and south gables, undertaken in the early 1990s.

Heritage significance

The tower is a sober mid-20th century office block, distinguished more by its provenance and primary contribution to the composition rather than by virtue of intrinsic architectural quality. However there is definite interest in the articulate, sculptural character of the main volume, its façade modelling and in the variegated treatment of the spandrel panels which impart a dynamic aspect that, depending upon conditions of weather and light, can read almost as an abstract cloudscape against the background sky.

This particular aspect stands out from the orthodox modernist canon which generally adopted a restrictive approach to façade design (see previous illustrations) and would regard such willful intervention as 'formalist'. Plymouth Civic Centre's façades are a solitary attempt to grapple with the compositional challenges of large repetitive modern buildings which very few architects were brave enough to confront, the only substantial contemporary exponent being the Russian master, Berthold Lubetkin.

The roof canopy design is also of particular interest in the way it transposes the splayed plan geometry of the gables into its extruded cross section thereby presenting as a logical extension of the building's essential identity, rather than as a gratuitous rhetorical addition as is so frequently the case in signature rooftop canopies in current building design. The concrete soffit was originally painted a bright yellow, (which remains).

The lower level treatment of the tower block around the entrance forecourt and foyer greatly enhanced the Centre's sense of legibility, and by implication, accessibility to the community it was intended to serve. As such it is an accomplished application of the Modernist device of employing pilotis to reclaim the ground plane from the raised building carcass above to provide maximum freedom of entry and circulation.

The heritage value of the façade materials themselves – the concrete and the windows – is regarded as sufficiently modest as not to preclude sympathetic replacement if new performance requirements so dictate.

View showing extension of offices to west of tower

North block façade, original view

North block façade, current

North west corner, as amended

The raised 'ring block', original view

The south block, current

The courtyard / pool inside the ring

Administrative offices
Original design
The offices at lower level occur in two distinct tranches – the transverse block placed below the north gable of the tower on an east-west axis (originally occupied by the Housing and Children Departments), and the rectangular 'ring' of offices that is raised on pilotis and connects the tower base with the Council House block to the south and which includes the Town Clerk's office suite. The former (referred to here as the North Block) presents as a regular curtain wall two-storey office block, with a recessed plinth along the north-facing façade that gathers height towards the west as the ground falls away and returns along the western edge of the building complex below the ground platform where access is provided to the lower ground car park and service undercroft. Its east and west flanks are treated as closed façades with storey height cladding panels and only local punched openings. The glazed north façade addresses Royal Parade across a wide apron of grass and trees.

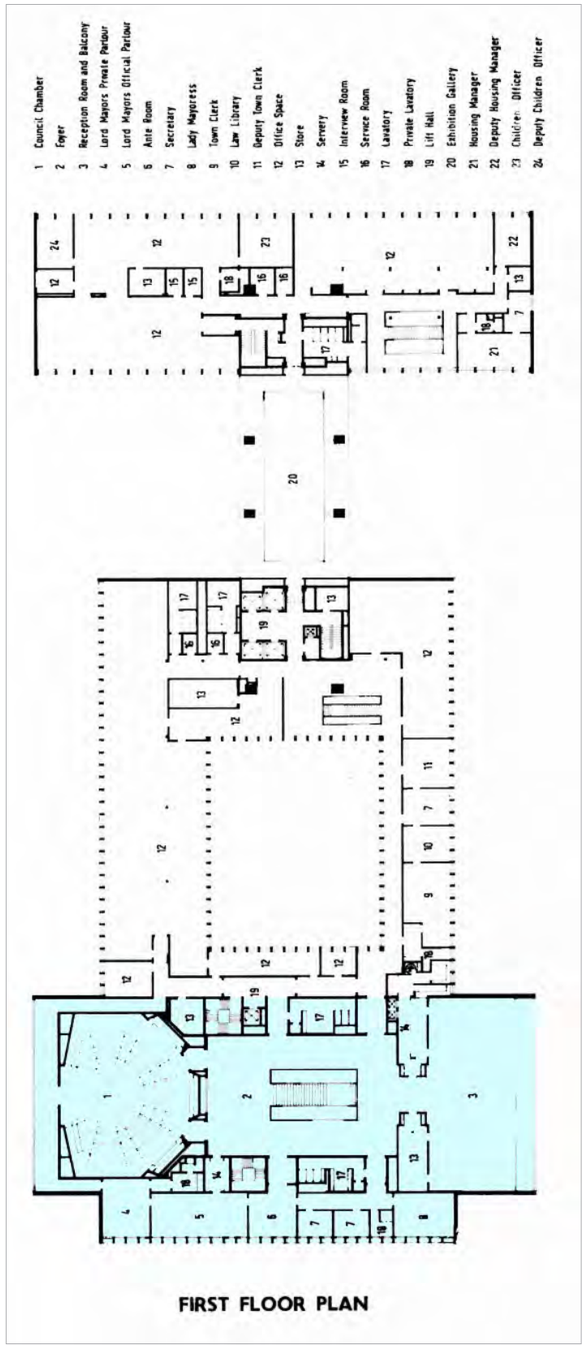
The raised 'ring block' allows views and access through to the west across the ground plane from the Great Square, framing the pool and also serving to integrate the Council House with the rest of the complex by seeming to penetrate its volume and re-appear on its south-facing flank at the southern edge of the site – the (red Murano glass) mosaic-clad columns providing material continuity around the perimeter. Recessed behind these columns tranches of Delabole slate-clad accommodation occur at ground level. Here the offices are presented as a single storey tier, with regular fenestration to the east and west façades only on the outward elevations, but with continuous fenestration around the inside of the ring.

Alterations from original design
Additional tranches of office accommodation have been developed on the west side of the original plan below the tower, which extend the original block southwards, in a spur of 2 storeys on the outer edge becoming a single storey and infilling the western courtyard up to first floor level. These extensions, though providing significant additional accommodation, completely obscure the transparency of the ground floor entrance hall and detract from the legibility of the original plan form. The extension envelope is nonetheless constructed in a matching style, joining seamlessly with the original west facing flank wall. The single storey portion runs out in a wide flight of external steps which connect the first floor level with the main ground platform. A further consequence of this intervention was the removal of one of the two external concrete spiral staircases which connected the platform with the lower ground level on the west.

In addition, the north-facing façade of the north block has been replaced with a conventional curtain wall, losing the rhythmic treatment of the original fenestration.

Plymouth Civic Centre

Feasibility Study



Council House *'piano nobile'* shaded

Plymouth Civic Centre - Council House

The porte cochere entrance

Members' Garden

Plymouth Civic Centre

Royal Festival Hall, London

Heritage significance
The interest in these lower level elements lies in their role in integrating the ensemble, and the architectural consistency with which their material vocabulary serves to unify the various components of the complex into an articulate composition. The use of high quality materials in the glass mosaic (procured from Murano and applied by Italian craftsmen) and riven Delabole slate cladding indicates the importance attached to those parts of the ensemble whose 'enrichment' could be appreciated at ground level.

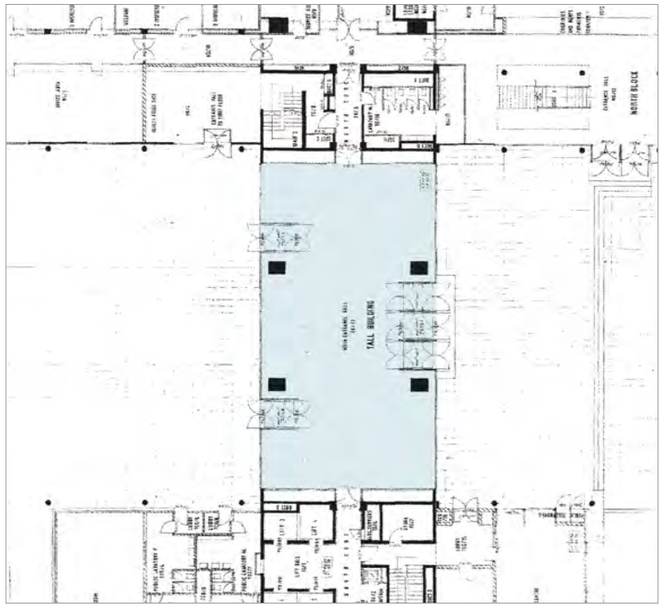
The heritage value of the main façade materials themselves, as in the case of the tower – the concrete and the windows – is regarded as sufficiently modest as not to preclude sympathetic replacement if new performance requirements so dictate. The mosaic and slate claddings however are of special value and deserve conservation repair if remedial measures works are required.

Council House
Original design
The Council House is configured in a two storey rectangular block of approximately 3:1 plan ratio, the upper level (which contains the council chamber itself) being expressed as a double height '*piano nobile*' raised on two tapered pilotis over the east-facing ceremonial entrance. The block is presented as open at each end with solid storey-height panel cladding along its sides, and a large rooflight zone over the central landing. At the east end the large reception hall opens on to a wide balcony which overlooks the civic precinct. At the west end the block overlooks a small Members' Garden.

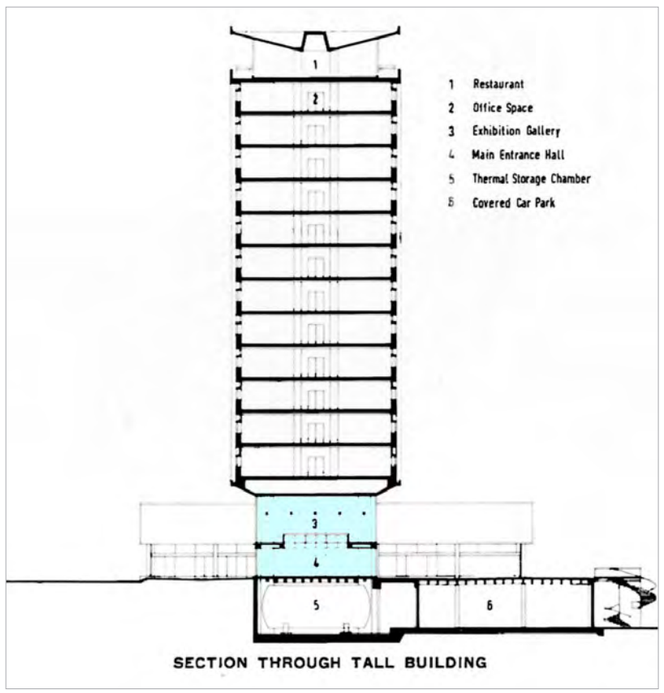
In the south-facing block of offices, which reads as an extension of the linking 'ring' (see above) the upper level windows to the Lord Mayor's suite, which are recessed in deep reveals, were double-glazed with anti-sun glass.

Alterations from original design
The rooflight, which was originally formed with glass pavement lights, has been overclad with a protective translucent dual-pitched cover. Otherwise, though there has been localized damage to the mosaic cladding, there appear to be no significant architectural alterations to this part of the complex, except for local window replacements.

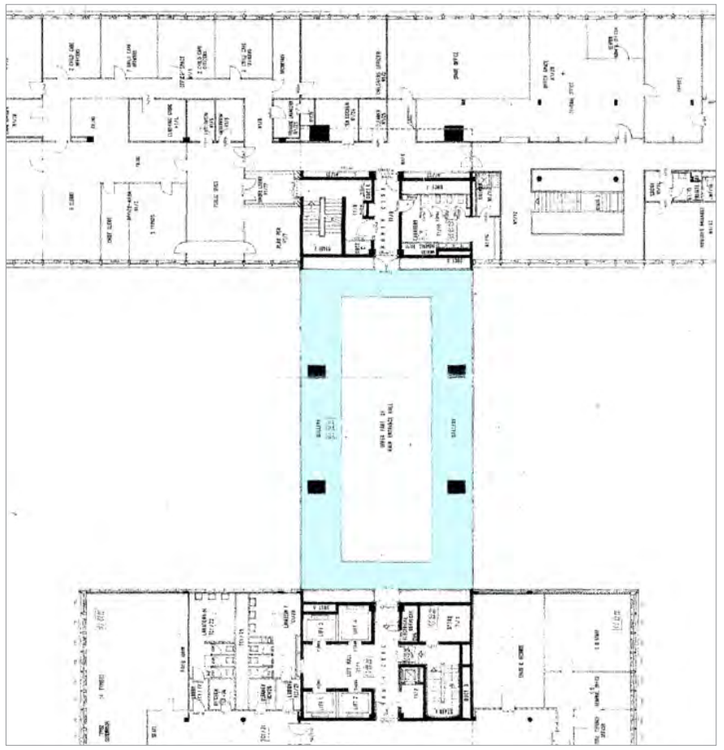
Heritage significance
The Council House is a notable early post-war essay in modern civic/ ceremonial architecture, in this case made more interesting by the way it is integrated into the Civic Centre ensemble and succeeds in counter-balancing the vertical dominance of the tower. In place of the monumentality and ornamentation employed in 19th and early 20th century public buildings as a means of conveying 'civic status', here the building uses proportion, symmetry, purity of line and selected fine materials to express the



Ground floor plan 1959, with entrance foyer shaded



Section looking south - entrance foyer shaded



First floor plan, with gallery shaded

Entrance foyer, original

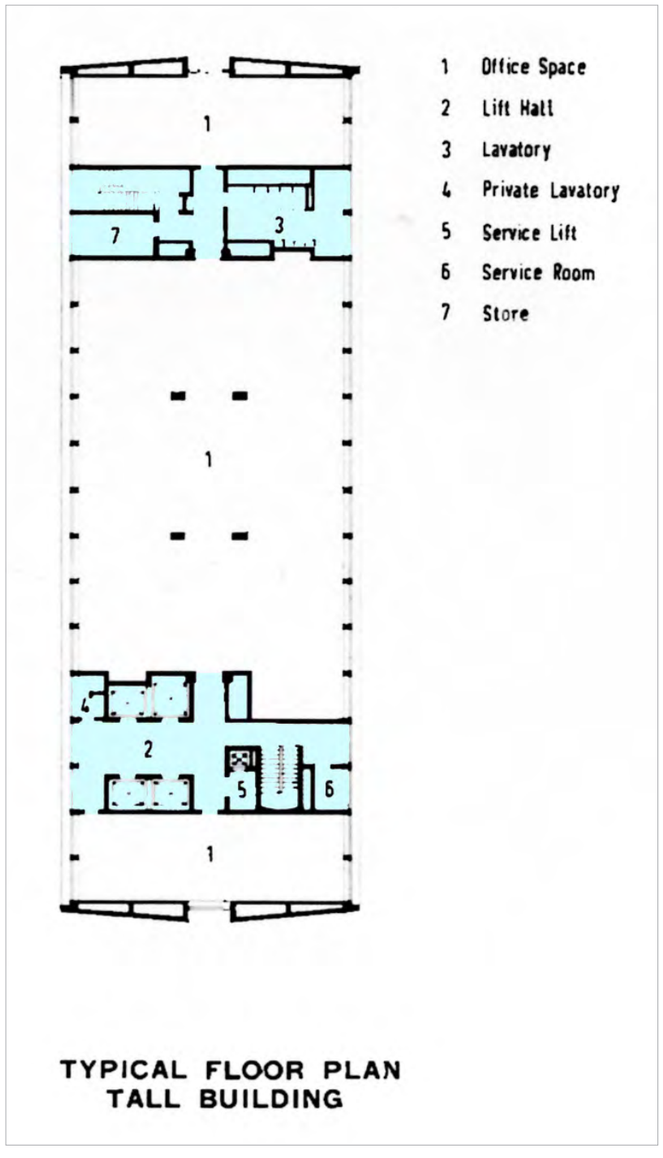
significance of its ceremonial purposes in a democratic idiom. Its general conception and manner may be compared with such buildings as the Royal Festival Hall in London, where a similar secular formality is evident albeit on a larger scale. The application of modern architecture to such ceremonial tasks was still in its early stages in post-war England and there is considerable interest in such a carefully conceived and executed example from this period. The interior treatment (see below) adds further to this special significance.

Several of the materials and elements are of particular value including the mosaic and slate as noted above, and also the large format windows which are of high quality hardwood. These deserve a conservation response, with like-for-like replacement only if refurbishment cannot achieve a viable result.

3.7.6 *The Civic Centre buildings (INTERIOR)*
Tower – Entrance Foyer
Original design
The principal entrance to the municipal offices was (and remains) from the east. The red and black paving of the forecourt continued through the entrance hall, the materials changing to alternating panels of red Verona and dark Levant marble set in terrazzo. The four main columns were faced in locally quarried and polished Ashburton marble, while the ceiling soffit is finished with yellow glass mosaic from Naples, uplit from suspended flourescent lighting troughs. At each end doors lead into the adjacent lift lobby and office areas. A cantilevered gallery encircles the foyer at first floor level and connects to the adjacent office floors. The foyer was extensively glazed along its long sides admitting abundant natural light to the interior. A free-standing hexagonal information kiosk with its own canopy was installed in the central floorspace of the foyer. A modest quantity of fixed seating was placed along the eastern side of the hall. Fine hardwoods and exotic veneers were used in many of the fittings and joinery work – opepe, figured avodire and agba.

Alterations from original design
The entrance foyer has been considerably altered from its original form. The temporary timber protective porch leading from the Great Square has already been noted, but it will be understood from study of the original photographs how considerably this affects the experience of entering the building.

Having reached the foyer itself there are further alterations following a major refurbishment in 1995. The original information kiosk has been replaced by an extensive reception counter, and the fine terrazzo/marble floor has been overlaid with carpet. The quantity of seating has been increased to create large waiting zones, with various information screens and associated paraphernalia replacing the distinctly minimal look of the original photographs. The Ashburton marble column facings have been replaced



Typical floor plan - lift, stair halls and service zones shaded

Entrance foyer, current

Lift hall, original

Lift hall, current

at gallery level and the gallery balustrade has also been replaced. A spiral staircase has been introduced at the northern end, connecting to the first floor gallery, and the additional office accommodation on the west side of the building has completely obscured the sense of transparency through the foyer, except at gallery level.

Heritage significance

The original ambience of the Entrance Foyer was a precise reflection of the architectural aspirations of its designers. Combining spaciousness, lightness, and refinement, it presented a distinctive portrait of early post-war interior design in the modern British idiom. Whilst exact replication of the original appearance is unlikely to be feasible, or arguably even necessary, there is considerable scope for recapturing some of the original elegance of this interior by judicious clearance of accumulated clutter and the re-presentation where possible of original materials. A well conceived new scheme would surely improve the perception and experience of the building for visitors and staff alike.

Tower – Lifts, stair halls, and service zones

Original design

Service zones are placed towards each end of the tower plan, being originally separated from the office areas by fusible link shutters and containing lift and stair cores, lavatories and storage rooms. The lifts are grouped in a quartet in the south core. A separate small mail hoist operated independently to serve each floor level. The lift halls throughout the building were panelled with zebrano veneers, with illuminated ceilings framed in a dark dado band opposite the lift doors. The lift doors themselves are stove enamelled with a dramatic arrowhead design in white and dark green, apparently intended to alert people to the closing action of the doors. Other details of signage and lighting convey a sense of the period.

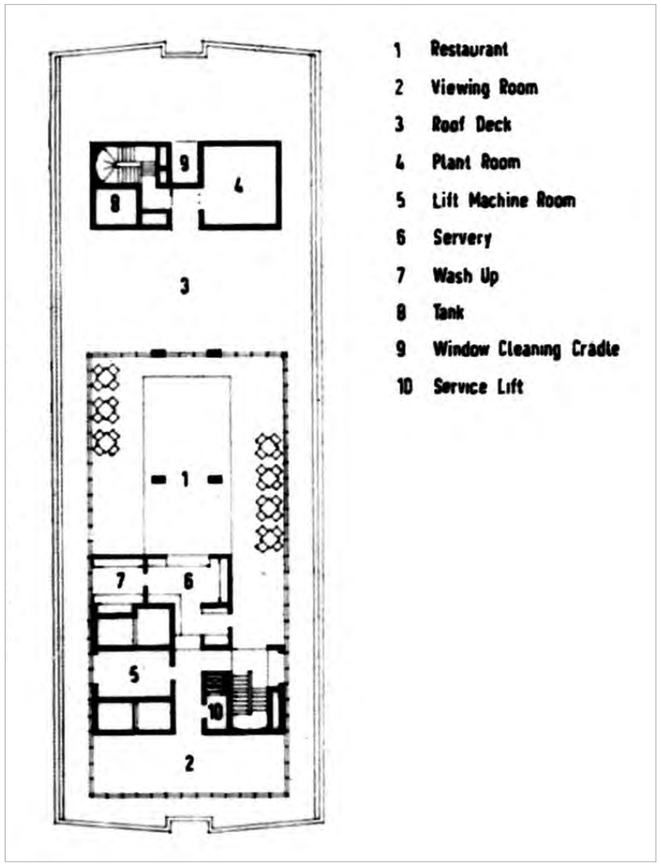
The staircases are located on diagonally opposite corners of the service zones and comprise simple concrete flights arranged in a dog-leg plan. The toilet area is placed in the corner diagonally opposite the lift core and with male/ female designation on alternate floors up the building

Alterations from original design

Apart from miscellaneous fixings and signage, updating of emergency lighting and routine redecoration little appears to have changed in these areas.

Heritage significance

The veneered panels that line the lift halls are of some architectural value, as is the striking design of the lift landing doors. Otherwise there is no significant heritage value in these areas or in the lift installations as such, which though advanced for their period, have been superseded by later lift



Roof deck plan

Roof terrace, original

Typical office floor

View over Plymouth Sound from south gable windows

Roof terrace, current

technology. Assuming lift installations require replacement there would be a case for sympathetic re-interpretation of the distinctive landing door motif to register the original interest of this detail, and improve on the bland conventions of current lift design.

Tower – Office accommodation
Original design
The main office floors are configured as flexible generically planned areas between the service cores interrupted by only the four central columns that define the centre corridor zone. The planning module (4'6") – 9' across a whole bay - was intended to provide multiple permutations for partitioning and fit-out. At each end of the plan, beyond the service zones a further office area is created which enjoys the outlook on the gable ends to north and south respectively. These were originally intended for occupation by the Chief Officers of the respective departments and their deputies. The views from the gable windows, northwards towards Dartmoor and especially to the south where they extend far over Plymouth Sound to the English Channel, are nothing short of spectacular.

The east and west window walls are lined with heating convectors in each bay, the windows being fitted with Venetian blinds for sun control. The upper clerestorey band was glazed in prismatic glass to defract light as deeply as possible into the room depth. Vertical service voids are formed within the splayed gable ends.

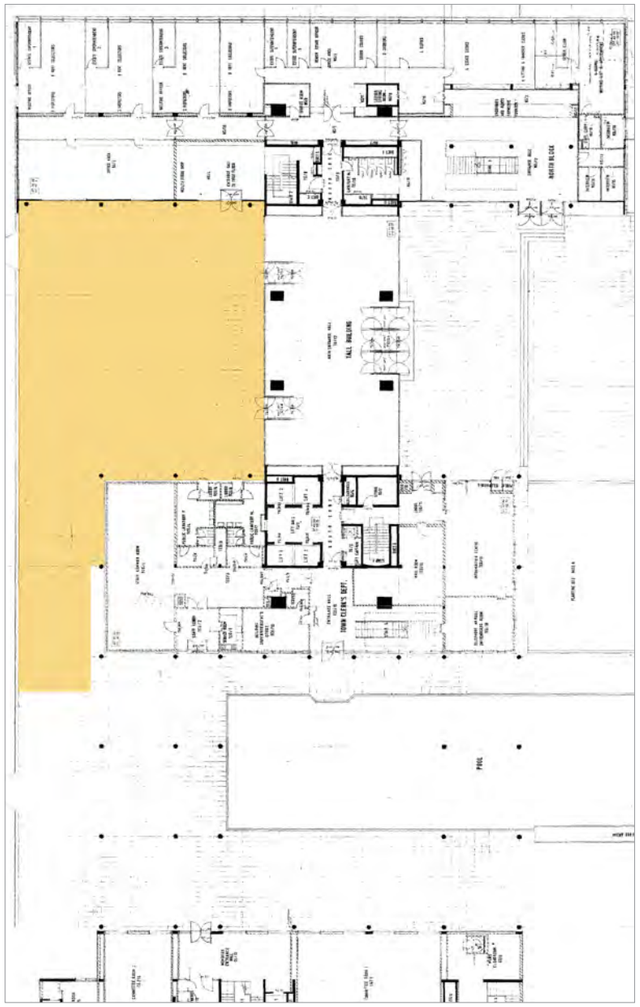
Alterations from original design
The tower floorplans were designed as repeating generic office areas, and subsequent alterations have consisted mainly of differing modes of occupation rather than in major architectural interventions. Several floors have been subdivided by the installation of partitioned offices and the formation of a central corridor.

Heritage significance
There is little or no intrinsic heritage significance within the office floor areas as such. Their value lies in the planning rationale, which facilitates equally either open-plan use or subdivision and compartmentalisation if this is needed for a particular mode of operation. The window wall, if replaced, should however reiterate the original spandrel/window proportion to retain the essential rhythm of the external façades.

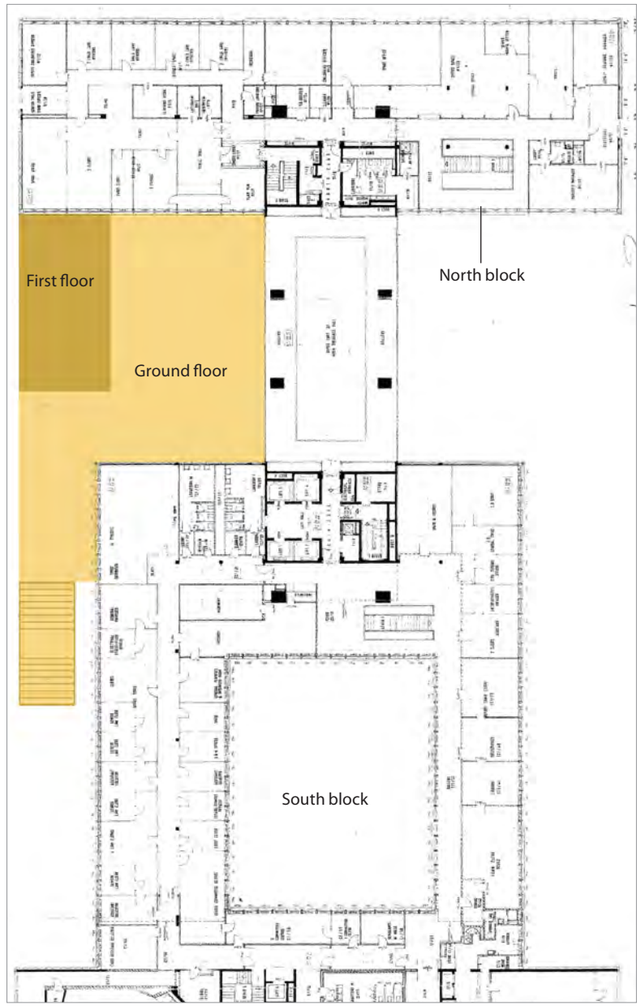
Tower – Roofdeck level
Original design
Above the last full office floor, the tower continues for a further level to provide a partially enclosed top floor and roofdeck terrace. This was originally operated as a public restaurant and viewing gallery. Access was by staircase from the 13th floor, where the main lifts terminated, the top floor accommodating their overrun and machine rooms within the roof profile.

Plymouth Civic Centre

Feasibility Study



Ground floor plan, original



First floor north and south admin blocks 1959, shaded tones indicating plan alteration

Kenneth Clark mural

The glazed enclosure is set back from the building edge and covers slightly more than half the length of the roof, leaving an open viewing deck and perimeter walkway. A smaller separate pod towards the north end encloses the secondary escape staircase, provides tank and plant room area and included a docking recess for the window cleaning cradle.

Alterations from original design

The restaurant was closed in the mid 1970's (apparently due to access limitations) and the enclosed accommodation has been taken over as meeting room and storage area. Some of the original restaurant fittings remain.

Heritage significance

The provision of public access and use to the summit of the tower is of great significance in terms of communal value as previously noted - both symbolically in signifying a sense of ownership by the townspeople of their city, and literally in providing a dramatic public viewing amenity. The restoration of this amenity could be an important means of recapturing the interest of the public in this building, and its feasibility would merit investigation. Assuming the glazed perimeter screens require replacement to meet current performance standards they should be re-fitted to a sympathetic equivalent design.

Administrative offices – North Block

Original design

This two storey block placed on an east-west axis under the north end of the tower contained the Housing and Children Departments. These are laid out in a combination of open plan areas and individual offices, together with interview rooms and support facilities. The Housing Department, located at ground level and approached from the east forecourt, was designed with a 35ft long rent payment and enquiry counter made of solid agba with a blue-green linoleum top. The Children Department at first floor level was approached from the west forecourt and included a play area decorated with a ceramic mural of birds, flowers and animals designed and made by Kenneth Clark.

Alterations from original design

Various internal alterations have occurred in these areas in response to changing operational demands, but the principal intervention has been the addition of the further accommodation to the west side as described above. (See plans opposite) This work included replacement of windows along the Royal Parade frontage. The Kenneth Clark ceramic mural was also removed in the later reorganisation of this area.

Large Committee Room

Corridor leading to Town Clerk's Suite

Council House grand staircase

Engraved glass screen by John Hutton

Engraving detail - Neptune

Small Committee Room

Members' Room

Mural by Mary Adshead in Members' entrance hall

Heritage significance
Apart from the artwork noted there is not now considered to be any particular heritage significance in the interior layout of these office areas. They were intended as functional working areas and pragmatically planned.

Administrative offices – South Block
Original design
The southern ring of first floor offices comprised large areas of general office space on the west, north and south sides, with the more bespoke suite of offices for the Town Clerk's department ranged along the east. Principal access is via staircase on the north side of the ring where a ground floor entrance is located centrally adjacent the pool, though the 'racetrack' corridor also connects this floor to the Civic Suite block to the south. These offices areas were generally designed to a functional standard, but the Town Clerk's suite and the adjacent corridor is particularly well finished in veneered panelling, the corridor benefiting from being single banked only, with views westwards over the pool.

Alterations from original design
The original plans show the wider west tranche of office space as a single open plan area, but this has subsequently been formatted into two ranges of compartmentalised offices with a central corridor.

Heritage significance
There is little intrinsic heritage value in the offices as such, except for the Town Clerk's suite with its special finishes, which deserve to be refurbished to a conservation standard. The interest in this part of the building is in the clarity of planning and the way in which all the different elements of the complex are appropriately located, linked and interrelated. The plan presents an ideal resolution of the multiplicity of requirements of a large municipal headquarters, providing both connectivity and separation according to operational need.

Council House
Original design
The Council House or Civic Suite is the most ceremonious, spacious and richly appointed element of the complex, comprising suites of committee rooms, the Lord Mayer and Lady Mayor's parlours, generous congregation areas and reception facilities and the Council Chamber itself. Entered from the east via a covered porte-cochere, the block is symmetrically planned on the east-west axis. The ground floor presents a wide ceremonial stair leading up towards the Council Chamber. The stairwell perimeter is enclosed with glazed aluminium screens embellished with engravings by John Hutton in range of maritime themes, ancient and modern. The columns are faced on alternate sides with Ashburton and Sicilian marble.

Plymouth Civic Centre

Feasibility Study

Upper foyer looking towards Council Chamber, with coat of arms above

View of cantilevered stair from Members' lobby

The Civic Plate Cabinet

Raised doors of courbaril

Mayor's Suite

Views of the Council Chamber, original

View of the Council Chamber, current

The Reception Hall, viewed from Musicians' Gallery

Around the lobby, which has a marble mosaic floor in black and white squares, ash wall panelling and embossed ceiling tiles, hung with green Orefors pendant lights, are distributed a series of five committee meeting rooms, each named after a warship built in the Devonport Dockyards. The rooms themselves are richly finished and furnished with bespoke fittings and tables in mahogany and rosewood.
At the west end of the ground floor the general Members' Room gives onto a dedicated garden laid to lawn, with shrubs and flowers in hexagonal boxes set on the surrounding paving.

On the west lobby wall is an engraved tablet commemorating the reconstruction of the city. The members' entrance hall on the north side of the ground floor within the pool courtyard is embellished with a mural by Mary Adshead depicting themes from the history of Plymouth. Another rare hardwood, South American courbaril, is used in the lift-car finishes, adjacent wall panels and the richly fielded doors to the principal rooms.

The main staircase is configured as a series of cantilevers from a reinforced concrete spine. The treads and risers are of afrormosia, as is the moulded balustrade handrail carried on a bronze and stainless steel frame, the guardings being formed in panels of toughened plate glass.

The first floor landing gives access to the mayors' parlours, the council chamber and the large reception suite. The landing ceiling is of fibrous plaster configured in a 'tulip' pattern by means of vinyl panels illuminated from above by fluorescent tubes concealed in the ceiling void. The upper tier of the landing walls is finished with yellow mosaic patterned wallpaper, with the lower portion lined in panels of daniellia, another West African hardwood. A plaster version of Plymouth's coat of arms, made by David Weeks, is mounted on the stairhead wall above a velvet-lined showcase containing the civic plate, which comprises items dating back over some 400 years.

The Lord and Lady Mayor's parlours are planned as an enfilade suite along the south range, again richly panelled and with bespoke furniture. Stairs, servery and support functions are provided in the intermediate *poche* space either side of the main landing.

The Council Chamber is planned as a foreshortened octagon and was designed to seat 90 members, with a public and press gallery at the rear higher level. Considerable attention was paid to the acoustic design, with a reflecting canopy and absorbent wall surfaces, the latter being covered by decorative fabrics designed with inset oil paintings by Hans Tisdall – again referenced to heraldic themes of Plymouth.

Mural by Mary Adshead, 1962

At the other end of the first floor landing, facing east, lies the grand Reception Room over 70 ft long and 21 ft high with a musicians' gallery and covered balcony. Again, high quality finishes and fittings were used, including African elm wall panelling, muhuhu strip flooring, German glassware chandeliers and specially designed curtains by Hans Tisdall.

Alterations from original design
The Civic Suite is virtually unaltered from its original design.

Heritage significance
This part of the Civic Centre is of the highest aesthetic and historic heritage value on account of the quality of its original specification, the high local significance of its art and craftwork, and the authentic state of its preservation. Beautifully planned and meticulously detailed, it stands as one of the most complete and intact examples of any major early post-war public building in England, encapsulating the optimism and confidence of the city in overcoming its wartime tribulations. The subtext of this fine interior and array of artwork was evidently intended to declare that the story of City of Plymouth extended far back beyond the wartime trials from which the building originated and that its illustrious narrative would therefore now continue into a new age with new achievements.

In this context it is also important to note that the selection of suitable artists for the enrichment of the building was entrusted by Plymouth City Corporation to the architects themselves and integrated into the development of the building design. In other words, the art and craftwork 'belong' with, and must be understood as an essential part of the building – they were not just decorative accessories acquired afterwards to beautify it.

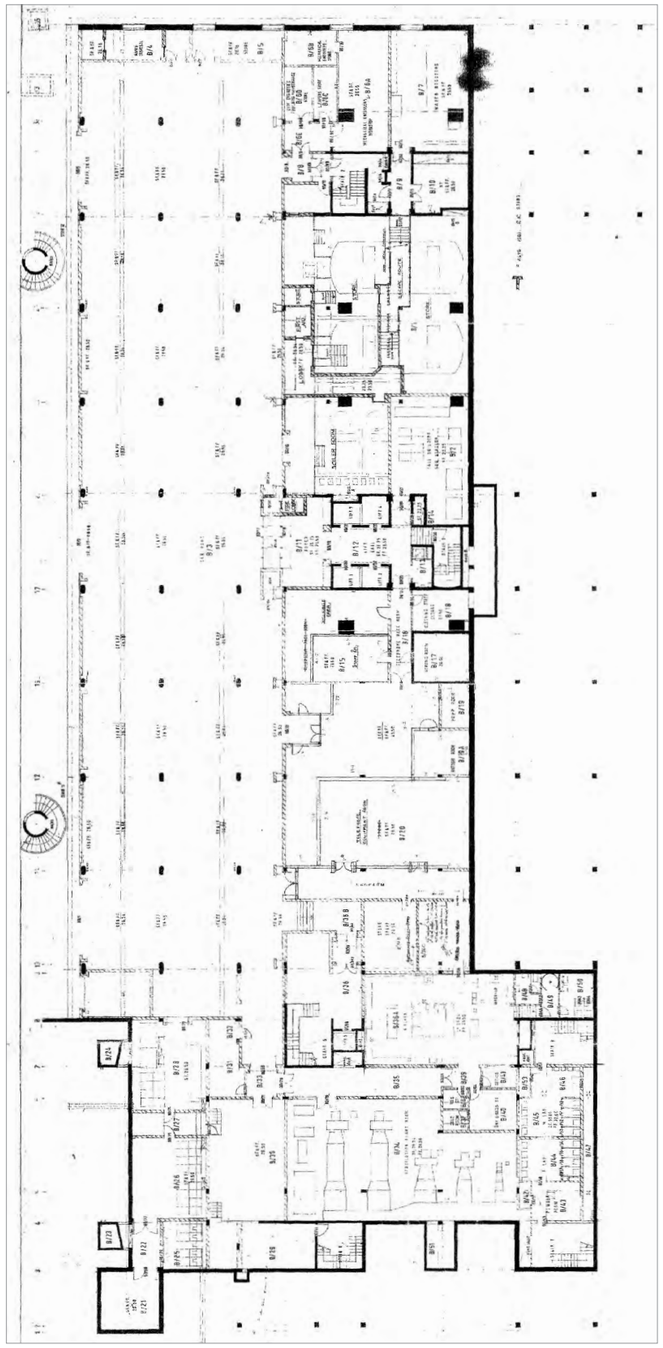
Any necessary works within the interior of the Civic Suite should be undertaken to the highest conservation standard.

Basement carpark and plant area
Original design
Below the tower footprint and extending towards the west is the large covered carpark and plant zone, which effectively supports the ground level platform of the main building complex. Entered from the south-west via Princess Street, this area provided integral parking for 56 cars and is connected directly to the buildings above by lifts and staircases, and also originally by two external spiral stairs to the ground level podium. The main thermal storage chamber is also located within this section, along with a water pressurization plantroom, the telephone exchange, substation, switchrooms and ventilation plant.

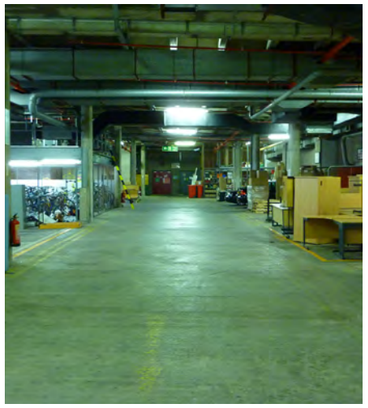
Alterations from original design
The main structural alteration has been the removal of the northern spiral

Plymouth Civic Centre

Feasibility Study



Basement plan



Basement view

Spiral steps

Paving pattern integrates oblique geometry of Guildhall

Aerial view of The Great Square, current

staircase as part of the extension works for the northern office range. (Commentary on the service installations is covered elsewhere).

Heritage significance

This part of the complex is an intelligent exploitation of the site topography providing vital servicing capacity for the main complex, but is entirely utilitarian in terms of construction and detail, with no intrinsic heritage significance. Repair work and alterations may be undertaken pragmatically as required albeit with due regard to the essential structural rationale of the original design.

Landscape works

Original design

The design of the hard and soft landscape works surrounding the Civic Centre was undertaken by Geoffrey Jellicoe and incorporated into the reconstruction plan for Plymouth as formulated by Hector Stirling on the basis of the Abercrombie- Paton Watson. Stirling had envisaged a major public square 'The Great Square' on Armada Way at its intersection with Royal Parade which would provide both a setting for the Civic Centre buildings and integrate them with the adjoining public realm and the other buildings bordering it, most notably the Guildhall, which was orientated on an historic oblique geometry.

Jellicoe is later reported to have described the design task as calling for 'dignity and frivolity' to create 'a civic amenity to be enjoyed by townspeople at all times'. The priority was given to pedestrians and the layout was carefully informal, pre-existing trees being allowed to remain and being integrated into the overall design. A variety of effects is incorporated, including water features, planting, street furniture and decorative paving in various materials – granite, Plymouth limestone, slate, cobbles and reinforced concrete.

The sunken pool running out eastwards from within the building complex was mirrored by a raised pool in front of the Civic Centre's main entrance, embellished with fountains and pleasingly formed as a bas relief against the land gradient. Contrasting with their rectilinear geometry is the raised planting area further to the south, edged in an arabesque frame of reconstructed stone that also serves as a continuous informal seating plinth. Elsewhere grassed areas and trees are interspersed with the hard paved zones comprising paviors of differing colours, patterns and materials.

Rings of concrete seating were supported on miniature versions of the tapering pilotis used on the front of the Council House, while rows of conventional bench seats were installed overlooking the raised pool opposite the main entrance. Carefully specified and located precinct lighting completes the piece. Tree species include chestnut, lime and ulmus glabra with shrubs of phormium cookianum and a variety of mixed bedding plants.

Plymouth Civic Centre

Feasibility Study

AVANTI ARCHITECTS

New entrance to north block

Site edge to Royal Parade

The car park looking south

Continuity of landscaping from Armarda Way through to the courtyard pool

Arabesque planter in front of Council House

Temporary carousel in The Great Square

View west into south courtyard, with planter box, right

Beyond the diversity and informality of the central precinct, immediately to the south of Princess Street, a raised horseshoe-shaped planter 'closes' the square and re-establishes the implied axis of Armada Way.

Alterations from original design

A subway beneath Royal Parade was built in the 1970s (and subsequently removed) and sections of the square were opened to vehicular traffic. A small tent-form cafe was installed on the east side of the square and the original post-top lanterns were removed and replaced by different fittings. Otherwise the original design is relatively intact though details of the circular seating have altered (replacing the tapered supports) and some of the planting has overgrown to such an extent as to obscure the geometrical formation of the arabesque planter. At the time of survey some temporary 'fairground' installations had been placed in the northern paved area just below Royal Parade.

Apart from the above, it may be surmised that if the further elements of the original project – the courts, the treasury, etc - had materialised on the west side of the current complex the desire line from the Great Square going west would have been considerably strengthened and would have added significant meaning to, and motivation for use of, the interior courtyard under the Town Clerk's offices with its reflecting pool. As it is, this area appears somewhat under-subscribed, leading as it currently does only, via the single remaining spiral staircase, to the lower level carpark. The original landscape design seems to call for strengthening this axis to the west and an intensification of this courtyard area.

Heritage significance

The extension of the building design out into the surrounding city through a designed public realm was an integral part of the Civic Centre complex and of the larger ambitions of the Plymouth Plan. It provides a significant example of the more informal and picturesque civic landscape style that evolved after the Festival of Britain, superseding the solemn neo-classical conventions of the pre-war era which no longer chimed with the ethos of the new 'Elizabethan Age'.

At the same time as providing an agreeable environment at ground level however, the landscape was clearly also intended to be read as an abstract design when viewed from height, specifically from the tower. This should be born in mind in the context of controlling the extent of vegetation to ensure this additional value is not obscured by overgrowth or compromised by piecemeal additions.

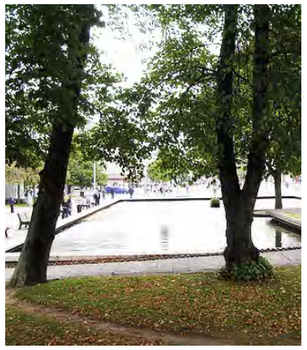
Its importance is recognised in its designation in the Register of Parks and Gardens and it deserves careful and informed maintenance.

Plymouth Civic Centre

Feasibility Study

View north towards The Great Square, current, showing 'tentform' cafe, right

Sir Geoffrey Jellicoe, 1992



Pool framed by landform

Seating in the square (supports altered from original tapered design)

Council House entrance with ceremonial inscriptions

Additional interest lies in the design of the Civic Centre precinct being a relatively early work of Geoffrey (later Sir Geoffrey) Jellicoe (1900-1996), founding member, and president, of the Institute of Landscape Architects, and International Federation of Landscape Architects, prolific author, historian and practitioner, who was to become the doyen of the modern landscape architecture profession.

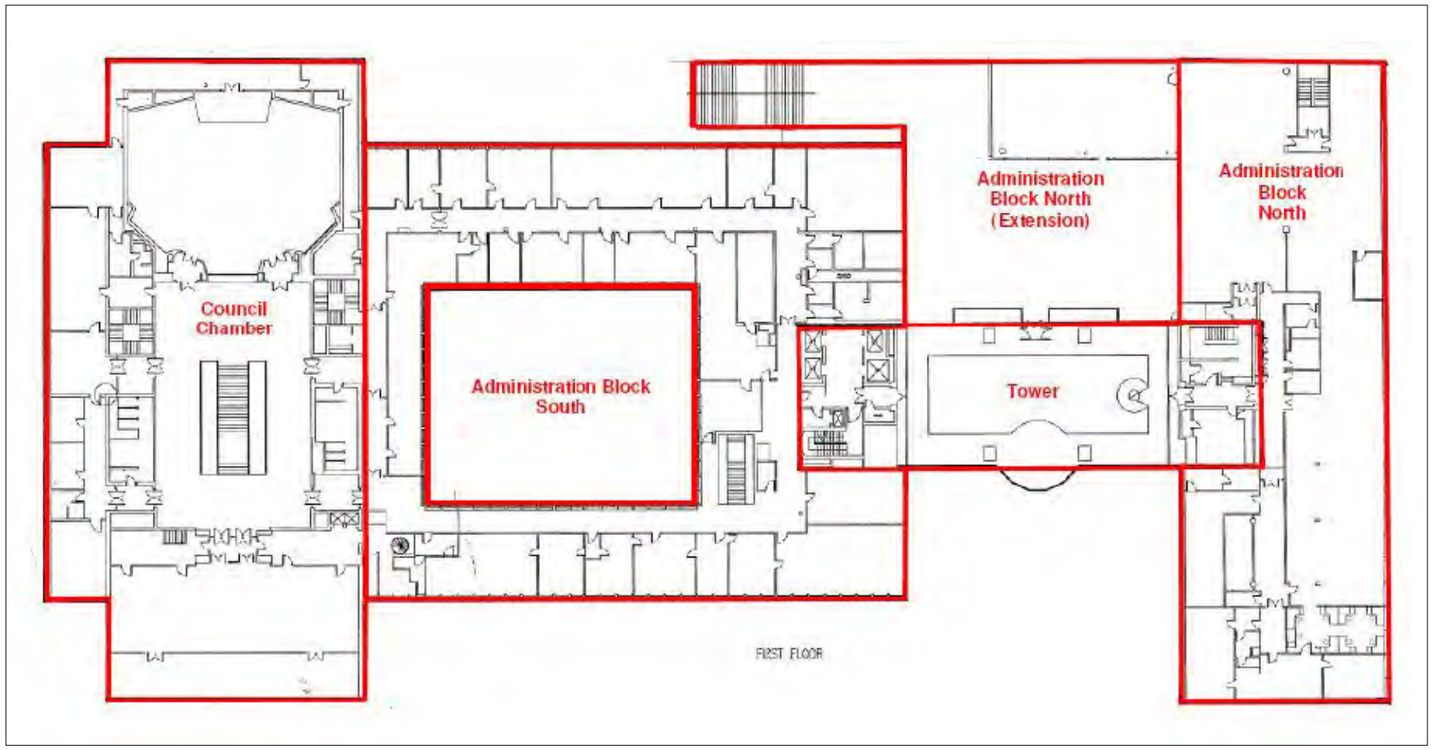
Summary table

The foregoing assessment of architectural heritage significance is now summarised in the table that follows. This is provided for easy reference, but should be read in conjunction with the full text.

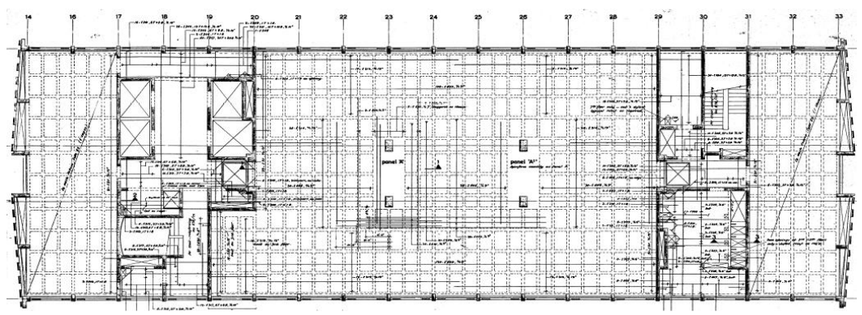
3.8 Heritage assessment - table of significance

ELEMENT	ORIGINAL	ALTERATION	SIGNIFICANCE	RESPONSE
GENERAL				
Civic Centre complex as a whole	Council House, Town Clerk's Offices, administrative office block and landscape precinct set as a composition.	Enlargement of tower base as noted below. (Original use continues.)	Group value. Composition expresses the range of municipal functions in a modern ensemble.	Value of the group relies on retention of its constituent parts, though the parts themselves may be modified.
Setting	Designed precinct complementing building group with pools, fountains, seating and planting.	Lighting and some details changed. Planting overgrown. Fountains disused.	Contribution to civic quarter. Integration with Armada Way. Rare example of modern registered parks and gardens.	General maintenance. Replacement of any damaged elements with appropriately matched equivalents.
Public Access	Rooftop restaurant and terrace on top floor of tower with panoramic views.	Restaurant closed in 1970s. Currently used as storage.	Heritage value is in its use, which symbolized public 'ownership' of the Civic Centre.	Restore to public use. Retain recessed line of enclosure but glazing may be replaced.
Skyline	Gull wing roof articulated from body of tower block. Corrugated soffit painted bright yellow.	Attachment of various installations, aerials, etc.	Roof canopy widely visible around Plymouth and acts as 'civic marker' for central area.	Remove later additions when possible, repair damage. Retain original colour to canopy soffit.
TOWN HALL (EXTERIOR)				
Tower (Main portion from 2nd to 13th floors.)	14 storey block on N/S axis. E/W cased façades in bays, steel windows, and concrete spandrel panel cladding with Portland stone clad mullions. Gables in two halves with central window strip.	Cladding panels and central strip of windows to gables replaced.	Articulation of block form and patterning of façade panel cladding is of moderate interest. Components and materials not of such special interest as to preclude replacement.	Modeled and patterned character of elevations could be reinterpreted in any overall façade replacement scheme.
Tower (lower floors)	Glazed screen façades recessed from tower outline. Main block supported on pilotis. Open forecourts on east and west formed by adjacent low blocks.	West side of office block enlarged on ground floor over original courtyard area. Entrance canopy added over main doorway (1995). Protective cover forming porch added to entry area on east. Original etched Coat of Arms artwork removed.	Open aspect of courtyards (east and west) was important to sense of accessibility and legibility. Artwork was of intrinsic value.	Remove protective porch as soon as repairs overhead permit. Reinstate east courtyard or use free-standing glazed enclosure if cover is required. Reinstate west courtyard if non original extension not required.
Low level office blocks (north)	Two storey flat roofed block ranged east-west below north end of tower. Originally occupied by Housing and Children Departments. Façades glazed to north and south. Gables with concrete panels. Concrete panelled undercroft to gradient along north façade.	West section of block extended southwards on ground and first floors. Podium spiral staircase removed. Original steel windows replaced with curtain wall glazing. South east entrance closed. New entrance formed on east gable end.	North block contributes to group composition. Components and materials not of such special interest as to preclude replacement.	Re-expose south east façade, and remove extension to west if not required. No vertical expansion should be attempted as this would alter separate articulation of tower. But low rooflights could be inserted if required to increase natural light to interior.
Low level office blocks (south) (Ring block connecting Tower with Council House)	Town Clerk's department. Part two storey, part single storey raised on mosaic clad pilotis forming open courtyard with ornamental pool. Slate cladding to ground floor.	Local alterations at south entrance by pool to allow wheelchair access. North façades at ground level obscured by porch and rear extension. (See above).	Ring block contributes to whole group composition. Mosaic and slate claddings are of intrinsic material value and should be maintained to a conservation standard.	Re-expose north east façade. No vertical expansion should be attempted as this would alter articulation from Tower and Council House. But low rooflights could be inserted if required.
COUNCIL HOUSE (EXTERIOR)				
Council House and two storey block to south	Two storey flat rectangular pavilion block, with double height 1st floor 'piano nobile'. Open east and west, façades, solid concrete clad on north and south above abutting blocks. East end recessed with double height aluminium glazed screen and open balcony, supported on tapered pilotis to form porte cochere over ceremonial main entrance below. Lower (2 storey) block to south on mosaic clad pilotis, with slate cladding to Grd. Deeply recessed windows to upper floor. Various inscribed tablets on east of north façades recording ceremonial history of the building.	Rooflight has been overclad with pitched roofed translucent cover. Several windows in south block replaced. Mosaic cladding has suffered damage. Otherwise virtually unaltered.	Notable example of early post-war civic/ceremonial building. Counter-balances the tower in overall composition. Mosaic and slate claddings are of intrinsic material value and should be maintained to a conservation standard. Engraved tablets of historic and intrinsic craft value.	Overall form should not be altered, though rooflight and roof coverings could be upgraded if necessary. The entrances on east and north façades are intrinsic to the planning and should be retained. Repair of materials and components should be to conservation standard with replacements on a like-for-like basis. Upgrade of any other elements, eg. glazing, should avoid any visual impact.

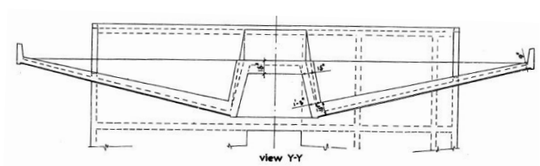
ELEMENT	ORIGINAL	ALTERATION	SIGNIFICANCE	RESPONSE
TOWN HALL (INTERIOR)				
Entrance foyer	Approached from east with marble mosaic floor paving grid continued from exterior. Double height glazed hall with four marble clad columns. 1st floor gallery. Soffit finished in yellow mosaic and uplit from suspended lighting troughs. Free standing enquiry kiosk, with bespoke furniture and fine finishes.	Entry altered by protective enclosure as noted above. West side now enclosed by extension. Kiosk replaced by large reception counter. Floor over-carpetted. Column claddings and gallery guardings changed. Uplighters removed and replaced above gallery only. Spiral staircase and numerous miscellaneous fixtures added.	Original interior was a good example of period interior design. Pilotis and extent of glazing gave spacious open quality to foyer. Fine cladding finishes had intrinsic material value. Uplit ceiling gave dramatic nightime effect.	This key space should be reviewed as a holistic design task tailored to the use to which the tower may be adapted. Any new scheme should aim to reduce clutter and remove any inessential additions to recapture the original clarity and elegance of this space. Original finishes should be conserved where they remain.
Stair halls, lifts, service zones	Main core to south end of tower; zebrano panelled walls; arrowhead design to lift doors.	Some updates to emergency lighting, and routine redecoration, but otherwise little changed.	Main lobbies have a period ambiance. Veneers have some material value. Lift doors distinctive.	Veneers could be retained and arrowhead motif re-interpreted. Generally these areas could be fully upgraded.
Office floors	Planned as adaptable floorplates open or partitioned as required. Offices beyond cores have outlook from gable windows.	Various alterations have been undertaken through the tower to suit changing needs (as was intended).	Heritage value is in the planned adaptability of the floorplate Bay rhythm remains but there is no other intrinsic material value.	The heritage value can best be served by exploiting the adaptability for whatever use is best suited to the tower within the bay rhythm.
Roof deck level	Originally public restaurant with open terrace viewing gallery. Separate pod houses escape stair and cradle.	Restaurant closed to public in mid 1970s. Space now used for storage.	This was a vital public amenity and symbolized ownership by townspeople of their city.	Restore public access to current standards when possible. Glazed enclosure could be upgraded.
North block offices	Accommodation for Children and Housing Departments, comprising open plan and cellular offices. Ceramic mural artwork.	Various internal alterations. Staircase removed. Windows replaced. Mural removed.	No heritage significance in interior. Artwork was of intrinsic craft value.	These floors can be re-arranged within the existing shell as required without detrimental heritage impact.
South block offices	Ground floor entry led to various support functions, staff common room and stairs to first floor. Town Clerk's offices on east of racetrack plan with further office areas on west and south.	Various alterations to office layout and east facing window wall of west range.	Little heritage value in offices except for Town Clerk's suite which has special finishes. Interest lies in the plan form and resolution of functional requirements.	Town Clerk's suite has definite material quality. Otherwise no particular heritage value. Overall plan form should be retained.
COUNCIL HOUSE (INTERIOR)				
Council House	Ceremonial entrance from east leads into generous foyer with grand staircase to first floor. Beyond a glazed screen is Members' lobby committee and Members' rooms Members' entrance from courtyard to north with stairs from basement to first floor. First floor double height with large toplit landing leading to Council Chamber and Reception Hall with musicians' gallery. Mayor and Mayoresses' parlours along south range. Stairs lead up to public gallery and press room. High value and rare materials and finishes are used throughout the Council House, together with a rich array of craft and artwork related to the history of Plymouth.	Virtually no alterations.	The Council House is of high heritage value, both in general architectural terms as a rare example of early post-war ceremonial design and also on account of its considerable material richness and bespoke art and craftwork. (See main text for details).	Any repairs and restorations to the Council House should be undertaken to the highest conservation standard. No interventions should be made that would impact on the integrity of the original design of the main spaces. Service spaces may be upgraded to meet current needs, provided interventions are contained within original areas.
BASEMENT				
Basement areas	Service areas extend as podium under west side of complex. These provided for plant, stores, equipment, kitchen etc and car parking.	Various items of plant have been replaced and/or superseded. Car park no longer used for H & S reasons.	This area is vital for the effective servicing of the complex but is of no heritage interest as such.	Rearrangement of internal plan layout and replacement of plant may be undertaken without detriment to heritage values.
LANDSCAPE				
Landscape works	Abstract semi formal design by G.Jellicoe, two interlocking rectangles, one a shallow pool, the other paved forming the centerpiece. Second pool at right angles running into Civic Centre courtyard, with raised flowerbox termination. Variety of paving materials and patterns. Other grassed or planted areas, including arabesque surround as countermotif. Several mature trees retained and framed in paving or seating. Interesting detail designs to seating, lighting, etc.	Loss of some original details, and overgrown.	This design for The Great Square, now designated in the Register of Parks and Gardens is of interest both intrinsically and as early work of the notable landscape architect, Geoffrey Jellicoe.	Conserve and manage to retain original. Reinstate original lost details (eg. tapered seating supports) where possible.



Structural block diagram



Typical waffle floor slab, Tower



Section through gull-wing roof, Tower

3.9 Structural significance

3.9.1 Summary description of existing structure

The Civic Centre is a braced reinforced concrete framed structure, founded in the slate bedrock and supporting various forms of suspended reinforced concrete slab and roof structures. The Civic Centre complex comprises four distinct and separate structural blocks, separated by structural movement joints, namely the tower, north and south blocks of administrative offices and the Council House. These are described in turn.

3.9.2 The Tower

The sixteen-storey tower comprises various forms of reinforced concrete suspended slab construction, supported by reinforced concrete perimeter columns, internal columns and shear walls.

Vertical loads arising from gravity are transferred through bending and shear action of the floor and roof structures to the columns and shear walls, which in turn transfer these forces to the foundations through axial compression. The reinforced concrete pad foundations transfer the gravity forces to the slate founding stratum through bending and shear action, resulting in an applied bearing pressure to the ground. Load transfer structures at the second floor level permit a major change in column layout, from 38No perimeter and 4No internal columns to a total of 8No internal columns only.

Lateral loads arising from the wind are applied to the slab edges through bending and shear action of the cladding panels and perimeter columns. The suspended floor structures transfer these loads to the reinforced concrete core walls via diaphragm action. Bending and shear action of the core walls transfer lateral loads to the foundations, which in turn apply the loads to the slate founding stratum through bearing, base friction and shear key action into the ground.

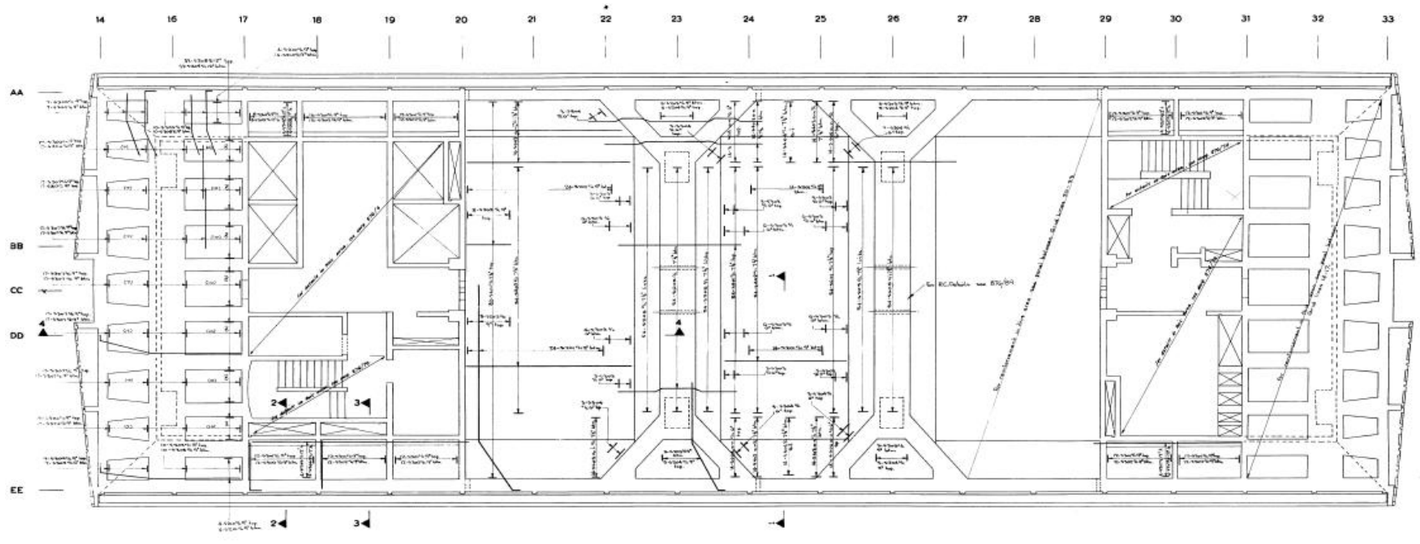
The reinforced concrete gull-wing roof comprises one-way spanning slabs, carried by deep tapered cantilever upstand beams, supported by the internal columns and shear walls. Two structural movement joints are present in the roof, on grids 23 and 26. The slab soffits are externally exposed and feature a subtle ribbed surface, which appears to be an architectural feature.

The main floor structures from third to fourteenth floor levels comprise 10½" deep reinforced concrete waffle floor slabs with solid infill panels at each of the four internal columns and perimeter edge beams shaped to support the cladding panels. Ribs are generally 6" wide, arranged at between 3'and 4'6" centres. The reinforced concrete topping is 2½" thick.

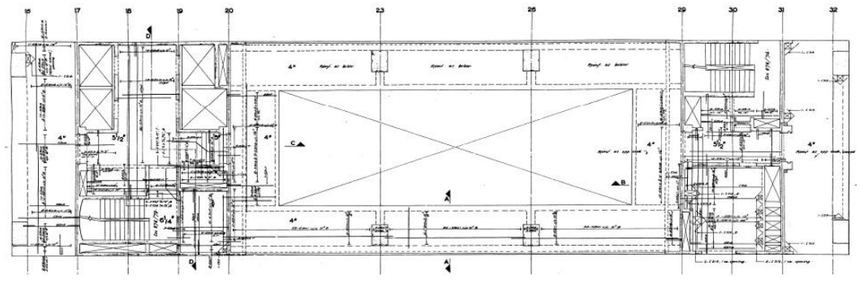
Record reinforced concrete detail drawings indicate that floors seven to thirteen contain additional steel reinforcement to the lower floors. The fourteenth floor also contains greater quantities of steel reinforcement that a typical floor.

Plymouth Civic Centre

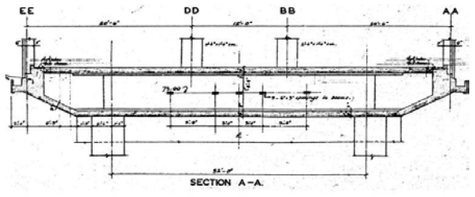
Feasibility Study



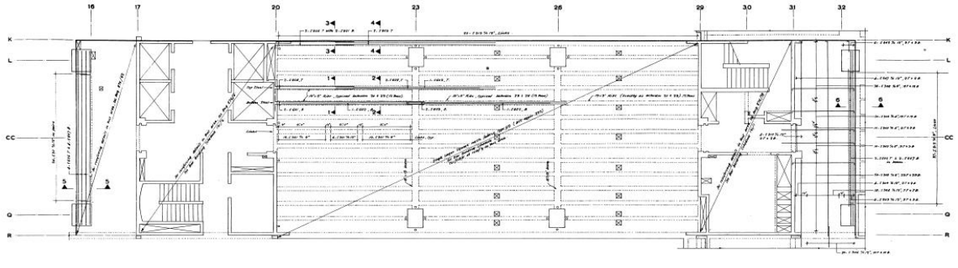
Second floor layout, including deep load transfer beams



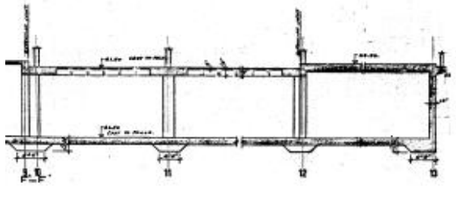
First floor gallery slab



Typical section through second floor slab



Ribbed slab at ground floor



Typical section through lower ground and substructure

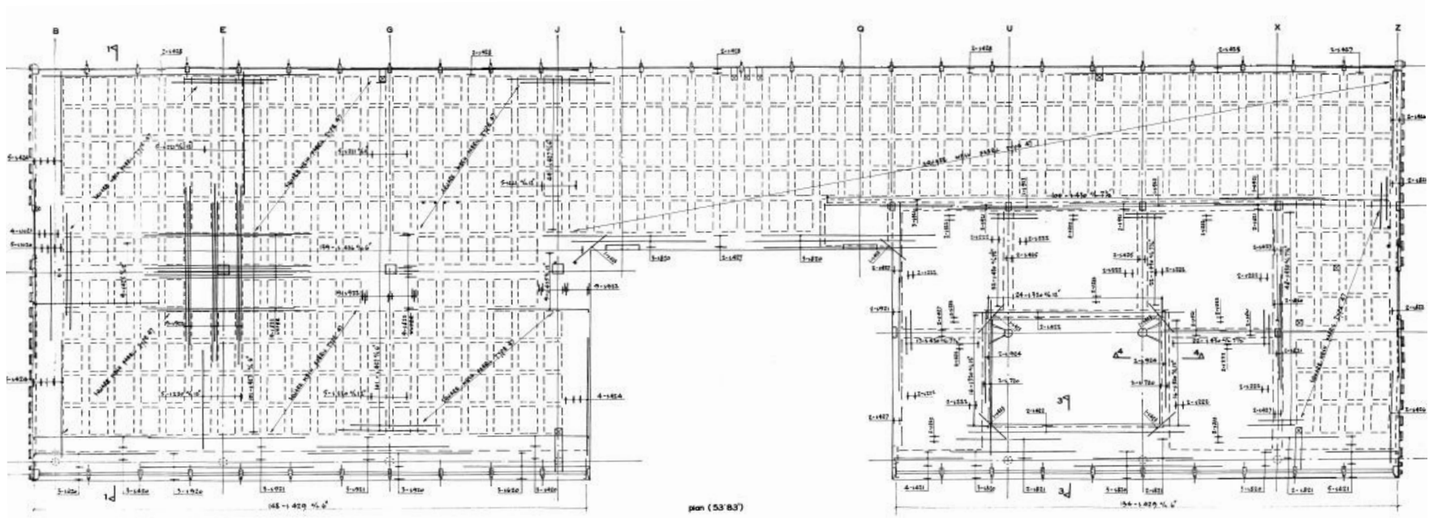
The second floor slab is a load transfer structure, comprising upper and lower one-way spanning reinforced concrete slabs (9″ thick), separated by 6′6″ deep reinforced concrete load-transfer beams between internal columns, creating a 5′ deep void. The beams transfer load from the upper perimeter and internal columns to a new arrangement of internal columns in the foyer below. The beams cantilever beyond the supporting internal columns in a splayed arrangement, to support the perimeter columns and beams at the slab edge. Numerous openings are provided in the top slab to access the floor voids.

A viewing gallery is formed at first floor level by means of one-way spanning slabs supported by reinforced concrete beams cantilevered from the main internal columns. Solid slabs beyond the north and south cores complete the first floor.

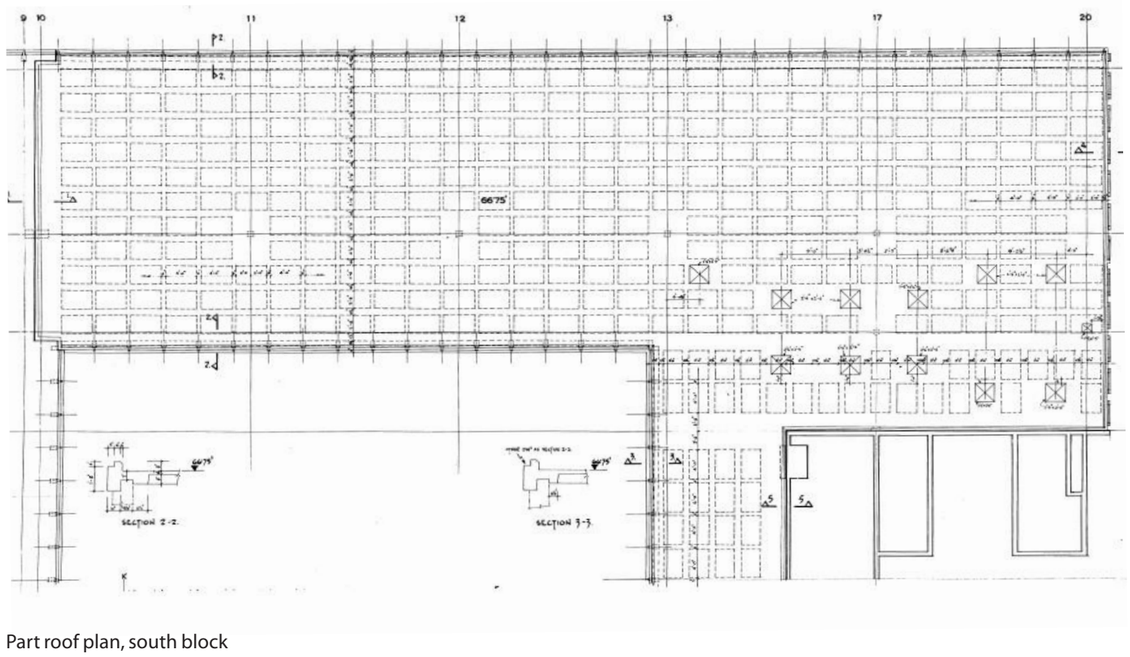
The main foyer comprises a reinforced concrete ribbed slab, suspended over the lower-ground basement. The 4″ thick slab is supported by 15″ deep x 9″ wide secondary beams, which in turn are supported by 18″ deep x 6″ wide primary beams between internal columns. Solid slabs beyond the north and south cores complete the ground floor.

The basement and substructures comprise a reinforced concrete ground bearing slab, typically 18″ thick, with integral reinforced concrete pad foundations and retaining walls constructed on the slate bearing stratum.

The structural frame is clad with a variety of pre-cast concrete, re-constituted stone panels and glazing. The north and south façades are predominantly clad with pre-cast concrete panels. The east and west façades are clad with a repetitive pattern of pre-cast concrete spandrel panels and windows. The columns are covered with decorative reconstituted stone pilasters. All cladding panels are attached to the structural frame with non-ferrous fixings.



First floor plan, north block



Part roof plan, south block

3.9.3 Administrative Offices – North Block

The two-storey administration block comprises a combination of reinforced concrete waffle slabs and two-way spanning slabs supported by reinforced concrete beams. Load paths for vertical (gravity) and horizontal (wind) forces are as described for the tower structure above.

The flat roof and first floor are formed by a series of reinforced concrete waffle slabs with solid infill slabs located at the columns. These slabs incorporate a large opening for the main staircase between ground and first floors.

The ground floor comprises a combination of reinforced concrete waffle slabs and two-way spanning slabs supported by reinforced concrete beams. Beneath this level lies the lower ground floor and substructures, which are common to all blocks, as described for the tower block above.

Vertical support is provided by a variety of circular, square and rectangular cast-insitu reinforced concrete columns, reinforced concrete walls, and also pre-cast concrete columns on the façades. The structural frame is clad through a mixture of spandrel wall panels and large glazed areas.

3.9.4 Administrative Offices – South Block

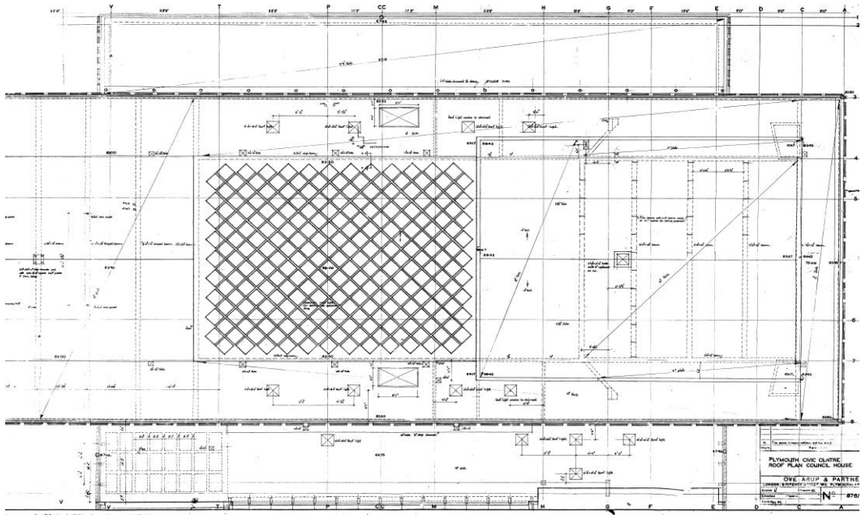
The south administration block is designed in much the same way as the north block structure, with similar load paths. This block links the council house and tower structures over an external plaza and pool at ground floor level.

The roof structure comprises a reinforced concrete waffle slab with solid infill panels around the internal columns, and perimeter edge beams to support the cladding panels.

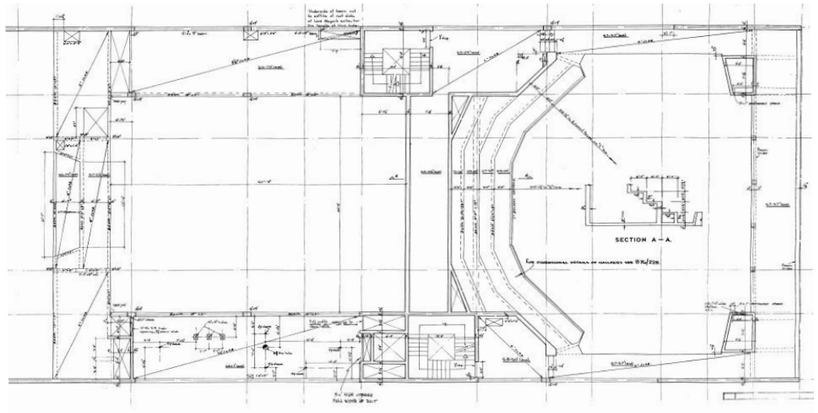
The first floor and ground floor constructions also comprise reinforced concrete waffle slabs with column infill panels and perimeter edge beams. As in the north administration block there is an opening in the first floor slab to accommodate a stair from ground to first floor.

The ground floor slab incorporates a sunken section to form the pool between the tower block and the council house. Beneath this level lies the lower ground floor and substructures, which are common to all blocks, as described for the tower block above.

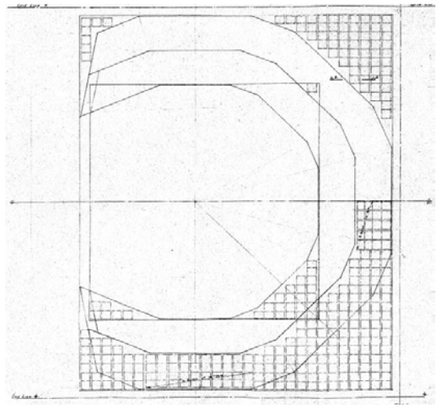
Vertical support is provided by a variety of circular, square and rectangular cast-insitu reinforced concrete columns, reinforced concrete walls, and also pre-cast concrete columns on the façades. The structural frame is clad through a mixture of spandrel wall panels and large glazed areas.



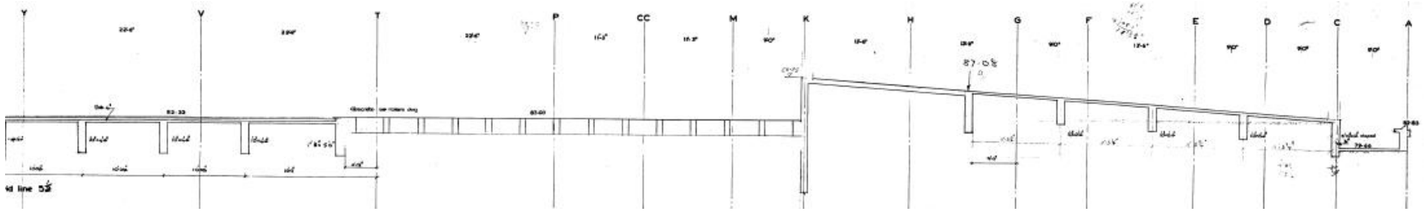
Part roof plan, Council House



Part plan of press room level, Council House



Plan of hollow-pot void formers in Council Chamber



Part roof section, Council House

3.9.5 Council House

The reinforced concrete framed council house differs from the adjacent blocks in various ways, due to the longer spans, clear open spaces, tiered floor slabs and a novel rooflight structure.

The roof structure comprises three distinct elements:

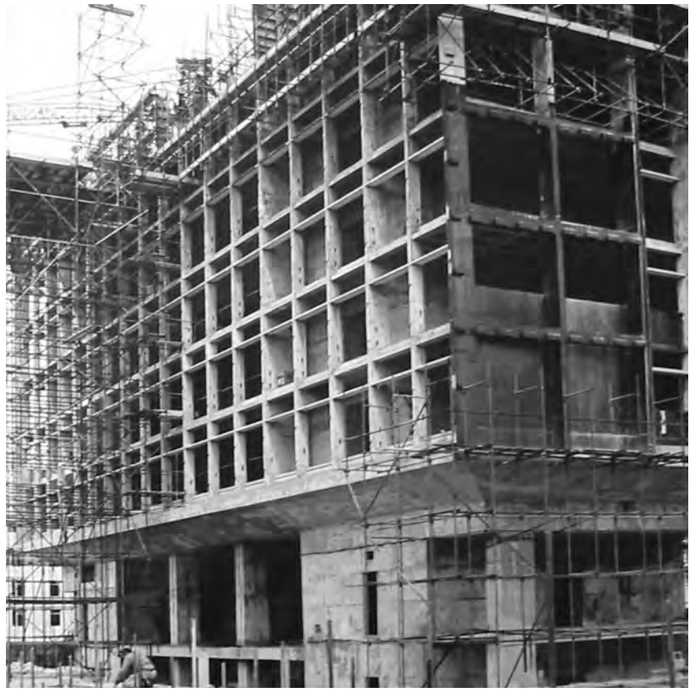
- One-way spanning reinforced concrete slabs, supported by long-span deep beams over the front public reception room.
- Diagonal grid of reinforced concrete beams forming a rooflight structure over the foyer, with adjacent two-way spanning reinforced concrete slabs supported by downstand reinforced concrete beams.
- Mono-pitched reinforced concrete roof over the council chamber, comprising one-way spanning reinforced concrete slabs supported by long-span reinforced concrete deep-beams.

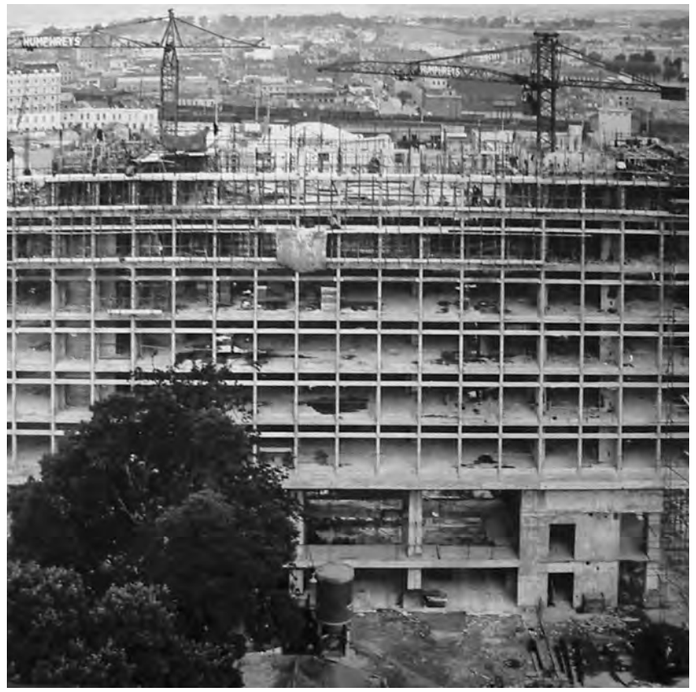
The press room level provides a viewing gallery to the council chamber, a recital gallery to the front public reception room, and plant room space either side of the double-storey height first floor foyer. The floor structures are generally formed with 6" thick reinforced concrete slabs supported by reinforced concrete downstand beams. Tiered seating of the press gallery comprises 6" thick reinforced concrete slabs, supported by 9" thick reinforced concrete deep beams spanning the foyer width.

The first floor level comprises two-way spanning reinforced concrete slabs supported by reinforced concrete downstand beams, typically 5" thick. The slab also incorporates a large void for the reinforced concrete feature stair leading up from the foyer. Two sunken sections form the raked council chamber seating, comprising two-way spanning reinforced concrete slabs and deep, long-span reinforced concrete beams. Intermediate steps are formed by use of hollow-pot void formers and a reinforced concrete topping.

The public reception room at the front of the building comprises a reinforced concrete waffle slab, with an exposed soffit over the main entrance. The slab is supported by two feature columns of tapered cross-section, and cantilevers beyond these to form a clear open space below.

Vertical support is provided by a combination of rectangular and circular insitu reinforced concrete columns, bespoke pre-cast concrete columns to north and south façades and shear walls supported on pad foundations. The shear walls are located around the stair cores providing the lateral stability of the structure.





The Civic Centre building during construction

Exposed structural framing of diagonal grid rooflight during construction

3.9.6 *Statement of significance*

Reinforced concrete framed structures were prevalent in the UK throughout the 1960's. The eminent structural engineers of the time, Ove Arup and Partners, designed many examples in Plymouth, including the Civic Centre and Plymouth Polytechnic, which is now the University of Plymouth.

Cornwall County Council's headquarters at New County Hall in Truro is remarkably similar, being a Grade 2 listed reinforced concrete framed structure of the same vintage, with exposed concrete elements and reinforced concrete waffle floor slabs. Reinforced concrete was a popular construction material in the 1960's, with well established standard construction methods. At the time it was considered to be exceptionally durable and almost maintenance free.

The Civic Centre exhibits various forms of reinforced concrete floor construction, including waffle, ribbed and two-way spanning slabs, all of which were common practice by the 1960's. Waffle and ribbed slabs were, and still are, an economical and structurally efficient method of forming long-span floor structures of up to 46'. The typical floor spans in this building are modest by comparison, with a floor slab spanning approximately 20' to 26', relatively unremarkable for its time.

From a structural engineering point of view, standard reinforced concrete design and construction techniques have been put to use in a number of interesting ways that contribute to the building's unique character, predominantly as a response to the Architect's design concept. The cantilever gull-wing roof, with its ribbed exposed soffit and tapered cantilever upstand beams is the most obvious example of this, being highly visible at the top of the tower. Also, the diagonal grid of reinforced concrete beams forming the rooflight over the council house foyer is an unusual form of construction comprising standard structural elements.

The most significant structural element in the Civic Centre complex is the load transfer 'double-slab' which supports the twelve floors of the tower block over the main foyer. The deep reinforced concrete transfer beams with their splayed cantilevered ends, concealed within a deep voided slab with tapered edges enables the tower to appear to float over the double storey height foyer and low-lying administration blocks, whilst at the same time permits different column layouts for the office and foyer spaces.

The raking council chamber floor structure is another noteworthy element of reinforced concrete construction. The steps are formed with voided slabs comprising hollow clay pots with a reinforced concrete topping.

From a constructional point of view, our research and investigations indicate that the reinforced concrete frame was built using standard methods and

Second floor load transfer slab visible during construction

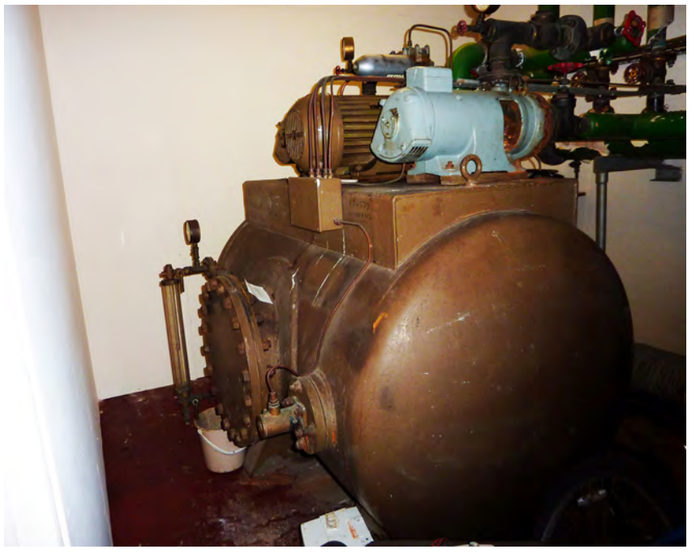
Timber formwork for waffle slabs

materials. Normal strength concrete, high-tensile square-twisted bars and standard timber forms were used throughout. One unusual observation is the plastic membrane used to line the coffer forms, which adhered to the concrete and remains to this day on the underside of some of the tower floors, hidden above the suspended ceilings.

Finally, in consultation with the Concrete Society, a review of the structural engineering and specialist reinforced concrete journals from the time of construction suggest that the Civic Centre was not considered to be of significant interest from either an engineering (The Structural Engineer, Reinforced Concrete Review) or aesthetic (Concrete Quarterly, Concrete Society archive photographs) viewpoint, as it is not recorded in them.
The Civic Centre complex does however represent an impressive package of engineering, carried out at a time when analytical techniques were rudimentary compared with current methods. It is no surprise therefore that the Council turned to Ove Arup, one of the most eminent engineers of the day.

Scott Wilson have worked on a number of Arup buildings of this vintage at the University of Plymouth where additions and alterations have been carried out. Through this work we have developed a good understanding of the techniques and methods of construction utilised.

Redundant refrigeration plant



Water booster pump

3.10 Services significance

The original services installations are generally typical of those in use at the time, with the exception of the heat source for providing space heating.

The building was originally heated via two large thermal stores with 11kV electric night storage immersion heaters. This method of heat generation is not unique although quite unusual for a building of this size.

It is understood to have been driven by a combination of influences at the time such as: the Suez disaster with its impact on oil supplies, the development of nuclear energy which was predicted to provide a cheap source of electricity and the provisions of the Clean Air Act introduced at this time. It is interesting that the drive to avoid the use of fossil fuel is once again influencing the design of energy supply in buildings today.

The existing heating, LV distribution and mechanical ventilation plant is thought to be original and is generally still in use. The original ventilation ductwork and pipework is insulated with cork and plaster which would certainly be unusual today. The exception to this is the original refrigeration plant and ancillary equipment which has been decommissioned due to the risk of legionella growth in the heat rejection equipment.

Aerial view of Civic Centre

4 Condition survey

4.1 General building fabric

4.1.1 Introduction

This non intrusive architectural condition survey of Plymouth Civic Centre is primarily based on the visual inspection and photographic recording carried out by Avanti Architects in July 2009.

The survey covers architectural aspects of the exterior and interior fabric, fittings, fixtures and finishes. The survey does not cover service areas and also excludes areas not accessible at the time of survey such as the elevations behind safety hoardings.

A structural condition survey has been carried out by Scott Wilson. (See below). A survey of primary services including heating, water and electrical and data provision has been carried out by Skelly and Couch. (See below).

Taken together these surveys provide an overall condition survey of the building complex and have been used to inform the estimated cost of repair and upgrade works required to return the building to a viable condition for an extended future as envisaged in the 'baseline repairs schedule of works'. This should be distinguished from the further upgrade or conversion works envisaged in the various option studies.

4.1.2 Methodology

The visual condition survey of each element of the building ensemble is scheduled as follows: the Municipal Offices (including Tower), the Administration Block (North), the Link Administrative Block (South) and the Council House. The conditions are further categorised for external fabric, internal fabric and finishes etc.

No prior studies or surveys of the architectural fabric, finishes or fixtures have been made available or are known to exist. It has not been possible to investigate the condition of the substrates or presence of contaminations or existence of any hazardous material.

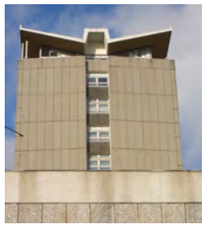
No prior studies or surveys of the architectural fabric, finishes or fixtures have been made available or are known to exist. It has not been possible to investigate the condition of the substrates or presence of contaminants or existence of any hazardous material. A Type 2 survey on asbestos carried out in 2003 has identified asbestos and asbestos containing material in a number of locations and fittings which includes window sills, floor tiles, ceiling tiles, insulations, various fire checks, within the electrical switchgear and ducts. It is therefore recommended that an invasive (Type 3) asbestos survey is carried out prior to any intrusive or disruptive work. Architectural elements with structural properties such as precast panels that are included here should be cross referred to the structural survey undertaken by Scott Wilson.

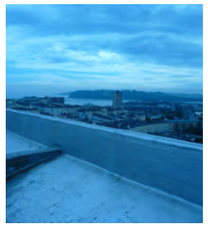
CIVIC OFFICES - 15 STOREY TOWER
External fabric
The external fabric, including the roof silhouette and various patterns and textures on the façades are part of the architectural significance of the building group and as such these elements have all been included in the visual survey.

Gull wing roof
The concrete wing roof currently carries a number of non original structures and fittings. The steel cradle support structure (not tested for functionality) is not original. Its base is supported via a transfer structure through the concrete wing above the north core. The cradle mechanism itself is known to be defective.

The roof topside is painted with solar reflective paint which is in good visual order. The date of application of the paint finish and condition and build up of water proofing system is unknown. Roof drainage appears to be satisfactory.

Ribbed concrete soffit to the wing roof is painted. There are some areas of concrete deterioration especially at the edges and at movement joints, also refer to Structural Survey by SW.






Terrace at fourteenth floor
The terrace is finished in concrete paviors which appear to be in sound condition. The parapet walls are capped in (non-original) pressed aluminium copings. The inside face of parapet walls are exposed concrete which show a degree of wear and tear, also refer to Structural Survey by SW.

A secondary safety railing of steel vertical supports with timber panel guarding is fixed inboard of the parapet. This railing is not original.

There are a number of antennae and associated cabling and ducting attached to the parapet walls at the four corners, the cable routes are connected to the main structure across the terraces via localized steel gantries creating obstacles.

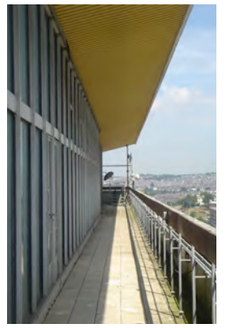
The condition, build-up and age of the waterproofing membrane below concrete paviors is unknown.


CIVIC OFFICES - 15 STOREY TOWER

Façades to fourteenth floor
The southern portion of the enclosure façade to 14th floor is predominantly constructed of aluminium framed full height glazing with associated opening lights and doors. The system is basic, does not comply with current standards and shows a degree of wear and tear.

The northern enclosure is clad in exposed aggregate precast concrete panels which appear to be in good visual order.

Access/escape doors, hatches and associated ironmongery are dated and in need of maintenance attention or upgrade.



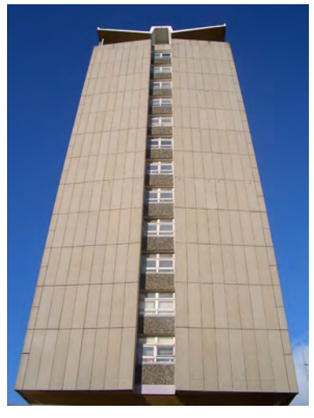

East and west façades from second to fourteenth floors
Prefabricated concrete panels, reconstituted stone mullions and insitu soffits were visually examined from ground level. Various levels of deterioration and spalling were detected. These elements are substantially covered in the structural survey by SW.

The window/precast panel assemblies in the tank room on the 7th floor adjacent to the north core escape stairs have not been finished on the inside providing a good visual image of the build up and conditions.

Aluminium framed window ensembles were visually inspected from ground level and from inside. Not all windows were examined but assemblies inspected were generally in working order, although not compliant with current standards.


North and south gables from second to fourteenth floors
Prefabricated concrete panels (which have been replaced) and insitu soffits were visually examined from ground level. Some deterioration and spalling were detected within the façade panels. It appeared that the condition was superior to panels on the east and west façades. Also refer to structural survey by SW.

Aluminium framed window ensembles were visually inspected from ground level and from inside. Not all windows were examined but assemblies inspected were generally in working order, although not compliant with current standards.



CIVIC OFFICES - 15 STOREY TOWER	
East façade from ground to second floors (including the external soffit) Most of the façade is currently covered with protective structure and therefore the condition remains unknown. The visible mosaic finish to the sloping soffit (Naples Yellow Glass) was visually inspected from ground level. The inspection revealed isolated patches where the mosaic tiles have fallen off and shows signs of modest movement.	
West façade from ground to second floors Original west façade at ground level is now incorporated in the 1980s extension. The façade at first floor is constructed in a full height aluminium glazed system (age unknown). The glazed screen is in good visual order, although not compliant with current standards. The western façade of the extension is of prefabricated exposed aggregate panels and aluminium window assemblies all of which appear to be in good visual order. The second level (first floor) of extension steps away from the original tower enveloping a roof terrace which acts as the escape route for the northern core. This area is currently covered with protective structure. The exposed visible façades are generally in good visual order, also see structural survey report by SW.	

CIVIC OFFICES - 15 STOREY TOWER **Tower interiors - general appraisal** **The office accommodation within the tower has undergone a number of alterations and is varied states of repair. The main offices at the 13th floor appear to have retained some of the original internal partitioning (partially retained original Principal Assistant's office is now a print/dispatch room) whereas the 10th and 12th floors have been completely refurbished to provide open plan offices with new flooring and redecoration.** **The western portion of the 2nd floor offices has been reassigned as an environmentally controlled computer hub with a section of raised access flooring necessitating the incorporation of two lengths of localized ramps within the newly formed central corridor.** **Adaptations, localized alterations, complete refurbishment and departmental reassignments point to flexibility of the original design and its ability to alter to comply with changing nature and needs of office environments.** **The more detailed visual condition survey of the interiors focuses on areas of the building which are cited as having architectural significance such as circulation areas and specifically designed spaces such as roof deck restaurant and the entrance lobby.**	
Main entrance hall, ground floor The main entrance hall is fitted out with a linear reception desk dealing with visitors, public enquiries etc. The floor is currently covered in carpet tiles, the condition of original flooring is unknown. North and south walls doorways etc are in good visual order. East wall is the inner face of the glazed screen façade. West wall screen back up offices behind the reception desk. The spiral staircase to the gallery level is in good visual order. The ceiling is the continuation of the sloping soffit finished in mosaic tiles. There are signs of water ingress damage and limited areas of fallen tiles.	Picture to be inserted
Main entrance hall, gallery level, first floor The gallery and its balustrade is in good visual order. The floor is currently covered in carpet tiles, the condition of original flooring below is unknown. North and south walls doorways etc are in good visual order. East wall is the inner face of the glazed screen façade. West wall is the inner face of the glazed screen façade.	Picture to be inserted

CIVIC OFFICES - 15 STOREY TOWER

Southern circulation core

Entrance hall
There are two primary public and personnel access points to southern circulation core.

Original personnel access, still in use, is to the south of the core and is entered from the under croft to southern administration block by the pool. The other access is through double doors from the main entrance hall.

The entrance hall leading to the core also accommodates an open stair case to first floor of the admin block. The hall and staircase are in good visual order and state of repairs.

Lift lobbies, ground and first floors
The core comprises of 4 passenger lifts clustered on to the west and accessible service ducts and a dumb waiter to the east. Access doors to north and west office accommodation are centred on the core. The double doors are mostly original and carry original ironmongery. The serviceability of these doors with regards to smoke and fire containment is unknown.

The eastern part of the core through single leaf door accommodates the escape stairs and store and other service ducts.

The lift lobby is finished in Zebrano veneer. The lift doors are painted to a pattern to original design. The lift lobby finishes and lift doors seem to be original and show signs of wear and tear to varying degree.

Some original livery, signage and ironmongery survive. These have been added onto through the years with additional signage etc.

To the east the lift lobby accommodates service ducts and an alcoved dumb waiter. The door to escape stair and additional store and service areas is located between the duct and the dumb waiter.

The doors to escape stair lobbies are original and many of them carry original ironmongery, the serviceability of these doors with regards to smoke and fire containment is unknown.

The escape stair is in good visual order.

CIVIC OFFICES - 15 STOREY TOWER

Lift lobbies, second to thirteenth floors
The core comprises of 4 passenger lifts clustered on to the west and accessible service ducts and a dumb waiter to the east. Access doors to north and west office accommodation are centred on the core. The double doors are mostly original and carry original ironmongery. The serviceability of these doors with regards to smoke and fire containment is unknown.

The eastern part of the core through single leaf door accommodates the escape stairs.

The lift lobby is finished in Zebrano veneer. The lift doors are painted to a pattern to original design. The lift lobby finishes and lift doors seem to be original and show signs of wear and tear to varying degree.

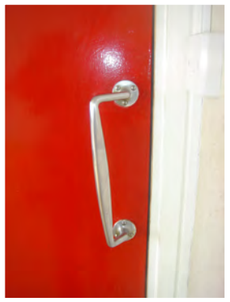
Some original livery, signage and ironmongery survive. These have been added onto through the years with additional signage etc.

To the east the lift lobby accommodates service duct and an alcoved dumb waiter. The door to escape stair is located between the duct and the dumb waiter.

The doors to escape stair lobbies are original and many of them carry original ironmongery, the serviceability of these doors with regards to smoke and fire containment is unknown.

The escape stair lobby leads to a staff pantry in each. On some floors a portion of office accommodation, between gridlines 19 ad 20, is converted into staff toilet facility accessed from this lobby.

The conditions and serviceability of these services are unknown. To the west the lift lobby gives access to a private single wc accommodation (north west corner). On some floors the area between the lifts and external elevation to the west has been reconfigured with additional wc facilities. The conditions and serviceability of these services are unknown.



CIVIC OFFICES - 15 STOREY TOWER

South core to fourteenth floor and services mezzanine above
South core continues to fourteenth floor and the service mezzanine via the escape stairs, the lifts do not serve fourteenth floor. Dumb waiter originally arrived at this level but its condition or serviceablity is unknown. Escape stairs continue up to service mezzanine. Generally the staircase and walls seem in good order.

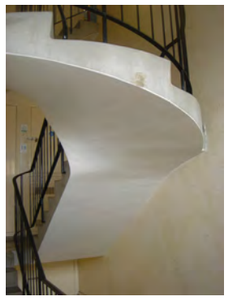
The doors to escape stair lobbies are original and many of them carry original ironmongery, the serviceability of these doors with regards to smoke and fire containment is unknown.

Northern circulation core
Northern circulation core is around a single stair rising from basement level to fourteenth floor. The stairs are open well with north south orientation up to second floor where the orientation changes to east west up to thirteenth floor where the stairs change in plan to half circle winder, in lieu of the landing, this is to compensate for the location and size of plan at fourteenth floor.

Stairs, landings, railings, walls and glazing seem to be in good working order.

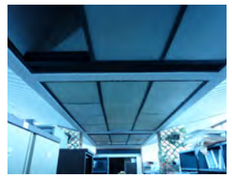
The fire and smoke check lobbies generally follow original plan. The doors to escape stair lobbies are original and many of them carry original ironmongery, the serviceability of these doors with regards to smoke and fire containment is unknown.

The door to the terrace at fourteenth floor shows sign of wear and tear and is in need of extensive repair or replacement.



Fourteenth floor roof deck and restaurant
The original top floor restaurant is now reassigned as part offices and part storage/archive space. The southern end - originally a viewing room - houses working offices, where as the northern end - originally a public canteen - is used as archives. The Servery and Preparation rooms have been decommissioned.

The original wood flooring (Muhuhu HW) to the canteen shows sign of water damage, the columns within the canteen area have been re-clad the condition of original finish is unknown.



CIVIC OFFICES - 2 STOREY ADMINISTRATION NORTH BLOCK AND ITS EXTENSION

The roof
The roof was visually inspected from high level windows of the Tower. There is evidence of moss growth and some ponding. The exact condition, build up and age of the roofing membrane is unknown, but it can be assumed that replacement of the covering with enhanced insulation and drainage gradient would be included in a general refurbishment project.

The roof lights are currently under protective boarding. The condition of these roof lights is unknown.

North façade
The north façade is composed of double height window assemblies (curtain walling) with precast stone full height separating mullions. The façade is clad in precast concrete sections to the parapet, sides, and the continuous cill at ground level. Visual inspection shows these to be in better condition than those of the tower, also refer structural survey by SW.

The exposed wall to basement service areas, to the west of the façade is in brickwork in fair condition. The wall also includes a regular pattern of ventilation grills to various accommodation behind.

South façade
As the eastern portion of south façade is currently covered in protective hoardings, it has not been possible to visually inspect this façade.

East and west façades
For west façade see above.

East façade is faced with exposed aggregate precast units with a two storey height window assembly approximately in the centre. The ground floor portion of the window has been replaced by a new entrance arrangement with an external glazed lobby accessed via steps and ramps from the pedestrian areas to the east. The date of this entrance is unknown. The precast concrete panels appear in fair condition and generally better than those of the Tower, also see structural survey by SW.

CIVIC OFFICES - 2 STOREY ADMINISTRATION NORTH BLOCK AND ITS EXTENSION

Interiors
The interior arrangement of the office accommodation has seen several changes throughout the life of the building. There are two significant changes to this block. The first is the extension of the ground floor and part of the first floor to the west. The second is the alteration to the original North Block entrance hall and the removal of accommodation stairs to the east.

The core, North Core of the Tower Block, remains relatively intact. The escape route from the North core is now at first floor across the roof of the GF extension to safety via open stairs between gridlines 17 and 20 to the west (ref. archive drawing 1001/302 rev C appended).

An additional stair case is constructed between grid lines 32 and 33 to the west of the block connecting lower ground level to the first floor (ref. archive drawing 1001/302 rev C appended). As in the main office accommodation in the tower, there have been many changes to the original plan arrangement of the cellular offices and designations.

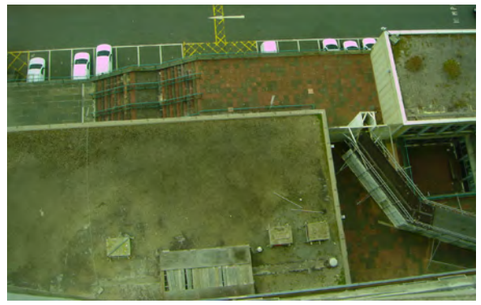
Picture to be inserted

SOUTHERN ADMINISTRATIVE BLOCK, THE LINK BLOCK

The building referred to as the Link Block is the structure occupying areas between grid lines 10 to 20 (N/S) and grid lines E to Y (E/W) at ground and first floors. Areas between grid lines 13 to 20 incorporate the Southern Circulation Core to the Tower Block (refer archive drawing no 1001C/302 rev A)

The roof
The roof was visually inspected from high level windows of the Tower. There is evidence of moss growth and some ponding. The exact condition, build up and age of the roofing membrane is unknown, but it can be assumed that replacement of the covering with enhanced insulation and drainage gradient would be included in a general refurbishment project.

The roof lights are currently under protective boarding. The condition of these roof lights is unknown.



Exposed soffit to elevated section
The coffered soffit is fair faced concrete with various degrees of degradation and spalling , also see structural survey by SW.

SOUTHERN ADMINISTRATIVE BLOCK, THE LINK BLOCK

Columns to elevated section
The red mosaic covered columns are in fair condition with some local areas of missing tiles apparently due to malicious interference rather than naturally occurring deterioration. Also see structural survey by SW.

East, west, north and south elevation to ground floor section (GL 30-20 N/S)
Ground floor façades are generally clad with riven-face slabs of Delabole slate. With rectangular aluminium windows at high level and punched square ones at mid level. The condition of cladding and windows is generally fair. Some of slate panels have been pinned back due to delamination.

The south façade between grid lines M and T is fully glazed with an access controlled glazed double door, staff entrance, the glazed screen is in good visual order but does not comply with current standards.

East, west, north and south elevations to first floor
East and west elevations are composed of single storey window assemblies (curtain walling) with precast stone full height separating mullions. The façade is framed in precast concrete sections to the parapet, sides, and the continuous sill at first floor slab. Visual inspection shows these to be in better condition than those of the tower, also refer structural survey by SW.

North elevation is composed of exposed aggregate precast concrete panels. Visual inspection shows these to be in better condition than those of the tower, also refer structural survey by SW.

SOUTHERN ADMINISTRATIVE BLOCK, THE LINK BLOCK

Inward looking elevations to first floor
All four elevations overlooking the pool are composed of story high glazing assemblies with precast stone separating mullions framed in precast concrete panels to parapet and the continuous sill. The windows appear to be constructed of thinner sections than elsewhere (steel sections) and are more fragile than other windows. The lower panel of the windows to part of the north and all of the west and south wings are stove enamelled steel panels.

Visual inspection of the concrete elements shows these to be in better condition than those of the tower, also refer structural survey by SW.

The condition of window assemblies ranges between poor to fair. The windows do not comply with current standards. The thickness of the glass below railing level is not likely to meet current safety compliance standards in respect of containment.

Interiors
The main staff entrance to the tower is located within the ground floor of this block, also see section 1.22 above.

This foyer also leads via an accommodation stair to the first floor. Both foyer and stairs are in good condition.

The first floor landing gives access to offices to the east and west. It also gives access to through the south core of the Tower to the gallery level of the main entrance hall to the north.

The offices to the west comprise of work spaces of various sizes and qualities.

The suite of offices to the east is of better quality and is accessed via a timber veneered corridor leading to the Council House. The offices off this corridor are also timber veneer lined. The corridor and the offices are in good visual order and can be satisfactorily re-conditioned.

Two areas of differential settlement within the first floor were detected, the first, at the junction of the Council Chamber building and the offices along grid lie 9 to the west and the second, in the foyer and in the vicinity of grid line 13.

THE CIVIC SUITE

The roof
Access to the roof has not been possible. It can however be ascertained when from viewed from the tower that there are a number of retrofit items that are generally modest and relatively unobtrusive with the exception of a large polycarbonate secondary roof light.

There is evidence of moss growth and some ponding. The exact condition, build up and age of the roofing membrane is unknown, but it can be assumed that replacement of the covering with enhanced insulation and drainage gradient would be included in a general refurbishment project.

East elevation
The large glazed screen, opening lights and doors to the reception room at first floor and the large glazed screen and doors to main entrance are in good visual order.

The reconstituted stone/concrete cladding at first floor and above is stained and weathered but otherwise appears to be in good order. Some of the panels appear to have been dislodged and have suffered damage (refer to the Structural Survey by Scott Wilson).

The balustrade to the terrace at first floor is in good visual order but the condition of the fabric and structural stability is not known, although there is no obvious evidence of defective performance.

The condition of the original finish to the first floor balcony appears to be fair. The condition of the waterproofing has not been ascertained.

The soffit over the main entrance and the adjacent supporting columns are in good condition.

The slate cladding to the walls at ground floor has suffered modest staining and weathering but is generally in good order. There are isolated patches of damaged slate and some poorly executed repairs have been carried out.

THE CIVIC SUITE

West elevation
The large glazed screen, opening lights to the ante chamber at first floor and the large glazed screen and doors to the Members Room are in good visual order.

The reconstituted stone/concrete cladding at first floor and above is stained and weathered but otherwise appears to be in good order.

The soffit to the first floor overhang is in good condition with the exception of one patch repair to the north west corner.

The slate cladding to the walls at ground floor has suffered modest staining and weathering but is generally in good order. There are isolated patches of damaged slate and some poorly executed repairs have been carried out.

South elevation
A number of the original windows to the Mayor's parlour at first floor have been replaced with new windows that do not match the originals.

The spandrel panels beneath the windows at first floor are stained but otherwise appear in good order.

The door and window frames at ground floor are generally weathered.

The reconstituted stone/concrete cladding at first floor and above is stained and weathered but otherwise appears to be in good order. Some of the panels appear to have been dislodged and have suffered damage (refer to the Structural Survey by Scott Wilson).

The soffit to the first floor overhang is in good condition but requires cleaning and redecoration.

The slate cladding to the walls at ground floor has suffered modest staining and weathering but is generally in good order. There are isolated patches of damaged slate and some poorly executed repairs have been carried out.

Large areas of original mosaic tiles are missing from the columns at ground floor, evidently as a result of malicious damage.

THE CIVIC SUITE

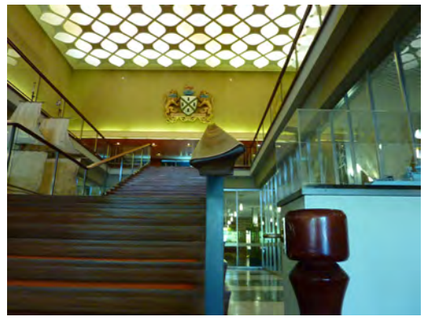
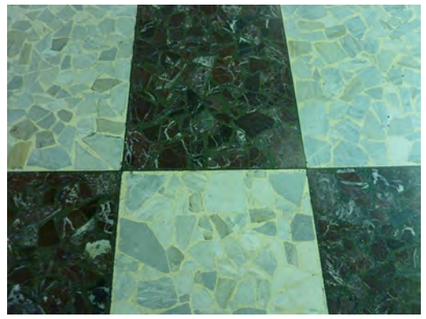
North elevation
The door and window frames at ground floor and first floor are weathered to varying degrees.

The spandrel panels beneath the windows at first floor are stained but otherwise appear in good order.

The reconstituted stone/concrete cladding at first floor and above is stained and weathered but otherwise appears to be in good order.

The soffit to the first floor overhang is generally in good condition.

The slate cladding to the walls at ground floor has suffered modest staining and weathering but is generally in good order. There are isolated patches of damaged slate and some poorly executed repairs have been carried out.

THE CIVIC SUITE **Interiors** **The interiors of this part of the building are of the highest aesthetic and historic heritage value on account of the quality of their original specification, the high local significance of the art and craftwork, and the authentic state of preservation. (See 'Statement of Significance').**	
Entrance hall at ground floor, Members' Lobby, ceremonial staircase, first floor foyer and gallery The original materials are of high quality. All original fixtures and fittings appear to be intact and in good order. The original light fittings are intact and in good condition. The original olive shaped dark glass shades to the pendant fittings have been replaced with clear glass globes. The aluminium glazed screen and associated artwork is in good order. A number of statutory notices have been applied to the glass doors. The chequered pattern marble mosaic floor is intact and in good condition. The original internal doors and ironmongery appear to be intact and in good order. The original embossed ceiling tiles are largely intact and in good condition with isolated areas of modest damage and adjustments made for retro-fit items such as smoke detectors. The internal column cladding of Ashburton marble and white Sicilian marble is undamaged and in good condition. There are a number of relatively modest incongruous retro-fit items such as wall mounted signage. The south wall to first floor foyer at high level has previously been refurbished due to collapse of the plaster behind decorative wall paper, thought to be caused by vibration from the centrifugal fans in rooms behind. The north wall shows signs of plaster delamination, behind decorative wall paper, this area will need to be further examined and investigated.	 

THE CIVIC SUITE	
Members' Room, various committee rooms, Members' entrance lobby and public entrance lobby at ground floor The original materials are of high quality. All original fixtures and fittings appear to be intact and in good order. The original internal doors and ironmongery appear to be intact and in good order. The original wall, floor, and ceiling finishes appear to be intact and in good order but in need of professional cleaning and reconditioning. Supplemental track lighting, white boards, multimedia facilities etc have been mounted on the walls and ceilings to the various committee rooms.	Picture to be inserted

THE CIVIC SUITE

Mayor's Parlour, Reception Hall, Council Chamber and ante rooms

Mayor's Parlour:
The original materials are of high quality.

All original finishes, fixtures and fittings appear to be intact and in good order but in need of professional cleaning and reconditioning.

The original internal doors and ironmongery appear to be intact and in good order.

There are a number of relatively modest but incongruous retro-fit items such as signage.

Reception Hall:
The original materials are of high quality.

All original finishes, fixtures and fittings appear to be intact and in good order but in need of professional cleaning and reconditioning.

The original internal doors and ironmongery appear to be intact and in good order.

There are a number of relatively modest but incongruous retro-fit items such as signage.

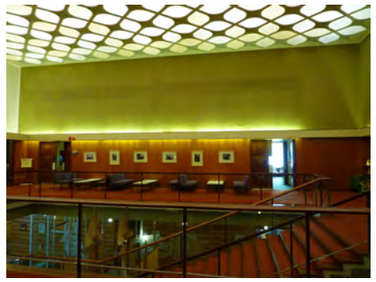
Council Chamber and ante rooms:
The original materials are of high quality.

All original finishes, fixtures and fittings appear to be intact and in good order but in need of professional cleaning and reconditioning.

The original internal doors and ironmongery appear to be intact and in good order.

There are a number of relatively modest but incongruous retro-fit items such as signage.

The original artwork within the council chamber is intact and in good order but in need of professional cleaning and reconditioning.



THE CIVIC SUITE

Ancillary accommodation, cloak rooms, reception room, musicians' gallery, storage and access rooms.
The original materials are of high quality.

All original fixtures and fittings appear to be intact and in good order.

The original internal doors and ironmongery appear to be intact and in good order.

The original wall, floor, and ceiling finishes appear to be intact and in good order.

There are a number of relatively modest but incongruous retro-fit items such as signage.

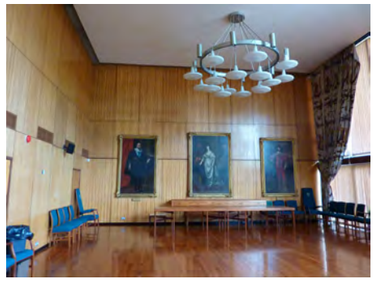
The artwork within the reception hall is intact and in good order.

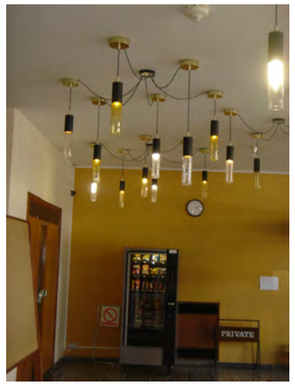
Primary and secondary circulation, north and south stairs, lift adjacent to north staircase.
All original fixtures and fittings appear to be intact and in good order.

The original internal doors and ironmongery appear to be intact and in good order.

The original wall, floor, and ceiling finishes appear to be intact and in good order.

There are a number of relatively modest but incongruous retro-fit items such as signage.





4.2 Structural condition survey

4.2.1 Background

Constructed in the 1960's, the Civic Centre is approaching 50 years of age and like many reinforced concrete structures of its age, the building has experienced various forms of reinforced concrete deterioration and corrosion. Incidents of concrete debris falling from the building over the years have prompted reactive patch repairs and replacement strategies. The most significant remedial works were carried out in 1992 following an incident where an entire pre-cast concrete cladding panel fell from a high level of the north gable end of the tower block. This resulted in the wholesale replacement of the pre-cast cladding panels on the north and south elevations of the tower block.

Within the last few years one of the cladding panels to the Council House became dislodged. At that time the panels to this block were re-fixed to the frame.

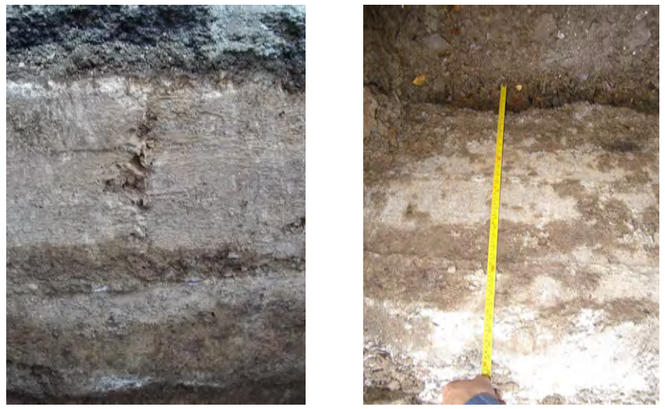
Recent reports of falling concrete debris in 2007, coupled with the Civic Centre's Grade 2 listing by the Department of Culture, Media and Sport, prompted further action. PCC called upon the John Grimes Partnership Ltd (JGP) to inspect the condition of the reinforced concrete tower structure, and assess the structural capacity of various elements including a typical floor slab and columns. JGP reported that parts of the tower were in a very poor condition, prompting PCC to place temporary impact-protection structures around the perimeter of the building to mitigate the risk of falling concrete debris hitting pedestrians. More alarmingly, perhaps, was their conclusion that the structural capacity of the building to accept imposed floor loads was severely limited.

Given these conclusions, in April 2008, Scott Wilson Ltd (SW) were instructed by PCC to provide an independent opinion on JGP's findings. Following this review SW provided a number of comments and recommendations for further targeted investigation and testing works and a review of the structural assessment based upon those findings. This section of the report summarises those investigations, carried out at the Civic Centre between 1 July 2009 and 31 October 2009.

Concrete reinforcement corrosion (rusting) is by far the most common cause of reinforced concrete durability problems. The two most common causes of reinforcement corrosion are concrete carbonation and chloride attack. Carbonation occurs when carbon dioxide slowly penetrates the concrete cover, reducing the concrete's protective alkalinity as it goes. Sooner or later the carbonation front reaches the reinforcement, leaving it unprotected from rusting. Chloride attack relates to an increase in the concrete's chloride ion content, commonly arising from close proximity to the sea or the use of de-icing salts. This promotes reinforcement corrosion, which is essentially an electrolytic reaction. In either case, water is also required for corrosion to take place, usually by ingress through shrinkage cracks in the concrete. These two forms of corrosion were the main focus of the investigation.

4.2.2 Reinforced concrete foundations

Trial pits were excavated in the public car park to inspect the condition of the reinforced concrete foundations, in particular to investigate any signs of ground related chemical attack. Two separate locations were investigated, with visual and tactile surveys indicating the foundations to be of a good and sound condition and showing no signs of deterioration or distress.



Formed face of foundations exposed in car park trial pits

4.2.3 Internal reinforced concrete columns

The internal reinforced concrete columns were inspected and tested in nine locations throughout the tower, spread over three floors (high, middle and low levels), using various non-destructive and semi-destructive methods. Inspection and testing was carried out for chloride-induced corrosion, carbonation-induced corrosion, reinforcement cover and half-cell potential.

With regard to chloride content, the JGP data indicated that the internal elements of the reinforced concrete frame contain a low background chloride content (both floor slabs, wholly internal beams and columns and the internal sections of the beams and columns around the periphery of the building). As suggested by JGP this contamination would almost certainly have been introduced at the time of construction as a result of the intentional use of calcium chloride as an admixture or unintentionally through the use of insufficiently washed chloride contaminated aggregates. Limited testing carried out by SW confirmed this view. After reviewing these results our conclusion is that we consider chloride-induced reinforcement corrosion to be of little concern internally.

JGP identified that various elements of the internal reinforced concrete frame had carbonated, but did not measure its depth or correlate this with reinforcement cover depth, which is crucial in assessing both the current and future risk of carbonation-induced reinforcement corrosion. SW's carbonation tests at the nine test locations gave a maximum carbonation depth of 14mm, with 4mm to 6mm being typical. At the same locations the minimum concrete cover to the reinforcement was between 37mm and 48mm. On an individual basis this indicates that none of the areas sampled were at risk of carbonation-induced reinforcement corrosion. This view was also confirmed by the results of the half-cell testing data which indicated either a low or uncertain probability of corrosion.

Chloride dust sampling and carbonation testing (left). Reinforcement inspection (right).

The internal and perimeter column reinforcement was exposed to verify cover meter readings and inspect its condition. The reinforcement was found to match the record reinforcement detail drawings, and was of good condition

Taking into account the small SW sample size, it is highly probable that there will be areas with lower cover than those measured and also some with greater carbonation depth. However, given the large difference between the two parameters at the sample locations and the requirement for a low cover to be coexistent with a large carbonation depth for corrosion to occur, we conclude that only minor areas of carbonation related deterioration are to be expected internally.

Furthermore, we consider that the future risk of significant carbonation-induced corrosion to be low. The cover depth is fixed at the time of construction and the carbonation depth changes over time. Assuming no significant change in internal conditions (ie. temperature or relative humidity) and given that the building is already almost 50 years old, the risk of reinforcement corrosion due to carbonation increasing to a significant amount within the next 50 years is very small.

In summary, we do not consider there to be a significant risk of reinforcement corrosion adversely affecting either the structural capacity or condition of the internal columns of the building within the foreseeable future. Also it is not possible to envisage any normal change of use (say, hotel or residential) that would increase this risk.

4.2.4 *Internal reinforced concrete slabs, third to fourteenth floors*

These floor slabs are finished with a sand/cement screed and concealed by a suspended ceiling. The concrete slabs were visually inspected where possible, in conjunction with opening-up works for the extraction of reinforcement samples for testing. The opening up works indicated areas of insufficient reinforcement cover in the soffit, causing reinforcement corrosion where exposed. A cover meter survey verified the low cover in some areas, in addition to confirming that the reinforcement layout accords with the record reinforced concrete details.

The slab construction also showed areas of poor workmanship. Record drawings specify a 65mm thick slab, whereas only 45mm was found in one location, overlain by 90mm of cement screed. Normal strength concrete and high-tensile square-twisted bars were used throughout. One unusual observation is the plastic membrane used to line the coffer forms, which adhered to the concrete and remains to this day on the underside of the tower floors, hidden above the suspended ceilings. This obscured the soffit and prevented visual inspection in some cases.

Samples of reinforcement were taken from the slab in three locations (upper, middle and lower floors) for strength testing and inspection of condition. In each case the reinforcement was found to be in good condition, with only minor surface rust. The bar size and spacing corresponded with the record reinforcement details, but with low cover to the soffit. In some cases the reinforcement cover was zero, with the bar visible in the soffit. Internal conditions are relatively mild, but the low cover does present a greater risk of carbonation and chloride related corrosion.

Reinforcement sampling and low reinforcement cover to soffit

4.2.5 *Cracking in second floor slab soffit*

The tiled second floor soffit exhibits long cracks over the main entrance foyer, running north-to-south between the transfer beams. The mosaic tiles were carefully removed and the cracks inspected from a tower scaffold. The mosaic tiles were stored for future replacement by the Contractor, Ian Williams Ltd.

Upon removing the tiles, it was clear that the crack has been repaired in the past. Repair mortar was easily removed, as shown in the photograph below, with no signs of reinforcement or reinforcement corrosion. The crack itself was measured at up to 4mm wide, reducing in width towards the transfer beams.

Cracking in second floor soffit - area knocked out to expose extent of cracking

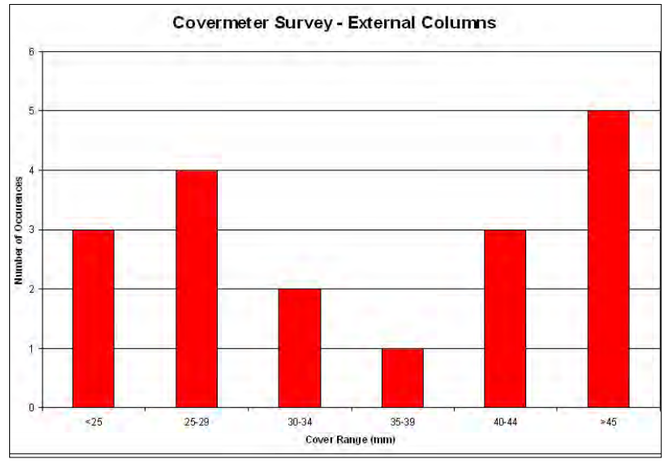
The slab was also inspected from above, by access to the second floor voids. There were no signs of cracking in the top surface of the slab, indicating that the crack has not gone all the way through the concrete section.

Structurally, this slab supports very low imposed load (empty second floor void space), and merely provides a reinforced concrete ceiling to the foyer. In addition, it is noted that the crack runs parallel to the span direction, and hence is unlikely to have been caused by bending or deflection of the slab. These observations indicate that the crack is non-structural in nature, and probably caused by shrinkage of the slabs shortly after construction, and exacerbated by thermal effects during its life, or deflection of the transfer beams, which support considerably more load than the slabs.

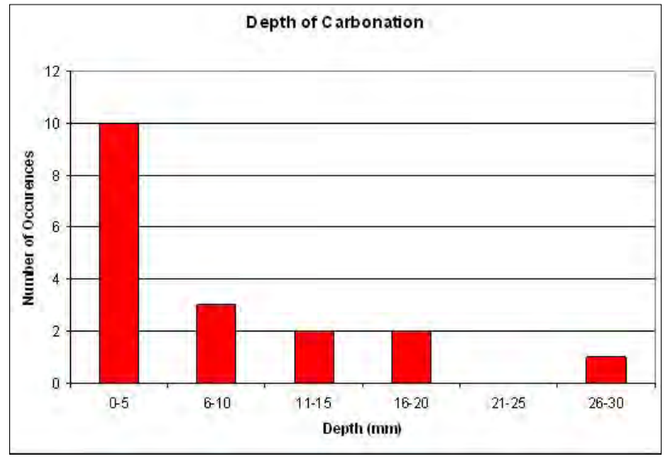
4.2.6 *External Reinforced concrete framed elements*

External columns were inspected, sampled and tested in eighteen locations, nine on each of the east and west elevations of the tower. The majority of the tests were carried out using rope access techniques.

Reinforcement cover on the externally exposed areas of the concrete columns was measured between 22mm and 61mm, which is reasonable in comparison with the recorded design cover of 11/2"(38mm). Refer to the following chart. The cover meter depths were taken on the side faces of the columns due to the presence of reconstituted stone cladding pilasters covering the outer faces.



Carbonation depths were found to be in the range of 1mm to 30mm, with a significant proportion higher than the anticipated maximum value of 5mm. Low carbonation ingress is usually found in structures set in a maritime environment such as this, because the weather conditions tend to keep the concrete sufficiently wet to prevent carbonation occuring. Nevertheless, when the carbonation and cover depths are correlated, the test data indicates that only 10% of the reinforcement is at risk of reinforcement corrosion due to carbonation.



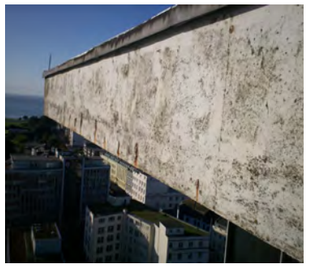
The chloride content data confirms our initial view that airborne sea salts have increased the level of chlorides in the cover concrete, and also indicate the chloride content at the reinforcement has reached a level where corrosion becomes likely (>0.3% by weight of cement). The presence of such high levels of chloride contamination rules out a number of simpler repair

options. Refer to the baseline repairs section of the report for further details.

In summary, the inspections and test results demonstrate widespread reinforcement corrosion in externally exposed concrete elements. Furthermore the amount of deterioration will increase with time unless measures are taken to nullify the effect of both the chlorides already in the concrete and those that will continue to be deposited on the surface of the concrete due to the building's proximity to the sea.

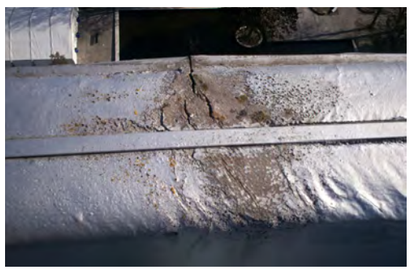
4.2.7 Gull wing roof

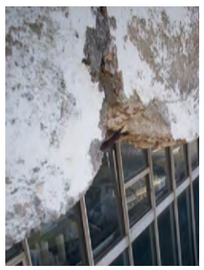
The exposed reinforced concrete soffit and edges of the gull wing roof were inspected in numerous locations using a combination of temporary scaffold and rope access techniques. Visually, the parapet appears to be in a poor condition, exhibiting many areas of reinforcement corrosion and presenting a health and safety risk to the public from falling concrete debris. In addition, the underside of the gull wing roof exhibits signs of reinforcement corrosion throughout, appearing most severe at the structural movement joints and roof edges.



Reinforcement corrosion to gull wing roof edge

A moderate amount of cracking, and a small amount of concrete spalling was found to be present. Typically the cover was low. On the roof edge the cover was measured between 5mm and 34mm. The ribbed soffits could be seen to have very low concrete cover of between 2mm and 3mm. The reinforcement appears to have been placed on the formwork during casting in some areas.





Corrosion in parapet at movement joint. Side view (right). Top view (left).

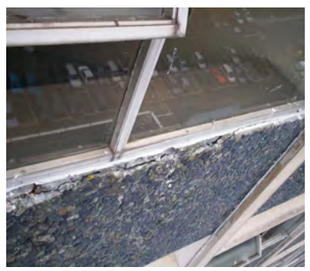
The measured carbonation depths were typically only 1mm to 2mm with a single abnormally high value of 12mm, although coupled with the low cover this would indicate a high risk of carbonation-induced corrosion.

Chloride contents were not excessively high, but were typically sufficient at the level of the reinforcement to introduce a risk of corrosion (>0.3% by weight of cement).

Corrosion in gull wing roof soffit

4.2.8 East and west façade cladding

It is agreed by both parties (SW and JGP) that there are serious problems with the precast cladding units and transom cill beams to the east and west elevations of the Civic Centre, and all indications suggest that the problems are a result of reinforcement corrosion.



Dilapidated spandrel cladding panels

As stated in our previous report, low level spandrel panels appear to differ in colour, which could be due to the presence of a clear coating, possibly an anti-carbonation coating. It would seem doubtful that a coating was applied at the time of construction, and would more likely have been applied some time later. It is also unclear how many panels would have been coated, but it would acknowledge that spandrel panel corrosion has been known about for some time, and that previous efforts have been made to address the issue.

However, we are also aware that two subtly different colours of cladding panel are present on the façades, which may cloud this issue.

The cladding panels were not inspected during our survey work, as sufficient studies have already been carried out and their poor condition is widely accepted and clear to see. An investigation was carried out on a small selection of the cladding panel fixings, which were all found to be of non-ferrous materials, and in good condition.

Non-ferrous spandrel panel bolt fitting

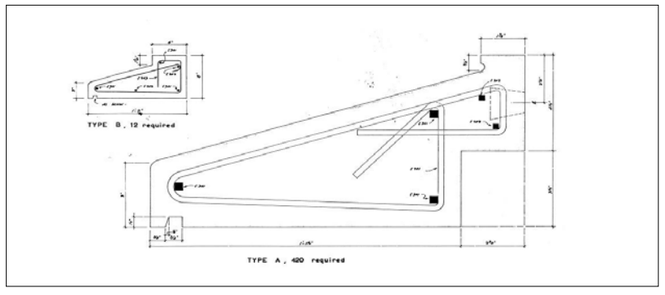
The pilaster cladding panels which cover the outer face of the insitu reinforced concrete columns were inspected for condition, including their fixings to the columns. Firstly, a panel was removed at second floor level on the west elevation in order to view the fixings and confirm record details. The fixings were observed to be of non-ferrous material, appearing similar in nature to fish-tail ties (as used in masonry wall construction) and anchored to the column by interlock with a cast-in slot. The fixings appear to offer horizontal restraint to the pilasters, with the weight of each panel supported off the next, and ultimately supported by the second floor slab edge. Four more fixings were investigated on the east and west elevations, with all being found in good condition.

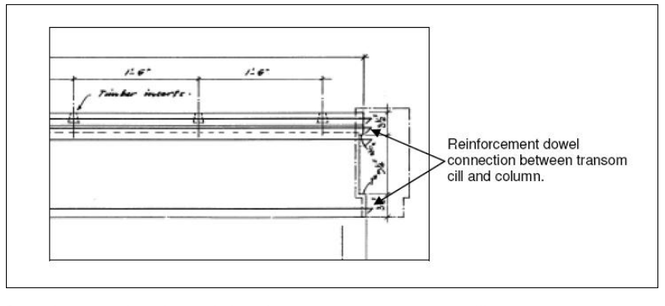
Non-ferrous metal pilaster restraint fixing

The pilasters themselves are of re-constituted stone construction and have slotted top and bottom surfaces designed to accept the restraint fixings. A protective coating also appears to have been applied, and their overall condition appears to be good. The pilasters have three small diameter round bars as reinforcement. In the element inspected the reinforcement was in very good condition.

Pilaster cladding panel removed at second floor. Fixing slot visible on left.

The upper and lower windows of each bay of the façade are separated by pre-cast concrete transom cills, many of which exhibit signs of reinforcement corrosion and previous patch repairs.





Record structural section and plan of pre-cast concrete transom cill

The pre-cast concrete transom cills are attached to the insitu reinforced concrete columns with reinforcement dowel bars, which project from the transom cill and were cast into the column at the time of construction.

Samples of concrete taken from the transom cills revealed high levels of chloride content, indicating the reinforcement corrosion to be chloride induced. In this instance the exposure to chloride ions is increased not only through direct exposure to a maritime environment, but also from rain running-off the windows above.

Pre-cast concrete transom cills

The pilasters, their reinforcement and their fixings appear to be in good condition, although deterioration of the mortar bedding and adjacent sealant are causing some to come loose and potentially to become unstable. This increases the risk of a pilaster falling in the future, and potentially causing a full collapse of all of the supported pilasters above. Additionally, the loss of mortar bedding behind some panels has exposed the outer column face and created a location for moisture to accumulate. This has caused reinforcement corrosion in some of these locations, acting to force the pilaster away from the column face.

Mortar bed loss and column reinforcement corrosion

The cladding panels on the north and south elevations were not inspected during this investigation, due to their wholesale replaced in 1992. At the time of the replacement, SW was appointed to survey reinforcement cover in the replacement panels. We understand that the insufficient cover found in many of these panels resulted in an agreement between PCC and the Contractor to replace the defective panels, based upon a parametric study of the minimum acceptable cover and predicated rates of deterioration. This could mean that some panels have an unacceptably reduced design life. In this context we have unsuccessfully endeavoured to obtain Council records on the matter in an attempt to shed light on this issue. At approximately seventeen years old, it would seem that their replacement would form a necessary part of a future refurbishment project, if their design life is not to expire during the refurbished building's lifespan.

In summary, we conclude that all the precast panels and cills on the East and West elevations are either deteriorating as a result of reinforcement corrosion or are at significant risk of deterioration in the future. Albeit based on a small sample survey, the fixings appear sound and therefore the risk is one of falling concrete debris and less one of wholesale cladding panel loss, as occurred previously on a different type of pre-cast concrete cladding panel on the north façade of the tower. Notwithstanding the good condition of the few samples inspected, the condition of a number of the spandrel panels may lead to loss of larger fragments of concrete falling over time, which could eventually lead to the loss of whole panels in the future.

4.3 Services condition survey

4.3.1 Summary

This report summarises the implications for the existing services installations as part of the feasibility work to determine the future use of the Plymouth Civic Centre Building. It consists of a services overview following a site inspection in June 2009. In the context of the interventions being considered in the feasibility study the conclusion of this report is that wholesale replacement of the existing services installations should be carried out. A summary is provided for sustaining the existing services installations for the period that the building will remain in occupation before the works.

4.3.2 Site survey notes

There is limited existing as built information for the existing services within the building. A useful check list of the various regulatory test certificates concerning the existing services installation that should be in place is included as Appendix 1 of this report. We would recommend that existing services information and test certificates are checked against this list.

4.3.3 Electrical services

HV/LV power distribution

There is a WPD incoming switch gear room in Room 3 with cabling run to an intake bus-bar panel with oil circuit breakers located in the Council House sub-station Room 4. This in turn feeds:

1. An OCB panel feeding a 500kVA transformer (T1) serving the council chamber switch gear panel located within Room 6 with one spare way. The switch panel serves: local small power and lighting distribution boards; cooking and water heating 1st floor; kitchen control panel; ventilation control panel; refrigeration control panel (now redundant); fire mans lift to the tower block; service lifts 6&7; passenger lift 5 (to the council chamber); CH and TC Emergency lighting and a SWEB Closing Rectifier. The switch gear panel has a 100A three phase feed from the site generator.

2. An OCB panel feeding two 500kVA transformers (T3 serving tall building and T4 serving the IT and Chiller/Air Conditioning) serving the tower block in the Tall Building sub-station Room 55 with one spare way. The switch panel is separated into essential and un-essential supplies fed from the standby generator. The switch panel served from T4 has an automatic change over to the standby generator in the event of this supply going down. The IT equipment has a UPS to cover the period between mains failure and the generator coming on line. The switch panel served from T3 has a change over switchboard to switch to the standby generator in the event of the supply going down. The panel serves all power within the tower block.

3. An OCB panel feeding a 750kVA transformer in the Law Courts sub-station serving a switch gear panel located within the Guildhall on the other side of Royal Parade.

There was insufficient time to obtain a detailed assessment of the individual supplies served. It was not clear exactly what equipment is served on each side of the panel. The building was originally heated via two large thermal stores with 11kV electric night storage immersion heaters. The night-time supply and associated switchgear has been disconnected and is now redundant. With the improvements envisaged to the electrical services (in particular lighting) the existing electrical supplies should be sufficient to serve the building.

Standby generator

There is a 430kVA standby generator located in Room 83 (this was not accessed). From the generator bus-bar air circuit breakers serve: Council House panel; each side of the Tall Building panel; 2nd floor computer server room UPS and chiller. There is a manual mains restoration reset switch to the computer supplies in Room 55. It would appear that the UPS to the computer suite has a limited duration back up and is dependent on the generator operation for sustained interruptions to supply. It is understood that there is sufficient diesel storage for 7 hours of operation of the generator. It is understood that exact nature of what equipment is served by the generator installation is not currently known and determination of this is limited by concerns about cutting off the supply to the building in order to test and maintain it. As the operation of the fire fighting lift is fundamental to enabling the fire department to quickly access and control fire fighting and escape from upper floors we would recommend that this is resolved and a full maintenance regime put in place for the generator.

NICEIC periodic inspection test certificate

It is understood that the 5 yearly electrical test certificates is to be carried out in August 2009. This will confirm the state of the existing LV installation and will inform any remedial work required to ensure the installation is compliant with the Wiring Regulations.

Voice and data

The incoming BT lines enter into Room 36 where the main PABX is installed. The main server room is located on the 2nd floor. The server room has a raised access floor that extends into the corridor. This results in a ramp at each end of the corridor. There is a dedicated UPS and local floor standing cooling units supplying via the floor void with internal condensers located within the ceiling void and heat rejection through the floor void at the base of the tower.

Fire alarm

The building is covered by an L2 fire detection and alarm installation. The original installation is redundant and a wireless installation has been installed. We did not have sight of the fire alarm test certificates however understand that these are in place. Wireless technology is becoming more accepted as a solution for fire detection and alarm installations; particularly in listed buildings where cable distribution can have a significant impact on the building fabric. On the basis that the existing wireless installation can be stripped out and stored during the works it is conceivable that it could be reused in the refurbished building.

Lighting installation

Office areas are generally served by fluorescent tube pendant fittings with local switching. There is no occupancy control not daylight dimming of these fittings.

Emergency lighting

There emergency lighting in the building is served by a combination of self contained battery fittings and fittings served via an emergency battery installation. The extent and nature of the installation is not documented.

Small power installation

There is not a raised floor distribution system within the tower and sockets are generally surface mounted on external walls and partitions.

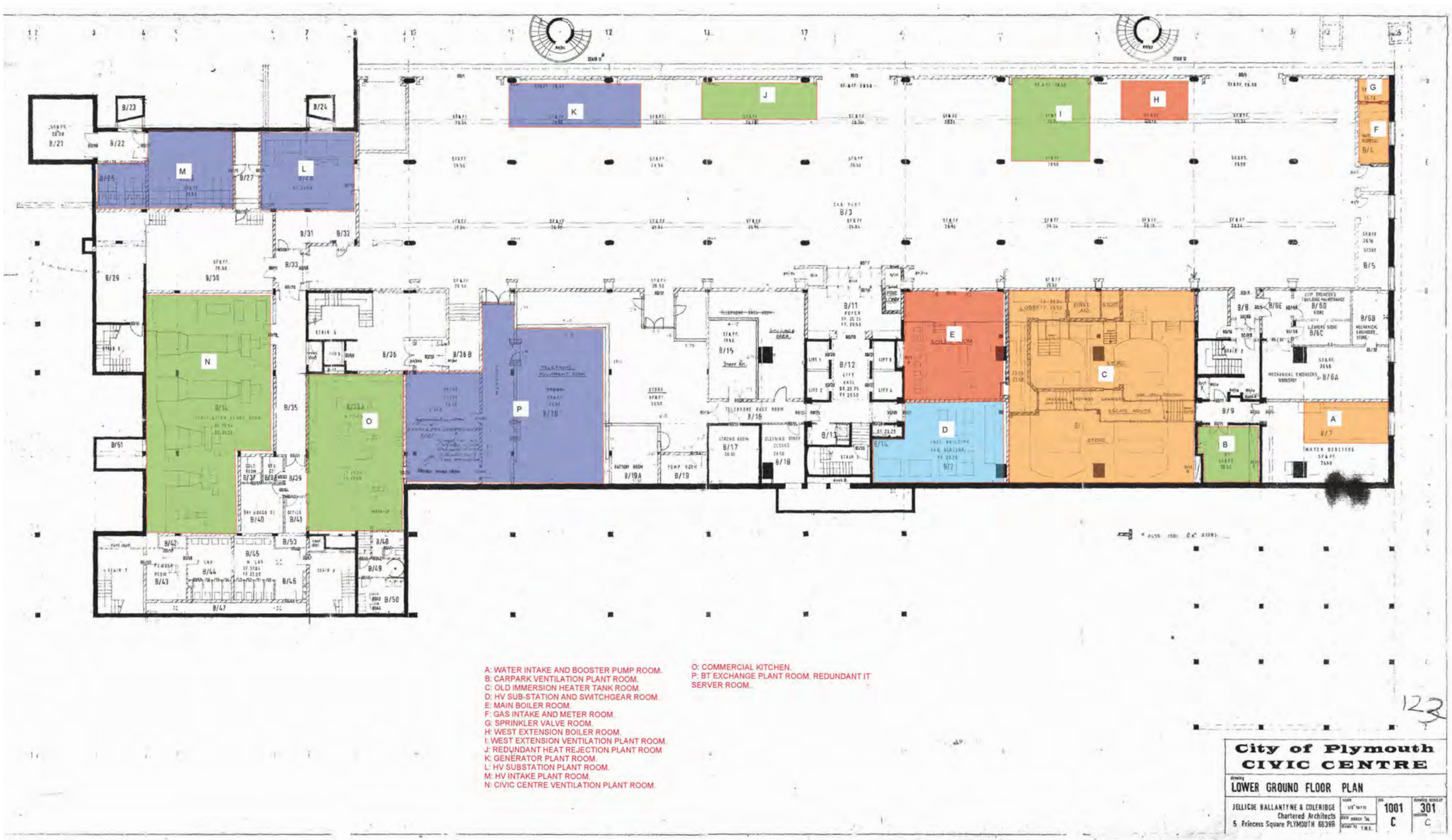
4.3.4 Mechanical services

LTHW heating

Three number 1650kW gas fired LTHW boilers are located in Room 54 and serve the LTHW heating installation throughout the building with the exception of the west extension. The boiler flues rise up a dedicated riser to tower roof level. It is understood that the boilers are sequenced with one boiler providing redundancy in the event of failure or maintenance of one of the lead boilers. It is understood that the burners to the boilers were replaced 2-3 years ago. The age of the boilers themselves is not known.

The boilers to the west extension are located in Room 79 with a dedicated flue rising to roof podium level. This installation is relatively new and in working order.

It is understood that the heating distribution pipework and many of the original heat emitters are original. Details of the heating schematic are not known however it is understood that there are 4 risers to the tower one in each corner of the building. The installation appears to suffer from poor control leading to under heating in areas of the building leading to people installing local electric heaters- this tends to exacerbate the lack of control. Additional radiators have been installed in the link building in front of the original radiators.


A: WATER INTAKE AND BOOSTER PUMP ROOM.
B: CARPARK VENTILATION PLANT ROOM.
C: OLD IMMERSION HEATER TANK ROOM.
D: HV SUB-STATION AND SWITCHGEAR ROOM.
E: MAIN BOILER ROOM.
F: GAS INTAKE AND METER ROOM.
G: SPRINKLER VALVE ROOM.
H: WEST EXTENSION BOILER ROOM.
I: WEST EXTENSION VENTILATION PLANT ROOM.
J: REDUNDANT HEAT REJECTION PLANT ROOM
K: GENERATOR PLANT ROOM.
L: HV SUBSTATION PLANT ROOM.
M: HV INTAKE PLANT ROOM.
N: CIVIC CENTRE VENTILATION PLANT ROOM.
O: COMMERCIAL KITCHEN.
P: BT EXCHANGE PLANT ROOM. REDUNDANT IT SERVER ROOM..
City of Plymouth
CIVIC CENTRE
drawing
LOWER GROUND FLOOR PLAN
JELLICOE BALLANTYNE & COLERIDGE
Chartered Architects
5 Princess Square PLYMOUTH 66388
job
1001
C
drawing number
301
C

The condition of the pipework distribution network is not known and in the context of trying to sustain the existing installation we would recommend a regime of regular water sampling and testing (this could be carried out by Rodol Water Treatment who carry out the potable water analysis) to determine whether any corrosion or bacterial growth is occurring that could reduce the life of the pipework system.

Ventilation
The office floors to the tower are naturally ventilated via openable windows with the exception of the 2nd floor IT suite.

Room 13
This room houses the main ventilation equipment to the council chamber building. There are dedicated supply and extract air handling units serving: council chamber, committee rooms, council toilets, commercial kitchen and general areas. Cooling and humidity control was provided as part of the original installation however this been decommissioned due to a legionella risk assessment. There is currently no cooling to these spaces. The heat rejection equipment is housed in room 81 which is understood to contain asbestos and has been isolated from the car park. The refrigeration plant is beyond repair.

Room 89
The car park has a dedicated extract ventilation installation.

Hot/Cold water
The main water intake is located in Room 69. This supplies two booster sets, one of which is understood to be non-operational. A boosted water supply is distributed via a dedicated riser to water storage tanks on the 7th and 13th floor. The water in the system is regularly tested by a Rodol Water Treatment. There is an additional water intake in Room 77 serving a sprinkler installation to the lower basement area. This is operational and tested on a weekly basis. Hot water is generally provided via local electric hot water boilers distributed throughout the building.

Gas
There are two gas intakes to the building located in Room 76. The supplies serve:

4. A U40 gas meter to the gas boilers serving the west office addition.

5. A G400 rotary gas meter to the gas boilers serving the rest of the site.

With the improvements envisaged to the thermal fabric the existing gas supplies should be sufficient to serve the building.

Public health
The above ground drainage and rainwater installation was not investigated in detail during the visit.

4.3.5 *Lifts*
The tower is served by three 13-person lifts and a 20-person lift for goods and serving as a fire fighting lift. These lifts serve a common lift hall on 15 landings however they do not access the roof restaurant level. There is also a service lift continuing to the roof deck level. It is understood that these lifts require regular maintenance and are often out of order. They are at the end of their economic life.

There is an 8-person passenger lift serving three floors in the Council House and two services lifts connecting the central kitchen on lower ground floor and the reception servery on the first floor.

4.3.6 *Energy use*
The building Display Energy Certificate indicates 2110 tonnes of CO_2 per year. Of this 850 tonnes is produced through heating and 1260 tonnes through electrical energy use. The energy consumption has been recorded as follows:

	kWh/m² actual building	**kWh/m² typical building**
Heating / hot water	218	110
Electrical	102	95

4.3.7 *Conclusions*
In the context of the extent of intervention envisaged for the three options considered in the feasibility study the existing services installations in the building should be replaced. Depending on the length of stay in the building before the works are carried out a regime of preventative maintenance should be carried out to sustain the life of the existing installations.

Description	**Cost**	**Comment**
Ongoing maintenance	£270,000 / year	Increasing at ~10% year on year.
Electrical		
HV/LV Distribution Remedial work	£140,000	Subject to findings of Periodic Inspection Report.
Emergency lighting	Included in ongoing maintenance cost above.	
Lighting: improvements in energy efficiency	£100,000	Worth consideration if occupancy for 5-10 years.
Lift	£350,000	Allowance for replacing fire fighting and 1 passenger lift in tower.
Standby Generator	£65,000	Allowance for replacement subject to survey.
Mechanical		
Repair to existing pipework distribution.	£100,000	Subject to water testing.
Replacement of one boiler	£165,000	Allowance for failure of one boiler in order to retain redundancy.
Improvements to control of existing heating installation.	£150,000	Work would be redundant when building redeveloped.

Summary table

5 Baseline repair scheme

5.1 Schedule of works - architectural

Schedule of works for baseline repairs, stabilization and fabric upgrade to the ensemble of buildings which constitute the Civic Centre.

5.1.1 Introduction

This schedule covers architectural aspects of the exterior and interior fabric, fittings, fixtures and finishes of the Civic Centre. A schedule of structural repairs and stabilisation is reported by Scott Wilson. A schedule of repairs and upgrades for the mechanical and electrical services together with the services strategy is reported by Skelly and Couch.

For equivalent Schedules of Works for the alternative uses which incorporate the consequential alterations to the fabric, plan or use of the accommodation see the relevant option study.

5.1.2 Methodology

The works relating to each element of the building ensemble is scheduled accordingly, e.g. The Municipal Offices, The Administration Block, The Link Block and The Civic Suite/ The Council House. A list of essential works is further categorised for external fabric, internal fabric and finishes etc. In each category replacement components would need to satisfy current and as far as possible future standards. The schedule has also been prepared in coordination with the Statement of Significance and takes account of the heritage values identified.

The schedule is based on a visual survey of the buildings, carried out by Avanti Architects in July 2009, and archival material gathered through PCC Surveyors Department, Plymouth and Devon Archives and desktop research of various architectural and historical sources.

In the case of the later extension of ground and first floor offices to the west of the Tower, options are included both for retention and for removal, with the requisite refurbishments / making good as appropriate.

No other recent studies or intrusive surveys of the architectural fabric, finishes or fixtures have been made available or are known to exist nor has it been possible to investigate the condition of the substrates or presence of contaminations or existence of hazardous material.

Architectural elements with structural properties such as precast panels that are included here should be cross referred to the structural survey undertaken by Scott Wilson.

1.0	CIVIC OFFICES - 15 STOREY TOWER
1.1	**External fabric** External fabric silhouette and various patterns and textures on the façades are part of the architectural significance of the building group and as such baseline repair and stabilization assumes reconditioning and reinstatement of the significant elements for the purpose of this exercise.
1.1.1	Wing roof 1. Remove existing non original equipment including cradle structure etc. 2. Remove existing finishes. 3. Carry out remedial works to concrete surfaces, above and below. 4. Install mansafe system to suit roof formation. 5. Add insulation and water proof membrane to roof including all required accessories. 6. Recondition, repair and replace rainwater goods etc. 7. Redecorate the underside of the wing roof.
1.1.2	Terrace at fourteenth floor 1. Remove existing finishes. 2. Remove telephone masts and associated cabling etc. 3. Carry out remedial works to concrete surfaces, deck and parapet walls. 4. Add insulation, waterproofing membrane and accessories. 5. Recondition rainwater goods etc. 6. Reinstate thresholds to entrances. 7. Finish terrace in lightweight promenade slabs on spacers. 8. Install safety rail to requisite height to inner face of parapet to architects design. 9. Install safety bolts at regular intervals for abseiling procedure for periodical maintenance and checks.
1.1.3	Façades to fourteenth floor 1. Replace/upgrade glazed screens with high performance glazing system to original pattern. 2. Make good walls. 3. Replace escape doors to stairs. 4. Replace access hatches, grills etc with new details to original pattern and design.

1.0	CIVIC OFFICES - 15 STOREY TOWER
1.1.4	East and west façades from second to fourteenth floors 1. Carefully remove all infill window & concrete panel ensembles. 2. Make good reveals, head and foot details and prepare for receiving new window and panel ensemble. 3. Prefabricate window and panel ensemble to represent original pattern and design to architects' details. The prefabricated panels to have: a) High performance window sets capable of being cleaned from inside. b) High performance insulated panel, outer finish to be vitrified panels or stone veneer, to represent original pattern. c) Incorporation of safety bolt on the inside face, for maintenance and cleaning. 4. Install prefabricated panels in existing openings. 5. Repair, recondition and where necessary re-fabricate vertical reconstituted stone claddings. 6. Repair, recondition and where necessary re-fabricate concrete panels to parapet to fourteenth floor. 7. Repair, recondition and where necessary re-fabricate concrete panels to soffit below to fourteenth floor parapet wall. 8. Repair, recondition and where necessary re-fabricate concrete panels to spandrel below window ensemble at second floor.
1.1.5	North and south gables from second to fourteenth floors 1. Carefully remove all infill window & concrete panel ensembles on the inset portion of the gable ends. 2. Make good reveals, head and foot and prepare for receiving new window and panel ensemble. 3. Prefabricate window and panel ensemble to represent original pattern and design to architects details. The prefabricated panels to have: a) High performance window sets capable of being cleaned from inside b) High performance insulated panel, outer finish to be vitrified panels or stone veneer. c) Incorporation of safety bolt on the inside face, for maintenance and cleaning. 4. Install prefabricated panels in existing openings. 5. Repair, recondition and where necessary re-fabricate concrete panels to parapet to fourteenth floor. 6. Repair, recondition and where necessary re-fabricate concrete panels from second to thirteenth floors. 7. Repair, recondition and where necessary re-fabricate concrete panel returns into window & panel ensembles from second to fourteenth floor parapet. 8. Repair, recondition and where necessary re-fabricate concrete panels to spandrel below window ensemble at second floor.

1.0	CIVIC OFFICES - 15 STOREY TOWER
1.2	**Interiors** Work scheduled under this heading refers only to heritage sensitive areas and does not include for general redecoration, internal alteration of office floors and sanitary accommodation or service amenities such as pantries etc. All the above upgrade/refurbishments are priced as per industry standard rates for Grade A office refurbishment.
1.2.1	Main entrance hall 1. Remove later additions fittings and fixtures. 2. Conservation grade repairs and reinstatement of original finishes. 3. New reception desk to contemporary design with references to buildings original style.
1.2.2	Southern circulation core 1. Conservation Grade repairs and reinstatement of the circulation areas on entrance lobbies to the lift core on both sides at ground and first floors. 2. Conservation Grade repairs and reinstatement of the lift lobbies including outer presentation of the lift doors, signage and livery and lighting. 3. New regulations compliant doors from lift lobbies to various accommodation presenting original design. 4. Replace lifts.
1.2.3	Northern circulation core 1. Conservation Grade repairs and reinstatement of the lobby including new regulations compliant doors to various accommodation presenting original design.
1.2.4	Connection to thirteenth to fourteenth floors 1. Allow for Part M compliant accommodation stairs between the two floors. 2. Allow for Part M compliant platform lift between the two floors.
1.2.5	Additional escape stairs to serve ground to thirteenth floor 1. Allow for structural alteration – cutting slabs and structural stabilization of structure where necessary. 2. Allow for a Part B compliant staircase from ground to thirteenth floors. Please note that there may be a fire engineering solution to cater for safe evacuation of the building in lieu of an additional escape stair.

2.0	CIVIC OFFICES - 2 STOREY ADMINISTRATION NORTH BLOCK
2.1	**External fabric**
2.1.1	Roof 1. Remove existing cables and any other surface mounted services. 2. Remove existing finishes. 3. Carry out remedial works to concrete surfaces. 4. Install mansafe system to suit roof formation. 5. Add insulation and water proof membrane to roof including all required accessories. 6. Recondition, repair and replace rainwater goods etc. 7. Recondition repair and replace as necessary drainage channels and rain-water goods.
2.1.2	North façade 1. Carefully remove all infill window & panel ensembles. 2. Make good reveals, head and foot and prepare for receiving new window and panel ensemble. 3. Prefabricate window and panel ensemble to represent original pattern and design to architects details. The prefabricated panels to have: a) High performance window sets capable of being cleaned from inside b) High performance insulated panel, outer finish to be vitrified panels Incorporation of safety bolt on the inside face, for maintenance and cleaning. 4. Install prefabricated panels in existing openings. 5. Repair, recondition and where necessary re-fabricate vertical reconstituted stone trims. 6. Repair, recondition and where necessary re-fabricate concrete panels to parapet. 7. Repair, recondition and where necessary re-fabricate concrete panels to soffit below parapet. 8. Repair, recondition and where necessary re-fabricate concrete panels to spandrel below window ensemble at ground floor. 9. Repair, recondition and where necessary re-fabricate concrete panels to soffit below spandrel at GF.

2.0	CIVIC OFFICES - 2 STOREY ADMINISTRATION NORTH BLOCK
2.1.3	South façade, portion facing main entrance to tower 1. Reinstate the colonnaded façade at GF, Conservation Grade. 2. Carefully remove all infill window & panel ensembles. 3. Make good reveals, head and foot and prepare for receiving new window and panel ensemble. 4. Prefabricate window and panel ensemble to represent original pattern and design to architects details. The prefabricated panels to have: a) High performance window sets capable of being cleaned from inside. b) High performance insulated panel, outer finish to be vitrified panels or stone veneer. c) Incorporation of safety bolt on the inside face, for maintenance and cleaning. 5. Install prefabricated panels in existing openings. 6. Repair, recondition and where necessary re-fabricate vertical reconstituted stone trims. 7. Repair, recondition and where necessary re-fabricate concrete panels to parapet. 8. Repair, recondition and where necessary re-fabricate concrete panels to soffit below parapet.
2.1.4	South façade, Option 1, refurbish and recondition non original extension as in 2.1.3 above. South façade, Option 2*, portion recovered post demolition of non-original extension. 1. Re instate the colonnaded façade at ground level and match elevation at first floor to eastern portion. Please refer to explanatory note under Methodology.

2.0	CIVIC OFFICES - 2 STOREY ADMINISTRATION NORTH BLOCK
2.1.5	North and south gables 1. Carefully remove all infill window & concrete panel ensembles. 2. Make good sides, head and foot and prepare for receiving new window and panel ensemble. 3. Prefabricate window and panel ensemble to represent original pattern and design to architects details. The prefabricated panels to have: a) High performance window sets capable of being cleaned from inside b) High performance insulated panel, outer finish to be vitrified panels c) Incorporation of safety bolt on the inside face, for maintenance and cleaning. 4. Install prefabricated panels in existing openings. 5. Repair, recondition and where necessary re-fabricate concrete panels to parapet. 6. Repair, recondition and where necessary re-fabricate concrete panels. 7. Repair, recondition and where necessary re-fabricate concrete panels to spandrel at GF.
2.2	**Interiors** Work scheduled under this heading refers specifically to heritage sensitive areas and assumes general decoration, internal alteration of office floors and sanitary accommodation or service amenities such as pantries etc. It also assumes the need for restoring certain original elements such as reinstatement of the accommodation stairs in the entrance lobby of the eastern portion. General upgrade/refurbishment works are assumed to be carried out to industry standard rates for Grade A office refurbishment.
2.2.1	Entrance hall 1. Re instate the entrance hall and the accommodation stairs with material and details in style of the original design. 2. Allow for a DDA compliant lift to first floor.

3.0	THE LINK BLOCK
	The building referred to as the Link Block is the structure occupying areas between Grid lines 10 to 20 (N/S) and Grid Lines E to Y (E/W) at ground and first floors. Areas between Grid Lines 13 to 20 incorporate the Southern circulation core to the tower block (refer archive drawing no 1001C/302 rev A).
3.1	**External fabric**
3.1.1	Roof For purposes of costing the roof area should be taken from Grid Line 8 to 20 (N/S) 1. Remove existing cables and any other surface mounted services. 2. Remove existing finishes. 3. Carry out remedial works to concrete surfaces. 4. Install mansafe system to suit roof formation. 5. Add insulation and water proofing membrane to roof with all accessories. 6. Recondition draining channels, rainwater goods etc.
3.1.2	Exposed soffit to elevated section (Grid Lines 10-13 N/S) 1. Carry out concrete repairs and cosmetic treatment to the coffered slab.
3.1.3	Columns to elevated section 1. Repair and recondition mosaic finish to columns.
3.1.4	East, west, north and south elevation to ground floor section (GL 30-20 N/S) 1. Carry out conservation grade repairs and re conditioning to the slate clad walls. 2. Replace glazed screens with high performance glazing system to original pattern. 3. Replace glazed doors north elevation (tower side) to with high performance system to original design. 4. Conservation grade refurbishment and upgrade glazed doors to south elevation(Civic Suite/Council House side).

3.0	THE LINK BLOCK
3.1.5	East, west, north and south elevations to first floor to include inward looking elevations. 1. Carefully remove all infill window and panel assemblies 2. Make good reveals, head and foot and prepare for receiving new window assemblies. 3. Prefabricate window and panel ensemble to represent original pattern and design to architects details. The prefabricated panels to have: a) High performance window sets capable of being cleaned from inside b) High performance insulated panel, outer finish to be vitrified panels c) Incorporation of safety bolt on the inside face, for maintenance and cleaning. 4. Install prefabricated panels in existing openings. 5. Repair, recondition and where necessary re-fabricate vertical reconstituted stone trims. 6. Repair, recondition and where necessary re-fabricate concrete panels to parapet 7. Repair, recondition and where necessary re-fabricate concrete panels below window assemblies.
3.2	**Interiors** Work scheduled under the interiors refers specifically to heritage sensitive areas and assumes general decoration, internal alteration of office floors and sanitary accommodation or service amenities such as pantries etc. Baseline upgrade/refurbishment works are assumed to be carried out to industry standard for Grade A office refurbishment.
3.2.1	Circulation area and accommodation staircase 1. Generally remove non original finishes and fixtures. 2. Recondition, repair or replace like for like finishes and fixtures such as railings to stairs. 3. Incorporate additional DDA compliant lift from GF to first floor at the northern portion.
3.2.2	Office accommodation, east wing 1. Carry out conservation grade reconditioning or repairs of the timber panelling to suite of offices.

4.0	THE CIVIC SUITE
	The interiors of the Civic Suite (Council Chambers) are the most architecturally sensitive of the complex. Externally, the public faces of the building on the south and east elevations have a different design to those of other buildings albeit using the same general palette of materials.
4.1	**External fabric**
4.1.1	Roof 1. Remove existing cables and any other surface mounted services. 2. Remove existing finishes. 3. Remove the non original polycarbonate over-roof protection to original roof lights. 4. Carry out remedial works to concrete surfaces. 5. Install mansafe system to suit roof formation. 6. Install bespoke glazed over-roof protection to roof lights to architects design. 7. Examine the flag pole for stability and carry out necessary repairs. 8. Add insulation and water proofing membrane to roof with all accessories. 9. Recondition drainage channels and rainwater goods etc.
4.1.2	East elevation 1. Carry out Conservation Grade repair and refurbishment of large glazed screen and opening lights and doors to function room at first floor. 2. Carry out Conservation Grade repair and refurbishment of large glazed screen and doors to main entrance at GF. 3. Repair, re-condition and where necessary re-fabricate reconstituted stone trims above ground level. 4. Repair, re-condition and where necessary re-fabricate concrete panels to parapet and areas below terrace. 5. Repair, re-condition and where necessary re-fabricate components of the railing to public terrace. 6. Remove existing finishes to terrace area re waterproof and re instate existing reconditioned finishes. 7. Carry out any repairs and conservation grade cosmetic treatment to under side entrance drive and supporting columns. 8. Carry out conservation grade reconditioning and repairs to slate clad walls at ground floor. 9. Repair and recondition original external light fittings, adapt to receive wiring and bulbs to current standards.

4.0	THE CIVIC SUITE
4.1.3	West elevation 1. Carry out Conservation Grade repair and refurbishment of large glazed screen and opening lights to the ante chamber at first floor. 2. Carry out Conservation Grade repair and refurbishment of large glazed screen and doors to Members Room at GF. 3. Repair, recondition and where necessary re-fabricate reconstituted stone trims. 4. Repair, recondition and where necessary re-fabricate concrete panels to parapet and areas below first floor. 5. Carry out any repairs and conservation grade cosmetic treatment to underside of first floor overhang. 6. Carry out conservation grade reconditioning and repairs to slate clad wall at ground floor. 7. Repair and recondition original external light fittings, adapt to receive wiring and bulbs to current standards.
4.1.4	South elevation 1. Carefully remove non original infill windows and screens to concrete screen at first floor (windows to Mayor's Parlour). 2. Replace with conservation grade replica of the originals. 3. Conservation grade repair and recondition existing door and window assemblies at ground floor. Re-glaze with high performance glazing to architects details. 4. Repair, recondition and where necessary re-fabricate reconstituted stone trims. 5. Repair, recondition and where necessary re-fabricate concrete panels to parapet and areas below first floor. 6. Carry out any repairs and conservation grade cosmetic treatment to underside of first floor overhang. 7. Carry out conservation grade reconditioning and repairs to slate clad wall at ground floor. 8. Re-finish the columns with matching mosaic. 9. Repair and recondition original external light fittings, adapt to receive wiring and bulbs to current standards.

4.0	THE CIVIC SUITE
4.1.5	North elevation 1. Conservation grade repair and recondition existing door and window assemblies at ground floor. Re-glaze with high performance glazing to architects details. 2. Repair, recondition and where necessary re-fabricate reconstituted stone trims. 3. Repair, recondition and where necessary re-fabricate concrete panels to parapet and areas below first floor. 4. Carry out any repairs and conservation grade cosmetic treatment to underside of first floor overhang. 5. Carry out conservation grade reconditioning and repairs to slate clad wall at ground floor. 6. Repair and recondition original external light fittings, adapt to receive wiring and bulbs to current standards.
4.2	**Interiors** The interiors of this part of the building are of the highest aesthetic and historic heritage value on account of the quality of their original specification, the high local significance of the art and craftwork, and the authentic state of preservation. The schedule of works for the interiors is therefore limited to light re-conditioning and cleaning, stabilization of the more fragile elements and repairs if necessary. Any builders work in connection to updated services and service routings will need to be in line with quality conservation grade specification. The schedule includes for two sensitive intervention projects to improve accessibility of the building to users and visitors. These are an additional passenger lift to serve the public entrance to the south and remodelling of part of the upper gallery for wheelchair accessibility.
4.2.1	Entrance hall at ground floor, Members' Lobby, ceremonial staircase, first floor foyer and gallery. 1. Conservation grade reconditioning and light refurbishment and repairs of all original surfaces, fixtures and fittings. 2. Artwork cleaning and restoration. 3. Repair and recondition original external light fittings, adapt to receive wiring and bulbs to current standards.

4.0	THE CIVIC SUITE
4.2.2	Members' room, various committee rooms, Members' entrance, lobby and public entrance lobby at ground floor. 1. Conservation grade reconditioning and light refurbishment and repairs of all original surfaces, fixtures and fittings. 2. Art work cleaning and restoration. 3. Repair and recondition original external light fittings, adapt to receive wiring and bulbs to current standards.
4.2.3	Mayor's Parlour, reception hall, Council Chambers and ante rooms 1. Conservation grade reconditioning and light refurbishment and repairs of all original surfaces, fixtures and fittings. 2. Artwork cleaning and restoration 3. Repair and recondition original external light fittings, adapt to receive wiring and bulbs to current standards.
4.2.4	Minstrel gallery, public galleries at second, and third floors 1. Conservation grade reconditioning and light refurbishment and repairs of all original surfaces, fixtures and fittings. 2. Minor remodelling of the upper public gallery to allow for wheelchair access 3. Repair and recondition original external light fittings, adapt to receive wiring and bulbs to current standards.
4.2.5	Ancillary accommodation, cloak rooms, press room, Minstrel gallery storage and access room. 1. Light refurbishment and necessary re-conditioning. 2. Repair and recondition original external light fittings, adapt to receive wiring and bulbs to current standards.
4.2.6	Primary and secondary circulation, north and nouth stairs, lift adjacent to north staircase. 1. Light refurbishment and necessary re-conditioning. 2. Refurbishment of the lift mechanisms to conform with current standards. 3. Inclusion of an additional Part 'M' (DDA) compliant lift to serve public and staff, location and extent of necessary alteration to be advised.

5.2 Schedule of works - structural

5.2.1 Maintenance strategies

Based on our assessment of the condition of the various reinforced concrete elements of the building, the following baseline repairs are recommended:

5.2.2 Internal frame elements

We consider maintenance measures unnecessary for the internally exposed sections of the reinforced concrete frame. There will be undoubtedly be some areas of reinforcement corrosion either present now or in the future, but given the benign internal environment and their likely location we consider they will have no structural significance and would be easily repairable.

5.2.3 External frame elements (including gull wing roof)

Option 1 – regular inspection and reactive patch repair

One potential strategy for the Civic Centre is to implement a programme of periodic visual and tactile inspections to identify and rectify areas of loose concrete and cracking before the risk of falling concrete becomes significant.

Inspections would need to be made on a regular basis, annually or at least bi-annually, and the inspections would need to include the entire external surface of the structure. This would require the use of the suspended access cradle, although this would require refurbishment/upgrade to improve its reliability. The current protection measures would also have to remain in place (or be replaced with a more in-keeping alternative).

In conjunction with these measures, all original concrete should be coated/surface impregnated to reduce further salt ingress, and all subsequent areas of repair recoated afterwards, during the first round of repairs.

The background level of chloride contamination already present makes the formation of incipient anodes adjacent to any repairs an appreciable risk. Therefore Fosroc Galvashield XP units, or similar, would be included within each repair to provide some degree of temporary protection against this.

The advantage to this approach is that repairs would be carried out only in the areas needed, minimising the immediate cost. However, even with the most sympathetic treatment a further and continual deterioration in the appearance of the building would occur and it would require a commitment on the behalf of the Council, or any subsequent owners, to provide additional funds for the periodic inspection and repair works throughout the remainder of the structure's life. Whereas this could be acceptable if the building remains as Council office accommodation, it is difficult to see such an approach being acceptable to a new owner.

Option 2 – repair and cathodic protection

Cathodic protection (CP) is a process by which a very small electrical current is passed to the reinforcement via an electrode (known as the anode) placed on or in the concrete. This electrical current effectively prevents the electrolytic corrosion process occurring and over the longer term changes the chemistry of the concrete around the reinforcement making it less susceptible to corrosion.

The anode can take many forms, but in this instance the most appropriate is likely to take the form of mixed rare-earth metal oxide coated titanium rods installed in drill-holes in the concrete. These anodes are then electrically connected to the reinforcement in the concrete via small mains-fed power supplies. Given that the external appearance of the building seems to be the most aesthetically valuable these could be installed from the inside, but would require the removal of all finishes in the vicinity and the installation of wiring and equipment.

The advantage of this approach is that it can prevent any further deterioration to the frame, irrespective of the level of carbonation or chloride contamination present both now and in the future. However, the work is both costly, requiring installation on all exposed external elements, and disruptive. The work would cause significant noise and disruption to the building's occupants, and damage to the internal finishes. As such it would only be feasible if the building was to undergo an extensive internal refurbishment, with occupants decanted. All existing corrosion sites would also be patch repaired during the installation process.

It would also be necessary to permanently electrically bond together all metallic elements which are fastened to or come into contact with the concrete frame, such as window frames, reinforcement in precast panels etc and their fixings or entirely isolate them. Overall the amount of work required to do this would be significant so may only be feasible if all of the existing precast panels, pilaster panels and window frames etc were being replaced. Once installed, maintenance of a CP system can be carried out at modest cost.

5.2.4 Precast concrete spandrel panels and transom cill beams (east and west façades)

Some precast concrete spandrel panels and transom cill beams are in reasonable condition, but many are also beyond economical repair. Given the disruption and difficulty in replacing these and also in obtaining an acceptable match in appearance to the original, we recommend that they all be removed and replaced, including the windows, with an aesthetically acceptable replacement conforming to modern Building Regulations and English Heritage standards.

5.2.5 Reconstituted stone pilasters

Subject to decisions made regarding the precast panels and transom cill beams and the external frame, it may not be appropriate to retain the column pilasters, even though they appear generally sound. However, in the event they can be retained then we recommended that all those currently loose are re-fixed with measures also put in place by way of sealant replacement etc to prevent any elements which are currently sound becoming loose in the future.

5.2.6 Precast concrete cladding panels (north and south façades)

The north and south façade cladding panels are younger than elsewhere on the building due to their wholesale replacement in 1992. However, their design life is unclear because some of the replacement panels were found to have insufficient reinforcement cover. We understand that the defective panels were removed and replaced, but we have been unable to retrieve primary evidence from the Council to support this view. At approximately seventeen years of age it would seem prudent for the panels to be replaced during the baseline repairs, as access will be available and the building will be unoccupied. If not, the panels will likely require maintenance or replacement early in the refurbished building's life, requiring further access and causing disruption.

5.3 Schedule of works - services

5.3.1 Introduction

The purpose of this project is to investigate options for the refurbishment of the existing Plymouth Civic Centre considering a range of building uses. As part of this study a new building is also being considered on the existing car park adjacent to the site. The building is Grade II listed. The aspiration is that the long term sustainability of the Centre will be significantly enhanced and if possible a BREEAM Excellent rating achieved.

The report summarises the scope of services and environmental enhancements appropriate to the refurbishment as a means of informing the cost estimated for the work.

5.3.2 Building Envelope Thermal Performance

Energy use

The building Display Energy Certificate indicates 2110 tonnes of CO_2 emissions per year. Of this 850 tonnes is produced through heating and 1260 tonnes through electrical energy use. The following table shows the existing energy consumption in comparison with a typical and current best practice building of the same use:

	kWh / m²		
	Actual building[1]	**Typical building[1]**	**Good practice[1]**
Heating / hot water	218	151	79
Electrical	102	85	54
KgCO2 / m²	85	65	38

[1] Based on a typical open plan naturally ventilated office.

It is clear that significant improvements are possible compared to the existing energy consumption.

The table below provides an indication of good and typical practice for the three occupancy profiles being considered for the tower as part of the feasibility study:

	Good practice			Typical practice	
	kWh/m² heating	**kWh/m² electricity**	**CO_2 $KgCO_2/m^2$/ year**	**kWh/m² heating**	**kWh/m² electricity**
Office	79	54	40	151	85
Hotel[1]	281	87	94	433	152
Hotel[2]	314	119	115	476	217
Housing[3]	65	17	20	87	23

[1] Hotel with no pool or air-conditioning

[2] Hotel with no pool however with air-conditioning

[3] Housing: Good Practice based on Code for Sustainable Homes Level 3; Typical based on Building regulations Notional.

From this comparison the hotel will be the most energy intensive option for the redevelopment with the air-conditioned option producing more than 3 times that of the open plan office and 6 times that of residential apartments. The implication for this is that significantly higher investment in renewable energy technology, or Combined Heat and Power plant, would be required to bring the CO_2 emissions from the building in line with the office or residential options.

Building Regulations

The Building Regulations requires that where a building is to undergo a major refurbishment there is an opportunity to improve the overall energy performance of the building fabric and serves and that this should be included as part of the work. It provides minimum levels of improvement to demonstrate this. As the building is listed there is an acknowledgement that improvements must be developed in sympathy with the listed nature of the building and the minimum standards are not always achievable. With aspiration of BREEAM excellent there is a need to substantially improve the fabric performance which will require adopting the Building Regulations recommendations as a minimum and enhancing them where possible.

Thermal Fabric Improvements

The existing building envelope is in need of substantial upgrade to bring it in line with modern best practice, reducing CO_2 emissions and running cost.

A summary of the minimum recommended building envelope performance is outlined in the table below. We have also indicated the possible enhancement to enable further reduction in CO_2 emissions and more potential for achieving BREEAM Excellent. These are consistent with the requirement for new thermal elements in extensions to existing buildings.

Building element	**U-Value (W/m2K)**	**U-Value (W/m2K)**
Roof	0.20	0.18
Walls	0.35	0.3
Floors	0.25	0.2
Windows & doors	0.20[1]	1.8[1]
Rooflights	2.20[1]	1.8[1]

[1] For whole unit or 1.2 centre pane.

The U-values indicated above for the floors are predominantly those between the existing ground floor and car-park. The large expanse of the exposed concrete soffit represents a significant heat loss to the unheated car-park.

Infiltration

The existing fabric has numerous small gaps around windows and cladding junctions that provide a path for air leakage and therefore heat loss. The replacement of windows and the addition of insulation to achieve the U-values above will offer an opportunity to substantially improve the air tightness of the fabric. In the case of the tower (which is exposed to higher wind speeds at height) the proposal of a factory assembled cladding panel will offer a more robust solution to improving air tightness.

Neither BREEAM nor the Building Regulations requires a minimum level of air-tightness for refurbishments (other than its contribution to reducing energy demand) however the minimum level for new build is to achieve a rate of 10m3/h/m^2 at 50Pa. The table below indicates the current typical and best practice for air tightness in the U.K. We would propose that a minimum of 10m3/h/m^2 at 50Pa be adopted with an aspiration to achieve 7 where appropriate (e.g in the refurbished tower).

Building type	**Air permeability in $m^3/(h.m^2)$ at 50 Pa**	
	Normal practice	**Best Practice**
Building regulations	10	
Offices		
Naturally ventilated	7	3
Mixed-mode	5	2.5
Air-conditioned	5	2
Factories & warehouses	6	2
Superstores	5	1
Schools	9	3
Museums & archival storage	1.5	1
Cold stores	0.3	0.2
Dwellings		
Naturally ventilated	9	3
Mechanically ventilated	5	3

Sources: ATTMA Technical Specification Standard 1, Measuring Air Permeability of Building Envelope. March 2006.

Control of Solar Gains

The predominant east west orientation of the building means that the tower is exposed to high levels of solar gain throughout the day. With the proposal to replace the windows a high performance glazing installation is recommended with a high visible light transmission and low heat transmission (e.g Pilkington Suncool Brilliant 66/33 or equivalent). This should apply to east, west and south glazing where it is replaced. Internal glare and solar control blinds will also be required.

5.3.3 Embodied Energy

We have produced an estimate of the embodied energy within the existing building if it were to be rebuilt. This equates to ~11,590 metric tonnes of CO_2. On the basis of the proposed improvements in thermal fabric and services efficiency this would equate to approximately 12 years of CO_2 emissions due to running the building. If the building were to be replaced with a new building, considering good practice and a 10% contribution from renewable energy, it would take 60 years to payback in CO_2 terms.

Demolition would also generate in the order to 18,165 tonnes of waste.

5.3.4 Rainwater harvesting

There is a potential to collection ~3000m^2 of rainwater per year. The original design included a 48,000 gallon (216m^3) thermal store in the basement. Final confirmation of occupancy is required however a rainwater harvesting tank of similar magnitude would enable ~85% of WC flushing to be via rainwater harvesting. Water bills for the building indicate ~9000m3 of water consumption per year so it would be possible to offset ~25% of the consumption via rainwater harvesting. Header tanks would need to be incorporated within the water tank rooms on 7th and 13th floors.

5.3.5 BREEAM

Office Option

A BREEAM Pre-assessment calculation has been carried out for the option of refurbishment into naturally ventilated offices to determine how the building could achieve BREEAM Excellent. This is included as an Appendix to this report.

To comply with BREEAM Excellent for a refurbished office building there is a mandatory requirement to achieve an Energy Performance Certificate rating of 47 which is equivalent to 47 KgCO_2/m$_2$/year. The implication of this is that we need to be aiming for improvements to the thermal fabric and buildings services to enable an emissions rate between a typical and good practice building.

The assumption above is that the existing natural ventilation strategy is retained with openable windows and exposed concrete soffit to enable the thermal mass to control overheating in the space. If an air-conditioned building were adopted the Good Practice equivalent would be 73 KgCO_2/m^2/year. To achieve BREEAM Excellent for the air-conditioned option approximately 35% of the energy consumption would need to be offset by the use of renewable energy technologies. It is doubtful whether this is achievable.

There are certain mandatory requirements for achieving BREEAM Excellent and these are summarised in the table below.

Table 4 Minimum BREEAM standards

BREEAM Issue	BREEAM Rating / Minimum number of credits				
	PASS	GOOD	VERY GOOD	EXCELLENT	OUTSTANDING
Man 1 - Commissioning	1	1	1	1	2
Man 2 - Considerate Constructors	-	-	-	1	2
Man 4 - Building user guide	-	-	-	1	1
Man 9 - Publication of building information (BREEAM Education only)	-	-	-	-	1
Man 10 - Development as a learning resource (BREEAM Education only)	-	-	-	-	1
Hea 4 - High frequency lighting	1	1	1	1	1
Hea 12 - Microbial contamination	1	1	1	1	1
Ene 1 - Reduction of CO_2 emissions	-	-	-	6	10
Ene 2 - Sub-metering of substantial energy uses	-	-	1	1	1
Ene 5 - Low or zero carbon technologies	-	-	-	1	1
Wat 1 - Water consumption	-	1	1	1	2
Wat 2 - Water meter	-	1	1	1	1
Wst 3 - Storage of recyclable waste	-	-	-	1	1
LE 4 - Mitigating ecological impact	-	-	1	1	1

The following items are M&E preliminary items that are over and above what could be considered as standard M&E preliminaries items. The items are standard BREEAM requirements and are considered good practice. We have included them to cater for the requirement of a BREEAM Excellent rating as part of the planning approval for the site.

Testing & comminssioning

The contractor will be required to employ a specialist commissioning agent. The contractor will also be required to undertake seasonal commissioning on a 3 monthly basis for the first year of operation.

Operational & maintenance documentation

The contractor will be asked to complete a simple Building User's Guide in addition to the Building Log Book required by the Building Regulations Part L.

Waste management

The contractor will be required to assist the main contractor in their commitment to monitor construction waste and energy usage on site. The contractor shall :

- sort and recycle construction waste by type on site;
- adopt best practice policies for minimising pollution to ground and watercourses/municipal systems.

Pipework insulation

The specification of insulating materials shall avoid the use of ozone depleting substances and substances with a global warming potential (GWP) of 5 or more in either manufacture or composition.

Refrigerants

The specification of refrigerants shall avoid the use of ozone depleting substances and substances with a global warming potential (GWP) of 5 or more in composition.

Hotel option

At present there is not a BREEAM tool for assessing Hotels and a Bespoke BREEAM assessment would need to be developed by the BRE if the hotel option were pursued. It is not proposed to pursue this as part of this feasibility study.

Residential option

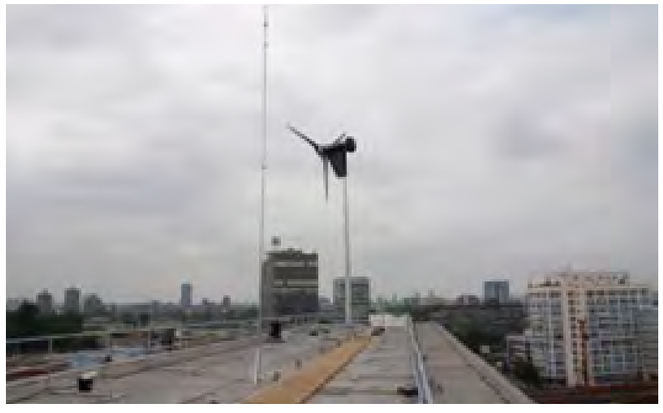
At present the Code for Sustainable Homes is the assessment tool for housing however it is limited to new build developments. Further discussion with the BRE will be required to determine how a refurbishment project can be treated. It is not proposed to pursue this as part of this feasibility study.

5.3.6 Renewable and efficient energy source

A detailed study of the possible integration of Renewable and more efficient Energy sources would be needed (this is required as part of the BREEAM process) during the next stage of design development however the following summary provides details of the possible options.

Wind

The effectiveness of low level wind turbines in a city environment is significantly reduced by the turbulence caused be ground obstructions. The tower offers the potential for roof mounted turbines however the structural and visual implications may preclude their use.



6kW roof mounted turbine

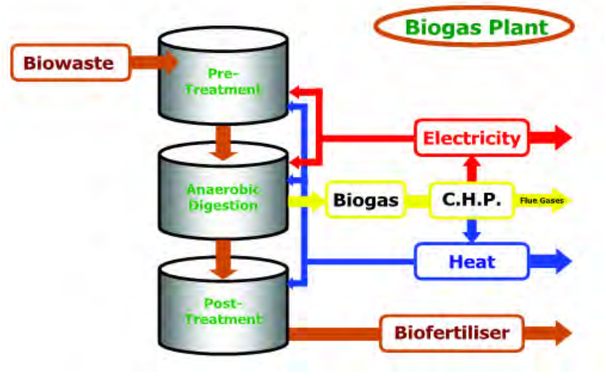
The turbine shown above would generate in the order of 12,000kWh per year which would be ~ 1% of the annual electrical load for the building.

Biomass
Biomass refers to living or recently living biological material which can be used to fuel energy production. Biomass can consist of wood chip/pellets, biodiesel, or gas produced by anaerobic digestion or pyrolysis of biological waste. Biomass can only be considered as a renewable energy if it comes from a sustainable source. The main advantage of biomass is its lower carbon emission, when compared to fossil fuels, as carbon absorbed when re-growing balances the carbon emissions. The use of biomass as a fuel source clearly relies on a long term, reliable and sustainable source of biomass.

Wood chip
There is currently a limited wood chip or pellet supply chain within the Plymouth area although this may change in future.

Anaerobic Digestion
Anaerobic Digestion (AD) is a process where anaerobic organisms convert some of the carbon in organic plant and animal matter into a biogas that consists mainly of Methane (CH4) and Carbon Dioxide (CO_2). The biogas (of which 60% is combustible methane) is a by-product of this decay process, which can be harnessed for cooking, space heating or water heating by burning in a boiler.

The bio-waste used for the majority of systems currently in use (there are over 3000AD plants in Northern Europe) are generated from farming: animal slurries and manure, maize or grass silage, crops such as potatoes and glycerol which is a byproduct of the production of bio-diesel.



The digestion process is temperature, time, acidity and chemical-composition dependent. Optimum conditions for the mesophile organism require a constant 35°C temperature, pH of 7.5 to 8.5, regular mixing, and constant usage of the gas produced.

As a guide the following fuel volumes would be required to produce 8200kWh of bio-gas per year:

- 5 cows (i.e. all the slurry is collected), or
- 1.5 acres of maize, or
- 4.5 tonnes of glycerol, or
- 27 tonnes of food waste, or
- 175 tonnes of sewage sludge.

This would offset ~1.5 tonnes of CO_2 from natural gas or roughly the equivalent if the gas were used to generate electricity and offset grid generated power.

The volumes of waste required are significant and the availability of small scale biogas generators is limited. It is currently only viable for larger scale biogas generation at a municipal, industrial or large scale farming enterprise. This may be something the Council would like to pursue at a municipal level.

Pyrolosis
Pyrolysis is a thermal process that uses high temperatures to break down waste. The waste is broken down to create gas, solid and liquid residues. The gases can then be combusted in a secondary process such as boiler or CHP unit to generate heat and electricity. The pyrolysis process thermally degrades waste in the absence of air (and oxygen). Temperatures are usually above 400-800°C.

The main product of gasification and pyrolysis is syngas, which is composed mainly of carbon monoxide and hydrogen (85 per cent), with smaller quantities of carbon dioxide, nitrogen, methane and various other hydrocarbon gases. Syngas has a calorific value, so it can be used as a fuel to generate electricity or steam or as a basic chemical feedstock in the petrochemical and refining industries. It can also undergo treatment to produce a hydrogen stream for use in fuel cells.

The technology is currently mainly focused on the use of municipal waste.

Ground source
Ground source heating involves extracting heat from the ground to heat the building, by circulating water through buried pipes. The length of the pipe depends on the buildings energy requirements.

The low grade heat extracted from the ground is passed through a heat pump, which provides high grade heat (in the form of hot water) to the building. The system can also be used in reverse to provide cooling in summer. By coupling the heat pump with the ground, a much higher Coefficient of Performance (COP) is achieved than the air coupled heat pumps commonly used in cooling systems.

The ground's temperature at around 2m deep remains at a steady 11°C. In the winter, this relatively high temperature can be taken advantage of as a heat source.

Heat pumps can be a very efficient way of obtaining heat. A typical COP is 4, which means for every kW of electricity used in the heat pump 4 kW of heat will be transferred to the building. The system must be designed to optimise the heat pump, best efficiencies for heat pumps are achieved when the difference in temperature between the heated water and the ground are lowest. Therefore heat pump technology is especially suited to low temperature heating systems such as under floor heating. This would require installation of a screed and this additional weight may limit the viability of a heat pump solution in the tower due to structural limitations.

There are four basic types of ground loop systems:

- Horizontal (slinky)
- Vertical
- Pond/Lake
- Open Loop

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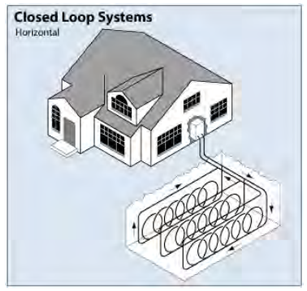
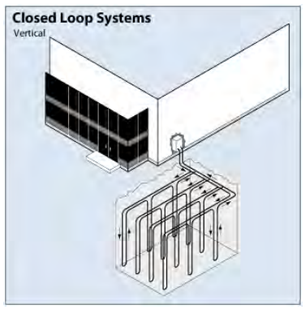
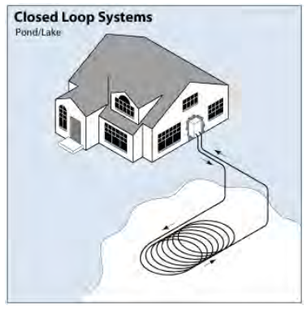
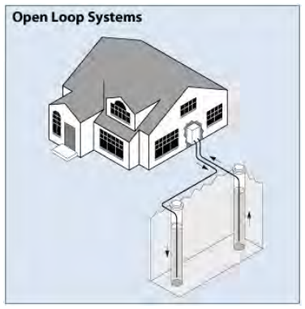
- Three of these; horizontal, vertical, and pond/lake are closed-loop systems. The fourth type of system is the open-loop option. Which one of these is best depends on the climate, soil conditions, available land, and local installation costs at the site. All of these approaches can be used for residential and commercial building applications.





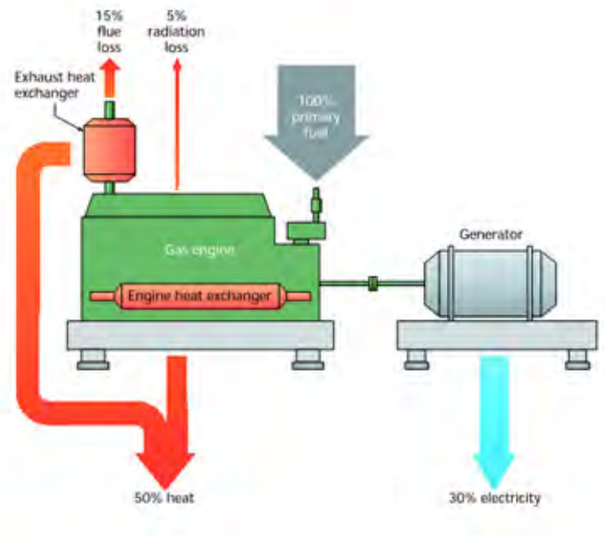




Given the site constraints an open loop system would be the most appropriate solution for further investigation on the site. The potential for using the heat pump where there are high cooling load (the hotel option and the civic centre) will offer significant improvements in efficiency over a more traditional cooling installation. It would also avoid the need for air cooled refrigeration plant which would otherwise be difficult to incorporate into the building.

CHP

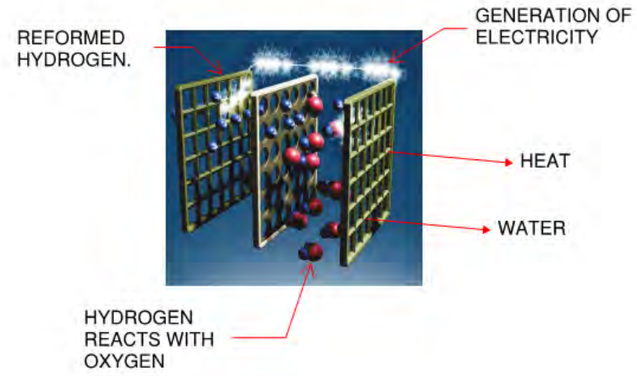
By using the waste heat from electricity generation the inherent inefficiency due to transmission of the electricity (or heat) can be ameliorated.



The overall impact of CHP can result in a reduction in CO_2 emissions when compared to grid generated power and local boiler of 30-40%. This requires a combined demand for electricity and heat at the same time (unless thermal or electrical storage is used). By selecting CHP plant that optimizes the periods of the year when a combined demand occurs, the viability of CHP is enhanced (generally it needs to operate for about 5000 hours/year to be economically viable). The hotel option with its high summer hot water demand offers the most suitable option for adoption of CHP and an allowance has been made within the cost plan.

Fuel cell CHP

Hydrogen is the primary fuel source for fuel cells. The process of fuel reforming allows for the extraction of hydrogen from many widely available fuels such as natural gas and propane or any other hydrogen-containing fuel (for example from anaerobic digestion or Syngas from pyrolysis). This gas enters the fuel cell stack and reacts with the oxygen contained in the air: Here electrical energy and heat are produced. An inverter changes the DC into AC which is normally used in the domestic field. The heat released is transferred to the heating circuit.



Small scale Fuel Cell CHP units are starting to come on to the market at a commercial level however the technology is still in its infancy.

Solar thermal

Solar thermal collectors use heat from the sun to generate hot water. A conventional system uses a mains powered circulation pump to couple a hot water storage tank with the solar panels.

There are two types of Solar Thermal Water Heating Panels:

Evacuated tubes

Evacuated tube collectors are made of a series of modular tubes, mounted in parallel, whose number can be added to or reduced as hot water delivery needs change. This type of collector consists of rows of parallel transparent glass tubes, each of which contains an absorber tube (in place of the absorber plate to which metal tubes are attached in a flat-plate collector). The tubes are covered with a special light-modulating coating. In an evacuated tube collector, sunlight passing through an outer glass tube heats the absorber tube contained within it.

Evacuated tube panels are generally more expensive but suffer less with heat losses and are less effected by some parts of the panel being shaded and are therefore more efficient. They also offer the advantage of being a flat bed arrangement so that there orientation can be optimised for solar collection without the visual impact of a panel collector. An allowance for integration of evacuated tube solar thermal collectors has been made in the cost plan.

Panel collectors
A flat plate collector consists of a thin absorber sheet (of thermally stable polymers, aluminium, steel or copper, to which a black or selective coating is applied) backed by a grid or coil of fluid tubing and placed in an insulated casing with a glass or polycarbonate cover.

Photovoltaics
Photovoltaics (PV) generate electrical energy from sunlight. There are three main types of photovoltaic system available and some hybrid systems:

Monocrystalline silicon cells
- these are a single crystal of electronically pure silicon.
- they have high costs but also have a high efficiency (14 - 15%).
- these perform badly under part load and very badly if any part of the array becomes shaded.
- cost approx. £600-£700/m^2

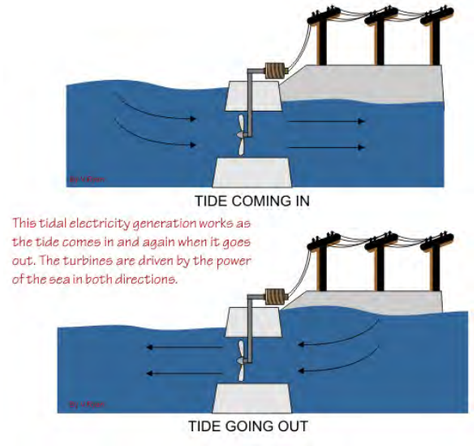
Polycrystalline cells
- these are formed from shards of silicon cells.
- these are still highly efficient but are cheaper than monocrystalline cells.
- 12 – 13% efficiency.
- these perform badly under part load and the output from the whole array is greatly reduced if any part of the array becomes shaded.
- cost approx. £600/m^2

Thin film/amorphous cell
- these are formed by an amorphous layer of silicon being deposited on a substrate. This allows for the production of flexible/semi-transparent cells (solar transmittance is approx. 10%).
- their efficiency is the worst of the silicon PV cell types and is typically in the region of 5%.
- although their peak efficiencies are lower than the other two, the part load efficiency is good and shading only reduces the output on the part that is shaded.
- the yearly output is often the same as for the other two types depending on the site.
- can be used as shades to stop glare and overheating in place of brise soleil or expensive high performance glazing.
- cost approx. £400/m^2

The cost analysis shows that the payback of Thin Film PV cells is slightly more beneficial than Mono-crystalline and is easier to integrate into the building fabric, however because they are less efficient more area is required. All types of PV perform best when located on an unshaded south façade inclined at approximately 30o. The roof area available for this is approximately 1500m2. A monocrystalline PV array of this area would cost in the order of £1M and would generate ~144,000 kWh per year. This would offset ~11% of the annual electrical energy demand for the office option.

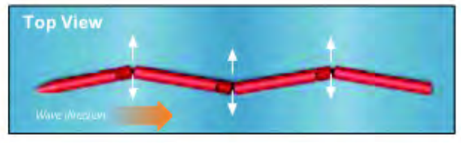
Hydro Wave & Tidal Power
Small Scale Hydro
Small scale Hydro-Electric power has a generating capacity of less than 50kW. It uses water flowing through a turbine (either due to water flowing in a river or a change in level due to the introduction of a weir) to drive a generator to produce electricity. The technology is highly site specific and is dependent on being near a body of water that is both flowing and preferably has a drop in level that can be exploited. An example of a small scale domestic installation is shown in the following image.

Tidal power
In a similar way to hydro-electric generation tidal power utilizes the natural motion of the tides to fill reservoirs, which are then slowly discharged through turbines to generate electricity.



For tidal power generation from such an installation to be viable a tidal difference in the order of 7m is required which is greater than the tidal range in Plymouth. An alternative is offshore tidal generation using a turbine at depth. This approach has been used in a 300kW offshore turbine off the coast of Devon in Lynmouth.

Wave power
Wave power is distinct from tidal power in that it utilises wave induced motion to generate electricity. There are many examples of wave power generators- one example is the Pelamis Wave Energy Converter which consists of a semi-submerged, articulated structure composed of cylindrical sections linked by hinged joints. The wave-induced motion of these joints is resisted by hydraulic rams which pump high pressure fluid through hydraulic motors which drive electrical generators.



A commercial scale installation generating electricity which is exported to the grid is in operation.

Conclusion

The emphasis of the design approach has been to improve the thermal fabric performance to minimise energy demand. This allows for the inclusion of viable renewable energy sources now and in the future. At this stage we have adopted the most economically viable renewable energy sources for each option. This includes solar thermal evacuated tubes for generating hot water to all Options. The need for heat rejection from the hotel and civic centre comfort cooling installations suggests an open loop bore hole installation to avoid external condensers. This will be optimised by inclusion of a heat pump as a more efficient way of harnessing the thermal storage capacity of the ground. Whilst not strictly renewable we have also included the option of Combined Heat and Power plant for the Hotel and Residential options where there is a year round demand for heating and power.

Option studies

Plymouth Civic Centre

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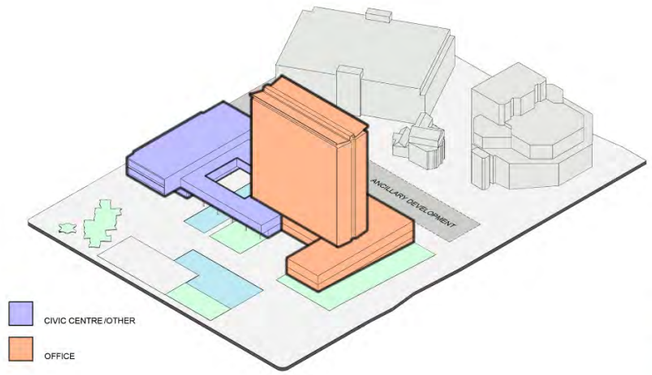
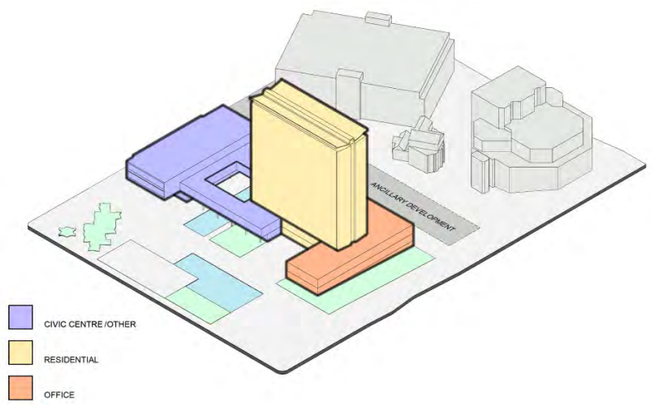
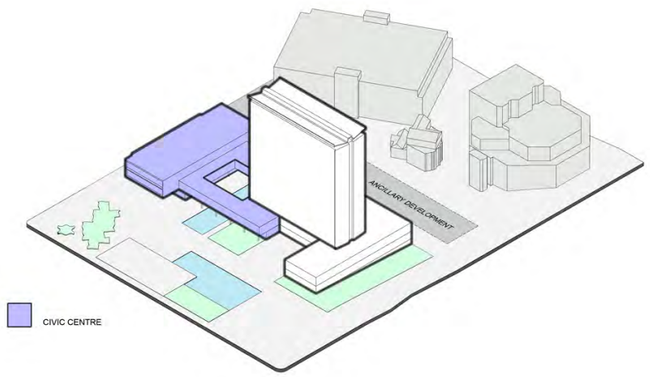
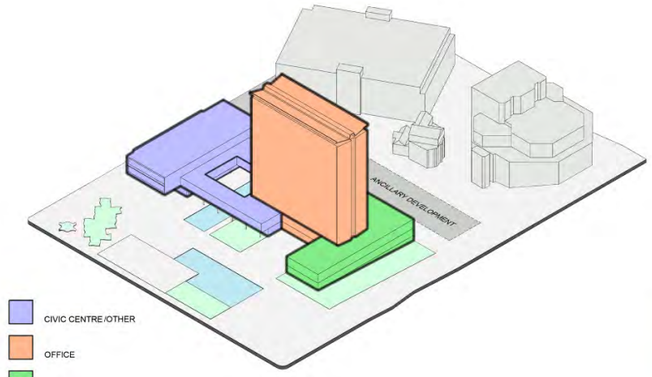
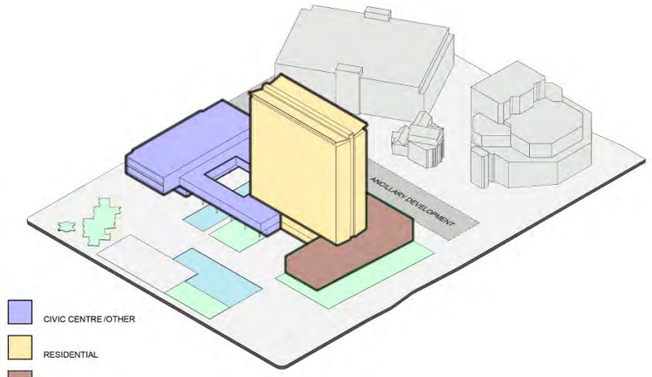
AVANTI ARCHITECTS

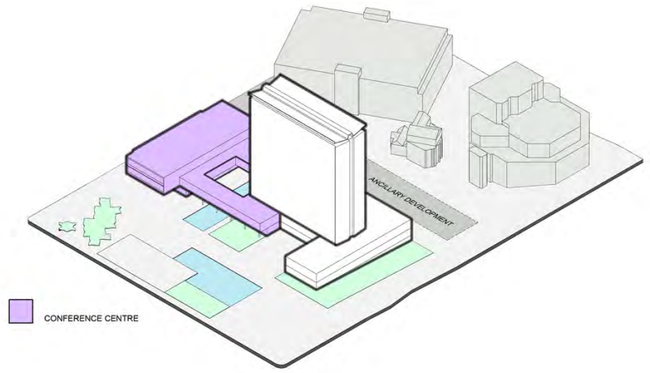


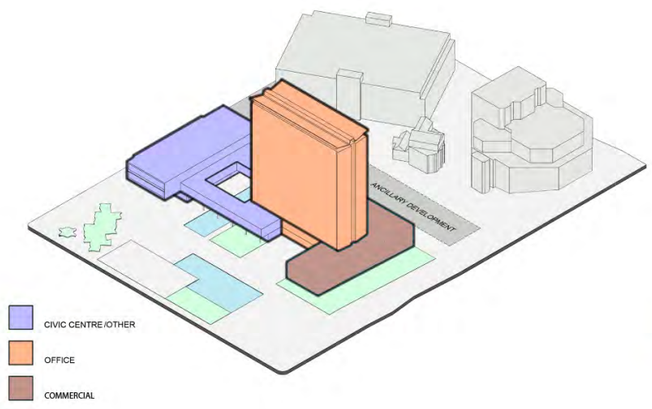


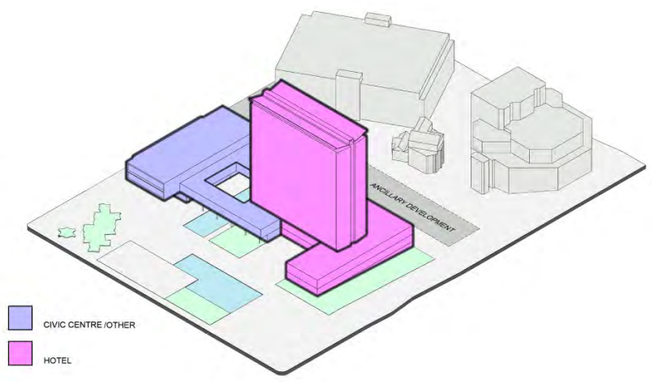












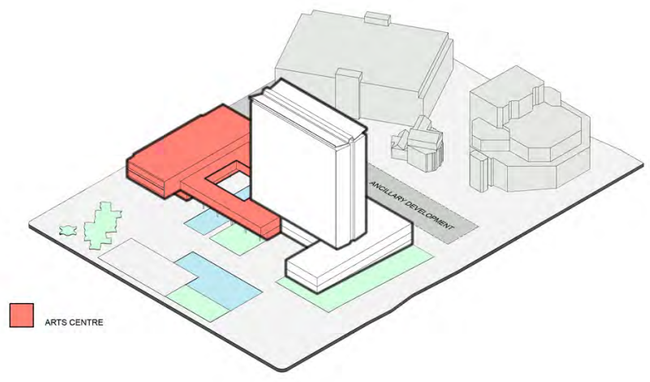


Table of options

6 Option studies

6.1 Introduction

This section looks at various possible alternative ways of using the existing buildings in any future regeneration project. It will be appreciated that the nature of the original complex as a series of related elements means that there is a range of options for the several parts that could combine in different ways. The Table of Options shows some of these combinations, though there are doubtless others. Within the broad range of possibilities we have organized the study into a series of 'generic' options – Office; Residential; and Hotel – in the case of the tower, with various commercial uses (gym/ A3/ SME) or library in the podium block. Meanwhile the Civic Suite is considered as a conferencing/ banqueting facility in conjunction with the hotel use, or as a standalone Arts Centre, or of course in terms of remaining in the use for which it was designed.

The chapter is introduced with general commentaries on the alternative uses from the property market perspective, the structural engineering implications and the possible services strategies. Individual commentary, including area figures, is then provided for each option with accompanying illustrations. More detailed sample layouts are provided for the residential, student accommodation, and hotel conversion variations within the tower itself. These are indicative only and should not be regarded as definitive floorplans. A table giving floor areas for all options is included.

6.2 Market / Property considerations

Knight Frank has received instructions from Plymouth City Council to provide input into the Feasibility Study undertaken by Avanti Architects to identify potential alternative uses for the Civic Centre complex.

The Civic Centre is a composition of Grade II Listed buildings dating from the 1960's and the intention of the Feasibility Study is to identify options which provide for the retention and refurbishment of the existing structures. At the same time it is acknowledged that the provision of accommodation for the identified alternative uses in keeping with the requirements of potential occupiers' current requirements will require intervention and upgrade.

In providing our advice we have had regard to the likely requirement of potential occupiers of the building for the identified alternative uses including the likely unit sizes, floorplates in the case of office accommodation and where appropriate a basic indication of the level of specification which would be required by occupiers. We would stress that this advice is not intended to provide a detailed specification for any of the proposed uses and has been provided in the form of a broad outline only.

The Avanti Feasibility Study has identified a range of principal alternative uses for the main 'tower' element of the building being:

- Offices
- Residential
- Student Accommodation
- Hotel

In addition a range of Further Uses have been identified for the Civic Suite and the Podium element of the main building including the following:

- Retention of the Civic Suite for Council use
- Banqueting and Conference Facilities
- Retail
- Gym
- Public Library
- Arts Centre

In addition the top floor of the Tower element of the development has been identified as providing the opportunity of providing a Restaurant for the use of the general public, which is understood to be the use for which it was originally designed. Detailed commentary on each of the above options accompanies the drawings that follow below.

6.3 Existing Use – Structural Capacity

6.3.1 Background

Following reports from JGP of extremely low load carrying capacity, Scott Wilson have carried out additional inspection and testing work. This included strength testing of samples of reinforcing steel taken from the floor slabs, and a thorough structural analysis and design assessment of a typical floor slab. This section of the report outlines Scott Wilson's assessment of the structural capacity of a typical tower floor slab between the third and seventh floor.

6.3.2 Assessment method

In an similar way to the JGP assessment, a finite element analysis has been carried out on a typical floor slab, based on a comprehensive set of record drawings and supported by the findings of our inspection work. The finite element model was verified by a manual analysis using similar techniques to those which would have been carried out at the time of the original design.

The slab was checked against the British Standard Code of Practice for the design of reinforced concrete building structures of the time, CP114, and also a comparative check was carried out in accordance with the current code, BS8110.

6.3.3 Design assumptions

The following assumptions were made, based on record drawings, material test results and observations during our inspections:

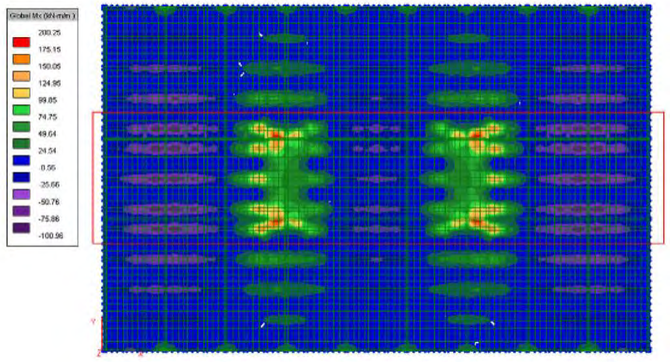
Reinforcement yield strength:	389N/mm^2
Concrete cube strength:	30N/mm^2
Imposed floor load:	2.5kN/m^2 (In accordance with BS6399 – 1)
Dead load:	4.27kN/m^2
Reinforcement layout:	As per record drawings and verified on site.

Design checks to CP114 were carried out using unfactored loads and checked against permissible stresses. The permissible stresses were calculated from the known material strengths, in accordance with CP114.

Design checks to BS8110 were carried out using ultimate limit state loads and checked against the known material strengths. Partial safety factors for materials were taken as 1.0 where possible, as the material properties and quality of construction are known from laboratory tests and visual inspections.

6.3.4 Structural behaviour

Record drawings indicate that the slabs were reinforced to behave as a central column strip running north-to-south between the internal columns, with transverse column strips in the east-to-west direction. The slab panels span between these column strips and the supporting perimeter walls and columns. The finite element analysis model appears to verify this behaviour, with the bending and shear forces concentrated more over the stiffer column strip zones.



Bending moment diagram along X-asis with loads concentrated on central column strip

6.3.5 *Design Checks to CP114 and BS8110*

Similar results were produced by the design checks to both CP114 and BS8110, summarised as follows:

Design check	CP114	BS8110
Bending (Max sagging in rib)	Pass (131%)	Pass (200%)
Bending (Max hogging in rib)	Fail (81%)	Limit (100%)
Bending (Max hogging over internal column)	Pass (124%)	Pass (244%)
Shear (Rib)	Fail (57%)	Limit (100%)
Punching Shear at Internal Column	N/A	Pass (119%)

The design checks have highlighted issues with the shear capacity of the coffered slabs. This is due to insufficient shear link reinforcement being present to comply with either code, and hence the shear forces have to be supported by the concrete materials alone. Significant change has occurred in the design methods for shear forces since CP114, which is why BS8110 gave acceptable results for the shear capacity of the slabs, whereas they are non-compliant with CP114. Shear resistance of the ribs alone was found to be insufficient to support the applied shear forces, but when the shear capacity of the concrete flange was included, it was possible to justify adequate shear resistance.

Few issues were found with the slab's bending capacity. The reinforced concrete sections were generally found to have sufficient resistance to bending stresses. In one instance insufficient top reinforcement was identified in the coffered slab close to the column supports, but once the tensile steel contained within the flange was included, sufficient bending stress resistance was justified.

6.3.6 *Discussion*

A typical slab has been shown to have sufficient structural capacity to support the applied imposed floor load of 2.5kN/m^2 in accordance with BS8110, but also that under these load conditions the slab is operating at its structural limit.

It is possible that the slabs have never experienced a full design load of 2.5kN/m^2, but in general there is a trend for office loadings to decrease over time with the move from paper to electronic documents, and more open-plan office designs without sub-dividing partition walls. SW initially assessed the current imposed load of a typical floor to be around 1.8kN/m^2, which accords with this trend.

Statistically speaking, it is unlikely that a load of 2.5kN/m^2 would be applied uniformly to the entire floor, indeed BS6399 Part 1 permits an imposed load reduction of around 10% on the primary column strip based on the floor area that it supports. This was not taken into account in the assessment, but demonstrates that the load is unlikely to reach its design limit uniformly over a large floor plate such as this.

The structure is considered to have been effectively load-tested during its life, and a lack of obvious or significant signs of distress demonstrates the floor slabs' ability to carry the imposed loads applied to it throughout its life.

Reinforced concrete structures are known to be a highly redundant structural form. Loads tend to re-distribute to alternative load paths in the event that highly stressed elements yield. Load testing has historically shown reinforced concrete structures to be capable of withstanding significantly more load than design calculations predict, and with few signs of structural distress being shown by this structure, it would seem that even though the calculations demonstrate the slabs to be on their limit, the design loads are within their capacity.

Floors seven to thirteen are recorded to contain additional steel reinforcement in the bottom of some of the ribs. Floor fourteen is also recorded as containing higher quantities of steel reinforcement than a typical floor. It would therefore seem reasonable to believe that these floors would also have capacity to support the standard office imposed load of 2.5kN/m^2.

6.3.7 *Conclusions*

The load-bearing capacity of critical areas of a typical floor slab has been rigorously assessed using accurate modern design methods and traditional manual design methods. A typical floor slab has been shown to possess sufficient structural capacity to support the design imposed loads for office use and the existing dead loads. The slab is considered to be operating at its structural limit under these loading conditions.

6.3.8 *Recommendations*

The above conclusions are based on record information and a limited amount of investigation and testing work. Therefore, should the building be refurbished to continue in its current use, we recommend that allowance be made for a thorough inspection of every floor slab for any signs of distress or poor workmanship which could adversely affect its load-carrying capacity, in particular the shear load capacity close to the central supports. In the event that problems are found, then local strengthening could be installed. An allowance should be made for this in cost estimates, as a contingency item.

6.3.9 *Proposed changes of use*

Various changes of use are proposed for the Civic Centre including:

Tower
Hotel, residential.

North Administration Block
Library, retail, hotel.

Council House and South Administration Block
Conference centre, arts centre.

Various sub-uses, such as gymnasium, plant rooms and restaurant apply to the above options.

Each of these options present three main structural issues:

- The capacity of the structure to support the proposed imposed loads.
- Compliance with current regulations for disproportionate collapse.
- Structural alterations to suit the proposed use.

6.3.10 *Imposed load capacity*

A review of the proposed uses in comparison with existing shows that in general the imposed loads will remain the same or reduce. Only in localised areas, for example the retail, gymnasium and restaurant uses would the imposed load increase. Refer to the load comparison table for full details.

Imposed load comparision between existing and proposed uses

Tower

	Original Design		Proposed Office		Proposed Residential		Proposed Hotel	
Level	**Imposed Load (kN/m²)**		**Imposed Load (kN/m²)**		**Imposed Load (kN/m²)**		**Imposed Load (kN/m²)**	
Roof	Roof	0.7	Roof	0.6	Roof	0.6	Roof	0.6
14	Restaurant	3.8	Restaurant	2	Restaurant	2	Restaurant	2
13	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
12	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
11	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
10	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
9	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
8	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
7	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
6	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
5	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
4	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
3	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
2	Office	2.4	Office	2.5	Apartments	1.5	Hotel Rooms	2
1	Foyer	2.9	Foyer	3	Foyer	3	Foyer	4
0	Foyer	2.9	Foyer	3	Lobby	3	Reception / Retail	4

KEY

Green
Load reduction compared to original

Black
Equal to original load

Red
Load increase compared to original

North and south adminitration blocks

	Original Design		Proposed Office		Proposed Library		Proposed Retail		Proposed Hotel	
Level	**Imposed Load (kN/m²)**		**Imposed Load (kN/m²)**		**Imposed Load (kN/m²)**		**Imposed Load (kN/m²)**		**Imposed Load (kN/m²)**	
Roof	Roof	0.7	Roof	0.6	Roof	0.6	Roof	0.6	Roof	0.6
1	Office	2.4	Office	2.5	Book Storage	4	Retail	4	Gymnasium / Café / Lobby	5/2/3
0	Office	2.4	Office	2.5	Book Storage	4	Retail	4	Restaurant / Conference	2/4

Council House

	Original Design		Proposed Civic Centre		Proposed Conference Centre		Proposed Arts Centre	
Level	**Imposed Load (kN/m²)**		**Imposed Load (kN/m²)**		**Imposed Load (kN/m²)**		**Imposed Load (kN/m²)**	
Roof	Roof	0.7	Roof	0.6	Roof	0.6	Roof	0.6
1	Council house	3.8	Council house	4	Conference centre	4	Arts centre	4
0	Foyer / Mtg rooms	3.8	Council house	4	Conference centre	4	Arts centre	4

Notes
Basement floor omitted, as ground-bearing and does not affect structural frame loads.
Original design imposed loads taken from CP V Code of Functional Requirements of Buildings - Loadings - 1952
Proposed imposed loads taken from BS 6399-Pt 1-1996

In general, the floor slabs are known to be operating at their structural capacity limit under the existing design imposed load of 2.5kN/m^2. Any change of use involving an increase in the design imposed load would require a specific detailed structural analysis and most likely would result in additional structural support (for example additional beams, columns and foundations) or strengthening of the existing structures to support the additional imposed load. The critical areas would appear to be the library, gymnasium, restaurant and foyer uses, where the design imposed load would be significantly greater than the current design load.

6.3.11 *Disproportionate collapse*
Having reviewed Part A of the Building Regulations, the Guide to the Building Regulations, the NHBC guidance relating to disproportionate collapse and change-of-use, and through consultation with Building Control authorities, the consensus of opinion is that a material change of use would require compliance with the current rules on disproportionate collapse.

6.3.12 *Building classification*
For all of the proposed uses, the building would be classified as 'Class 2B' for disproportionate collapse, which covers:

- Hotels, flats, apartments and other residential buildings greater than four storeys and less than fifteen storeys.
- Offices greater than four storeys but not exceeding fifteen.
- All buildings to which the public are admitted, which contain floor areas exceeding 2000m^2 but less than 5000m^2 per storey.

The design rules for disproportionate collapse specific to Class 2B buildings are:

Either
Provide effective horizontal and vertical ties throughout the structure.

Or
Check that upon notional removal of each column and each beam supporting a column, the building remains stable and that the area of floor at any storey at risk of collapse does not exceed the limits stated in the Regulations. Where removal would cause damage in excess of these limits, the element under consideration should be designed as a 'Key Element'.

A key element should be capable of resisting an accidental design loading of 34kN/m^2 applied in the horizontal and vertical directions (in one direction at a time).

6.3.13 *Design approach*
In the case of the tower block we believe that both criteria need to be applied, in accordance with BS8110 Part 1 'Structural Use of Concrete', ie the provision of ties to floors three to fourteen, combined with key element design of the second-floor load-transfer structure. This is because it is judged that the removal of a second-floor transfer beam or one of its supporting columns during an accident would likely cause disproportionate collapse. Removal of the beam or its supporting column would require transfer of significant load over a large distance by means of an alternative load path. Such an alternative load path is not evident at this level. Therefore key element design is applied in this case.

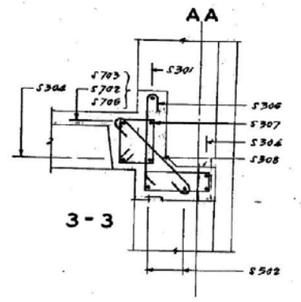
6.3.14 *Horizontal and vertical ties*
The reinforced concrete frame has been checked in accordance with BS8110 Part 1 'Structural Use of Concrete' for its capacity to provide horizontal and vertical tying action. The horizontal ties (ribs) and vertical ties (columns) were found to contain sufficient steel reinforcement to support the required horizontal and vertical tying forces.

Horizontal and vertical ties must be continuously reinforced in order to provide the required tie action. For example, a vertical tie (column) must be continually reinforced from its lowest to its highest level, and a horizontal tie (beam) must be continually reinforced from end to end. In addition, columns must be adequately anchored to slabs at each level. Record reinforcement detail drawings and construction photographs provide suitable evidence as follows:

- Record reinforced concrete detail drawings indicate the horizontal ties (ribs) to be continuously reinforced from end to end, as would be expected in two-way spanning slabs of this nature.
- Photographic records indicate sufficient continuity of reinforcement in the vertical ties (columns) by virtue of the reinforcement laps visible between floors

Column reinforcement projecting above slab. Continuous between floors

- Columns are adequately tied to the slabs through mechanical interlock of column reinforcement with the perimeter edge beam reinforcement and its subsequent mechanical interlock with the slab reinforcement.

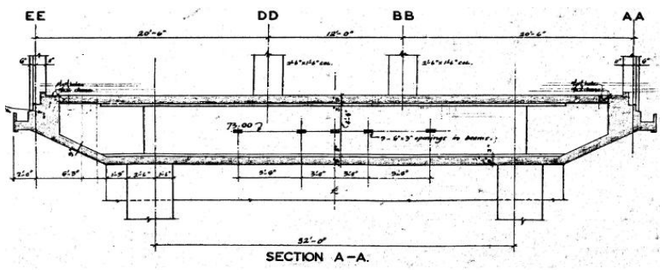


Perimeter column anchored to slab by mechanical interlock with perimeter beam reinforcement

Record drawings and design calculations indicate that the structural frame is well tied, both horizontally and vertically, not only by virtue of the many horizontal and vertical elements and their structural capacity to support tie forces, but also the monolithic and continuous nature of the insitu reinforced concrete frame's design and construction. Design calculations, coupled with record drawings and photographic evidence, demonstrate that the tower complies with the current Building Regulations requirements for disproportionate collapse.

6.3.15 Second floor load transfer structure

A load transfer structure at the second floor level of the tower permits a change in the column layout between the second floor office and the ground floor foyer. All columns from second floor to roof are supported by two reinforced concrete transfer beams, each supported by two large reinforced concrete columns through the foyer. The removal of the transfer beam or a supporting foyer column during an accident would result in a disproportionate collapse situation; therefore these elements need to be assessed for their capacity to support the accidental load of 34kN/m^2.



Tower load transfer structure comprising deep transfer beam and supporting columns

The accidental load combination differs from standard design load combinations in that the design partial safety factors are reduced, and the accidental load is combined with only one-third of the design imposed load, which itself can be reduced by 50% due to the statistical probability of all floors being fully loaded at the same time (BS 6399 Part 1). The fact that this building comprises a relatively large number of floors means that the reduction in dead and imposed loads outweighs the additional accidental load, and hence it has been possible to justify both the transfer beam and its supporting columns to support the accidental load combination.

The reinforced concrete transfer beams and supporting columns are massive in comparison to all other structural elements, and record information and design check calculations indicate that they have sufficient strength to support not only the accidental load combination, but also the greater ultimate limit state load combinations.

6.3.16 Conclusion

The tower has been shown to comply with the Building Regulations for disproportionate collapse in accordance with BS8110 Part 1 'Structural Use of Concrete'. The other structural blocks are also likely to comply, due to their similar construction, reduced scale and reduced sensitivity to accidental damage.

6.3.17 Structural alterations

Various structural alterations may be required to suit the proposed future uses. These include:

- Structural openings for a new fire escape stair to all tower floors.
- Structural openings for a new lift between thirteenth and fourteenth floors.
- Structural openings for new doorways and corridors through the tower shear walls.

Exact details are unknown at this stage, but our knowledge and understanding of the existing structure leads us to believe that the proposed alterations would be feasible, but may necessitate strengthening and re-supporting slabs and walls where necessary.

6.4 Service scope - Skelly and Couch

In order to inform the cost plan for the various intervention options we have developed a scope of work for each and this is summarised in the following table. The final scope for the preferred option would need to be developed as part of a detailed briefing process however we have provided an informed strategy in each case to enable costs to be derived. In the case of the Base Repair Scheme we have included provision for those elements that would be required to enable the potential for achieving BREEAM Excellent for the refurbishment.

	A: Office Option	B: Hotel Option	C: Residential Option	New Build
C12 Survey Work	Survey existing services installations prior to strip out.	As for Option A.	As for Option A.	Below ground services survey and below ground drainage CCTV survey.
C20 Demolition	Strip out existing services with the exception of the Statutory services intakes. Remove existing mobile phone masts?	As for Option A.	As for Option A.	Divert main trunk sewer running beneath proposed site. Divert other services following below ground services survey.
N13 Sanitary Appliances / Fittings	New installation throughout. Low flush WCs. Spray taps to wash hand basins.		New throughout. Low flush WCs. Low water use fittings, and low consumption sanitaryware, to enable Code for Sustainable Homes level 3(?).	As for Option A
R10 Rainwater & Pipework Distribution	New installation throughout. Rainwater directed to basement rainwater harvesting tank. Either two number 100,000l below ground tanks (20m long and 2.6m diameter) or say four number 5mx4mx3m. Tank room 15mx15m bunded with access from above. Say 2m3 Header tank at 7th and 13th floors.	As for Option A.	As for Option A.	New installation throughout. Rainwater directed to below ground rainwater harvesting tank. Say 54,000l tank 11m long 2.6m diameter. Use tank in Option A as alternative.
R11 Foul Drainage Above Ground	New installation throughout.	As for Option A.	As for Option A.	As for Option A
S12 Hot & Cold Water	New installation throughout. Tower Retain use of water tank rooms on 7th and 13th floors. Each tank room to have 5mx2mx2m tank and hot water cylinder. Cold and hot water meters to each tank. Water plant room at 7th and 13th floor 30m^2 each. Civic Suite Allow 30m^2 water plant room in basement for cold water storage tank, hot water storage tank and booster set. Allow for 30m^2 of evacuated tube solar thermal panel at £850/m^2.	New installation throughout. **Tower** Retain use of water tank rooms on 7th and 13th floors. Each room to have 5mx3mx2m tank. In addition allow for water booster plant and hot water storage tank in each tank room. 5m^3 hot water storage per tank room. Cold and hot water meters to each tank. Water plant room at 7th and 13th floor 50m^2 each. **Civic Suite** As for Option A. As for Option A with an additional 70m^2 of solar thermal panel due to increased hot water use.	New installation throughout. **Tower** As for Option B with exception that hot water storage is 3m^3 per tank room. Cold and hot water meters to each apartment (meters located within meter cupboard in apartment) **Civic Suite** As for Option A. As for Option A with an additional 40m^2 of solar thermal panel due to increased hot water use.	New installation throughout. Allow for two tanks at 5mx2mx2m. In addition allow for water booster plant and hot water storage tank. Cold and hot water meters to each tank and each demise if separately tenanted. Water plant room 30m^2. Allow for 20m^2 of solar thermal panel.
S32 Natural Gas	Retain existing gas intake. Allow for diversion of pipework within basement to serve boilers. Remove gas supply to west extension boilers. Allow for new gas supply to Civic Centre kitchen.	Retain existing gas intake. Allow for diversion of pipework within basement to serve boilers. Remove gas supply to west extension boilers. Allow for new metered gas supply to hotel kitchen. Allow for new gas supply to Civic Centre kitchen.	Retain existing gas intake. Allow for diversion of pipework within basement to serve boilers. Remove gas supply to west extension boilers. Assume no gas distribution to flats. Allow for new gas supply to Civic Centre kitchen.	New metered gas supply. Gas supply not needed if heat source comes from Civic Centre.

	A: Office Option	B: Hotel Option	C: Residential Option	New Build
S63 Sprinkler Systems	Natural smoke venting from basement requires fire engineering input. At this stage assume that existing sprinkler installation needs to be extended to whole of basement area in combination with smoke extract at 10 air changes per hour. (the alternative would be natural smoke vents equivalent to 1/40th of basement area distributed evenly around building). Allow for new dry riser installation. Assume sprinkler is not required for property protection to floors above lower ground.	As for Option A.	As for Option A.	As for Option A.
T10 LTHW Heat Source	Allow for replacement of existing boiler installation with three boilers (one for redundancy). Total 2400kW. Reuse existing flue route to roof termination. Boiler room 140m^2 located adjacent to lift core for access to flue route. Allow for new 550kW chiller and chilled water installation to Civic centre air handling equipment, Restaurant and ICT Server Room. Allow 50m^2 for chiller in lower ground floor. External Dry Air cooler 8m by 2.5m by 1.5m high. Alternative heat rejection to borehole in combination with heat pump installation (allow £500,000 extra over cost compared with conventional air cooled chiller).	Allow for replacement of existing boiler installation with three boilers. Total 3600kW (one for redundancy). Reuse existing flue route to roof termination. Boiler room 160m^2 located adjacent to lift core for access to flue route. Allow for new 1700kW chiller and chilled water installation to Civic centre air handling equipment Restaurant and hotel rooms. Allow 70m^2 for chiller in lower ground floor. External Dry Air coolers 3 number at 8m by 2.5m by 1.5m high. Alternative heat rejection to borehole in combination with heat pump installation. As enhancement include for 132kW heat output (82kW electrical output) gas fired CHP plant.	Allow for replacement of existing boiler installation with three boilers (one for redundancy). Total 2000kW. Reuse existing flue route to roof termination. Boiler room 120m^2 located adjacent to lift core for access to flue route. Heat meters to individual apartments. Allow for new chiller and chilled water installation to Civic Centre air handling equipment and Restaurant. As enhancement include for 60kW heat output (37kW electrical output) gas fired CHP plant.	New Boiler installation. Three boilers total 750kW. Flue Route to roof. Boiler room 80m2. Not required if heat source comes from Civic Centre however the boiler capacity would need to be increased to (hotel use worst case) 5,800kW 180m2 plant room. Boiler riser may need to be enlarged. Assume Naturally ventilated. Allow for 32kW cooling to ICT server rooms.
T31 Low Temperature Hot Water Heating	New installation throughout. Thermostatic radiator valves. New fixed temperature circuits to air handling plant to Civic Suite and Commercial Kitchen. Allow for chilled water installation to Civic Centre air handling plant, restaurant and ICT Server room.	As for Option A with addition of chilled water installation to restaurant/conference facilities and local fan coil units to each bedroom.	As for Option A.	New installation throughout. Thermostatic radiator valves. New fixed temperature circuits to air handling plant.
U10 General Supply & Extract	Building remains predominantly naturally ventilated. Renew ait handling plant to Civic Suite, Commercial kitchen and ancillary spaces ((install mechanical ventilation with heat reclaim to these spaces). Include for mechanical smoke extract to basement at 10 air changes per hour.	As for Option A with exception of comfort cooling to tower. Install new commercial kitchen mechanical ventilation with charcoal filtration to enable low level exhaust. New mechanical supply and extract with heat reclaim ventilation to bathrooms. Two central units per floor.	Building remains predominantly naturally ventilated. As for Option A. New mechanical supply and extract with heat reclaim ventilation to each residential unit for bathroom and kitchen ventilation. Two central units per floor.	Naturally ventilated. Mechanical ventilation with heat reclaim to WCs. Car-park to be naturally ventilated. This requires openings at each car-park level with an aggregate equivalent area equal to 1/20th of the floor area at that level, of which 25% should be on each of two opposing sides. This required smoke vents to 1/40th of floor area distributed around perimeter will be achieved by the ventilation requirement above.

	A: Office Option	B: Hotel Option	C: Residential Option	New Build
V20 Low Voltage Distribution	Retain existing LV Transformers in their current locations. Renew existing 500kVA diesel powered standby generator. Allow room of 30m² with attenuated mechanical supply and exhaust ventilation. Allow for replacing existing UPS serving the ICT server room.	As for Option A	As for Option A	Allow for new electrical substation at ground level. Room of 25m2 with louvred access from external wall.
V21 General Lighting	New installation throughout. Generally low energy lighting throughout. Occupancy sensing and daylight dimming throughout where appropriate. Allow for Dali dimmable addressable ballasts and central lighting control installation.	New installation throughout. Generally low energy lighting throughout. Occupancy sensing and daylight dimming throughout where appropriate. Allow for Dali dimmable addressable ballasts and central lighting control installation in communal and landlord areas. Allow for hotel room card operated power and lighting isolation.	New installation throughout. Generally low energy lighting throughout. Occupancy sensing and daylight dimming throughout where appropriate. Allow for Dali dimmable addressable ballasts and central lighting control installation in communal and landlord areas.	New installation throughout. Generally low energy lighting throughout. Occupancy sensing and daylight dimming throughout where appropriate. Allow for Dali dimmable addressable ballasts.
V22 General LV Power	New installation throughout. Allow for new 20kVA emergency lighting 230V static inverter. Allow a room of 25m² withed dedicated ventilation to an outside wall.	New installation throughout. Allow for hotel room card operated power and lighting isolation. Allow for new 20kVA emergency lighting 230V static inverter. Allow a room of 25m² withed dedicated ventilation to an outside wall.	New installation throughout. Allow for new 20kVA emergency lighting 230V static inverter. Allow a room of 25m² withed dedicated ventilation to an outside wall.	New installation throughout. Allow for new 7.5kVA emergency lighting 230V static inverter. Allow a room of 10m² withed dedicated ventilation to an outside wall.
W10 Telecommunications	New installation throughout.	New installation throughout.	New installation throughout.	New installation throughout.
W15 Facilities for Disabled Persons	Disabled WC alarm with central alarm notification at main reception. New disabled refuge two way communication system throughout.	As for Option A.	As for Option A.	As for Option A.
W20 Radio / Television / CCTV	New installation throughout.	New installation throughout.	New installation throughout.	New installation throughout.
W21 Projection	New installation throughout.	New installation throughout.		New installation throughout.
W40 Access Control	New installation throughout.	New installation throughout.	New installation throughout.	New installation throughout.
W41 Security, Detection & Alarm	New installation throughout.	New installation throughout.	New installation throughout.	New installation throughout.
W50 Fire Detection & Alarm	New installation throughout. Assume L1/P1.	New installation throughout. Assume L1/P1.	New installation throughout. Assume L1/P1.	New installation throughout. Assume L1/P1.
W51 Earthing & Bonding	New installation throughout.	New installation throughout.	New installation throughout.	New installation throughout.
W52 Lighting Protection	New installation throughout. Allow for connection air termination network to existing reinforcement in contrite frame to avoid down conductors.	As for Option A.	As for Option A.	New installation throughout. Allow for connection air termination network to reinforcement in contrite frame to avoid down conductors.

	A: Office Option	B: Hotel Option	C: Residential Option	New Build
W60 Building Management System	New installation throughout including a Building Energy Management System for central alarm, meter reading and control. Metering to enable 90% of building energy use to be identified.	New installation throughout including a Building Energy Management System for central alarm, meter reading and control. Metering to enable 90% of building energy use to be identified.	New installation throughout including a Building Energy Management System for central alarm, meter reading and control. Metering to enable 90% of building energy use to be identified. Individual heat, water and power metering to each apartment via ESCO.	New installation throughout including a Building Energy Management System for central alarm, meter reading and control. Metering to enable 90% of building energy use to be identified.
W70 Structured Cabling	New installation throughout.	New installation throughout.	New installation throughout.	New installation throughout.
X10 Lifts	Replace all lifts (The tower is served by three 13-person lifts and a 20-person lift for goods and serving as a fire fighting lift. Fire fighting and one passenger lift to be extended to Roof Restaurant Level?). There is also a service lift continuing to the roof deck level. There is an 8-person passenger lift serving three floors in the Council House and two services lifts connecting the central kitchen on lower ground floor and the reception servery on the first floor.)	As for Option A.	As for Option A.	Allow for 4 No. 13 person passenger lifts (two to each core). One of each of these lifts to be an evacuation lift.

Option 1 Offices			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	793	8,536	-	-
	B	Office Plates 2 - 13th Floors	9,204	99,071	6,588	70,913
	C	14th Floor Resaturant	326	3,509	280	3,014
2 Storey Admin Block - North	A	Lower Ground Services / Plant	1,729	18,611	1,450	15,608
	B	Office plate at GF and 1st Floor	2,871	30,903	2,814	30,290
			14,923	160,630	11,132	119,824
Option 2 Offices / Library			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	614	6,609	-	-
	B	Office Plates 2 - 13th Floors	9,204	99,071	6,588	70,913
	C	14th Floor Resaturant	326	3,509	280	3,014
2 Storey Library Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Library Storage / Support	757	8,148	675	7,266
	C	Library plate at GF and 1st Floor	3,402	36,619	3,335	35,898
			15,368	165,420	11,749	126,465
Option 3 Offices / Commercial Space			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	793	8,536	-	-
	B	Office Plates 2 - 13th Floors	9,204	99,071	6,588	70,913
	C	14th Floor Resaturant	326	3,509	280	3,014
2 Storey Library Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Retail Storage	757	8,148	675	7,266
	C	Retail plate at GF and 1st Floor	3,220	34,660	3,153	33,939
			15,365	165,387	11,567	124,506
Option 4 Residences / Offices			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	793	8,536	-	-
	B	Residential Plates 2 - 12th Floors	8,426	90,697	6,708	72,204
	C	13th Floor Restaurant	669	7,201	504	5,425
	D	14th Floor Bar	326	3,509	280	3,014
2 Storey Library Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Office Storage / Support	757	8,148	675	7,266
	C	Office plate at GF and 1st Floor	3,220	34,660	3,153	33,939
			15,256	164,214	12,191	131,223

Option 5 Residences / Library			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	614	6,609	-	-
	B	Residential Plates 2 - 12th Floors	8,426	90,697	6,708	72,204
	C	13th Floor Restaurant	669	7,201	504	5,425
	D	14th Floor Bar	326	3,509	280	3,014
2 Storey Library Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Library Storage / Support	757	8,148	675	7,266
	C	Library plate at GF and 1st Floor	3,402	36,619	3,335	35,898
			15,259	164,247	12,373	133,182
Option 6 Residentail and Retail			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	793	8,536	-	-
	B	Residential Plates 2 - 12th Floors	8,426	90,697	6,708	72,204
	C	13th Floor Restaurant	669	7,201	504	5,425
	D	14th Floor Bar	326	3,509	280	3,014
2 Storey Library Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Retail Storage	757	8,148	675	7,266
	C	Retail plate at GF and 1st Floor	3,220	34,660	3,153	33,939
			15,256	164,214	12,191	131,223
Option 7 Hotel			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	837	9,009	-	-
	B	Hotel Bedrooms 2 - 12th Floors	8,349	89,868	6,708	72,204
	C	Luxury Hotel Suites at 13th Floor	83	893	83	893
	D	13th Floor Restaurant	669	7,201	504	5,425
	E	14th Floor Bar	326	3,509	280	3,014
2 Storey Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Kitchen Storage	753	8,105	675	7,266
	C	Ground Floor - Kitchen, Cafe Lounge, Café, and Health Bar	1,060	11,410	1,038	11,173
	D	Ground Floor - Fittness, Change, Treatment Room, Beauty Spa	586	6,308	586	6,308
	E	First Floor - Kitchen, Breakfast	641	6,900	619	6,663
	F	First Floor - Meeting and Conference	496	5,339	496	5,339
			14,865	160,006	11,860	127,660
Options 8,9&10 Civic Centre			Gross		Nett	
			sq m	sq ft	sq m	sq ft
Civic Centre	A	Amenity Areas, Back up & Kitchen at Lower Ground Floor	1,838	19,784	-	-
	B	Circulation at Lower Ground Floor	235	2,530	-	-
	C	Circulation at Ground, First & Second Floor	2,448	26,350	-	-
	D	Activity Rooms & GF & FF	1,069	11,507	1,069	11,507
	E	Council Chamber	244	2,626	244	2,626
The Link Block	A	Circulation Areas at GF and 1st Floor	566	6,092	-	-
	B	Amenity Rooms at Ground Floor	104	1,119	104	1,119
	C	Activity Rooms / Offices at First Floor	847	9,117	847	9,117
			7,351	79,126	2,264	24,369

Civic Centre options - area tables

The options illustrated: Office use

6.5 Offices

The floorplate of the main tower element of the property provides a typical net internal area of approximately 548 sq m (5,900 sq ft) with accommodation over 12 upper floors of the tower element of the complex providing a total net internal area of circa 6,503 sq m (70,000 sq ft).

As it is considered unlikely that a single occupier will be identified for this building (other than the Council should they decide to remain in occupation) flexibility will be a key consideration when considering a future office use.

Clearly in the absence of a single occupier being identified it would be preferable for the building to be let on a floor by floor basis however in reality it is common for buildings of this nature to be further subdivided to provide a number of smaller suites on each floor with, to a degree, the subdivision being a result of individual occupier requirements.

In the case of the Civic Centre there is the opportunity to provide suites of circa 83 sq m (900 sq ft) within the areas on the northern and southern elevations of the building, in addition to which it would be preferable to be able to have the ability to subdivide the larger open plan office area within the centre of the building should this be required.

A number of the identified options also include office/business units within the podium/2 storey extension element of the complex. Again we consider that maintaining flexibility to provide units of a size to satisfy individual occupiers requirements will be an essential consideration in respect of this element of the building.

The proposal for the use of the building as offices indicates a Reception area within the ground floor of the building which is essentially a replication of the existing Civic Centre reception and following refurbishment will provide a spacious high quality reception area which is considered to be essential if the future use of the building as offices is to succeed.

In terms of specification the internal fit out of the offices is likely to be restricted by the floor to ceiling heights within the building. Ideally the specification should provide for fully accessible raised floors, or as a minimum underfloor trunking, togther with suspended ceilings incorporating LG3 compliant light fittings and comfort cooling/heating. If the floor to ceiling heights prohibit the use of raised floors as well as a suspended ceiling system the most important factor will be the provision of raised floors.

Male and Female toilet facilities should ideally be provided on each floor of the building together with Disabled facilities. In addition shower facilities should ideally be provided on each floor, or at worst within the ground or lower ground floors adjacent to cycle storage areas.

Consideration will also need to be given at the design stage to the ability to provide kitchenette facilities within individual office suites with capped off services being provided to facilitate installation in line with individual occupier requirements.

With regard to the Environmental Performance of the property it has been indicated that if Plymouth City Council are to reoccupy the building a BREEAM Rating of 'Excellent' will be required and we consider that this should equally be the aspiration for the use of the property by the private sector.

The provision of car parking to serve the office will be difficult given the proposals to develop the adjacent surface car park to the west of the Civic Centre complex. Consideration will need to be given to the provision of car parking beneath the development proposed on this adjoining site or possible though the availability of spaces in the nearby Theatre Royal Car Park on either a licence or season ticket basis.

AVANTI ARCHITECTS

6.5.1 *Option 1 - Office / Office*

Retention and regeneration of the 15 storey tower and the two storey northern administration block as Grade A offices.

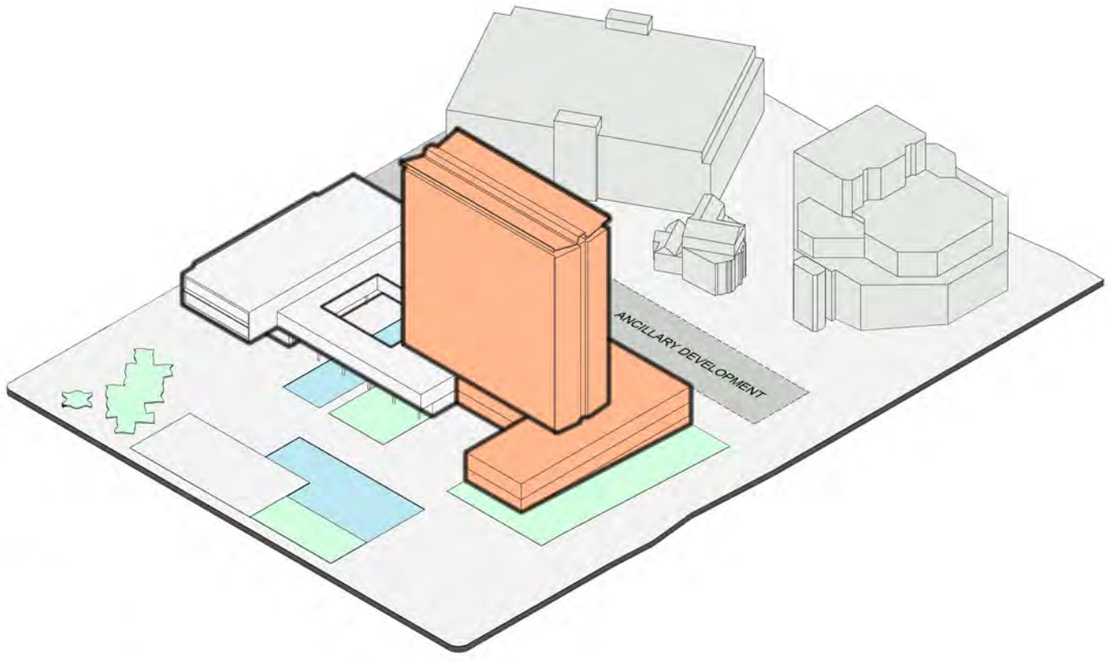
- Refurbishment of the main entrance hall and first floor gallery to present a modern stylish welcome lobby.
- Refurbishment of the southern circulation core to incorporate modern compliant lifts within existing shafts.
- Refurbishment of northern circulation core, inclusion of modern efficient wc accommodation for male, female and wheelchair users.
- Refurbishment of the existing office floor plates to present Grade A office accommodation within both the tower and the lower block.
- Refurbishment of the fourteen floor restaurant as a commercial venture or as hospitality suite to serve the office development and general public.

Summary of structural and architectural interventions

- Inclusion of at least two motorroom-free lifts within the existing shafts to allow lift access to fourteenth floor restaurant.
- Inclusion of an accommodation stair case from thirteenth floor to fourteenth floor restaurant.
- Creation of a protected lobby at lower ground floor to allow safe escape from the northern escape stairs towards Royal Parade.
- Insertion of a wider escape stair from fourteenth floor to lower ground floor, assuming a fire engineered solution for the existing escape routes is not viable.

Summary of service works for office options

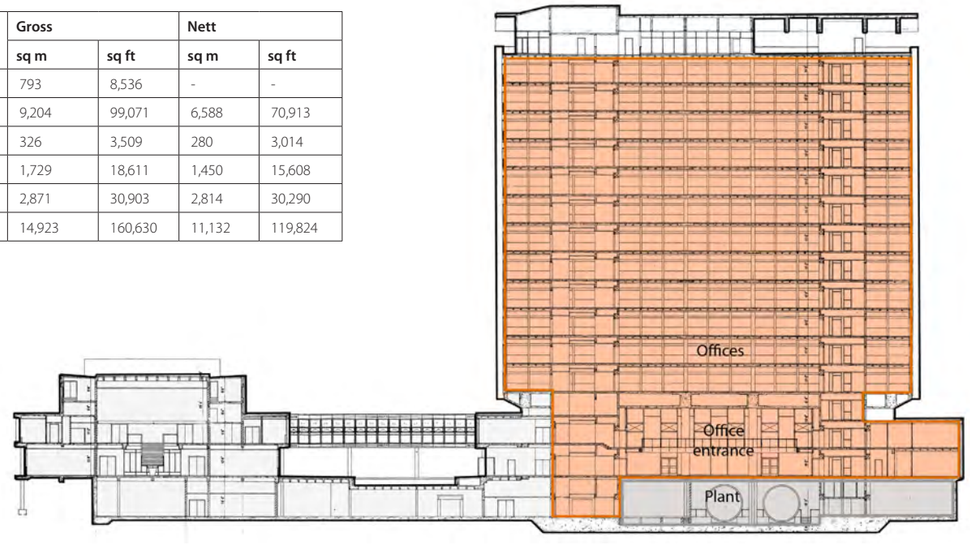
- Full thermal fabric repair including solar and glare control.
- Full services installation replacement including lifts.
- Natural Ventilation to offices spaces throughout with some assisted ventilation to ground and first floor deep plant spaces (this includes office and library options for these floors).
- Maintain ventilation strategy to Council House and introduce comfort cooling with option of borehole cooling.
- Commercial spaces will require mechanical ventilation with comfort cooling.
- Daylight dimming and occupancy control of lighting.
- Aspiration of BREEAM Excellent. Solar Thermal Panels for hot water, rain water recycling and option of borehole cooling in combination with heat pump.
- Energy use metering and monitoring throughout.



KEY

- Office
- Circulation
- Services

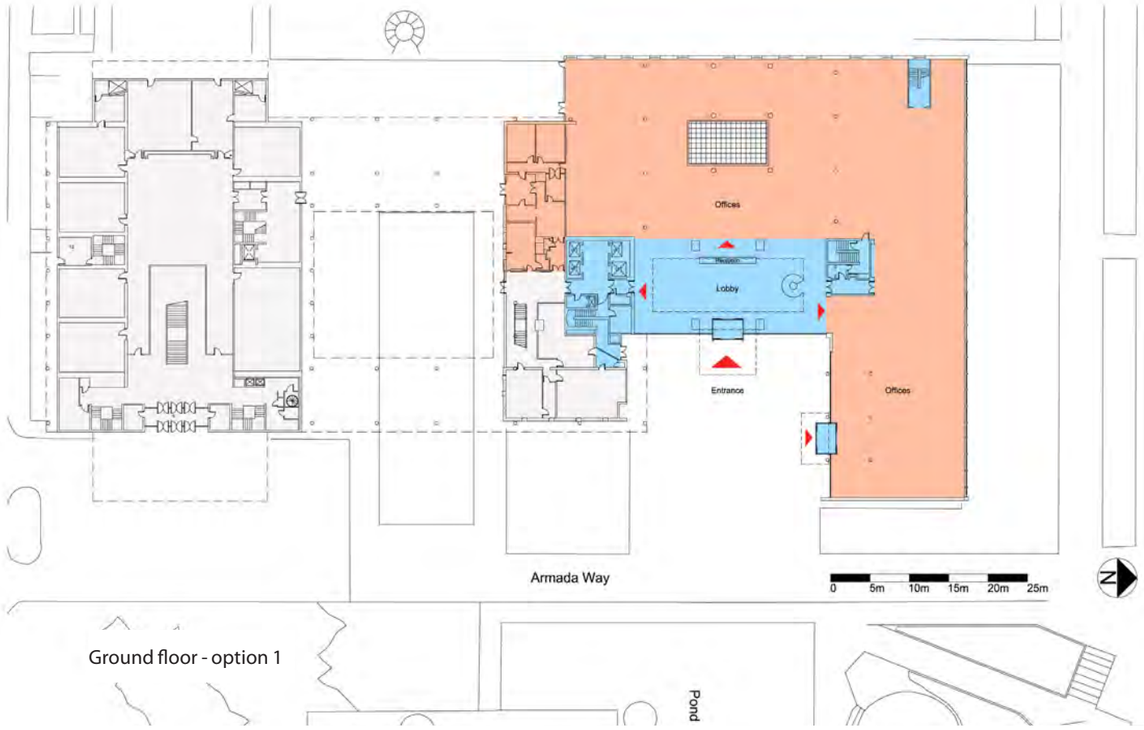
Option 1 - Areas			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	793	8,536	-	-
	B	Office Plates 2 - 13th Floors	9,204	99,071	6,588	70,913
	C	14th Floor Resaturant	326	3,509	280	3,014
2 Storey Admin Block - North	A	Lower Ground Services / Plant	1,729	18,611	1,450	15,608
	B	Office plate at GF and 1st Floor	2,871	30,903	2,814	30,290
			14,923	160,630	11,132	119,824



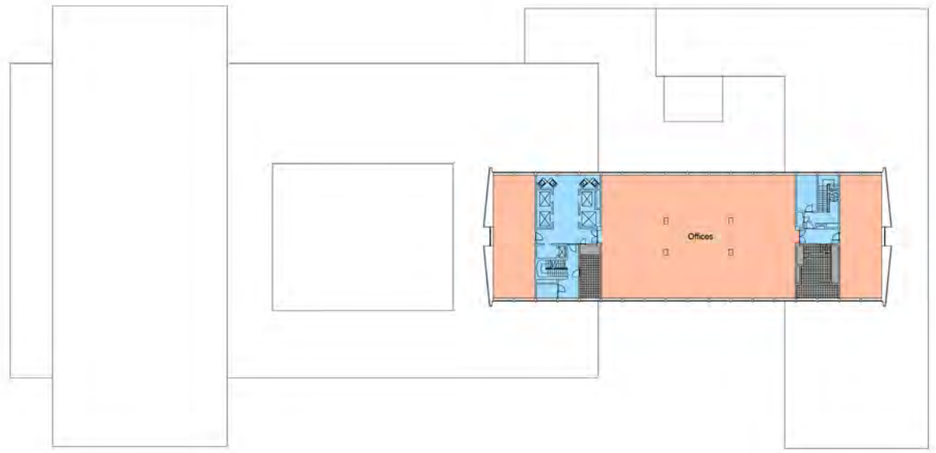
Long section - option 1

Plymouth Civic Centre

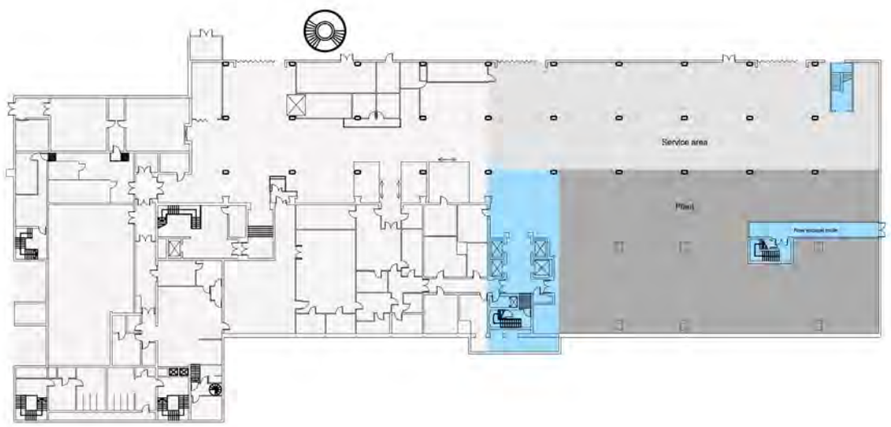
Feasibility Study



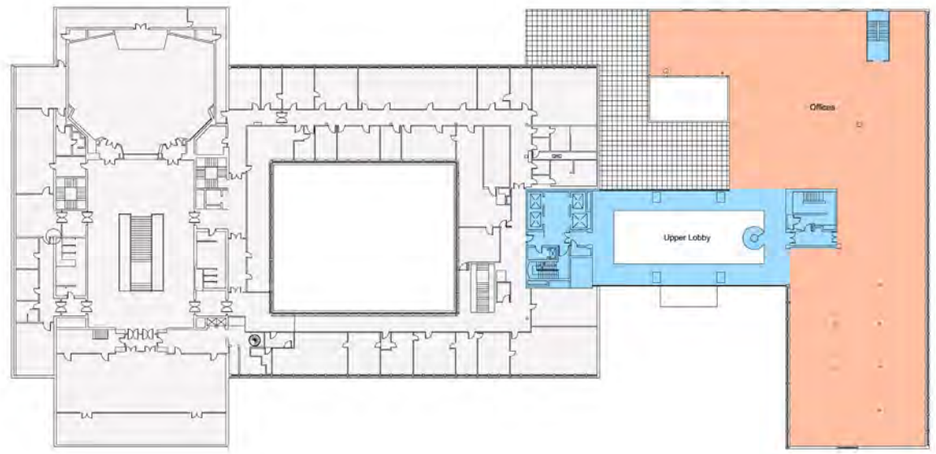
Ground floor - option 1



Typical upper floor - option 1



Lower ground floor- option 1



First floor - option 1

AVANTI ARCHITECTS

6.5.2 *Option 2 - Office / Library*

Retention and regeneration of the 15 storey tower as Grade A offices. Conversion of the two storey northern administration block and western two storey extension as a public Library.

The Tower

- Refurbishment of the main entrance hall and first floor gallery to present a modern stylish welcome lobby.
- Refurbishment of the southern circulation core to incorporate modern compliant lifts within existing shafts.
- Refurbishment of northern circulation core, inclusion of modern efficient wc accommodation for male, female and wheelchair users.
- Refurbishment of the existing office floor plates to present Grade A office accommodation.
- Refurbishment of the fourteenth floor restaurant as a commercial venture or as hospitality suite to serve the office development and general public

The Library

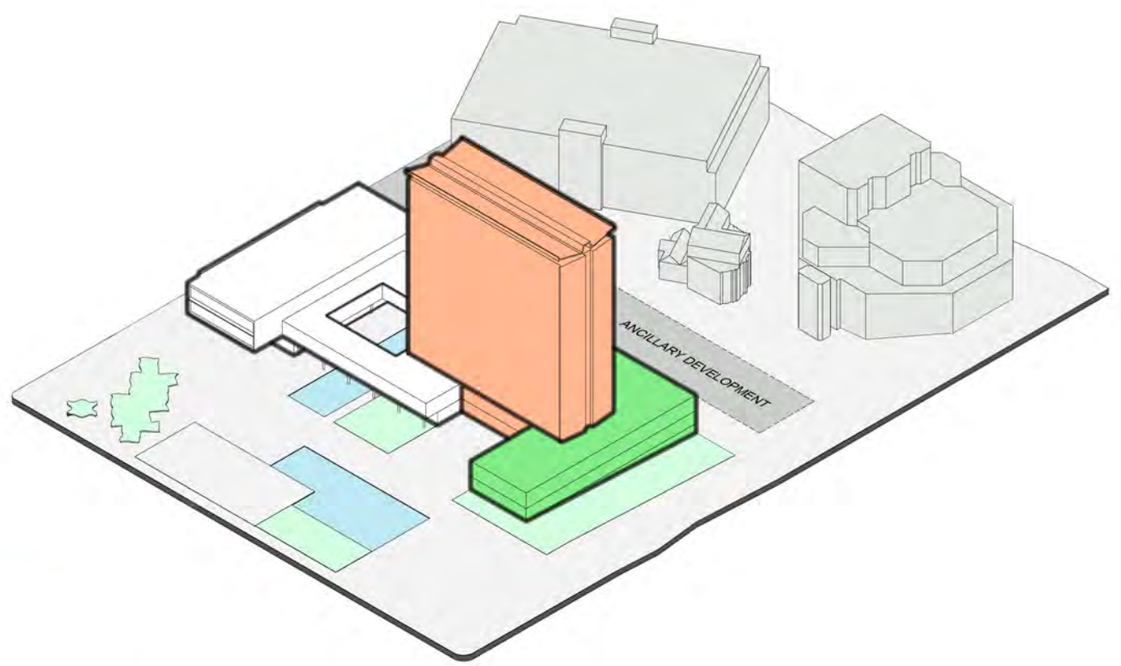
- Re-establishment of the dedicated entrance to the two storey north block as the main entrance to the library.
- Re-establishment of the accommodation stairs to the first floor.
- Creation of a reception and control lobby in front of the entrance.
- Planning of the two storey block and the extension into various activity and book shelving areas.
- Designation of parts of the reorganised and rationalised plant room area at lower ground floor as storage and back up area for the Public Library.

Summary of structural and architectural interventions

- Inclusion of at least two motorroom -free lifts within the existing shafts to allow lift access to fourteenth floor restaurant.
- Inclusion of an accommodation staircase from thirteenth floor to fourteenth floor restaurant.
- Creation of a protected lobby at lower ground floor to allow safe escape from the northern escape stairs towards Royal Parade.
- Incorporation of two passenger/goods lifts from LGF to FF for the Library development.
- Insertion of a wider escape stair from fourteenth floor to lower ground floor assuming a fire engineered solution for the existing escape routes is not viable.

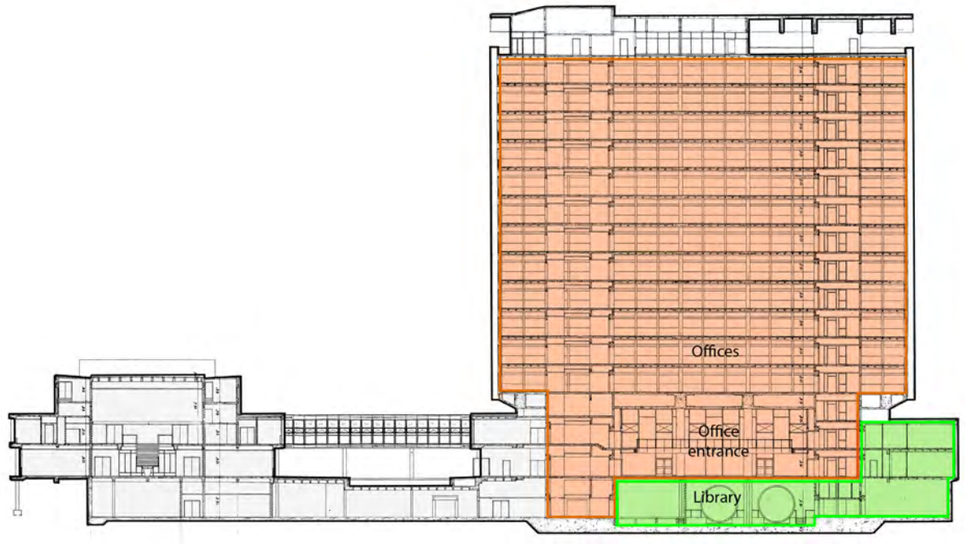
Option 2 - Areas			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	614	6,609	-	-
	B	Office Plates 2 - 13th Floors	9,204	99,071	6,588	70,913
	C	14th Floor Resaturant	326	3,509	280	3,014
2 Storey Library Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Library Storage / Support	757	8,148	675	7,266
	C	Library plate at GF and 1st Floor	3,402	36,619	3,335	35,898
			15,368	165,420	11,749	126,465

Long section - option 2



KEY

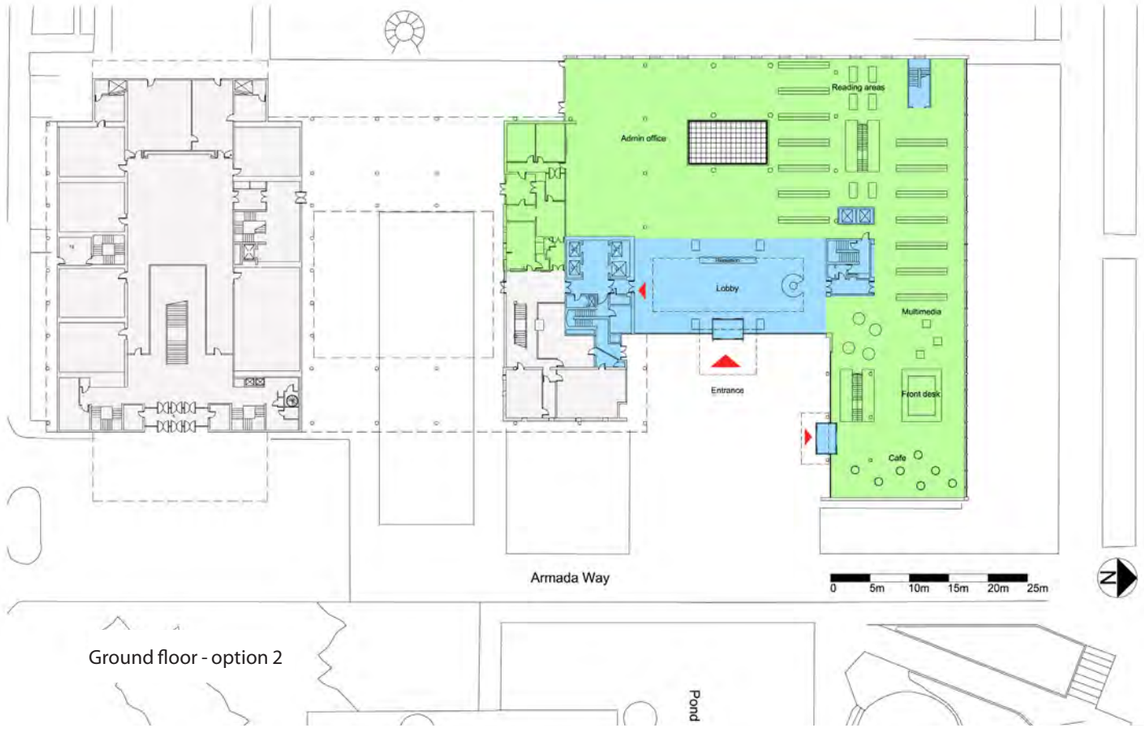
- Office
- Library
- Circulation
- Services



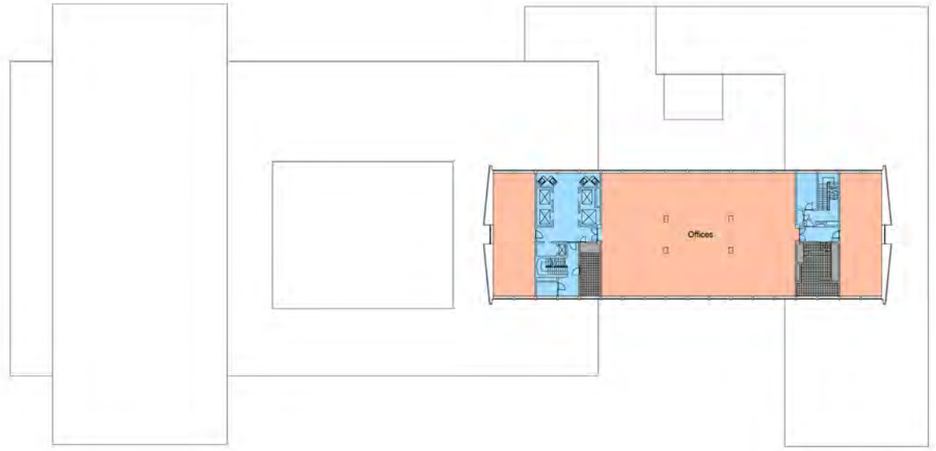
Long section - option 2

Plymouth Civic Centre

Feasibility Study

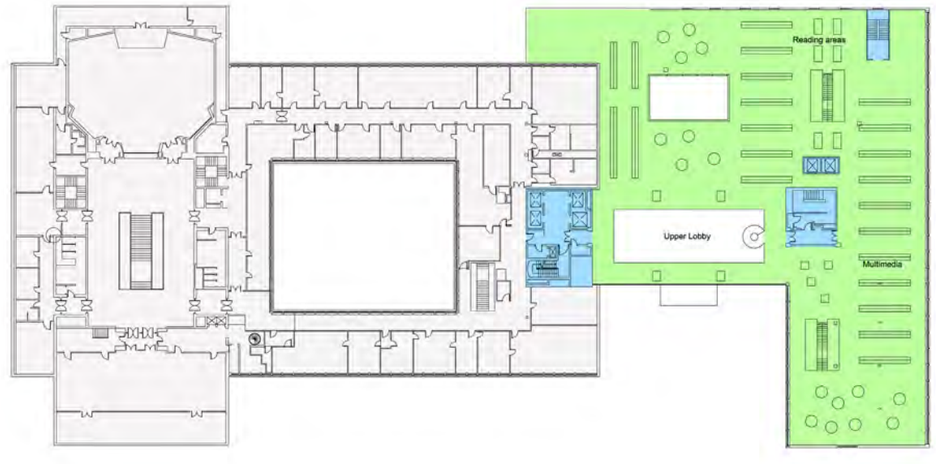


Ground floor - option 2



Typical upper floor - option 2

Lower ground floor- option 2



First floor - option 2

6.5.3 *Option 3 - Office / Commercial (A3/Gym, etc)*

Retention and regeneration of the 15 storey tower as Grade A offices. Conversion of the t northern administration block and western two story extension as lettable space for a va suitable activities and tenancies such as small to medium enterprises, restaurants, bars o centres and health spas.

The Tower

- Refurbishment of the main entrance hall and first floor gallery to present a modern sty welcome lobby.
- Refurbishment of the southern circulation core to incorporate modern compliant lifts existing shafts.
- Refurbishment of northern circulation core, inclusion of modern efficient wc accomm for male, female and wheelchair users.
- Refurbishment of the existing office floor plates to present Grade A office accommod
- Refurbishment of the fourteenth floor restaurant as a commercial venture or as hospit to serve the office development and general public.

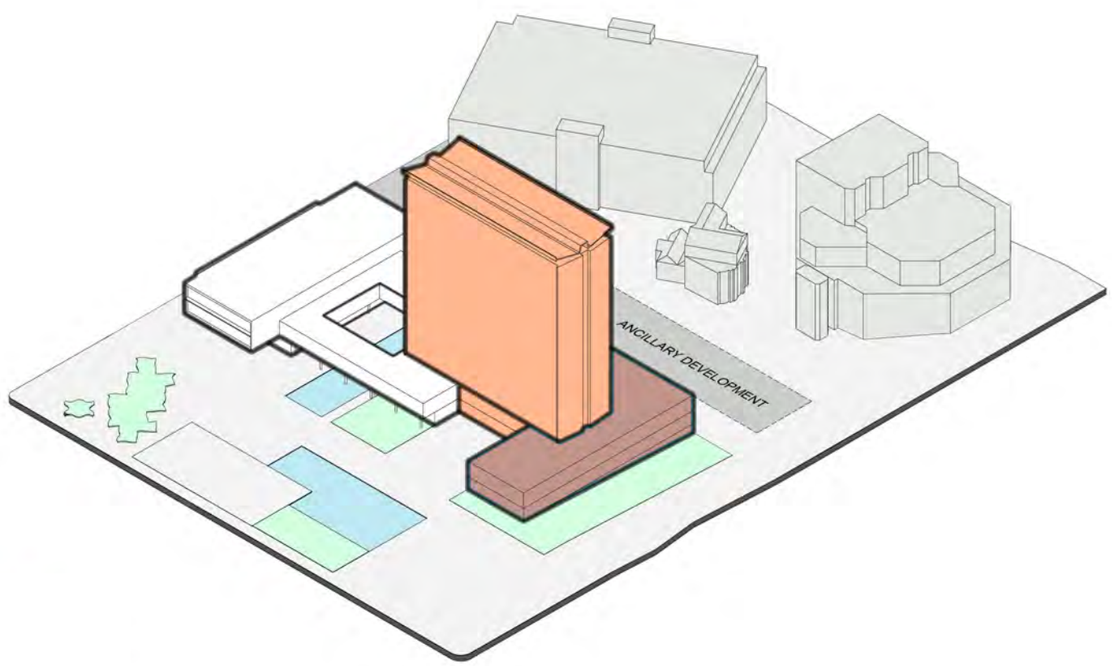
The Commercial Block

- Re-establishment of the dedicated entrance to the two storey north block as the main
- Re-establishment of the accommodation stairs to the first floor.
- Creation of a reception and control lobby in front of the entrance.
- Designation of parts of the reorganised and rationalised plant room area at lower grou as storage and back up area for the commercial activities.

Summary of structural and architectural interventions

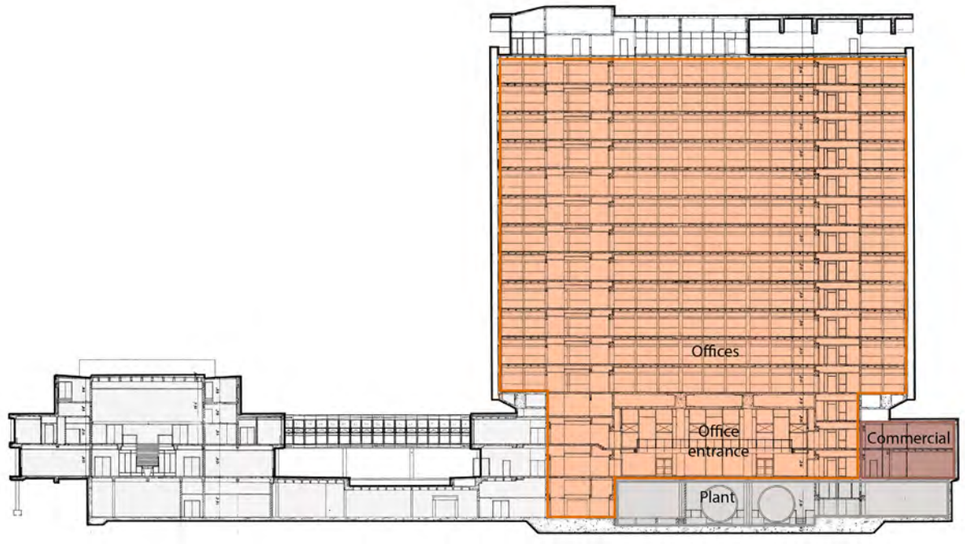
- Inclusion of at least two motor-room free lifts within the existing shafts to allow lift access to fourteenth floor restaurant.
- Inclusion of an accommodation stair case from thirteenth floor to fourteenth floor restaurant.
- Creation of a protected lobby at lower ground floor to allow safe escape from the northern escape stairs towards Royal Parade.
- Incorporation of two passenger/goods lifts from LGF to FF for the commercial development.
- Insertion of a wider escape stair from fourteenth floor to lower ground floor assuming a fire engineered solution for the existing escape routes is not viable.

Option 3 - Areas			**Gross**		**Nett**	
			sq m	**sq ft**	**sq m**	**sq ft**
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	793	8,536	-	-
	B	Office Plates 2 - 13th Floors	9,204	99,071	6,588	70,913
	C	14th Floor Resaturant	326	3,509	280	3,014
2 Storey Library Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Retail Storage	757	8,148	675	7,266
	C	Retail plate at GF and 1st Floor	3,220	34,660	3,153	33,939
			15,365	165,387	11,567	124,506

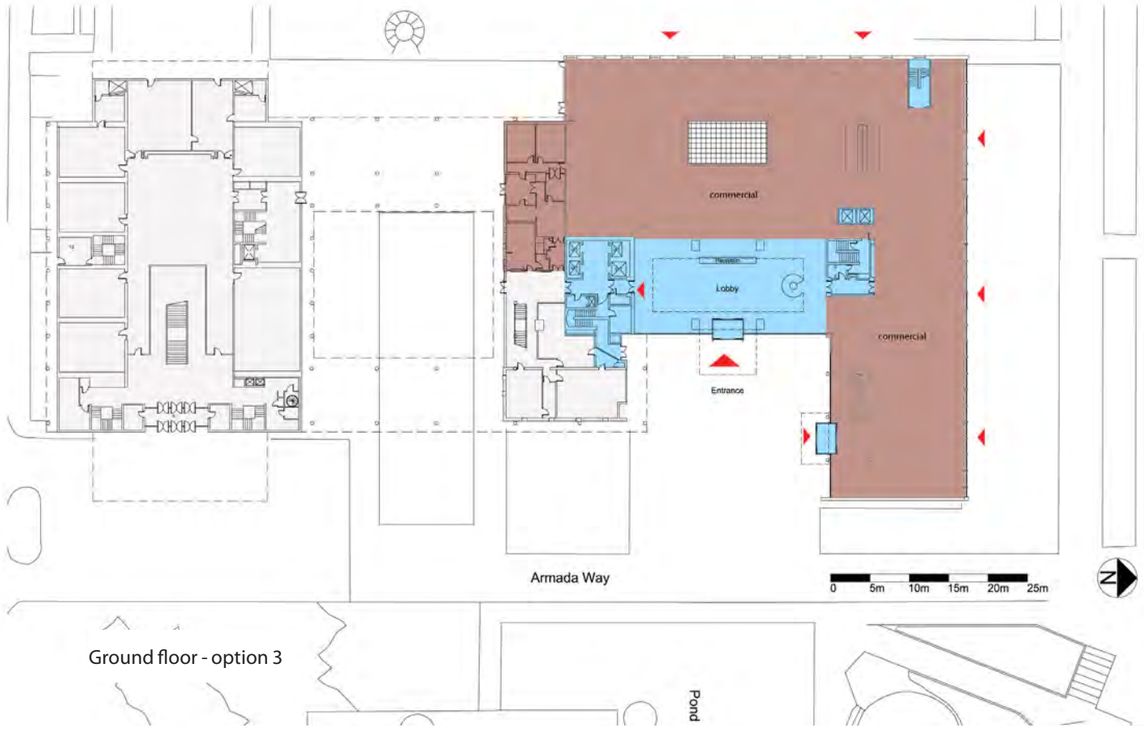


KEY

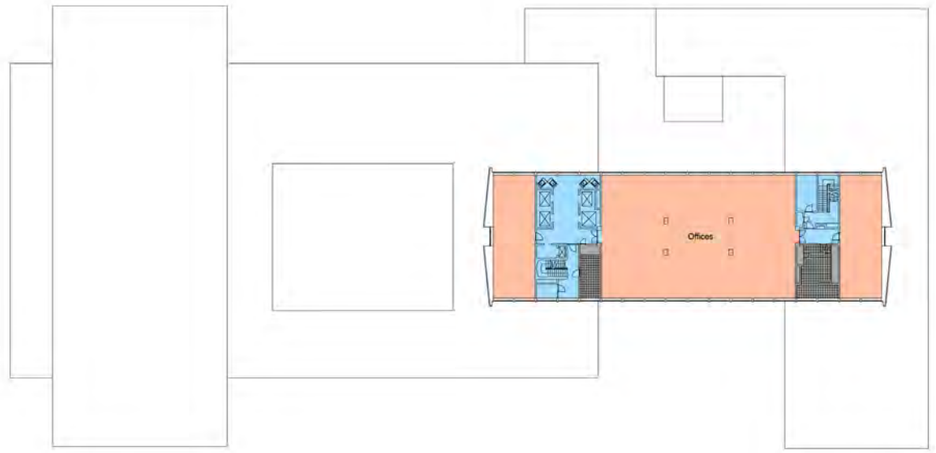
- Office
- Commercial
- Circulation
- Services



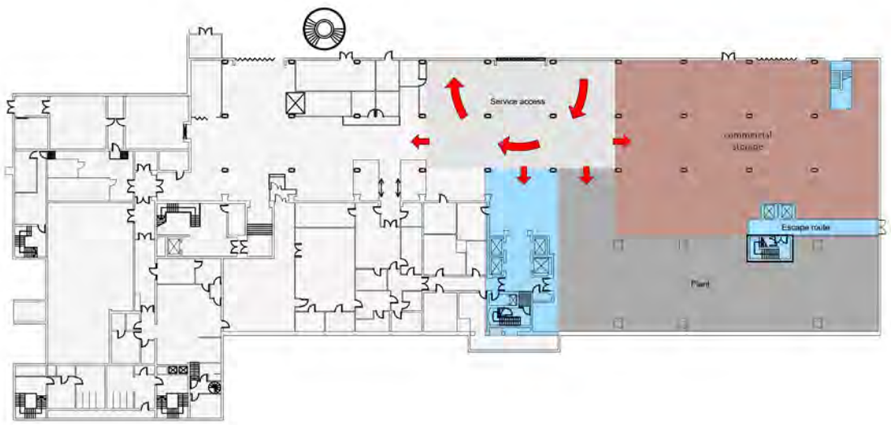
Long section - option 3



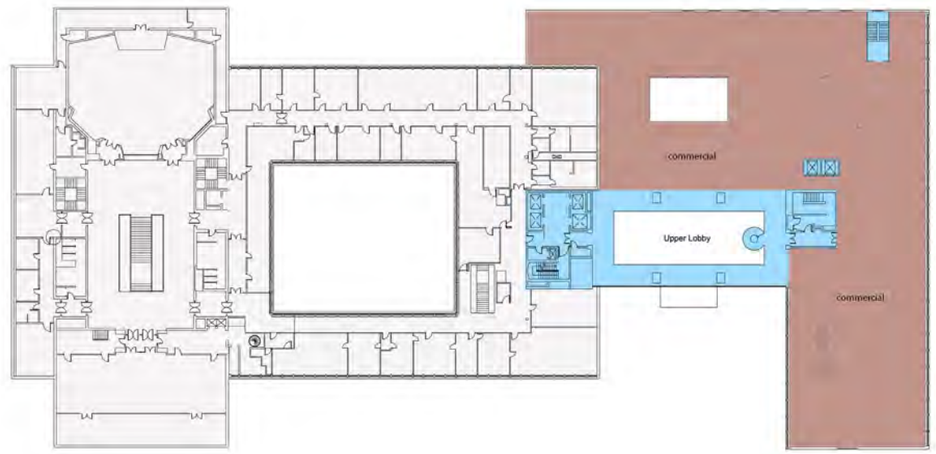
Ground floor - option 3



Typical upper floor - option 3



Lower ground floor- option 3



First floor - option 3

The options illustrated: Residential use

6.6 Residential

Current proposals indicate the conversion of the tower element of the complex to provide a total of 95 apartments being a combination of 36 one bedroom and 59 two bedroom apartments. We note that 12 of the two bedroom apartments effectively have a study.

The demographic of the area shows the postcode to be largely composed of single people, both young and old. Around 20% of the people in these areas are in their 20s, but 10% are over 75. Both are well above the national average. The dominant characteristic is the single person renting small flats. Whilst the above general profile covers the whole of the PL1 postcode we note a high proportion of 'first time' buyer profiles and with current lending and 'affordability' issues this type of buyer will be extremely 'price sensitive' within the context of the subject site. Currently mortgage lending has a requirement for circa 25% deposits being paid and at this time this profile of purchaser is likely to be unable to provide such sums.

The city centre market has since its inception relied in the majority on investor purchasers, usually from outside the area or from overseas. This market has all but disappeared and increasingly investors are walking away from deposits and even exchanges rather than complete on purchases.

Plymouth City Council's planning policy targets at least a 30% affordable housing provision within new residential developments being typically a mix of unit types pepper-potted through a development. Although unlikely to have a great impact at the design stage the cost implications of the provision of this level of affordable housing within the development could have a potentially significant impact upon the financial appraisal of this option following completion of the Feasibility Study. Increasingly Housing Associations have management problems with pepper-potted sites and ideally the affordable element should have a separate access and core. This would benefit the private units as there is evidence of certain affordable tenure types blighting private values.

We note that over the last few years the studio and 1 bedroom market became over supplied as demand from first time buyers and buy-to-let investors fell away. However, demand in the short term has still been for these smaller units as 'buy-to-let' and 'first time buyers' are replaced by 'bulk investors' who have purchased at heavily discounted prices on the basis of an established and sustained rental market for this type of unit, as shown by the demographics of the area. There may therefore be an argument for a slightly higher proportion of smaller 1 bedroom units and at least some affordably priced, private market studios.

However, in the medium to longer term there has been a backlash against 'small' sized city centre apartments and if the local demographic improved with more professionals in the area, then larger 2 bedroom units would be more sought after. In this connection we would comment that most currently mothballed/pipe-line schemes have a high percentage of 2 beds and in our opinion it will take a long time for the supply/demand balance to stabilise.

In terms of layout, we would comment that conversions typically make a more inefficient use of space than new-build, particularly in the communal and core areas. However, generally our opinion is that the proposed units appear to be a good size and reasonable layout. This is 'a positive,' but the opportunity cost of large well laid out units may be that the build/conversion costs are higher and it would be necessary to identify the break-even point before the law of diminishing returns occurs, ie. end sales values don't rise pro rata with larger than average (at a cost) units.

We would comment that the upper and end facing units will benefit from far-reaching and coastal views. At the peak of the market it was generally accepted that water aspect and higher units could attract premiums of up to 20% over average and to a degree we would expect this premium to return as market sentiment improves.

Whilst car parking is not essential on the smaller units, we would highlight that a 'glass ceiling' on value will be reached if there is no car parking offered on the upper and water fronting units due to the supply of good quality water apartments on the Plymouth market which do offer the benefit of parking.

AVANTI ARCHITECTS

6.6.1 Option 4 - Residential / Office

Retention and redevelopment of the 15 storey tower as a residential block. Conversion of the two storey northern administration block and western two story extension as lettable Grade A offices.

The Tower

- Refurbishment of the main entrance hall and first floor gallery to present a modern stylish welcome lobby.
- Refurbishment of the southern circulation core to incorporate modern compliant lifts within existing shafts.
- Refurbishment of northern circulation core.
- Redevelopment of second to twelfth floors as apartments or student accommodation to offer a variety of accommodation types (see typical plan examples).
- Redevelopment of the thirteenth floor as an independently run commercial restaurant connected to the fourteenth floor via an accommodation staircase.
- Refurbishment of the fourteenth floor restaurant as a bar with viewing terrace.

The Office Block

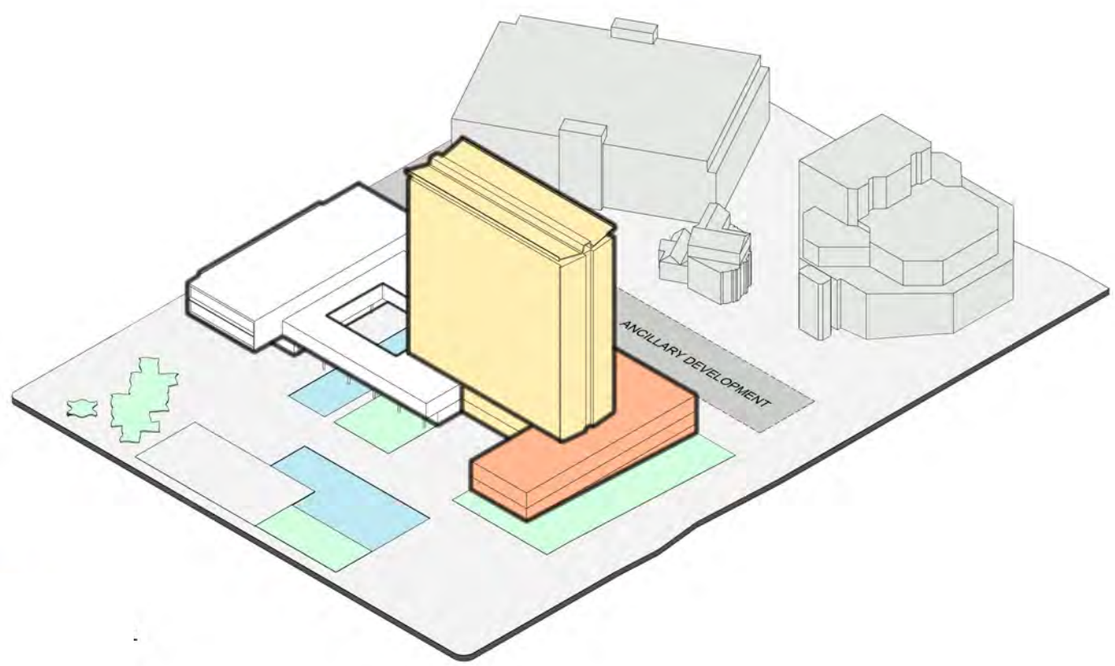
- Re-establishment of the dedicated entrance to the two storey north block as the main entrance.
- Re-establishment of the accommodation stairs to the first floor.
- Creation of a reception and control lobby in front of the entrance.
- Designation of parts of the reorganised and rationalised plant room area at lower ground floor as storage and back up area for the offices.

Summary of structural and architectural interventions

- Inclusion of at least two motorroom-free lifts within the existing shafts to allow lift access to fourteenth floor restaurant.
- Inclusion of an accommodation staircase from thirteenth floor to fourteenth floor restaurant.
- Creation of a protected lobby at lower ground floor to allow safe escape from the northern escape stairs towards Royal Parade.
- Incorporation of two passenger/goods lifts from LGF to FF for the office development.

Summary of service works for residential options

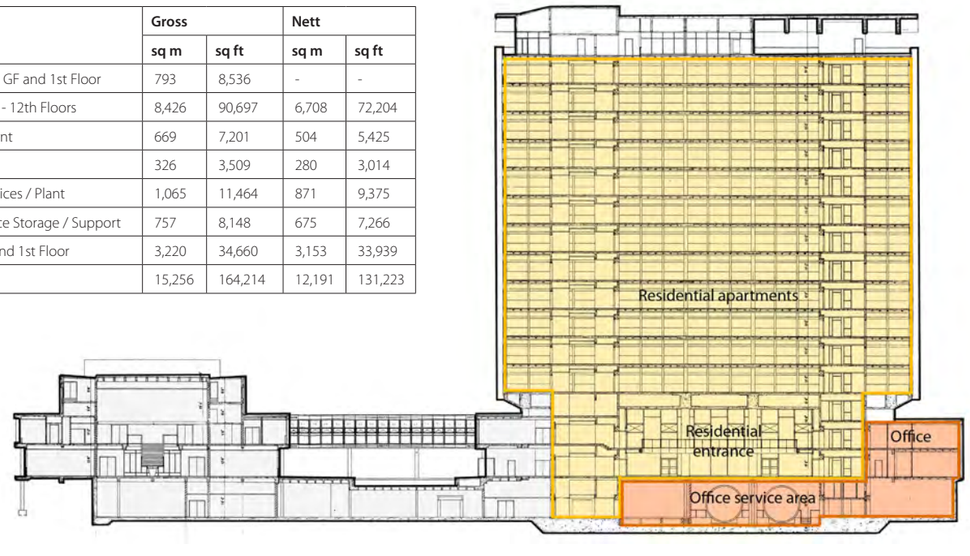
- Full thermal fabric repair including solar and glare control.
- Full services installation replacement including lifts.
- Mechanical ventilation with heat reclaim to apartments in winter, natural ventilation in summer.
- Natural Ventilation to offices spaces where possible with some assisted ventilation to ground and first floor deep plant spaces (this includes office and library options for these floors).
- Maintain ventilation strategy to Council House and introduce comfort cooling with option of borehole cooling.
- Daylight dimming and occupancy control of lighting where appropriate.
- Solar Thermal Panels for hot water and borehole and rain water recycling.
- Energy use metering and monitoring throughout.



KEY

- Office
- Residential
- Circulation
- Services

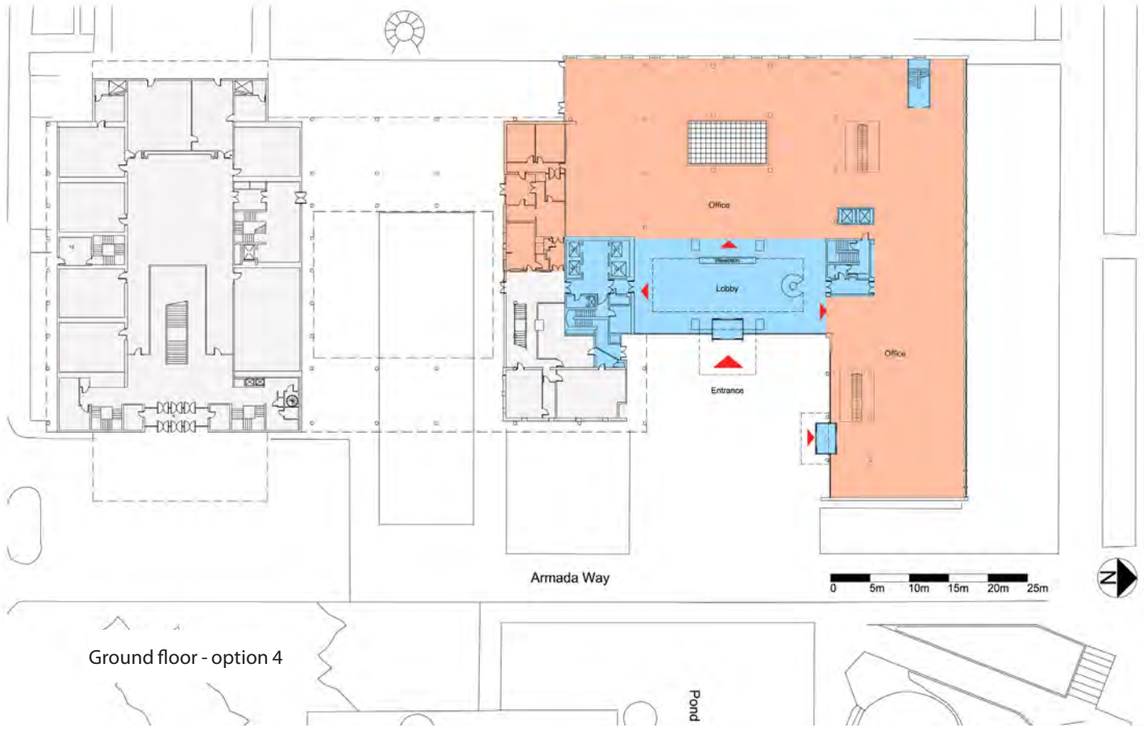
Option 4 - Areas			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	793	8,536	-	-
	B	Residential Plates 2 - 12th Floors	8,426	90,697	6,708	72,204
	C	13th Floor Restaurant	669	7,201	504	5,425
	D	14th Floor Bar	326	3,509	280	3,014
2 Storey Library Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Office Storage / Support	757	8,148	675	7,266
	C	Office plate at GF and 1st Floor	3,220	34,660	3,153	33,939
			15,256	164,214	12,191	131,223



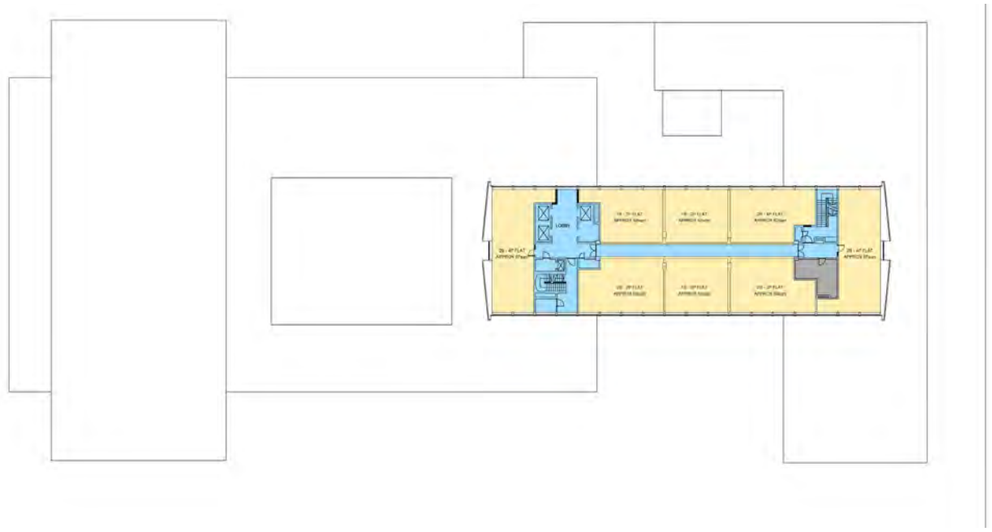
Long section - option 4

Plymouth Civic Centre

Feasibility Study

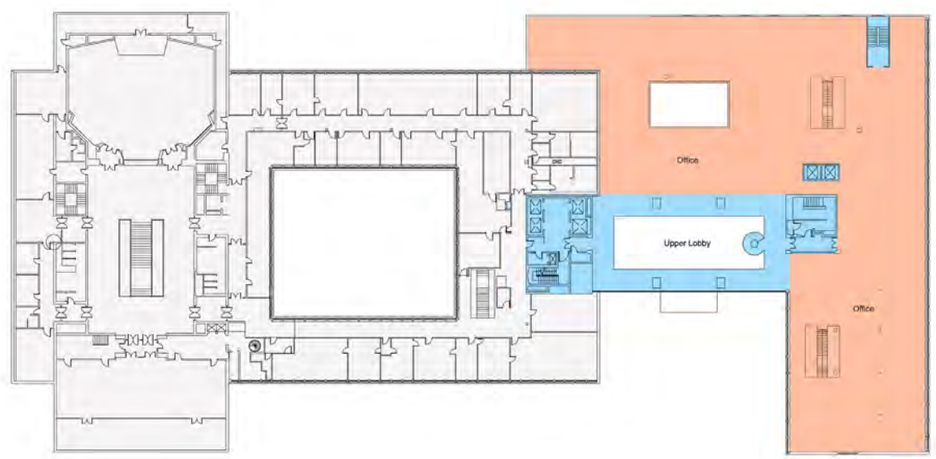


Ground floor - option 4



Typical upper floor - option 4

Lower ground floor- option 4



First floor - option 4

6.6.2 Option 5 - Residential/Commercial (A3/Gym etc.)

Retention and redevelopment of the 15 storey tower as a residential block. Conversion of the two storey northern administration block and western two story extension as let-able space for a variety of suitable activities and tenancies such as small to medium enterprises, restaurants, bars or fitness centres and health spas.

The Tower

- Refurbishment of the main entrance hall and first floor gallery to present a modern stylish welcome lobby.
- Refurbishment of the southern circulation core to incorporate modern compliant lifts within existing shafts.
- Refurbishment of northern circulation core.
- Redevelopment of second to twelfth floors as apartments or student accommodation to offer a variety of accommodation types.
- Redevelopment of the thirteenth floor as an independently run commercial restauran connected to the fourteenth floor via an accommodation staircase.
- Refurbishment of the fourteenth floor restaurant as a bar with viewing terrace.

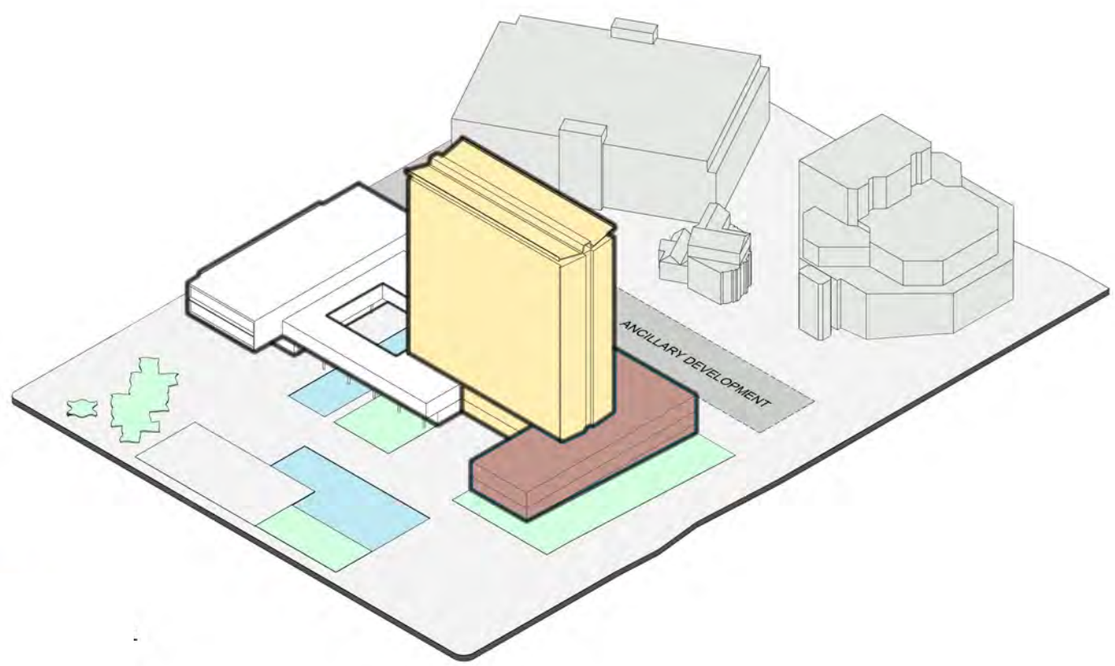
The Commercial Block

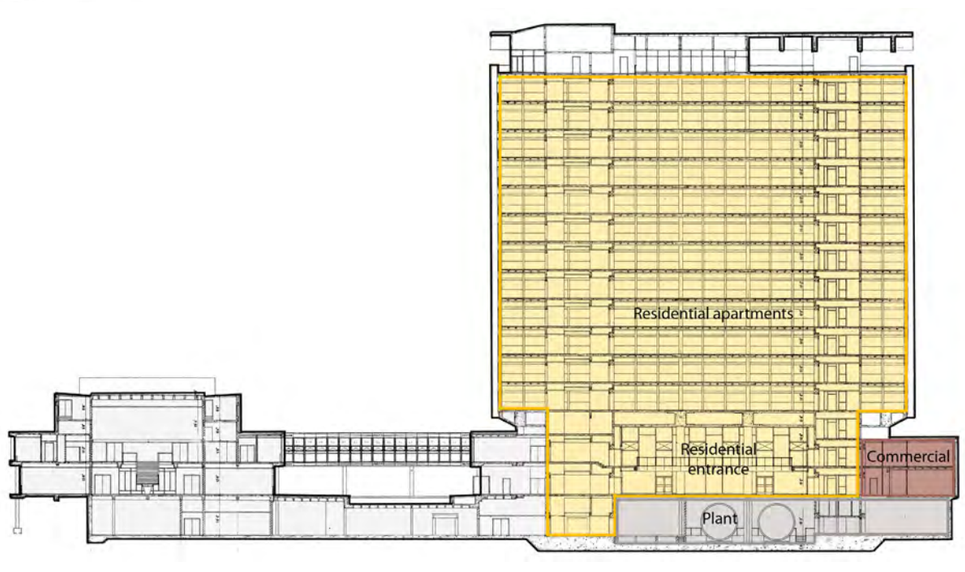
- Re-establishment of the dedicated entrance to the two storey block as the main entrance.
- Re-establishment of the accommodation stairs to the first floor.
- Creation of a reception and control lobby in front of the entrance.
- Designation of parts of the reorganised and rationalised plant room area at lower ground floor as storage and back up area for the commercial activities.

Summary of structural and architectural interventions

- Inclusion of at least two motorroom-free lifts within the existing shafts to allow lift access to fourteenth floor restaurant.
- Inclusion of an accommodation staircase from thirteenth floor to fourteenth floor restaurant.
- Creation of a protected lobby at lower ground floor to allow safe escape from the northern escape stairs towards Royal Parade.
- Incorporation of two passenger/goods lifts from LGF to FF for the commercial development.

Option 5 - Areas			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	793	8,536	-	-
	B	Residential Plates 2 - 12th Floors	8,426	90,697	6,708	72,204
	C	13th Floor Restaurant	669	7,201	504	5,425
	D	14th Floor Bar	326	3,509	280	3,014
2 Storey Library Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Retail Storage	757	8,148	675	7,266
	C	Retail plate at GF and 1st Floor	3,220	34,660	3,153	33,939
			15,256	164,214	12,191	131,223

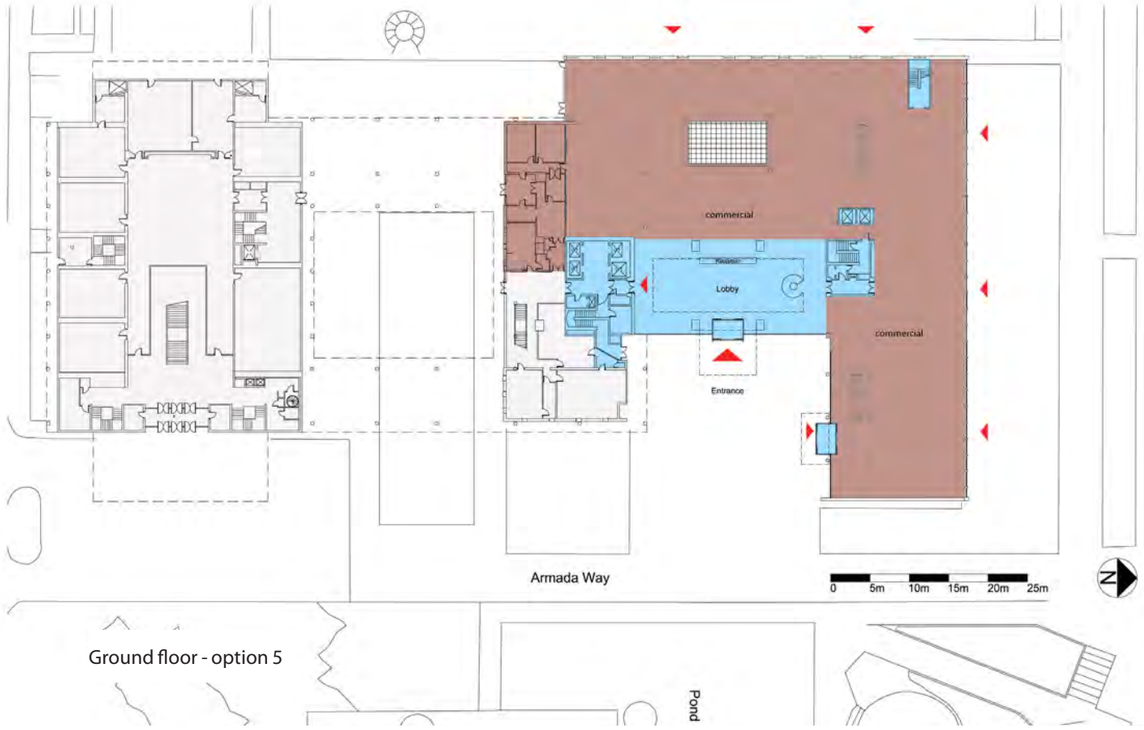




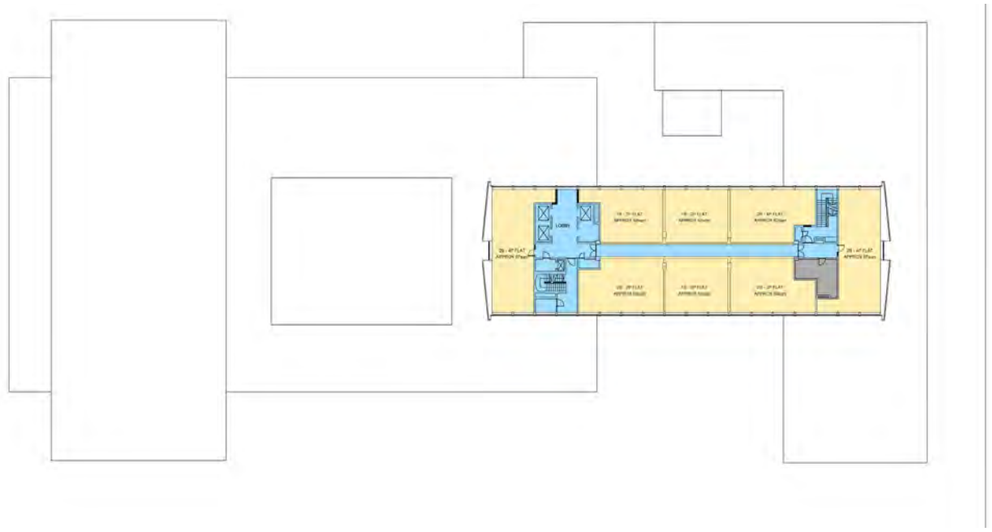
Long section - option 5

Plymouth Civic Centre

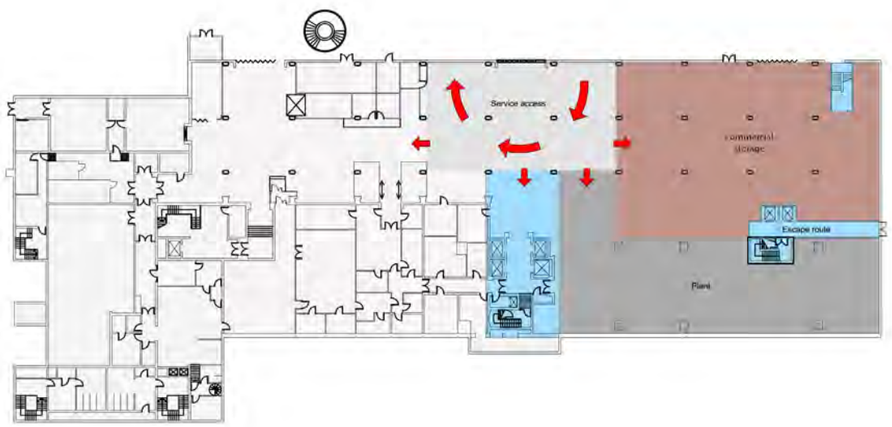
Feasibility Study



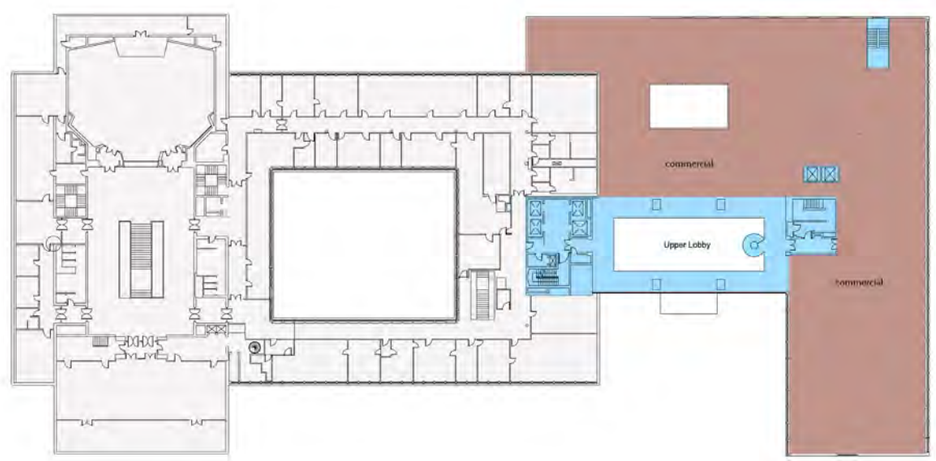
Ground floor - option 5



Typical upper floor - option 5

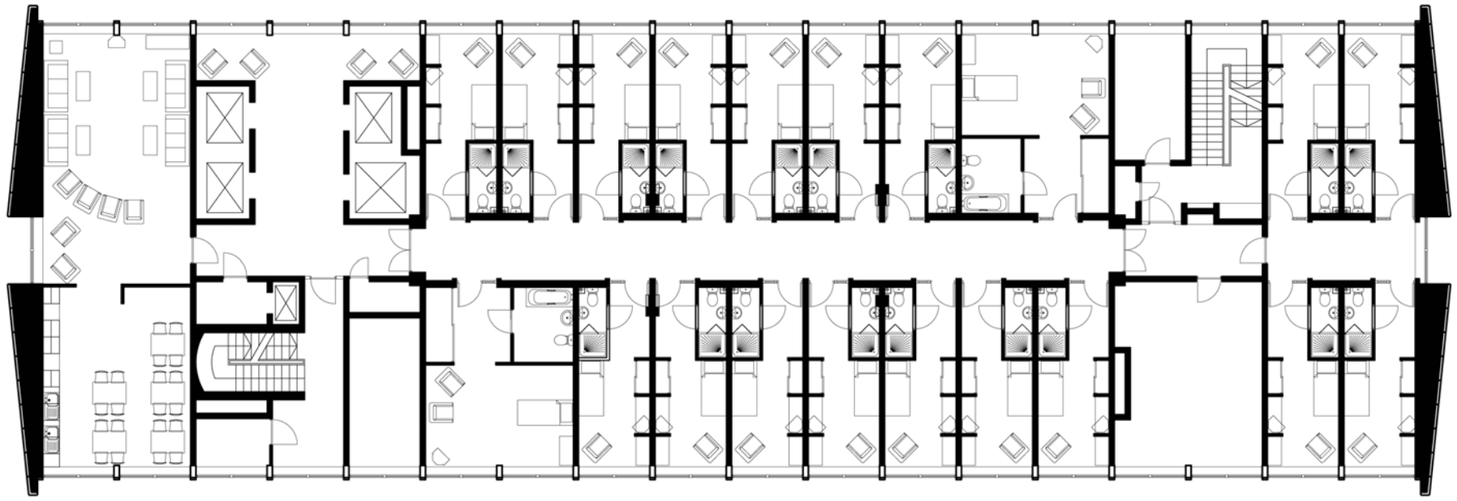


Lower ground floor- option 5

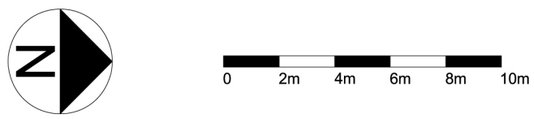


First floor - option 5

Sample floor plan - (residential apartments)



Sample floor plan - (student accommodation)



RESIDENTIAL USE

The options illustrated: Hotel use

6.7 Hotel

Avanti Architects' proposals provide for a total of 166 double bedrooms or alternatively 190 bedrooms comprising 142 double bedrooms and 48 single 'Business' bedrooms. Additional accommodation to be provided within the ground floor and basement includes the range of uses which would normally be expected of a city centre hotel including fitness suite, bar, restaurant/ breakfast room, meeting rooms, reception and administrative offices etc. In addition the upper floor of the tower will, in common with the other identified options for the building, provide a restaurant.

The scale of the proposed hotel is in keeping with operators' typical requirements where between 160 and 200 bedrooms are typical of the requirements of corporate hotel operators in locations such as Plymouth.

We consider that the 166 double bedroom option would be more attractive to operators than the second option, which provides smaller single 'Business' bedrooms and which could restrict the weekend and summer leisure market that would form an important element of the target market for a hotel in such a location. For a 4* operation room sizes in the order of 23-24 sq m (248-258 sq ft) would normally be the average, though this will vary between operators.

The current design proposals provide for a Spa within the ground floor with kitchen facilities on the lower ground floor. There is an argument for the Spa, which does not necessarily require natural daylighting being located on the lower ground floor with the kitchen then being at ground floor level immediately beneath the Restaurant. This will necessarily be a matter that varies from operator to operator and at this feasibility stage the plans clearly demonstrate that both facilities can be accommodated within the building.

It will be important to provide the levels of meeting space which would be demanded by a 4* operation though this is again an issue which would most appropriately be dealt with at a detailed design stage. Alternatively the integration of the adjoining Civic Suite as a Conference and Banqueting venue allied to the hotel would offer a solution.

The initial design consideration for the hotel proposal has been prepared envisaging a 4* full service hotel for which there has historically been occupier demand although this, in common with the majority of cities has waned with the onset of the 'credit crunch' and the associated difficulties in securing development finance.

Notwithstanding this, with the exception of the recently completed Jury's Inn on Exeter Street and the proposed Hotel within the nearby Oceanique development (former Foot Anstey site), Plymouth's hotel stock is generally of a dated nature and we believe that there is latent demand from operators for a quality full service hotel within the city and would anticipate operators returning to the market as the economic climate improves over time.

In terms of specification this will naturally vary between individual operators corporate fit out requirements, though for the purposes of this feasibility study we would recommend that a typical 4* quality fit out is assumed.

AVANTI ARCHITECTS

6.7.1 *Option 6 - Hotel*

Retention and conversion of the 15 storey tower and the two storey north block and its extension to the west as a 4-5 star luxury hotel. The tower will accommodate double, twin and single luxury business and tourist hotel rooms. The main entrance lobby at the ground floor will lead to coffee lounge/ bar and small scale restaurant. The main restaurant is located at thirteenth and fourteenth floor to take advantage of the panoramic views of the city, the Hoe and beyond the Plymouth Sound.

The lower two storey northern block will provide a series of flexible meeting rooms, breakfast room and a terrace at first floor. The ground floor provides fitness suite and health spa accessible to hotel guests The independent access provides the potential for the health and fitness centre to have a broader use for members who are not hotel guests.

- Refurbishment of the main entrance hall and first floor gallery to present a modern stylish welcome foyer.
- Refurbishment of the southern circulation core to incorporate modern compliant lifts within existing shafts.
- Refurbishment of northern circulation core.
- Redevelopment of second to twelfth floors as luxury hotel bedrooms. Refitting of the gable end accommodation at thirteenth floor as two luxury hotel suites. (see typical plan)
- Redevelopment of the thirteenth floor as a restaurant connected to the fourteenth floor via a modern and stylish accommodation staircase.
- Refurbishment of the fourteenth floor restaurant as a bar/lounge with viewing terrace.

The two storey north block

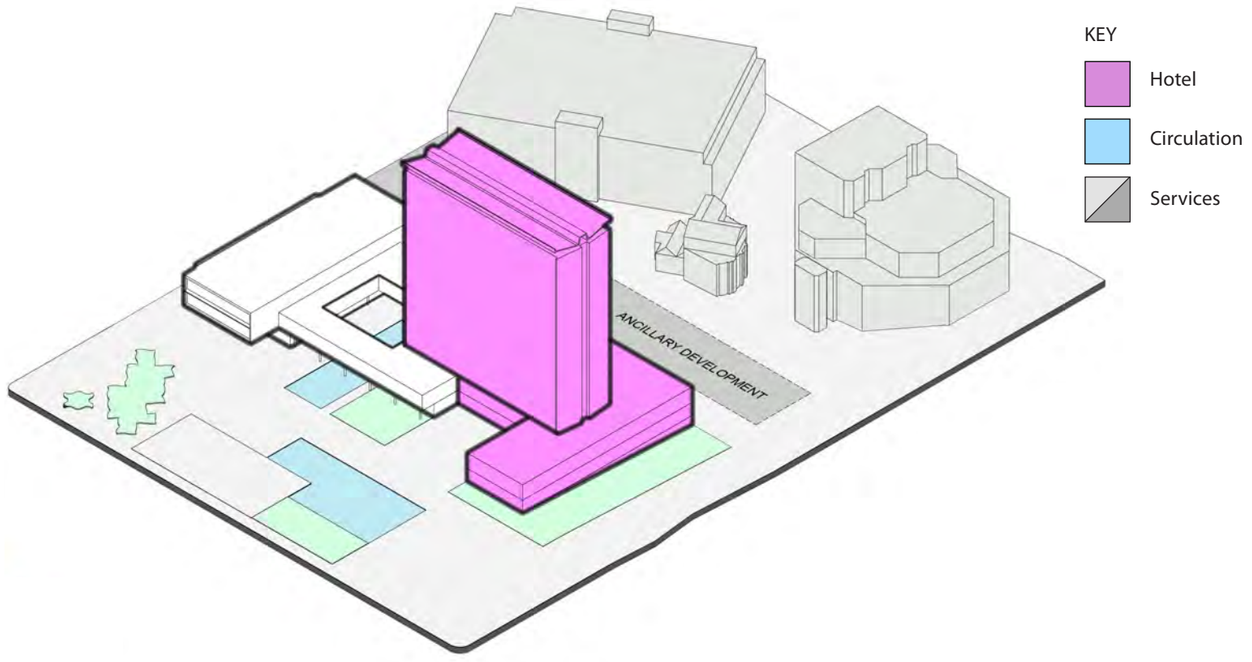
- Re-establishment of the dedicated entrance to the two storey block as a secondary entrance.
- Creation of a reception and control lobby in front of this entrance.
- Designation of parts of the reorganised and rationalised plant room. area at lower ground floor as storage and backup area for the hotel and restaurant.

Summary of structural and architectural interventions

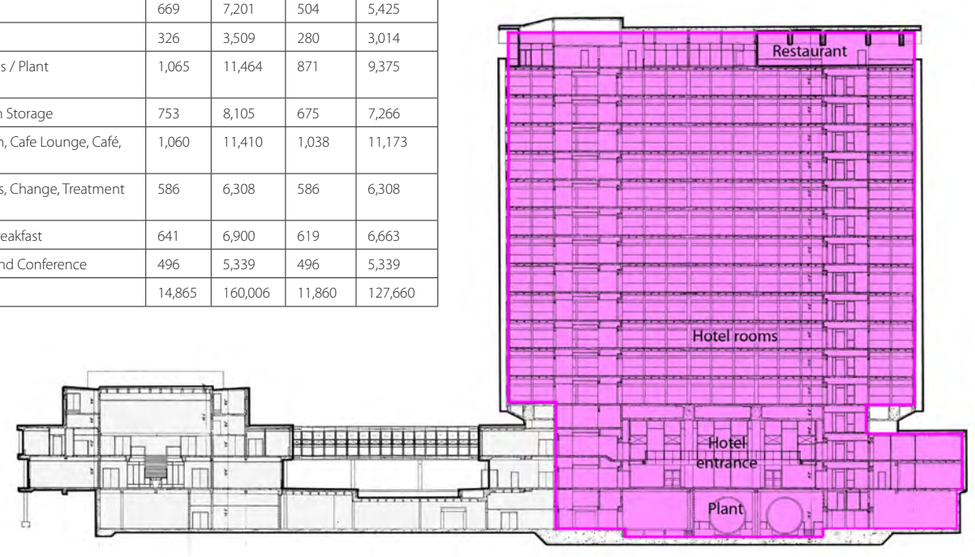
- Inclusion of at least two motoroom-free lifts within the existing shafts to allow lift access to fourteenth floor restaurant.
- Insertion of a motorroom-free passenger and goods lift at the northern core within the existing service zone to serve LGF to thirteenth floor restaurant.
- Inclusion of an accommodation staircase from thirteenth floor to fourteenth floor restaurant.
- Creation of a protected lobby at lower ground floor to allow safe escape from the northern escape stairs towards Royal Parade.
- Incorporation of one staff /goods lifts from LGF to GF and FF to serve various kitchens and preparation areas within the two storey block.

Summary of service works for hotel option

- Full thermal fabric repair including solar and glare control.
- Full services installation replacement including lifts.
- Mechanical ventilation with heat reclaim to Bedrooms and commercial Kitchen.
- Maintain ventilation strategy to Council House and introduce comfort cooling with option of borehole cooling.
- Commercial spaces will require mechanical ventilation with comfort cooling.
- Comfort cooling to bedrooms via borehole.
- Daylight dimming and occupancy control of lighting where appropriate (lighting and small power controlled on swipe card occupancy control to bedrooms).
- Solar Thermal Panels for hot water and option of borehole cooling in combination with heat pump and rain water recycling. Additional option of Inclusion of CHP.
- Energy use metering and monitoring throughout.



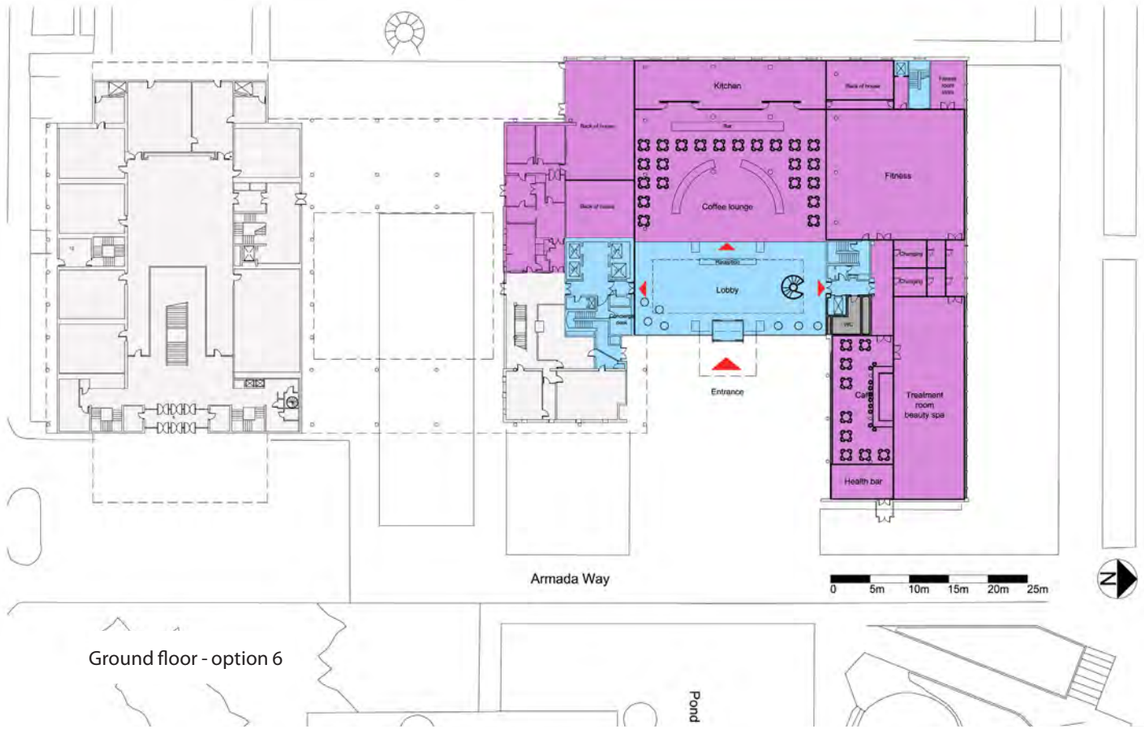
Option 6 - Areas			Gross		Nett	
			sq m	sq ft	sq m	sq ft
15 Storey Office Tower	A	Circulation Areas at GF and 1st Floor	837	9,009	-	-
	B	Hotel Bedrooms 2 - 12th Floors	8,349	89,868	6,708	72,204
	C	Luxury Hotel Suites at 13th Floor	83	893	83	893
	D	13th Floor Restaurant	669	7,201	504	5,425
	E	14th Floor Bar	326	3,509	280	3,014
2 Storey Block - North	A	Lower Ground Services / Plant	1,065	11,464	871	9,375
	B	Lower Ground Kitchen Storage	753	8,105	675	7,266
	C	Ground Floor - Kitchen, Cafe Lounge, Café, and Health Bar	1,060	11,410	1,038	11,173
	D	Ground Floor - Fittness, Change, Treatment Room, Beauty Spa	586	6,308	586	6,308
	E	First Floor - Kitchen, Breakfast	641	6,900	619	6,663
	F	First Floor - Meeting and Conference	496	5,339	496	5,339
			14,865	160,006	11,860	127,660



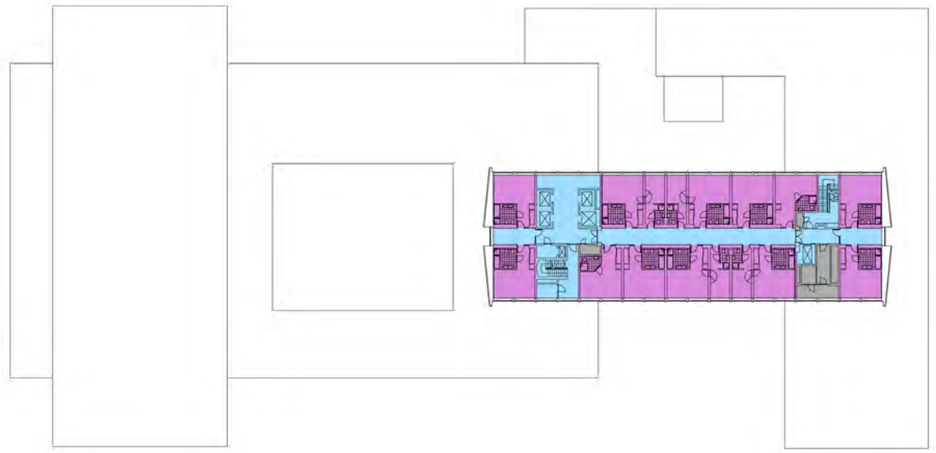
Long section - option 6

Plymouth Civic Centre

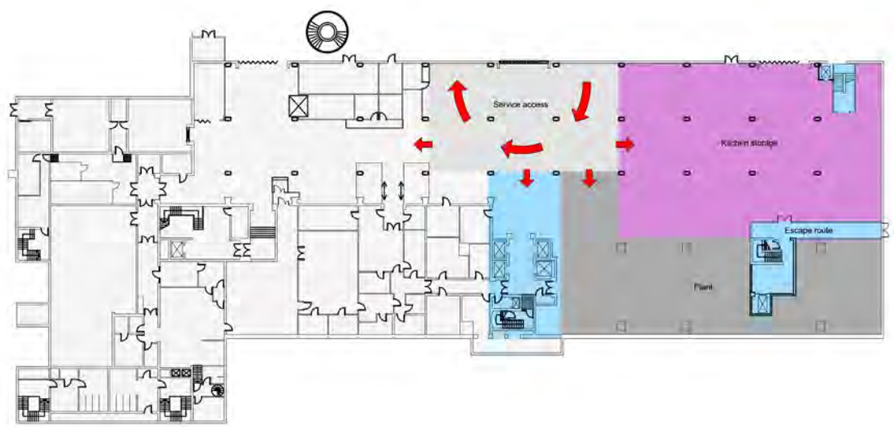
Feasibility Study



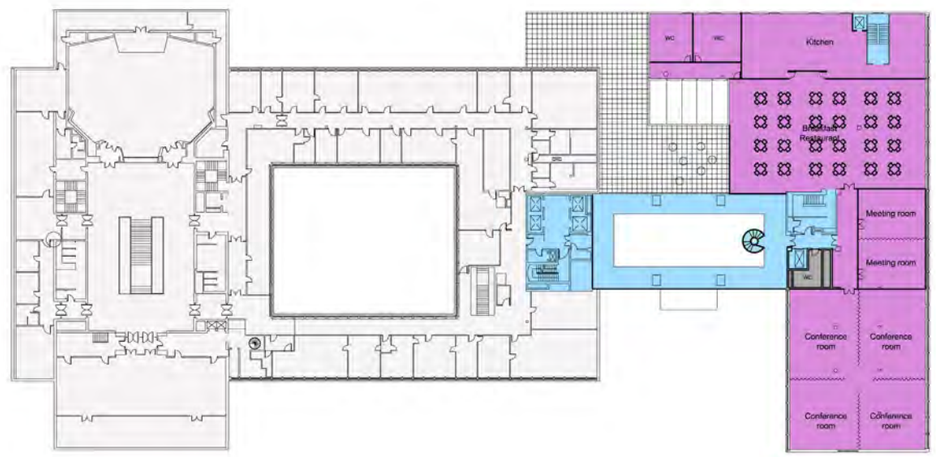
Ground floor - option 6



Typical upper floor - option 6

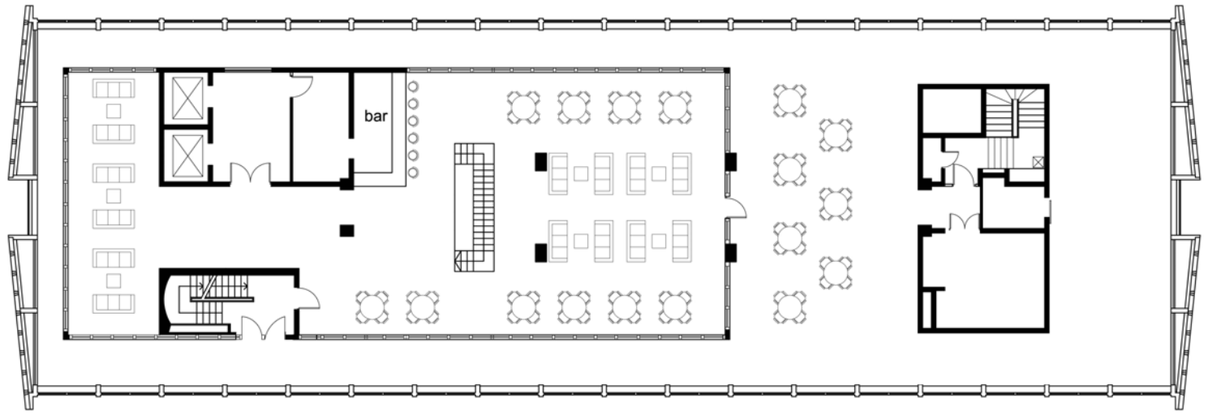


Lower ground floor- option 6

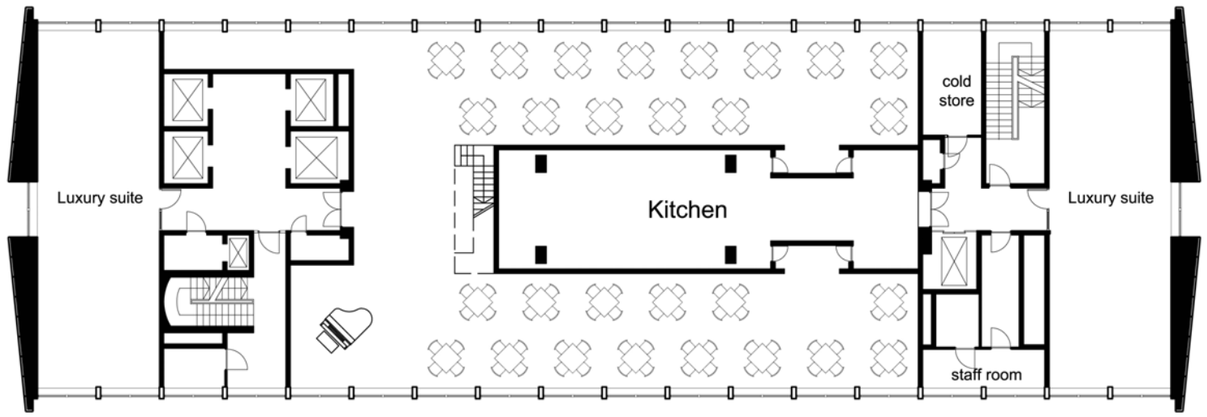


First floor - option 6

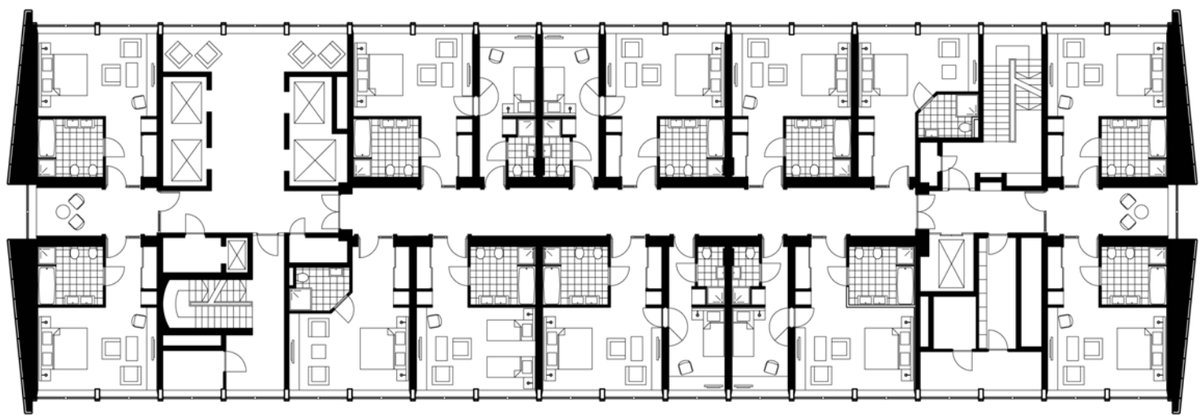
TOP FLOOR PLAN
(TERRACE BAR / RESTAURANT)



TOP FLOOR PLAN
(RESTAURANT)



TYPICAL FLOOR PLAN



HOTEL USE

The options illustrated: Other uses (Council House)

6.8 Further Uses of other elements of the Civic Centre complex
We have also considered the various ancillary uses proposed for the Civic Suite, Podium and 2 storey extension to the main building as summarised at the start of this briefing note. We would comment as follows in respect of the identified options:

6.9 Retention of the Civic Suite for Council use
This proposed use falls outside of our brief to provide comment upon the commerciality of the identified potential alternative uses for the Civic Centre and we are therefore able to provide only limited comment.

It is however worth noting that the Civic Suite is considered to be one of the most difficult elements of the complex when considering alternative uses as it is the element of the building which has the highest concentration of elements which are considered to be of Conservation and Heritage importance and the level of works which can be undertaken, particularly internally, is more restricted than other areas of the complex.

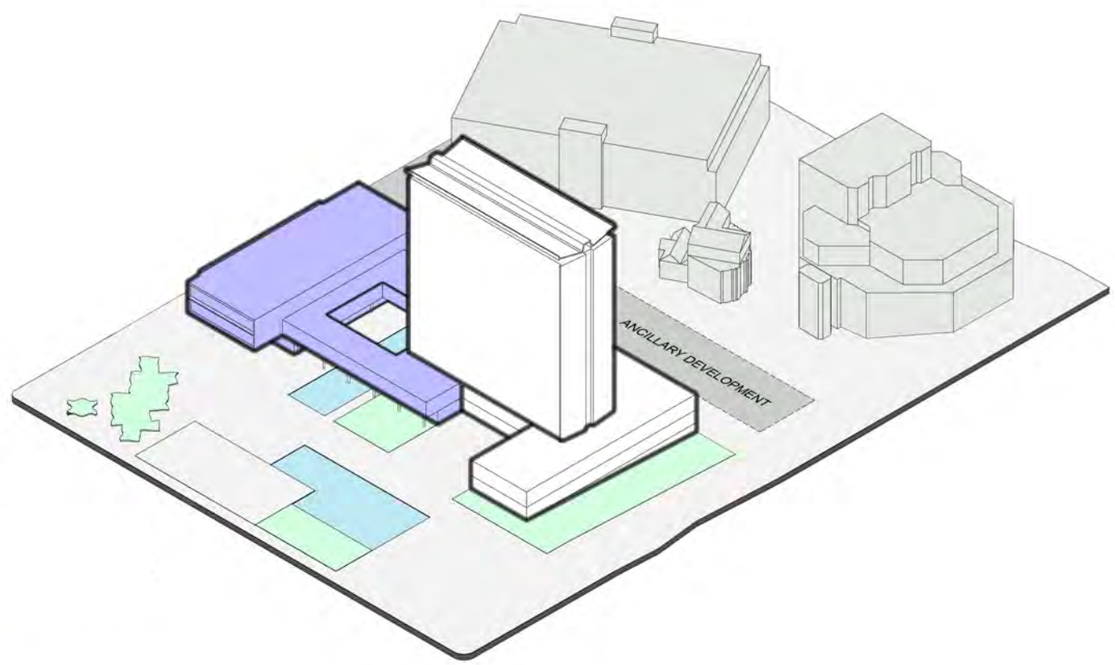
The retention of this element of the building for Council uses is arguably the most appropriate use for the accommodation as it will allow this area of the complex to continue in the use for which it was originally designed with minimal disruption to the fabric of the building. However it will be for the Council to determine the practicality of the continued use of this area if other Council functions were to be relocated away from the site.

AVANTI ARCHITECTS

6.9.1 Option 7 - Civic Centre

Retention and conservation grade renovation of the Civic Centre to continue in its present function.

- Conservation grade renovation, reconditioning and cleaning of the art work and bespoke features.
- Judicious incorporation of Part M and DDA compliant passenger lifts and platforms to allow accessibility to all public areas of the building.
- Any discrete adaptation that may be beneficial for enhanced operational performance.

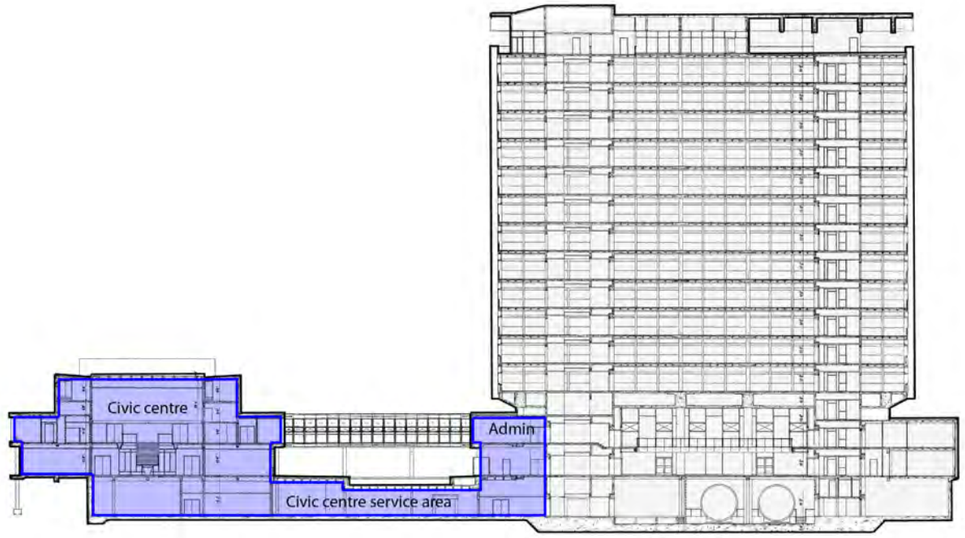


KEY

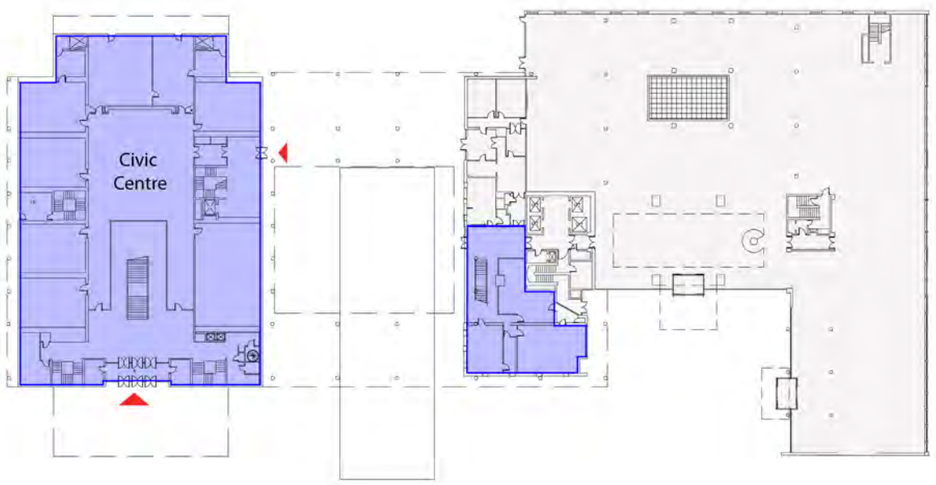
Civic Center

Services

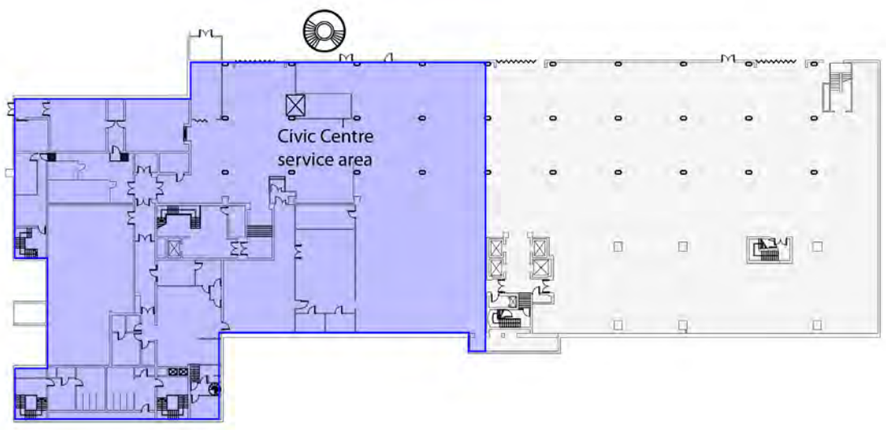
Option 7 - Areas			Gross		Nett	
			sq m	sq ft	sq m	sq ft
Civic Centre	A	Amenity Areas, Back up & Kitchen at Lower Ground Floor	1,838	19,784	-	-
	B	Circulation at Lower Ground Floor	235	2,530	-	-
	C	Circulation at Ground, First & Second Floor	2,448	26,350	-	-
	D	Activity Rooms & GF & FF	1,069	11,507	1,069	11,507
	E	Council Chamber	244	2,626	244	2,626
The Link Block	A	Circulation Areas at GF and 1st Floor	566	6,092	-	-
	B	Amenity Rooms at Ground Floor	104	1,119	104	1,119
	C	Activity Rooms / Offices at First Floor	847	9,117	847	9,117
			7,351	79,126	2,264	24,369



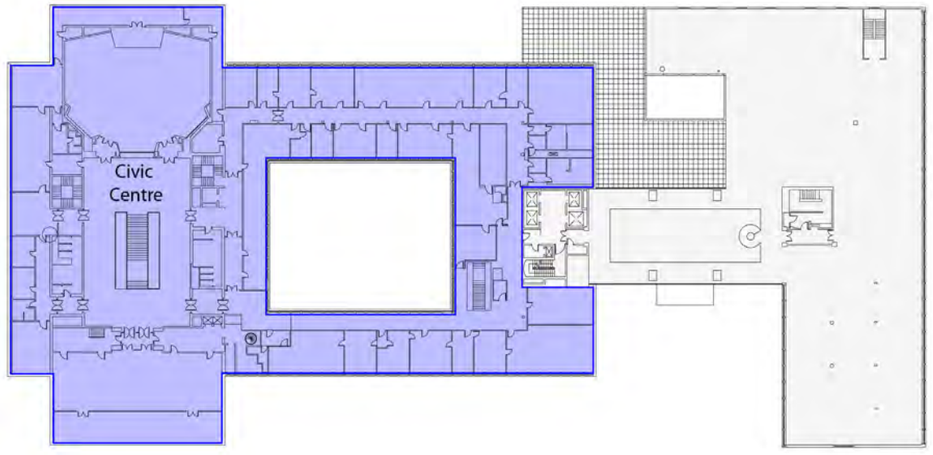
Long section - option 7



Ground floor - option 7



Lower ground floor- option 7



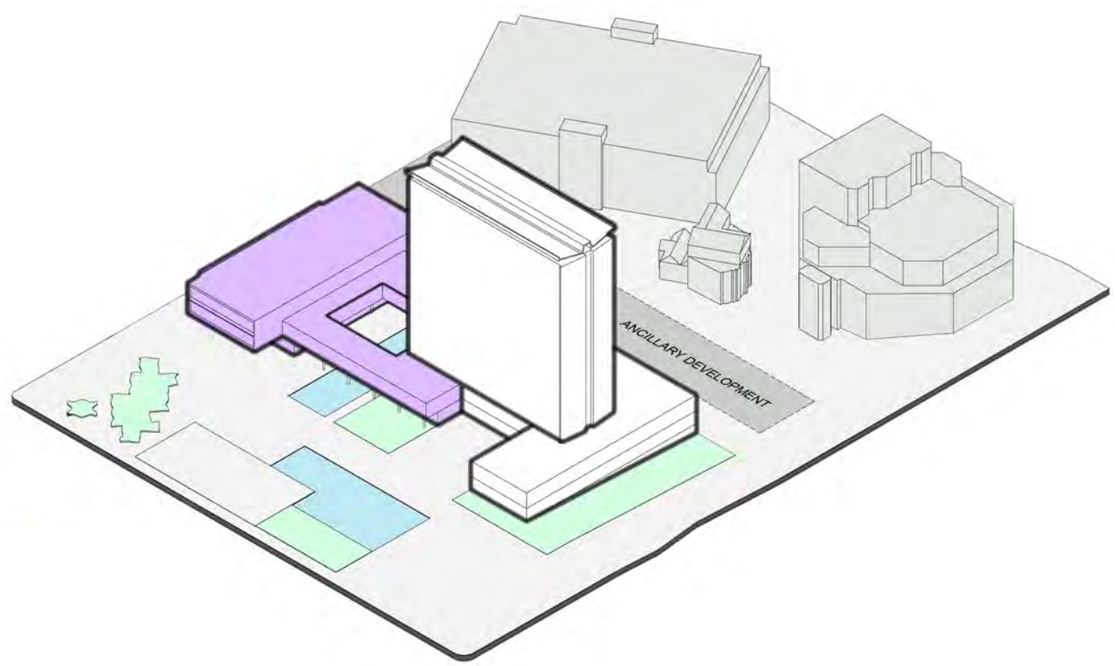
First floor - option 7

AVANTI ARCHITECTS

6.10 Option 8 - Conference

This use has been proposed as an option for the Civic Suite in which only limited works are anticipated to be acceptable. If such a use is pursued we consider it essential that the accommodation be considered as part of the Hotel option as it is unlikely that a stand-alone conference facility would be financially viable.

There are some concerns in relation to this option due to the limited ability to alter the accommodation to suit operator requirements and the limited market for this type of use within Plymouth in general.



KEY

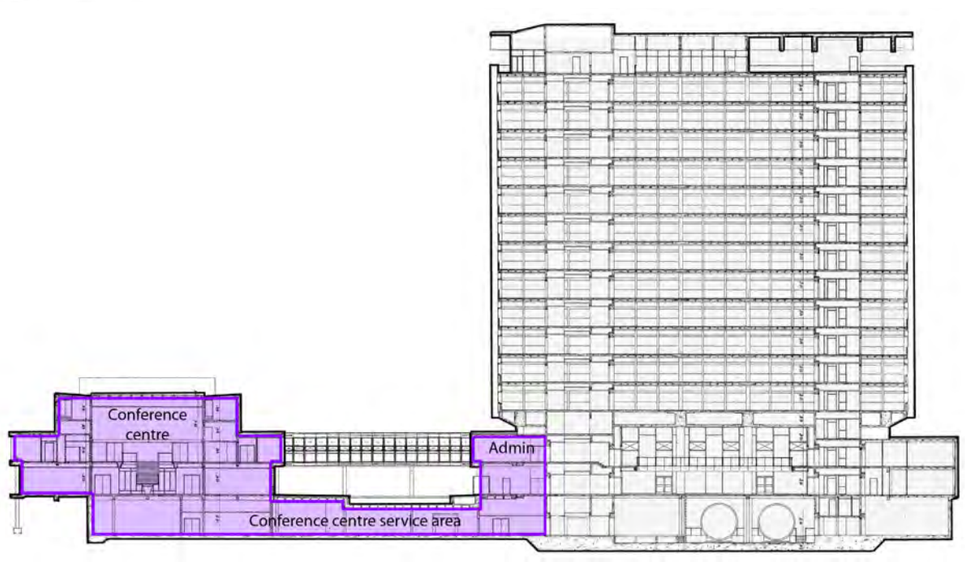
Conference

Services

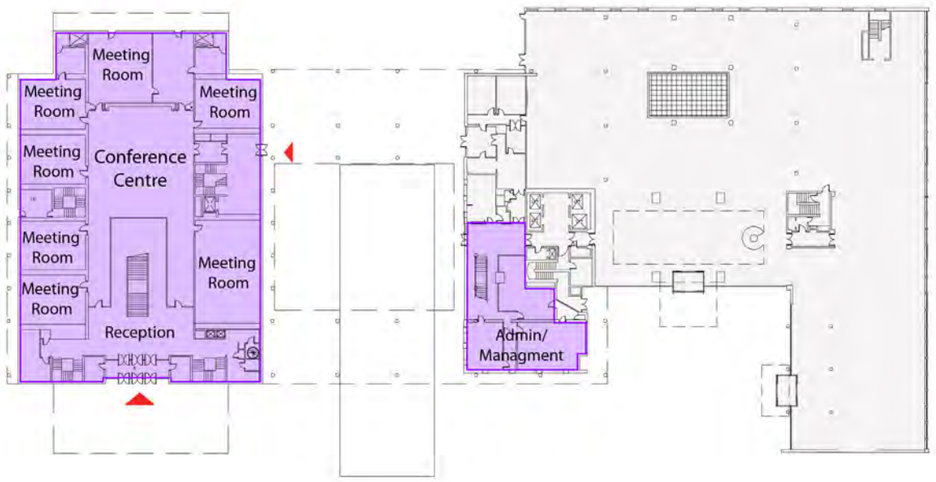
Retention and conservation grade renovation of the Civic Centre to become a prestigious conference facility to be managed either as an independent entity or as part of the Hotel option.

- Conservation grade renovation, reconditioning and cleaning of the art work and bespoke features.
- Judicious incorporation of Part M and DDA compliant passenger lifts and platforms to allow accessibility to all public areas of the building.
- Judicious re-planning of Mayer's Parlour as hospitality suite.
- Improved access to musicians' gallery in Banqueting Hall.
- Integrated public address system.
- Judicious re-planning of the Council Chambers and public gallery tiers to increase seating capacity.
- Any discrete adaptation that may be beneficial for enhanced operational performance.
- Re-planning of the lower ground accommodation to facilitate creation of a fully functioning commercial catering kitchen.

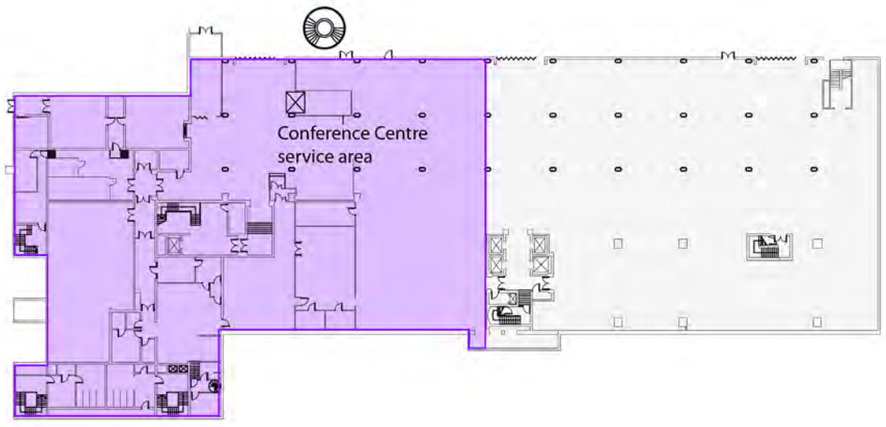
Option 8 - Areas			Gross		Nett	
			sq m	sq ft	sq m	sq ft
Civic Centre	A	Amenity Areas, Back up & Kitchen at Lower Ground Floor	1,838	19,784	-	-
	B	Circulation at Lower Ground Floor	235	2,530	-	-
	C	Circulation at Ground, First & Second Floor	2,448	26,350	-	-
	D	Activity Rooms & GF & FF	1,069	11,507	1,069	11,507
	E	Council Chamber	244	2,626	244	2,626
The Link Block	A	Circulation Areas at GF and 1st Floor	566	6,092	-	-
	B	Amenity Rooms at Ground Floor	104	1,119	104	1,119
	C	Activity Rooms / Offices at First Floor	847	9,117	847	9,117
			7,351	79,126	2,264	24,369



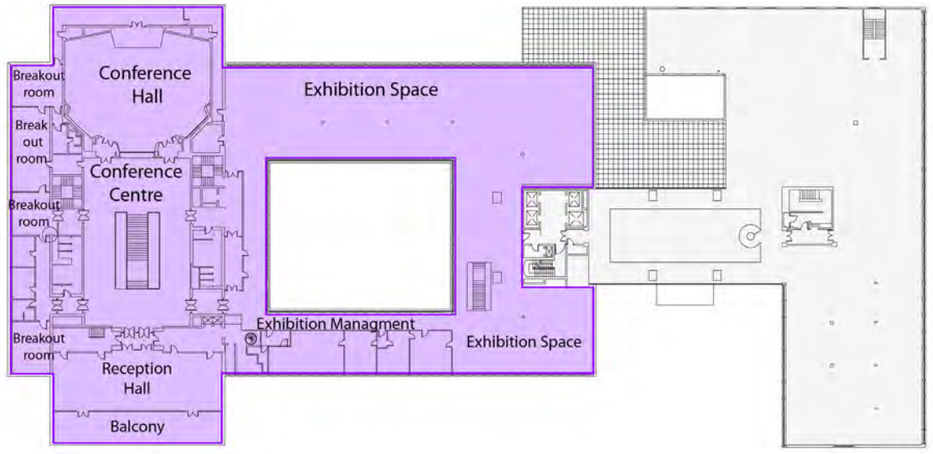
Long section - option 8



Ground floor - option 8



Lower ground floor- option 8



First floor - option 8

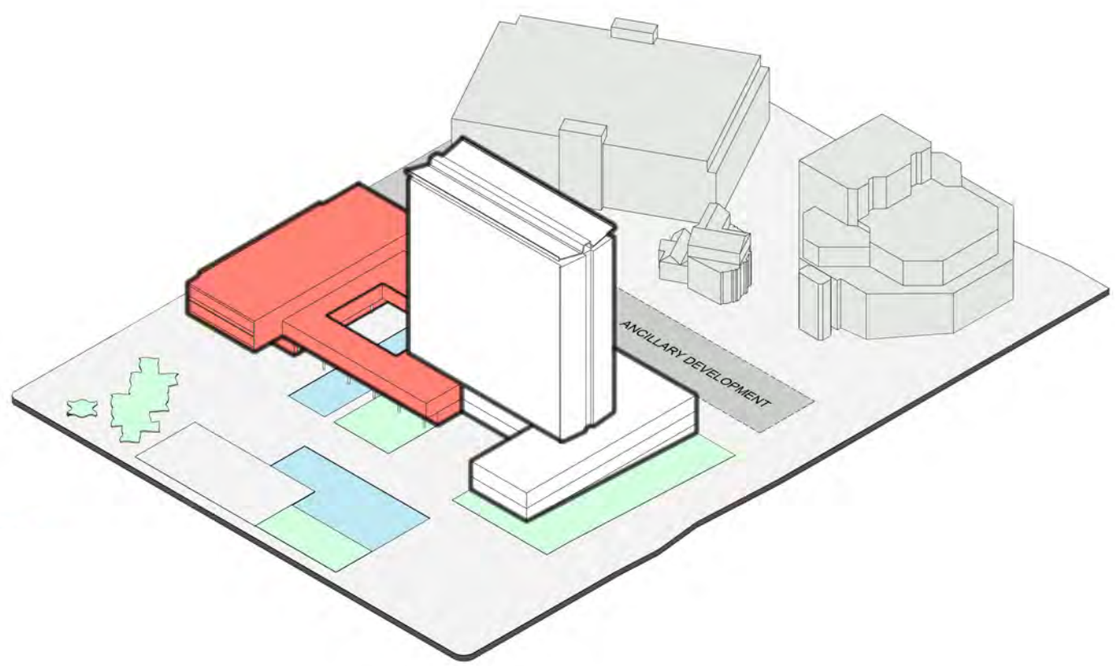
AVANTI ARCHITECTS

6.10.1 Option 9 - Arts centre

An option for the reuse of the Civic Suite as an Arts Centre has also been considered. We would anticipate a use of this nature requiring a significant involvement from the Local Authority together with Grant Funding.

It is assumed that this proposal has been considered as it will potentially allow for the accommodation provided within the Civic Suite to be incorporated with the minimum level of alteration to the existing internal layout and the sympathetic treatment of the areas of the building which are of principal interest in Conservation terms.

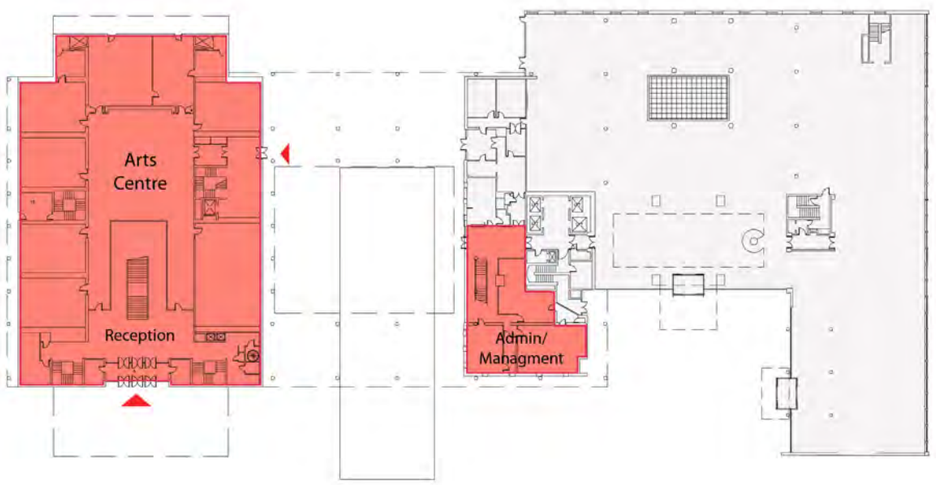
Whilst the use of the Civic Suite as an Arts Centre could provide a solution for this element of the property it is considered unlikely that it would be a viable option for a private sector developer/investor.



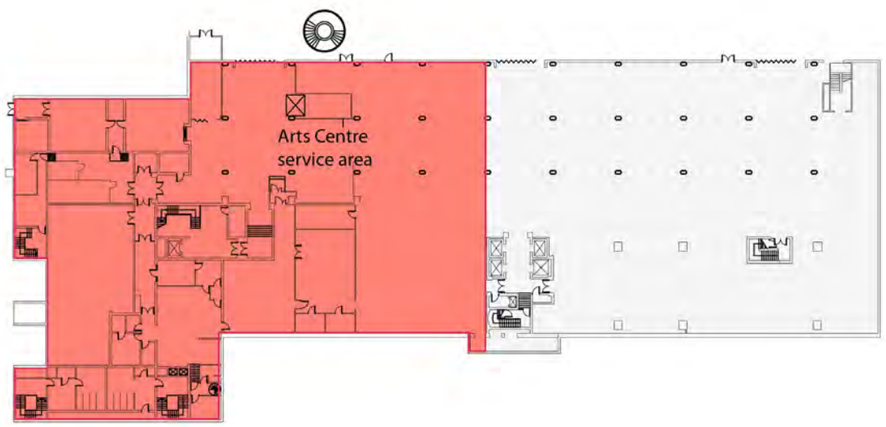
Retention and conservation grade renovation of the Civic Centre to become an Arts Centre facility.

- Conservation grade renovation, reconditioning and cleaning of the art work and bespoke features.
- Judicious incorporation of Part M and DDA compliant passenger lifts and platforms to allow accessibility to all public areas of the building.
- Judicious re-planning of Mayer's Parlour as hospitality suite.
- Improved access to musicians' gallery in Banqueting Hall.
- Integrated public address system.
- Judicious re-planning of the Council Chambers and public gallery tiers to increase seating capacity to be used as venue for performing arts or a cinema.
- Re-planning of various meeting rooms as seminar or presentation rooms
- Any discreet adaptation that may be beneficial for enhanced operational performance.
- Re-planning of the lower ground accommodation to facilitate creation of a fully functioning commercial catering kitchen.

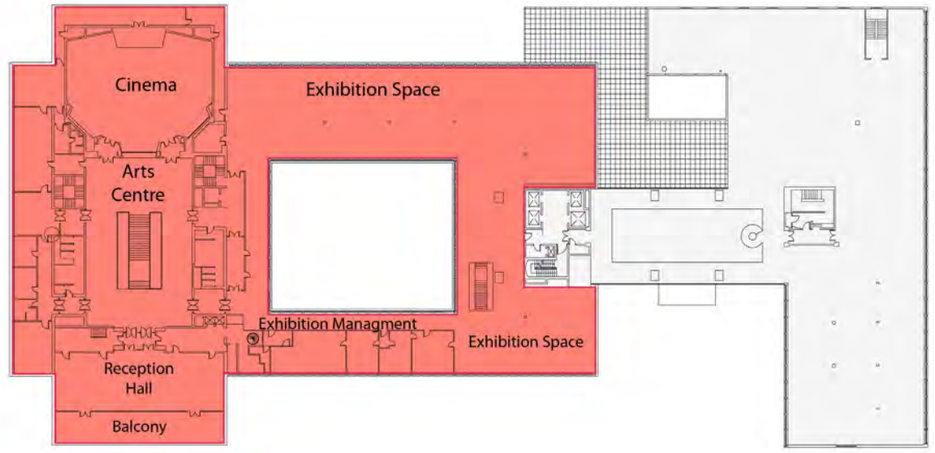
Option 9 - Areas			**Gross**		**Nett**	
			sq m	**sq ft**	**sq m**	**sq ft**
Civic Centre	A	Amenity Areas, Back up & Kitchen at Lower Ground Floor	1,838	19,784	-	-
	B	Circulation at Lower Ground Floor	235	2,530	-	-
	C	Circulation at Ground, First & Second Floor	2,448	26,350	-	-
	D	Activity Rooms & GF & FF	1,069	11,507	1,069	11,507
	E	Council Chamber	244	2,626	244	2,626
The Link Block	A	Circulation Areas at GF and 1st Floor	566	6,092	-	-
	B	Amenity Rooms at Ground Floor	104	1,119	104	1,119
	C	Activity Rooms / Offices at First Floor	847	9,117	847	9,117
			7,351	79,126	2,264	24,369



Ground floor - option 9



Lower ground floor- option 9



First floor - option 9

7 Ancillary development

7.1 Introduction

In addition to reviewing the options for beneficial refurbishment and re-use of the original Civic Centre complex the Feasibility Study syllabus also included consideration of other possibilities for enhancing the asset value through ancillary development. This section of the report accordingly presents initial proposals for achieving this objective.

7.2 Development opportunity

Immediately to the west of the Civic Centre between it and the Theatre Royal lies an area of land, understood to be in the ownership of the Council. It is evident from some of the earliest versions of the Civic Centre concept that part of this site was intended accommodate further elements of the scheme – including law courts and a treasury – before these were dropped from the brief. The site has never been developed and is currently used as an open car park. This site would appear to offer a valuable development opportunity.

7.3 The site

The land plot, which is rectilinear in outline with a length to width ratio of roughly 6:1, stretches between Royal Parade at its north end and Princess Street on the south and has a gross area of approximately 3,300 sq m. It is currently accessed by a ramped roadway from Princess Street at a level that drops slightly to equate to the basement of the Civic Centre, to which it also provides vehicular access at this level. At the north end the ground floor of the Civic Centre would align with the first floor of the new building. The various perimeter set back constraints produce a building footprint of approximately 1,700sm.

7.4 The new building

A distance of approximately 30m can be achieved between the east face of a new building and the west face of the Civic Centre which should provide ample separation distance. On the west side there will also ample distance between a new building and the existing buildings to the west – the Theatre Royal, a pub, and a multi-storey car park. The new building could accordingly have a floorplate width of approximately 16 – 18m.

Its height would be governed by the need to avoid overshadowing of the Civic Centre both in the technical sense of daylight and sunlight, and also in heritage terms in not appearing to challenge the architectural primacy of the listed complex. This suggests a building of ground + 5 upper storeys (6 at the most). It would also have a basement storey in addition to the existing lower ground floor that connects with the basement of the Civic Centre. This produces approximate development areas as follows.

- Gross floor area (excluding car park level) = 10,485m^2
- Assuming a target net/ gross of 77.5%, net area = 8,126m^2
- 75% net/gross would be = 7,863m^2

Outline sketches show an initial concept proposal for the building based on these considerations for indicative purposes only, and it is emphasised that these sketches are not presented as a fully considered architectural scheme. The fit-to-site suggests that main entrances to the building would be located at the north end from Royal Parade and towards the south end of the east façade, where a good connection could be made through the courtyard of the Civic Centre – helping to animate this somewhat underused area, enhance east-west linkage across the site as a whole and add meaning to the pool courtyard in joining with the Members' Entrance en route. This entrance approach could also be served and signalled by a new canopy bordering the pool and acting as a marker on Armada Way. Such an intervention would of course need to be very finely designed to complement the listed building. In addition to these principal entrances, intermediate doorways to the new building can be located along the podium on its east and west sides.

The existing surface car parking facility would effectively be re-created below the new building, and access to the underground car park in the Civic Centre would still be provided. The podium level which currently 'runs out' along the west side of the Civic Centre would most likely be extended to join an equivalent level around the new building creating a coherent pedestrian circulation terrace around the enlarged site. On the west side the difference of level between the ground floor of the new building and existing ground level to the west would be reconciled by a scheme of landscaped terracing, providing a green edge to the development.

7.5 Building use and strategic logistics

At this stage a specific building use is not determined, though there is a logistical case for considering office and other public services uses (eg. library) by the Council itself. The quantum of accommodation roughly equates to the floor space currently occupied by Council departments within the tower block and thus it would be possible to exploit the new building to decant these functions from the tower thereby enabling the repair/ conversion project in the tower to take place with the building vacated.

Assuming the refurbished tower is then re-assigned for alternative use, this strategy both avoids the contractual difficulties of working within a semi-occupied building with the attendant safety and phasing issues, and avoids the cost and disruption of a double decant for the Council itself. It may also be supposed that staff morale would be considerably raised by the prospect of moving into new premises.

The larger issue of Council co-location is also supported by this strategy. Retaining Council services in close proximity to the Civic Suite (assuming this use continues, which is regarded as the default option) optimises operational efficiency and maintains the sense of coherence and identity of the City Corporation. The Council House and the new building, 'joined' as they would be by the pool courtyard and the enhanced access from Armada Way, would give the Council both a cohesive architectural and an institutional presence.

This strategy releases the tower and its entrance forecourt for an alternative use and/or user with autonomous access. The range of possibilities for such re-assignment is covered elsewhere in the report.

The subject of possible procurement models is beyond the remit of this study, but there would appear to be several options as to whether the Council would procure the new building itself, or take up occupancy on a term leaseback arrangement with a private developer who could be incentivised through the opportunity of converting the Town Hall.

Other options for use of the new building and the way its development might interlock with the strategy for the existing buildings are of course available to optimise the added value.

7.6 Structural considerations

The proposed ancillary development on the adjacent car park site represents a relatively straightforward framed office construction. Its repetitive rectangular form suggests that it could be economically constructed as either a braced reinforced concrete frame or a braced steel-framed structure, supporting suspended concrete slabs and a lightweight roof structure, founded on reinforced concrete pad foundations. From our knowledge of site conditions and the proposed building uses, the following issues should be considered in developing the concept design and estimating a budget cost:

Ground conditions

A thorough site investigation is recommended, to fully understand the relationship between slate and limestone strata, which are known to interface in this area of the city.

Excavation in rock

From our knowledge of the existing foundations, it is likely that slate bedrock will be present close to the surface of the existing car park. The proposed basement car parking will require excavation in this rock, which can be a difficult, time consuming and relatively expensive operation.

Public sewer
A large public sewer is known to cross the site. In general, South West Water requires diversion of public sewers before development can commence. In some instances, large man-entry sewers can remain on development sites, but the foundation and column layouts would have to be arranged to avoid and not surcharge the sewer, which would have implications on the building's form.

Load transfer
Three potential occupancy types are identified for the proposed building, namely office use on the upper floors, car parking on the lower floors and possibly a public library in-between. Load-transfer structures (beams and slabs) will be required to transfer the loads between differing column layouts between these uses, which would result in increased structural thickness at the transition floors.

7.7 Servicing considerations

The Ancillary Building has adopted a similar profile and floor height to depth ratio as the existing tower. This is optimal in terms of daylight penetration and should enable the artificial lighting to be off, or substantially dimmed, for the majority of daylight work hours. The overall depth offers the potential for natural cross ventilation which in combination with exposed thermal mass to the soffit will enhance the ability to avoid overheating. To reduce water consumption a rain water recycling installation has been included to provide water for flushing toilets. The fact that the car park is incorporated within a semi basement area means that natural ventilation can be adopted for ventilation and smoke exhaust leading to considerable savings in plant (mechanical ventilation and sprinkler plant, running and maintenance cost and CO_2 emissions).

7.8 Market evaluation

Knight Frank has also been instructed to provide comment upon the proposal to develop a new 'Grade A' office building upon the existing surface car park which lies to the west of the Civic Centre complex.

Initial proposals for the development of this site indicate that a 6 storey building (Ground and 5 upper floors) can be accommodated with an estimated gross internal area of 10,485 sq m (112,860 sq ft) and a net internal area of approximately 8,126 sq m (87,468 sq ft).

The end use for this office development has yet to be determined. The first consideration is as a potential 'decant' option for PCC to facilitate the redevelopment of the Civic Centre complex. If this option is not pursued by PCC the office could potentially be developed for the private sector.

The eventual end user of the office building will, to a degree, impact upon the design solution as were PCC to occupy the space for their own use we would anticipate that their requirement would be for a single building providing large floorplates with public access areas within the Ground Floor of the building. There is also potential that part of the building could provide the new library accommodation required by the Library Service within Plymouth City Centre.

If the building is to be used by the private sector the floorplate provided (estimated to be an average of 1,672 sq m (18,000 sq ft) per floor might be too large for the requirements of the majority of occupiers within the Plymouth office market, unless a large scale Government or Private Sector relocation is secured. An alternative is to subdivide the proposed building into 2 or possibly 3 self contained office buildings capable of occupation on either a whole building or on a floor-by-floor basis to maximise the flexibility of the development. This is indicated in the plans.

In terms of specification for the development we would recommend that this is broadly in line with the British Council for Offices Guidelines (2009) which provides an outline specification for 'Grade A' office accommodation.

The initial outline for the development provides for 2 floors of basement car parking beneath the property. Car parking provision will be an essential consideration, particularly if the development is to be targeted at the private sector although it is acknowledged that the cost of providing the second level of basement car parking, which would involve excavation of the bedrock beneath the site, may be prohibitive and a cost/benefit analysis of this element of the development may need to be considered. (Sections showing both versions are included).

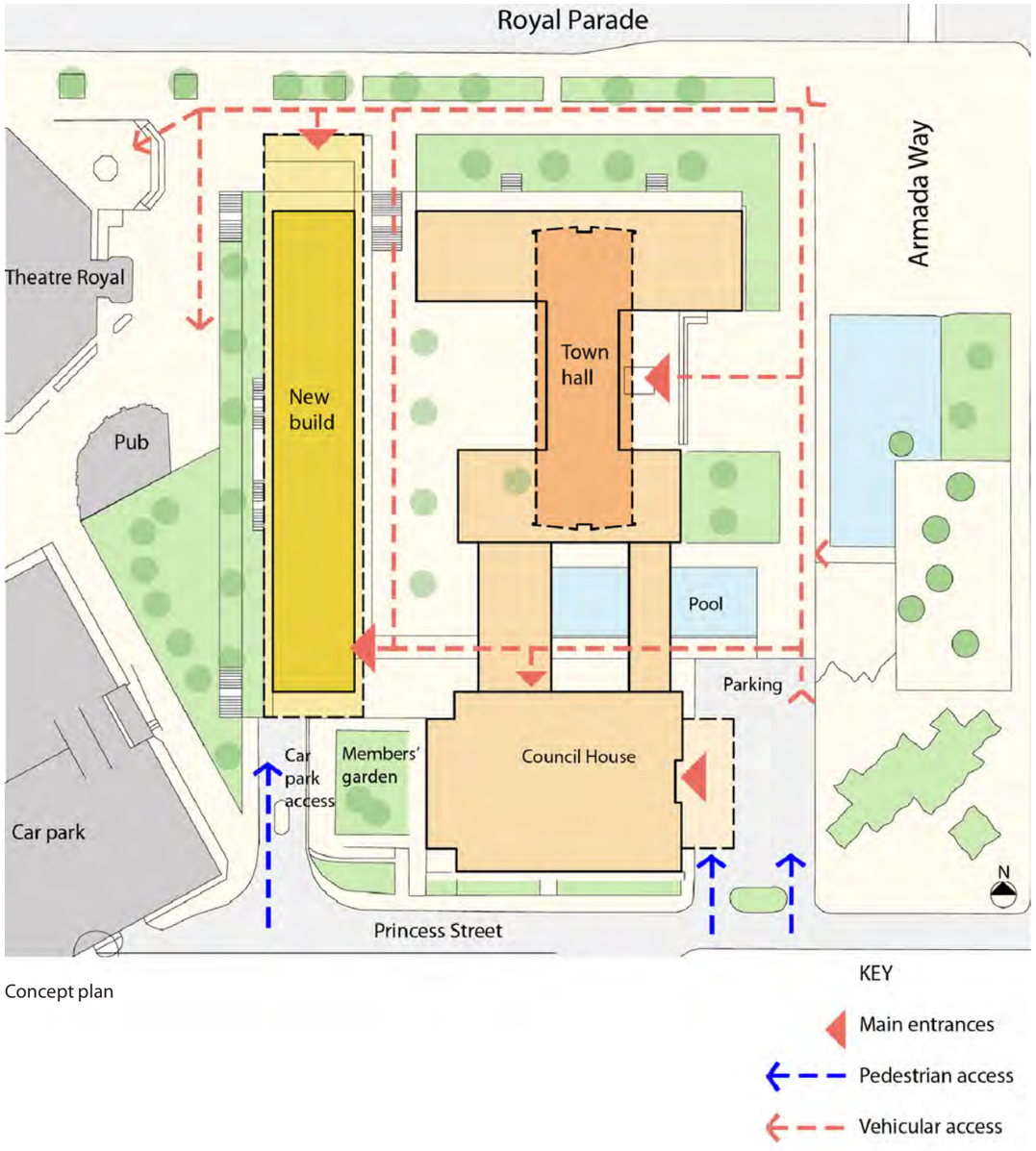
For a development of this type it is inevitable that occupiers will require a comfort heating/cooling system and we would anticipate that further investigation will be required to identify the most sustainable options potentially including ground source heating, chilled beams etc.

We would anticipate that the prevailing level of rents for office accommodation within Plymouth will impact upon the level of specification which can be justified in view of the likely end values of the completed building. Ultimately therefore there will need to be a degree of trade-off between specification and cost.

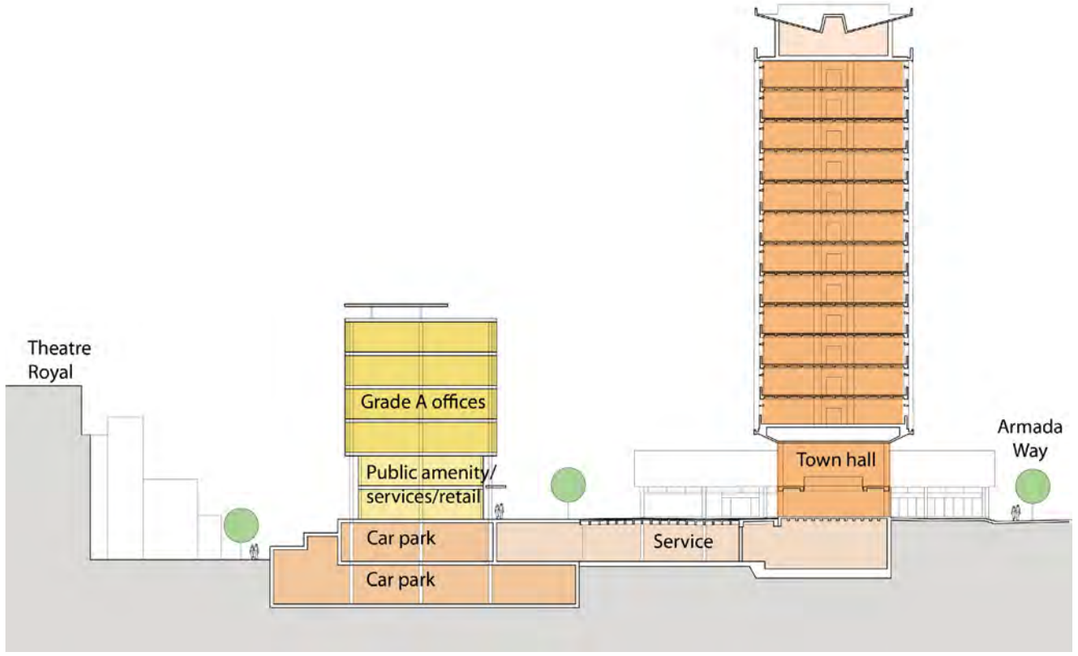
Plymouth Civic Centre

Feasibility Study

AVANTI ARCHITECTS

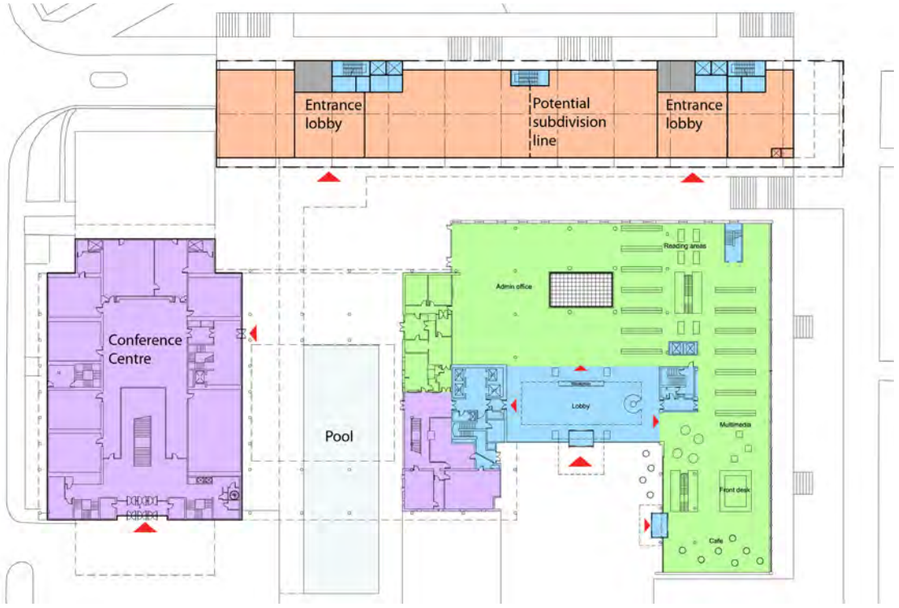


Concept plan

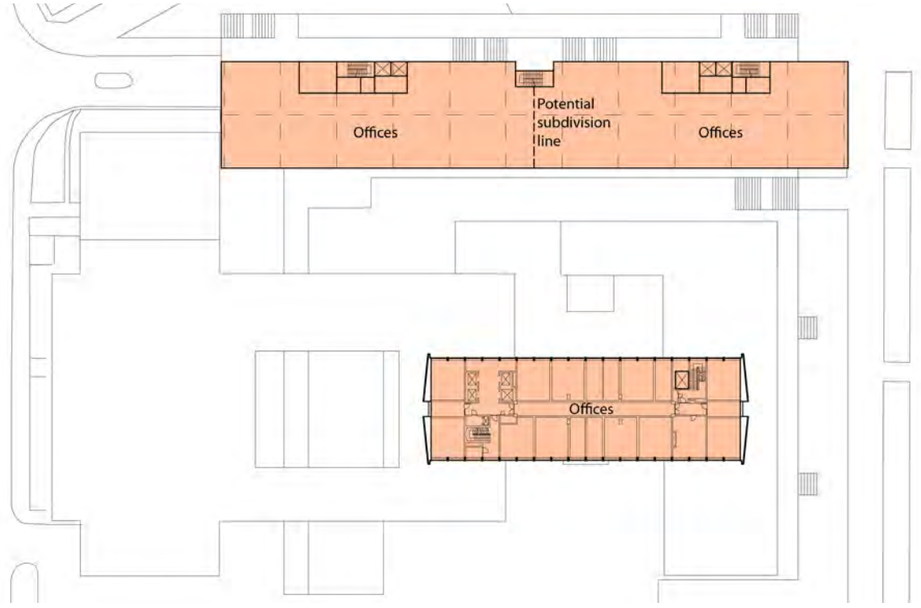


Areas table

Gross floor area (exclusing car park level)	10,485m2 / 112,860sq ft
Assuming a target net/gross of 77%, net area	8,126m2 / 87,468sq ft
75% net/gross	7,863m2



Ground floor - new build option



Typical upper floor - new build option

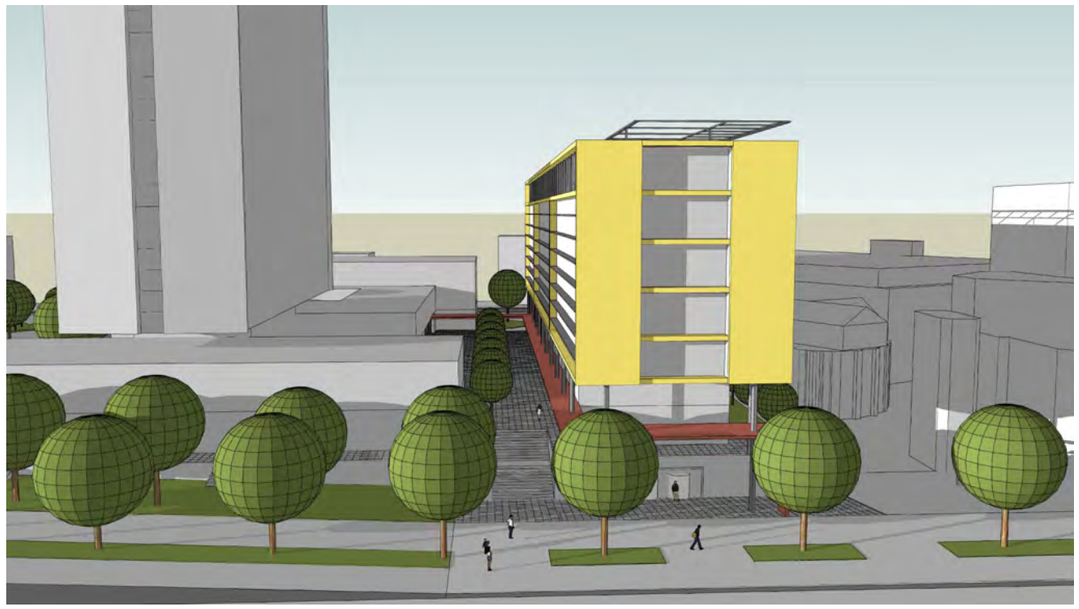
Lower ground floor- new build option

Plymouth Civic Centre

Feasibility Study

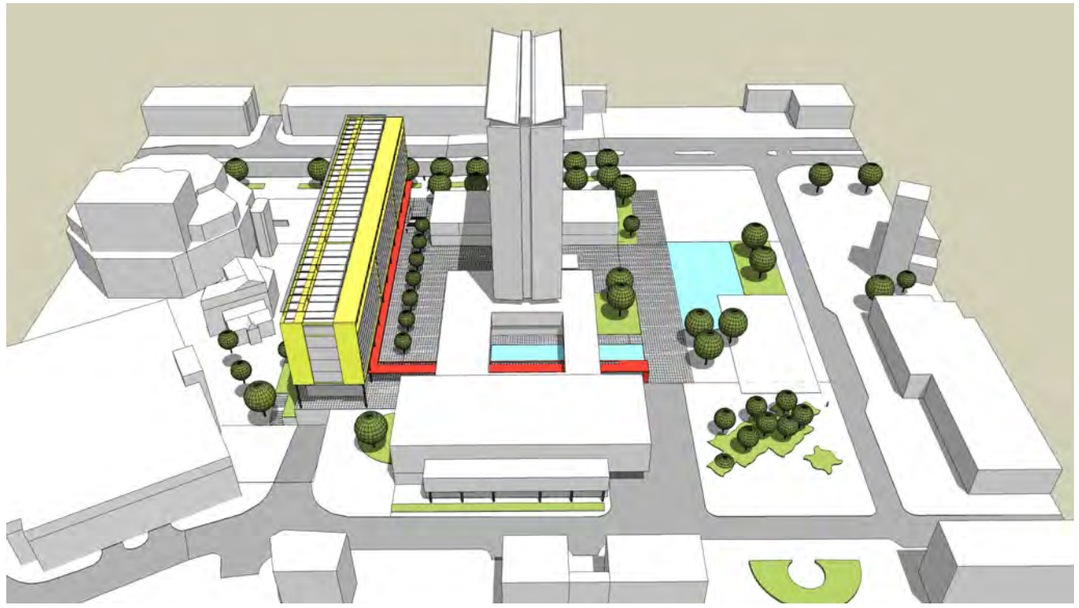
AVANTI ARCHITECTS

Aerial view from north



View of elevation to Royal Parade

Aerial view from north west

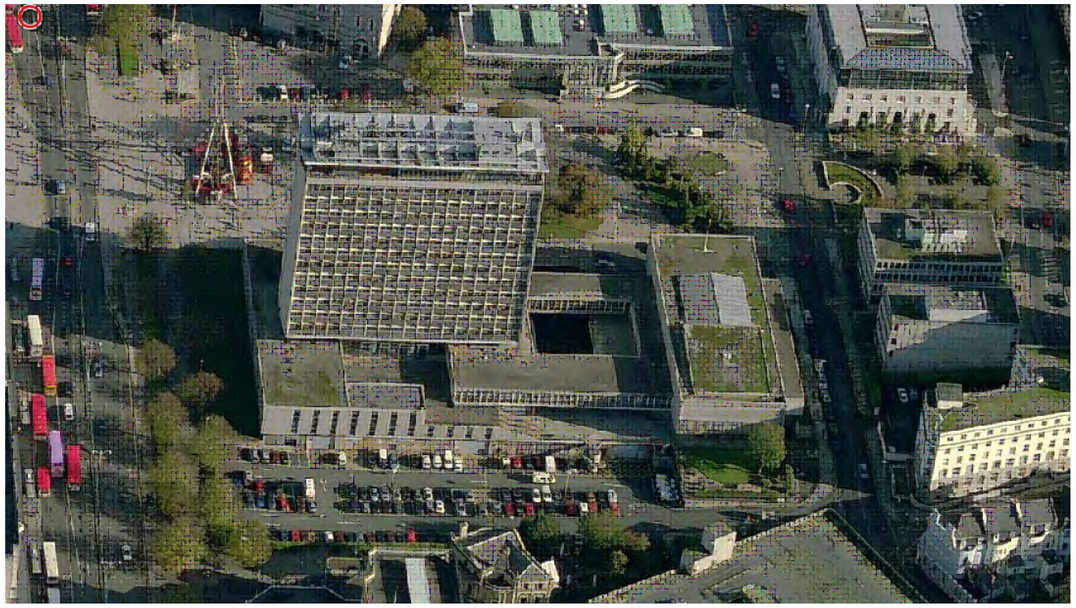


Aerial view from south

Plymouth Civic Centre

Feasibility Study

View of access to new building from Armada Way



Existing building - aerial view from west showing development site in foreground

Existing building - west façade of tower and entrance to car park

View of car park - the development site

8 Holding measures

8.1 Introduction

A decision on how to proceed following submission of the Feasibility Study will involve further discussion and debate both within the Council and beyond. Depending on the direction this takes, it may be necessary to pursue a preferred option or options to a greater level of detail for further analysis. Meanwhile the buildings will be required to remain in beneficial use with appropriate provision being made for any necessary maintenance and repair measures. This section of the report considers the implications of maintaining the buildings in use for varying periods while decisions are reached, an implementation programme is developed and decant arrangements are made. It will be appreciated that the longer the period before regeneration is undertaken the greater will be the extent and cost of interim works that would be covered anyway in a full refurbishment project.

Whichever option is selected by the Council, holding measures will be necessary in order to continue occupation of the building in a safe and comfortable manner until a chosen strategy is implemented.

It should be borne in mind that the building condition whereby fragments of concrete and finishes are becoming detached and falling to the ground, will require ongoing attention. It should also be noted that the rate of deterioration will increase with time.

The vulnerable elements of the building comprise essentially reinforced concrete which is deteriorating due to chloride ingress in the main (i.e. salt-laden atmosphere). Our conclusions are based upon our experience in this field and on engineering judgement. A science is emerging which allows prediction of the life expectancy of such structures and Scott Wilson have used this technique on previous projects. For a number of reasons, however, we do not believe that it is appropriate to use it for this project.

8.2 Observations

i) The structural elements in the interior of the building are in a reasonable condition and minimal maintenance work on these is envisaged. However as with any building, no significant increases in loading or alterations should be carried out without first checking the capacity of the structure in that area.

ii) Precast cladding panels are present on all four elevations of the tower; these are a cause for concern. They are deteriorating due to corrosion of the steel reinforcement which causes fragments of concrete to spall and fall to the ground. The rate of deterioration of the panels will increase in time.

A suitable maintenance regime will involve periodic tactile inspection of the panels, removal of loose material and local weatherproofing work.

It is envisaged that the panels on the East and West elevations will require urgent attention but that those on the North and South elevations will also become vulnerable in due course.

Inevitably there will come a point when the entire building will need to be re-clad.

With regard to the cladding on the East and West elevations, we have found that the pilasters which are attached to the columns are in better condition than the spandrel panels.

We have also found cladding fixings to be in reasonable condition which provides some reassurance that the risk of entire panels falling to the ground may be acceptable for the time being.

Precast concrete lintels are present in the façades between the upper and lower parts of the windows. These are also deteriorating due to chloride ingress and the same comments apply to these as to the cladding panels.

iii) A reinforced concrete frame supports the cladding panels which was cast in situ. This frame is exposed to the elements in parts of the elevations, in some slab soffits and in the gull-wing roof.

Our investigations have shown that these elements are deteriorating due to chloride ingress. Again, the rate of deterioration will increase with time.

Since the frame is essentially monolithic, it would be difficult to replace sections of it piecemeal. Therefore a targeted patch repair regime is envisaged (in fact this has been on-going for some time) following periodic inspection. The problem with such a regime is that its life is limited (due to a process known as incipient anode formation). Therefore in the long term a more permanent solution will be required i.e. cathodic protection.

8.3 Public safety

The danger of falling debris has been recognised and protective measures have been put in place by the Council. Further measures have been recommended and these should be implemented in the near future.

It should be emphasised that both the existing and the extended protective measures are capable of withstanding the impact of small fragments of concrete. However, they could not withstand the impact of an entire cladding panel falling. It is, therefore, important that the risk of these falling is considered and that regular inspections are instigated.

8.4 Recommended maintenance regime

Based upon our results to date and on our engineering judgement we have formulated a tentative maintenance regime in tabular form.

Orders of cost for each activity can be provided. Our experience on inspection work to date has demonstrated that access is not easy and this will add to the cost.

Such a maintenance regime should be kept under review and modified following the findings of each inspection.

With regard to the equipment available for inspection (i.e. the cradle and hoist), we have found this to be unreliable and unusable under certain conditions. Provision of a more robust system should be considered which would facilitate future inspections and maintenance work.

Whilst many of the structural elements of the Civic Centre are essentially sound, external elements including pre-cast concrete cladding panels, reinforced concrete columns, slab soffits and the gull-wing roof are in poor condition, are deteriorating visibly and debris is regularly becoming dislodged and is found at ground level. It is essential that a targeted and appropriate maintenance regime is put in place in order to protect the asset and for reasons of public safety.

Tentative maintenance regime for structural element

Time Period	Maintenance Activity Envisaged
immediate	Provide further protective measures at ground level (refer to Scott Wilson report of August 2008).
2-5 years	Carry out annual inspections of the building (after first reproviding inspection equipment). Remove loose material in a controlled manner. Patch repair as necessary.
5-10 years	Carry out annual inspections. Remove loose material. Patch repair as necessary. Strengthen as necessary. Replace cladding panels or parts of panels and precast lintels on an ad-hoc basis.
10+ years	Strip the building back to the frame. Install long term corrosion protection (cathodic protection). Reclad the building. Instigate routine maintenance regime

9.3.1 *Sustaining the existing services*

It is difficult to determine the anticipated life of the existing services with the current level of existing information and scope of the feasibility work. The following provides an overview for the main installations where work in addition to ongoing general maintenance is carried out. The BSRIA Guide: Rules of Thumb- Guidelines for Existing Services 2003 suggest a figure of £1050/100m^2 for non-air conditioned offices for ongoing general annual M&E maintenance costs. This equates to approximately £270,000 per year at today's prices. Given the condition of the existing installations it is likely that these costs will increase year on year. We would suggest an allowance of 10% year on year.

To sustain the existing installations in operation as long as possible a regime of preventative maintenance should be put in place to prevent, as far as possible, further degradation.

HV/LV installation

The results of the 5 year Periodic Inspection Test Certificate should inform any remedial works required to the: LV distribution, small power and lighting installations. The Wiring Regulations have changed recently and a requirement for Residual Current Device protection to general small power socket outlets has been introduced (this provides an enhanced level of protection by monitoring a leakage to earth). Whilst there is not an obligation to provide this protection retrospectively (and the lack of them is not inherently unsafe) the fact that they will not be in place will be recorded as non-compliance with the current regulations. The council may wish to take a view on this. Upgrading the LV distribution to incorporate RCD protection would be significant and may require the replacement of all the distribution boards within the building as a worst case scenario. On the basis of say 1 distribution board 400m^2 and £1500 per point this would be approximately £85,000. Subject to the findings of the Test Certificate and additional allowance of £55,000 for any rewiring requirements would be ~10% of the cost of a complete rewire.

General lighting installation

This should be covered within the general ongoing maintenance cost budget.

There is potential for reducing the energy consumption, and running cost, of the existing lighting installation. The extent of lamp type within the existing installation is not known however retrofitting T5 fluorescent lamps, where T8 lamps are installed, has a payback period in the order to 4 years and can lead to reductions in running costs and CO^2 emissions for the lighting of ~25%. This may be worth further consideration. Although there are significant savings in CO^2 and running cost to be derived from incorporation of occupancy and daylight control of the general lighting the cost of improvements is not likely to be justifiable unless the projected stay in the existing building is between 5 and 10 years. This would require further analysis following a more detailed inspection of the existing installation.

Emergency lighting

This should be covered within the general ongoing maintenance cost budget.

If not in place, given the availability of existing information, we would suggest an Emergency Lighting Verification Declaration ECN2 is carried out for the installation. This will highlight any remedial works required to ensure that the installation is fully compliant.

Standby generator

We would recommend that the Standby Generator is serviced and tested as a matter of urgency to determine its condition. A complete replacement would be in the order of £60,000.

Lift installation

Depending on the length of stay in the building replacement of one or more of the existing lifts may be worth consideration. Replacement of one of the lifts is likely to be in the order of £175,000. The advantage of replacement is that it should be possible to retain any new lifts within the redeveloped building.

LTHW

As the existing burners are relatively new the main area for potential failure of the system are the boilers and distribution pipework. We would recommend that water sampling is carried out throughout the installation to determine the condition of the existing pipework. This work should be done in accordance with BSRIA Pre-commission Cleaning of Pipework Systems. Water treatment may be required to ameliorate any degradation and a filtration system installation to remove any residue.

A complete replacement of the heating pipework installation would be in the order of £500,000. Subject to the findings of the water testing an allowance of £100,000 is suggested for addressing pipework and valve degradation. There are three boilers for the main building with only two required to meet the base load. Replacing one of these boilers would be in the order of £165,000.

The poor performance of the LTHW throughout the building is understood to be more likely due to poor local control. To provide a proper assessment of how this could be improved would require a schematic and layout drawing for the installation including pump duties, valve locations and flow rates. Given the size of the building this would constitute a significant amount of survey work. One likely solution would be to install a means of thermostatic control at each radiator. Where the radiator is exposed this could be a simple TRV valve. Where concealed a TRV with a remote thermostatic head could be installed. A more robust approach would be a local two port valve with remote temperature sensor however this would be significantly more expensive and unlikely to be justified given the likely occupation of the building. On the basis of say 1 radiator per 20m^2 and £100 per point this would be approximately £100,000-150,000 depending on the interventions required to the rest of the installation.

9 Modes of implementation

9.1 Introduction

This aspect is considered briefly in two respects, firstly in terms of strategic site and construction management, and secondly in terms of delivery vehicles or procurement planning. In the first case various alternatives are considered, including refurbishment of the existing buildings whilst remaining in (partial) occupation or through various modes of decant – whether to the proposed adjacent new building, or to temporary accommodation, or into alternative offices elsewhere.

As for procurement it is evident that there may be several options open to the Council in how it might undertake development works itself, or through a variety of possible vehicles involving a development partner, whether through JV, leaseback or disposal.

9.2 Building work strategies

The refurbishment and restoration of the civic centre will involve recladding and associated demolition and drilling, stripping and reinstatement of mechanical and electrical services, reinstatement of architectural finishes and significant concrete repair work.

These operations will generate considerable noise which will tend to reverberate around the concrete frame, and dust will represent a hazard to occupants and the general public.

There are a number of possible modes of implementation including:

1. Refurbish whilst in occupation.
2. Construct ancillary building in adjacent car park and single decant.
3. Decant staff into temporary accommodation (portacabins) in adjacent car park and return upon completion.
4. Decant staff to alternative office accommodation and return.
5. Permanently decant staff into alternative office accommodation.

Option 1 above will most likely be the cheapest in terms of capital cost however it is also likely to be the most disruptive to the occupants. In order to implement this, part of the building would have to be handed to the contractor and work would be carried out within this area, with a buffer zone between the working area and the office area. The contractor would have to plan his work carefully and ensure that building services are maintained in operation at all times. This would incur cost and time penalties. Maintaining the existing services, and installing new, will result in considerable complication. In the first instance a full and detailed survey of the existing services installations would be required to inform the nature of diversionary work and the phasing of the interventions and new installations. The survey work itself would need to be carefully coordinated with periods of shut down to ensure that an accurate representation of the services routing and distribution through the building is recorded. It is conceivable that extensive diversionary work would be required that would end up being redundant. Enabling the vertical distribution of services may also result and in non-optimised use of floor space to enable the new services to be installed whilst the existing are retained in operation.

There is no doubt that this mode would be disruptive to office staff in the remaining part of the building in terms of noise and dust and we would counsel that the implications of this should be explored carefully before going ahead with this option.

Option 2 would involve some disruption to office work, both during construction of the ancillary building and during refurbishment of the existing building. Whilst perhaps unusual in Plymouth, this situation is routine in major cities where high rise blocks are constructed in close proximity to other buildings. For this option, the building contractor would be obliged to take appropriate precautions.

Aside from decanting operations the remaining options listed above should involve little disruption to office staff.

Whichever option is chosen, staff morale will undoubtedly improve once details of new modernised facilities are unveiled.

9.3 Procurement / delivery strategies

There are a number of delivery vehicles that could be considered to progress the Civic Centre project.

The following strategic options for development of the property portfolio could be considered:

- Joint Venture with a developer for the refurbishment of the existing complex and new development on car park site.
- Disposal of the asset to a third party developers with PCC taking a leaseback of part or all of the competed development.
- Disposal of the asset to a developer and relocation to an alternative site.

For each option a number of programme specific factors must be considered. These could include:

- Details of the option considered;
- Advantages and disadvantages, including both financial and non-financial;
- Procurement requirements;
- Ownership and legal governance structure;
- Capital set up costs;
- Revenue funding requirements;
- Likely sources of financing including borrowing and availability;
- Timescales for set up, operation and delivery;
- A risk analysis of the risks to each party.

The final delivery vehicle will ultimately be dictated by the financial viability of the proposals.

10 Appendices

10.1 List entry

Building Name:	Civic Centre	**LBS Number:**	495906
Parish:	Plymouth	**Grade:**	II
District:	Plymouth	**Date Listed:**	21 June 2007
County:	Devon	**Date Delisted:**	
Postcode:		**National Grid Reference:**	SX4768254371

Listing Text:

740-1/0/10098 ARMADA WAY
21-JUN-07 Civic Centre

GV II

Civic Centre (1958-62) by Jellicoe, Ballantyne and Coleridge. In-situ concrete structure with pre-cast aggregate panels. It comprises a fourteen storey slab block on a raised raft foundation which straddles a two storey block to the north and a bridge link to the two storey Council House to the south. The bridge link is elevated on pilotis to create an open courtyard with a reflecting pond, part of the designed landscape of the civic square.
Exterior: The ground floor of the Council House and the Town Clerk's offices, located on the link bridge, are clad in riven-faced slabs of Delabole slate with rubbed bands at floor level and over the lower windows. The link bridge is supported on pilotis faced in red glass mosaic from Murano, Italy. At first floor level, external precast columns of Portland stone support steel windows over stove-enamelled coloured panels. Blank walls are faced with pre-cast storey height cladding panels with exposed aggregate of pinkish-grey Plymouth limestone. The windows are hardwood to the ground floor with metal frames elsewhere. South facing windows throughout the building were originally glazed with anti-sun glass to eliminate glare and were double glazed. The first floor of the Council House is double height and breaks forward on pilotis with a balcony with glazed balustrade overlooking the designed landscape of the civic square.
The tower block uses similar materials to the Council House. The north and south end elevations are divided by vertical strips of windows which are referenced in the butterfly roof. The east and west facades have strong horizontal bands of 432 windows set over granite panels. The windows themselves are modelled, with recessed upper windows glazed in prismatic glass which were intended to give interest and break the uniformity of the building in strong sunlight. Glazing is in 1/4in glass in order to withstand recorded windspeed of up to 100mph. The green granite panels below the windows are also modulated with a slight variation of colour and arranged in a series in a Fibonacci system of harmonic proportions which was intended to symbolise the diversity of activities within the building and alleviate the monotony of what otherwise is a uniform facade.
The building is capped by a `butterfly' roof canopy which appears unsupported when viewed from the ground.
Interior:

Council House: Over the main entrance doors facing the square is a Sicilian marble tablet commemorating the official opening of the building by HRH Elizabeth II on 26 July 1962. The entrance hall is separated from the lobby beyond by a glazed aluminium screen. The entrance hall and the lobby have horizontally banded ash panelling, a chequered black and white marble mosaic floor, and embossed ceiling tiles with Orrefors glass pendant lights, giving a sense of unity to the two areas despite the screen. Internal rectangular columns, clad in Ashburton marble on the long faces and white Sicilian marble on the others, support the upper floor. A series of rooms open off the lobby including a Members' room and five committee rooms named after warships built at the Devonport Dockyard. The largest committee room, the Warspite Room, has a ceiling of waxed Columbian pine slats fixed to plywood panels. One wall of each of the committee rooms was treated and lit for the display of maps and plans. The Members' entrance is approached from the courtyard below the Town Clerk's office and leads to a central lobby. A mural painting by Mary Adshead on the east wall depicts incidents in Plymouth's history. Elsewhere walls are panelled in courbaril, a South American wood. A lift provides access to the basement carpark and 1st floor.
The principal staircase rises opposite the main entrance doors. It is cantilevered from a central beam of reinforced concrete. The treads, risers and moulded handrail are of afrormosia, a West African wood, and it has a metal balustrade of bronze and stainless steel with panels of toughened plate glass. Below the stairwell there is a polished aluminium screen on three sides with panels of glass engraved by John Hutton with abstract and figurative designs reflecting Plymouth's links with the sea.
The first floor acts as a hub with the Council Chamber, Reception Room, Lord Mayor's suite and a door through to the Town Clerk's offices all opening off it. It has a geometrical ceiling with tulip-shaped vinyl panels which diffuse natural light set between ribs. At night they are lit by concealed fluorescent tubes. The walls are panelled in daniellia, a West African wood. The doors are faced in raised pyramids in courbaril veneer edged with silver bronze. A plaster representation of the city arms by David Weeks is hung above a built-in display cabinet for the city plate which is in turn flanked on either side by doors to the Council Chamber. The Council Chamber is designed to seat 90 members on five sides of an octagon so that all members are within a set minimum distance from the Lord Mayor. The seating for the Officers of the Council is in recesses below the public gallery. Tables and fixed seating is of Burma teak with lacquered brass metalwork. The acoustics have been carefully designed by Hope Bagenal and wall surfaces are kept to a minimum with reflectors provided by the canopy over the Lord Mayor and by the stepped shaping of the fibrous plaster ceiling over the gallery. Absorbant surfaces are provided by fabric covered frames set over an air space behind with inset oil paintings by Hans Tisdall on an abstract heraldic theme reflecting Plymouth's history. Elsewhere at low level acoustic frames are masked by slender vertical ribs of afrormosia which act to further diffuse sound.
The reception room is directly opposite the Council Chamber and faces east with a full length external balcony. The east wall, leading out to the balcony, is fully glazed. The remainder of the room has panelling of quartered African elm on the walls and a strip floor of muhuhu, an East African wood. There is a musicians' gallery over the entrance doors to the landing. The room retains its original lighting of sixteen glassware shades and eight cylindrical metal fittings supported on a steel ring. Panelling in the Lord Mayor's suite is Burmese teak.
Tower: The principal public space is the entrance hall. Now carpeted, it originally had red and black chequerboard mosaic paving of alternating panels of red Verona and dark-coloured Levant marbles in a bed of terrazzo. This may survive beneath the carpeting. Four columns faced with polished Ashburton marble support a cantilevered mezzanine gallery although these have been refaced at gallery level.

The gallery fascia is veneered in figured avodire, a West African wood. The wood and glass gallery balustrade has been replaced. The entrance hall underwent a major refurbishment in 1995. This included the insertion of a spiral stair on the north side of the hall to provide access between the ground and gallery floors and alterations to the entrance. The original freestanding information kiosk has been replaced by a continuous reception desk along the west side of the hall. Lift halls throughout the building are panelled with zebrano (a figured wood from the Cameroons) veneers. The lift doors have a distinctive stove-enamelled finish in a white and dark green geometric pattern which was designed to prevent people walking into the doors as they were closing. The stair and lift are located in concrete fireproof enclosures at either end of the building and formerly were separated from the central office with fusible link shutters. The office accommodation originally consisted of a large open plan central space subdivided by demountable partitions. The north and south bays provided permanent office accommodation for the chief officers and their deputies, in the south bays, and for specialist functions such as plan printing and dark rooms in the north bay. This plan has been largely altered throughout the building with the insertion of central corridors and the creation of fixed partitions within the central office space although the original layout can be discerned on the 3rd, 6th, 9th and part of the 4th floor. The top floor of the tower, underneath the butterfly roof was originally designed as a public restaurant affording views over Plymouth from the open viewing platform. A separate room formerly served as the Lord Mayor's viewing and banqueting hall. This floor has now been partly converted for office accommodation. Provision for plant and window cleaning cradles is made in a separate block below the canopy.
The north block, which formerly housed the Housing and Children's Departments has a separate, east entrance off the square which gave access to a payment and enquiry counter, now extended. A stair in the lobby of this block was removed for security reasons and the block has been considerably extended into a former courtyard area to the rear of the building. This has resulted in the loss of one of a pair of external spiral staircases which provide access from the raised deck to the car park below.
The building was originally heated by a Thermal Storage Plant and features such as heat convectors below windows, Venetian blinds and treated glazing to reduce sun were designed in to allow temperature control within the building.

History:
The Civic Centre lies at the southern end of the area which formed the focus of Patrick Abercrombie's `Plan for Plymouth', an ambitious plan for the re-building of Plymouth city centre following the devastating bombing of WWII to create a great Beaux-Arts city. The Civic Centre lies within an area zoned for civic function, near the former Guildhall. The design of the new civic area was masterminded by HJW Stirling who was appointed city architect in 1951. Stirling's revised plans won the Grand Prix d'Honneur at the National Festival of Architecture and Monumental Art in Paris in 1956. In February 1957, Stirling's scheme was approved by the City Council but by May 1957 the architects Jellicoe, Ballantyne & Colleridge had been appointed to `complete' the detail of Stirling's design as his office had more work than it could cope with.
Geoffrey Jellicoe is especially known for his garden design and landscaping work, but was recognised in the 1950s as an important architect with a specialism in housing and public offices. Records suggest that Jellicoe and his partner Alan Ballantyne were given a fairly free hand to redesign the buildings in detail, importantly whilst retaining and interpreting `the spirit' of Stirling's general layout and concept. The quality of their detailing in comparison with contemporary buildings in Plymouth shows the difference between local work and that of an internationally respected practice. The acoustician for the project was Hope Bagenal who designed the Festival Hall.
Construction was undertaken in three phases and commenced in 1958 with work on the foundations and substructure commencing in August 1958. On the 21st March, 1962, the 21st anniversary of the destruction of the old municipal offices, the fully furnished new Council House was formally handed over to the Corporation and the building was officially opened by the Queen in the same year.
As is to be expected in a building expressing civic function and celebrating local pride, the Civic Centre brings together the work of several noteworthy artists, particularly in the Council House, including John Hutton (1906-1978), Mary Adshead (1904-1995), and Hans Tisdall (1910-1997) although here the commissioned artwork contributes to an unusually homogeneous composition.

Summary of Importance:
Plymouth Civic Centre is a particularly complete and coherent civic centre which compares well with others of its date including Newcastle Civic Centre, Newcastle-upon-Tyne (listed grade II*) and New County Hall, Truro (listed grade II). In its careful massing and position it stands as a landmark within the city centre and embodies the hope and aspirations of a newly confident City Council following the devastation of the Second World War serving as a striking testimony to the spirit which guided the rebuilding of the city. Nowhere is this better reflected than in the Council House with its collection of artworks of rare quality and cohesion themed around Plymouth's history.

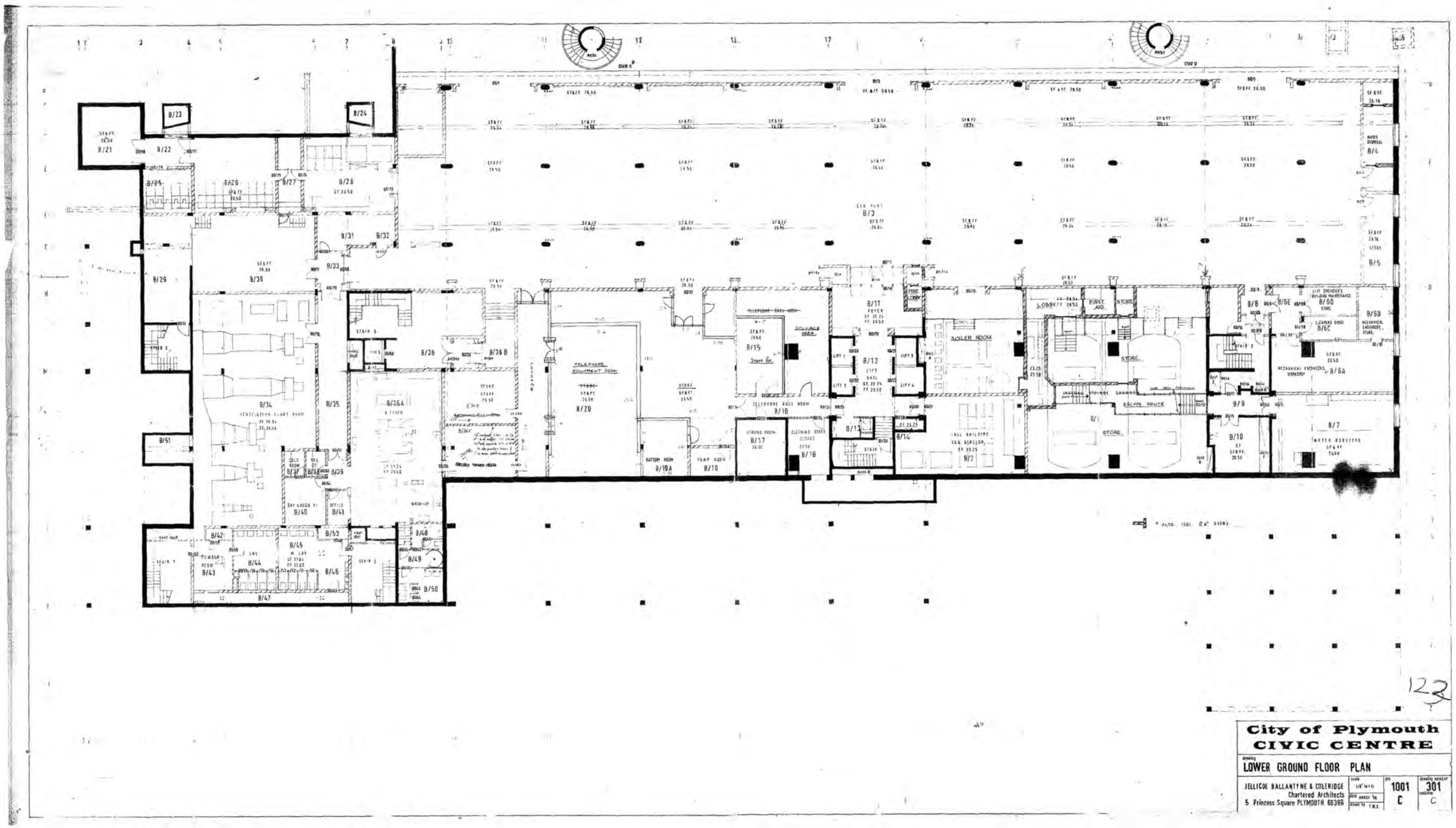
Sources:
The Architect & Building News, 6 May 1954. p.513
Architectural Review, Dec 1962. p.435-437
Plymouth Guide c1967
The Builder, 15 October 1954. p.612-613
AR May 1959. p.827
Bulletin 37, Dec 1964. pub (BICC)
English Heritage Post 1939 Listing Programme Stage 1 Report: Public Buildings (1940-1980)
The Council House and Municipal Offices. Undated leaflet published by Clarke, Doble & Brendon Ltd, Plymouth

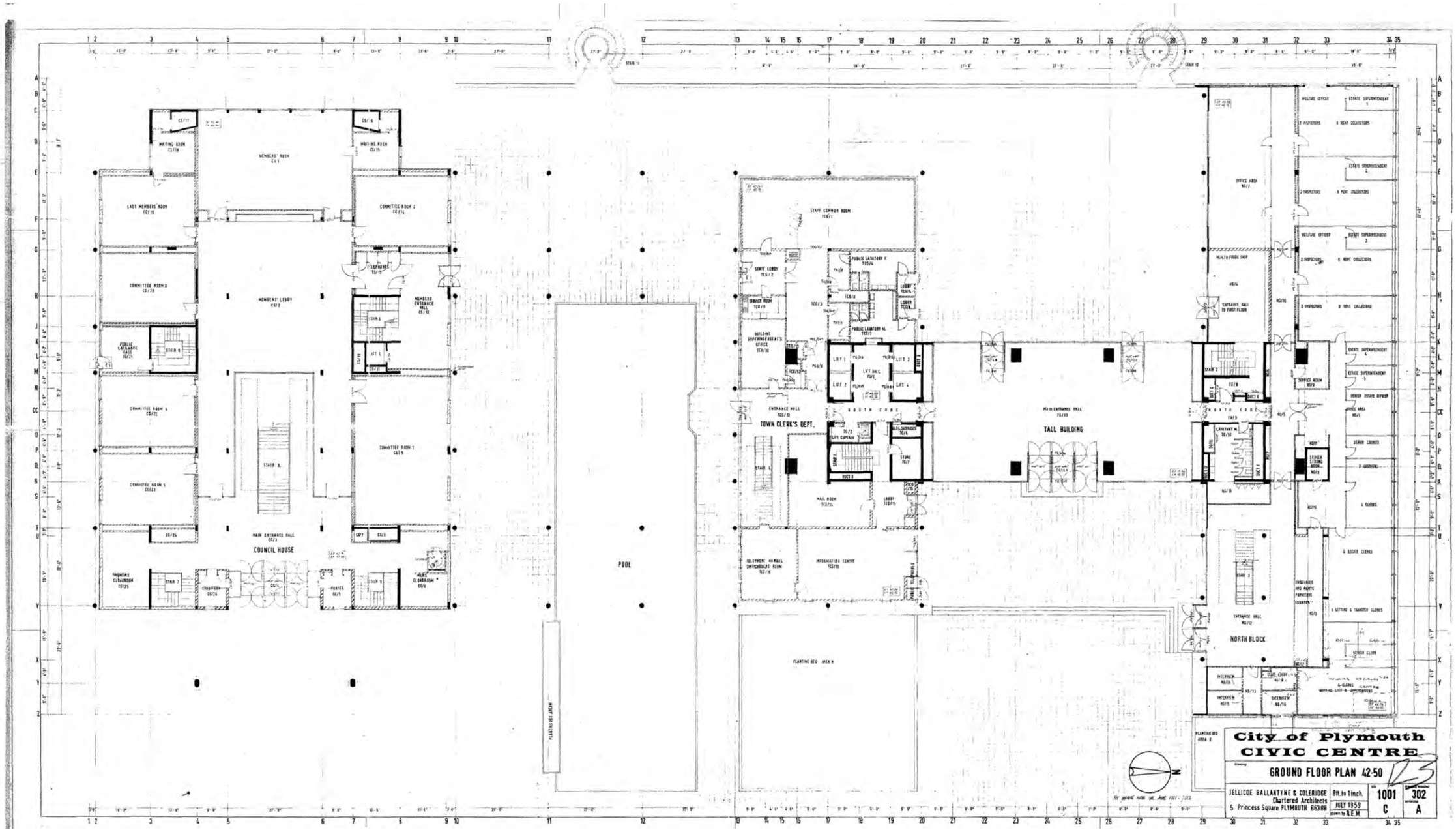
10.2 References

Selected references consulted in the preparation of this report.

- A Plan for Plymouth, J. Paton Watson and P. Abercrombie, 1943
- The Council House and Municipal Offices, Plymouth City Council, c. 1962
- City of Plymouth, The Municipal Offices, Clarke, Doble & Brendon Ltd, c.1962
- The Architect & Building News, 6 May 1954. p.513
- Architectural Review, Dec 1962. p.435-437
- The Builder, 15 October 1954. p.612-613
- Architectural Review, May 1959. p.827
- Planning Policy Guidance 15 : Planning and the historic environment, HMSO 1994
- A Vision for Plymouth, David Mackay MBM Architects, 2003
- English Heritage Post 1939 Listing Programme Stage 1 Report: Public Buildings (1940-1980)
- Conservation Principles – Policies and guidance for the sustainable management of the historic environment, English Heritage, 2008
- The Architecture of the Plan for Plymouth, Jeremy Gould, 2009
- LDF – City Centre and University Area Action Plan, Plymouth City Council, 2009

10.3 Selected original drawings


City of Plymouth
CIVIC CENTRE
LOWER GROUND FLOOR PLAN
JELLICOE BALLANTYNE & COLERIDGE
Chartered Architects
5 Princess Square PLYMOUTH
1001
C
301
C
BOILER ROOM
TELEPHONE EQUIPMENT ROOM
LOBBY
FIRST AID
STORE
ESCAPE ROUTE
STORAGE AREA


COUNCIL HOUSE
TOWN CLERK'S DEPT.
TALL BUILDING
NORTH BLOCK
POOL
City of Plymouth
CIVIC CENTRE
GROUND FLOOR PLAN 42·50
JELLICOE BALLANTYNE & COLERIDGE
Chartered Architects
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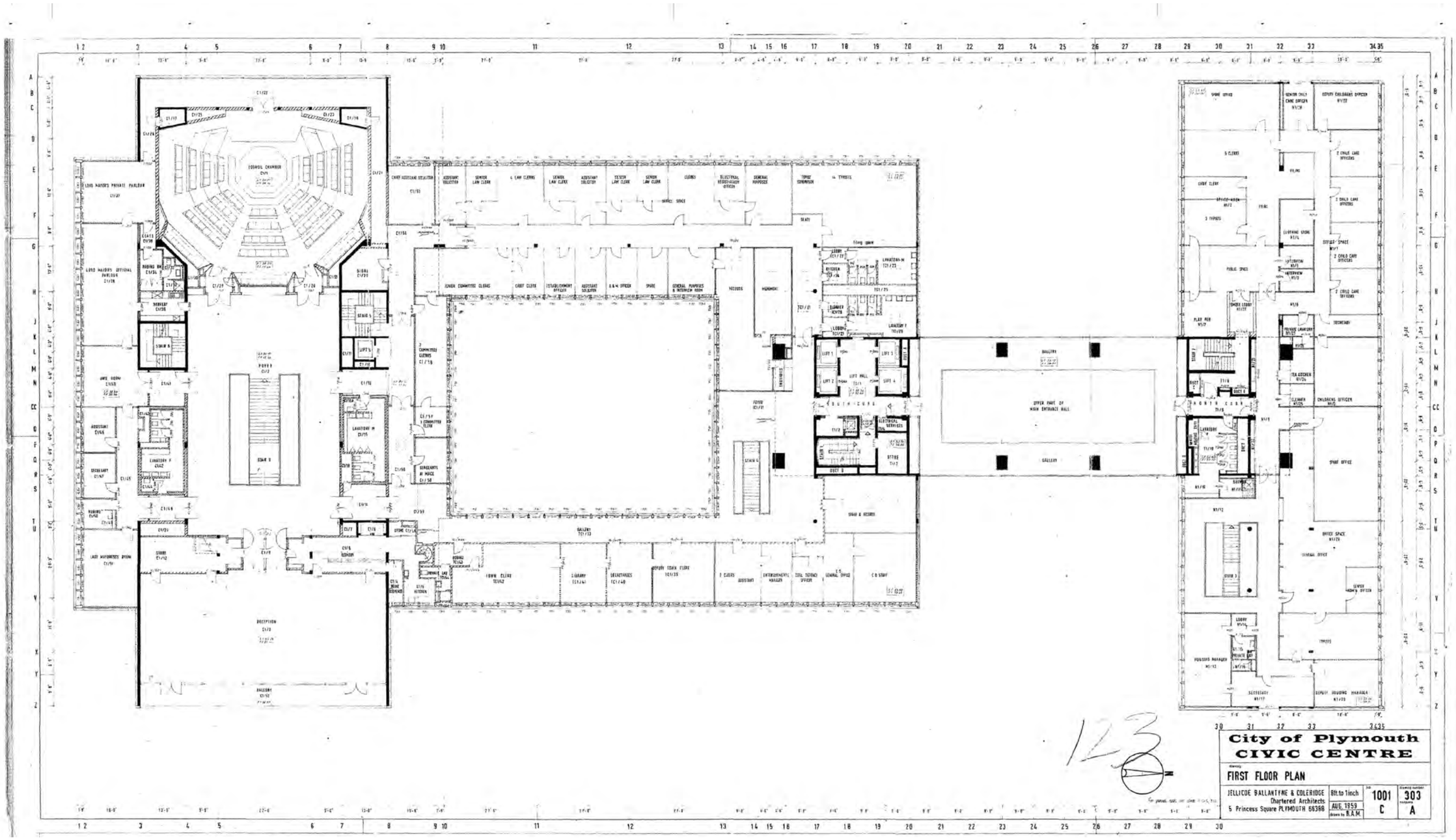
JULY 1959
1001
C
302
A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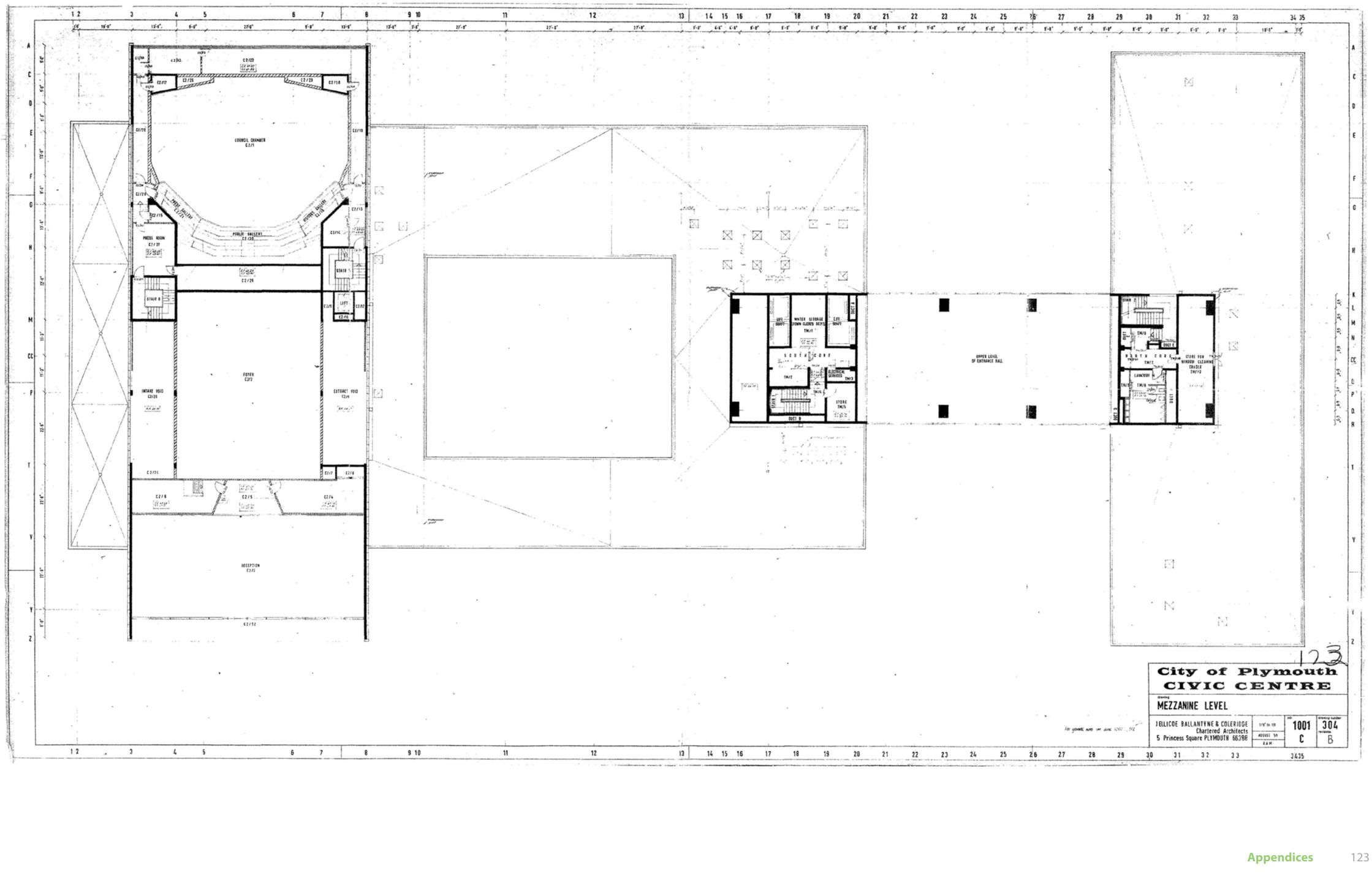
LORD MAYOR'S PRIVATE PARLOUR
LORD MAYORS OFFICIAL PARLOUR
RECEPTION
BALCONY
GALLERY
UPPER PART OF MAIN ENTRANCE HALL
TOWN CLERK
LIBRARY
DEPUTY TOWN CLERK
SPARE & RESERVE
LIFT HALL
SOUTH CORE
NORTH CORE
STAIR 1
STAIR 2
STAIR 3
STAIR 4
STAIR 5
STAIR 6
STAIR 7
STAIR 8
City of Plymouth
CIVIC CENTRE
FIRST FLOOR PLAN
JELLICOE BALLANTYNE & COLERIDGE
Chartered Architects
5 Princess Square PLYMOUTH 66366
8ft.to 1inch
AUG. 1959
drawn by R.A.M.
1001
C
303
A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C2/1
PUBLIC GALLERY
C2/28
PRESS ROOM
C2/27
STAIR 1
STAIR 2
LIFT
C2/29
FOYER
C2/2
INTAKE VOID
C2/20
EXTRACT VOID
C2/9
RECEPTION
C2/31
C2/32
C2/6
C2/5
C2/4
C2/7
C2/8
C2/7A
C2/10
C2/11
C2/12
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C2/15
C2/16
C2/17
C2/18
C2/19
C2/21
C2/22
C2/23
C2/24
C2/25
C2/26
WATER STORAGE TOWN CLERKS DEPT
LIFT SHAFT
SOUTH CORE
ELECTRICAL SERVICES
STORE
DUCT B
UPPER LEVEL OF ENTRANCE HALL
NORTH CORE
LAVATORY
STORE FOR WINDOW CLEANING CRADLE
DUCT A
DUCT C
City of Plymouth
CIVIC CENTRE
drawing
MEZZANINE LEVEL
JELLICOE BALLANTYNE & COLERIDGE
Chartered Architects
5 Princess Square PLYMOUTH 66396
1/16" to 1ft
AUGUST '95
R.A.M.
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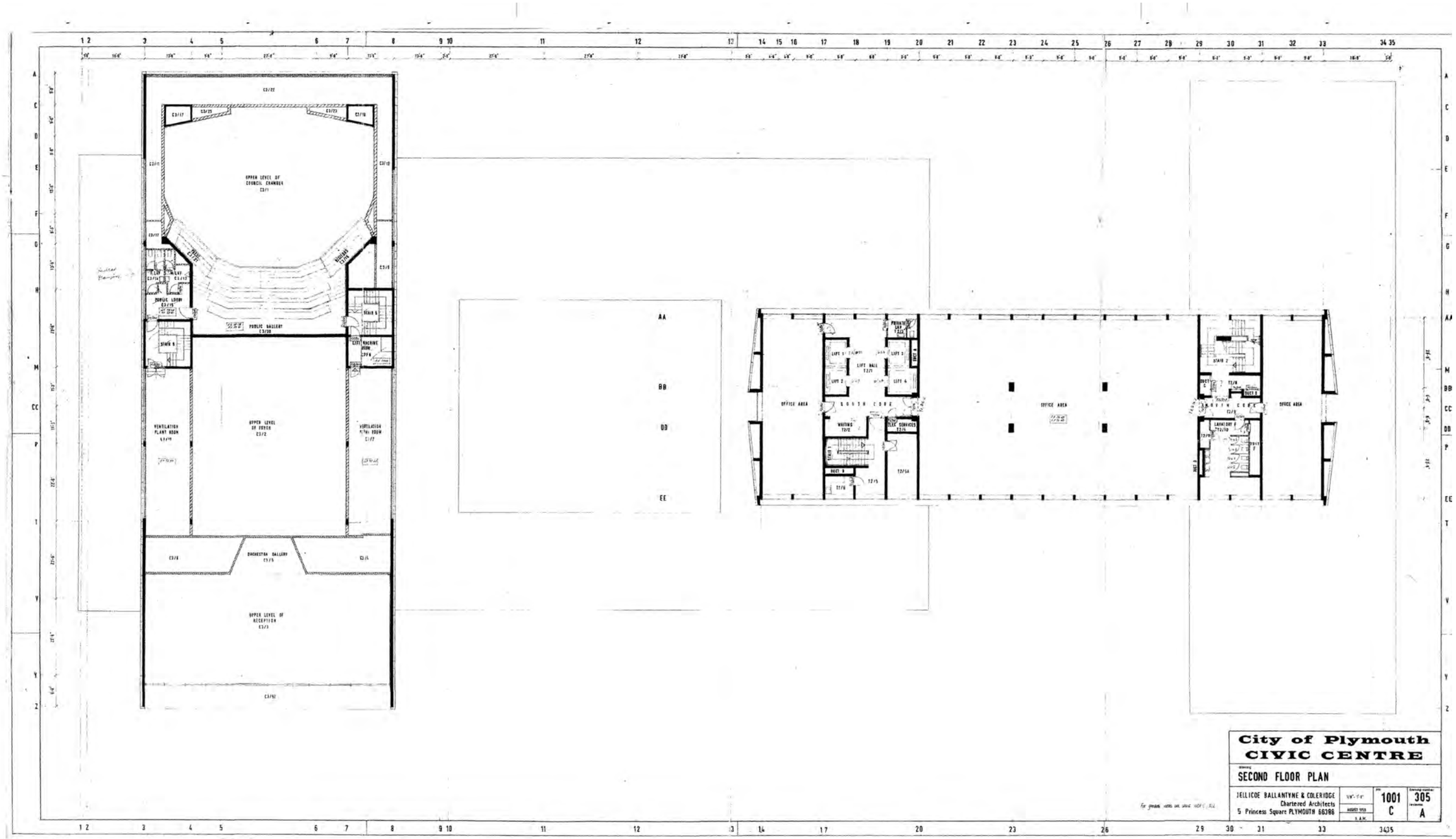
C
drawing number
304
revisions
B
123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PUBLIC GALLERY C3/20
VENTILATION PLANT ROOM C3/19
UPPER LEVEL OF DECK C3/2
VENTILATION PLANT ROOM C3/17
ORCHESTRA GALLERY C3/5
UPPER LEVEL OF RECEPTION C3/3
OFFICE AREA
SOUTH CORE
WAITING T2/2
ELEC SERVICES T2/4
OFFICE AREA
OFFICE AREA
NORTH CORE
OFFICE AREA
City of Plymouth
CIVIC CENTRE
SECOND FLOOR PLAN
JELLICOE BALLANTYNE & COLERIDGE
Chartered Architects
5 Princess Square PLYMOUTH 66388
1001
C
305
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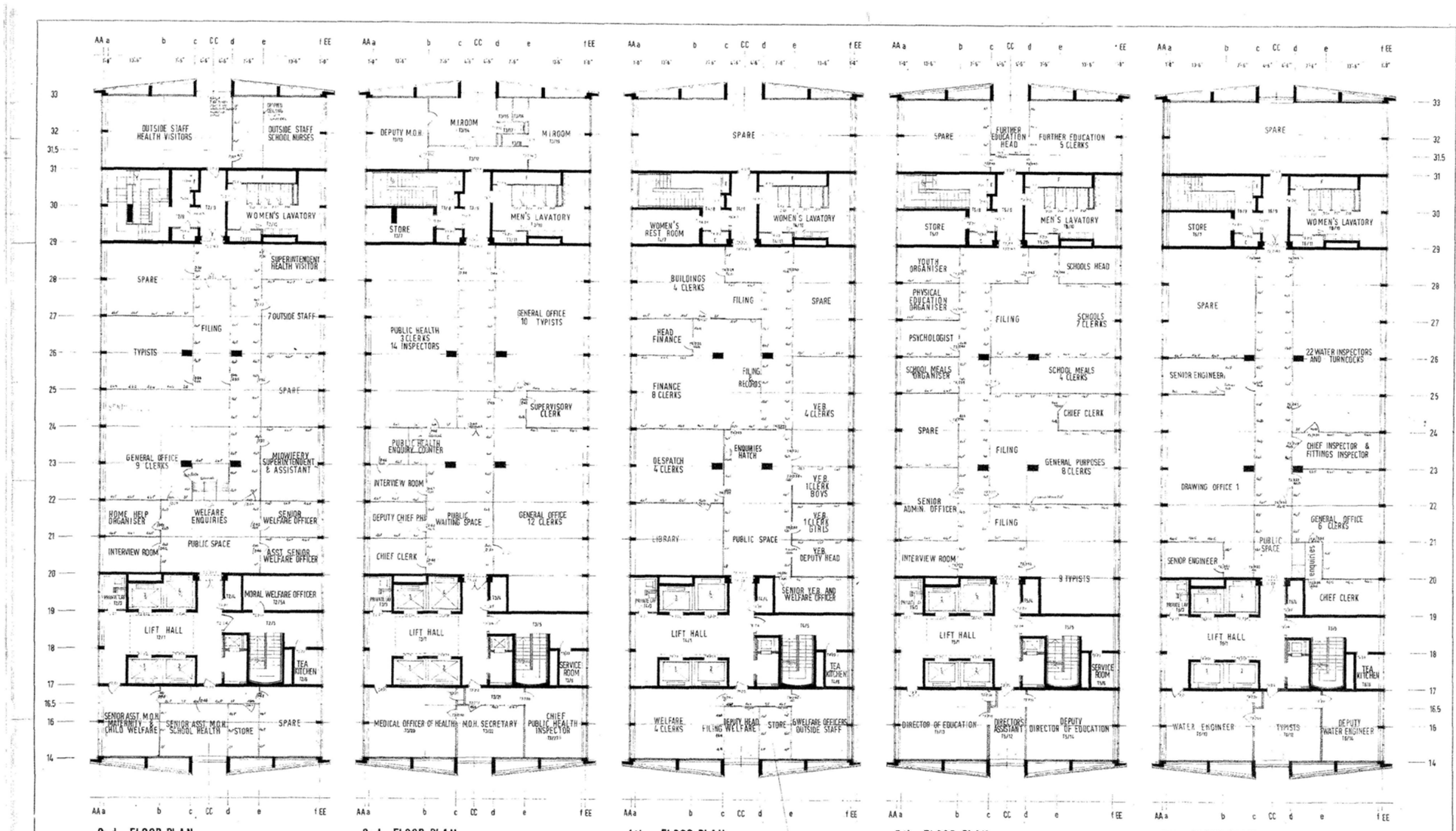

23 5 61 C panel types added to all floor plans
6 12 50 6th floor added
23 9 60 2nd to 5th floors - partitioning layouts added.

123

City of Plymouth
CIVIC CENTRE

drawing: TALL BUILDING
LAYOUTS OF PARTITIONING 2nd to 6th FLOOR PLANS

JELLICOE BALLANTYNE & COLERIDGE CHARTERED ARCHITECTS
9 PRINCESS GARDENS, PLYMOUTH TELEPHONE PLYMOUTH 66244

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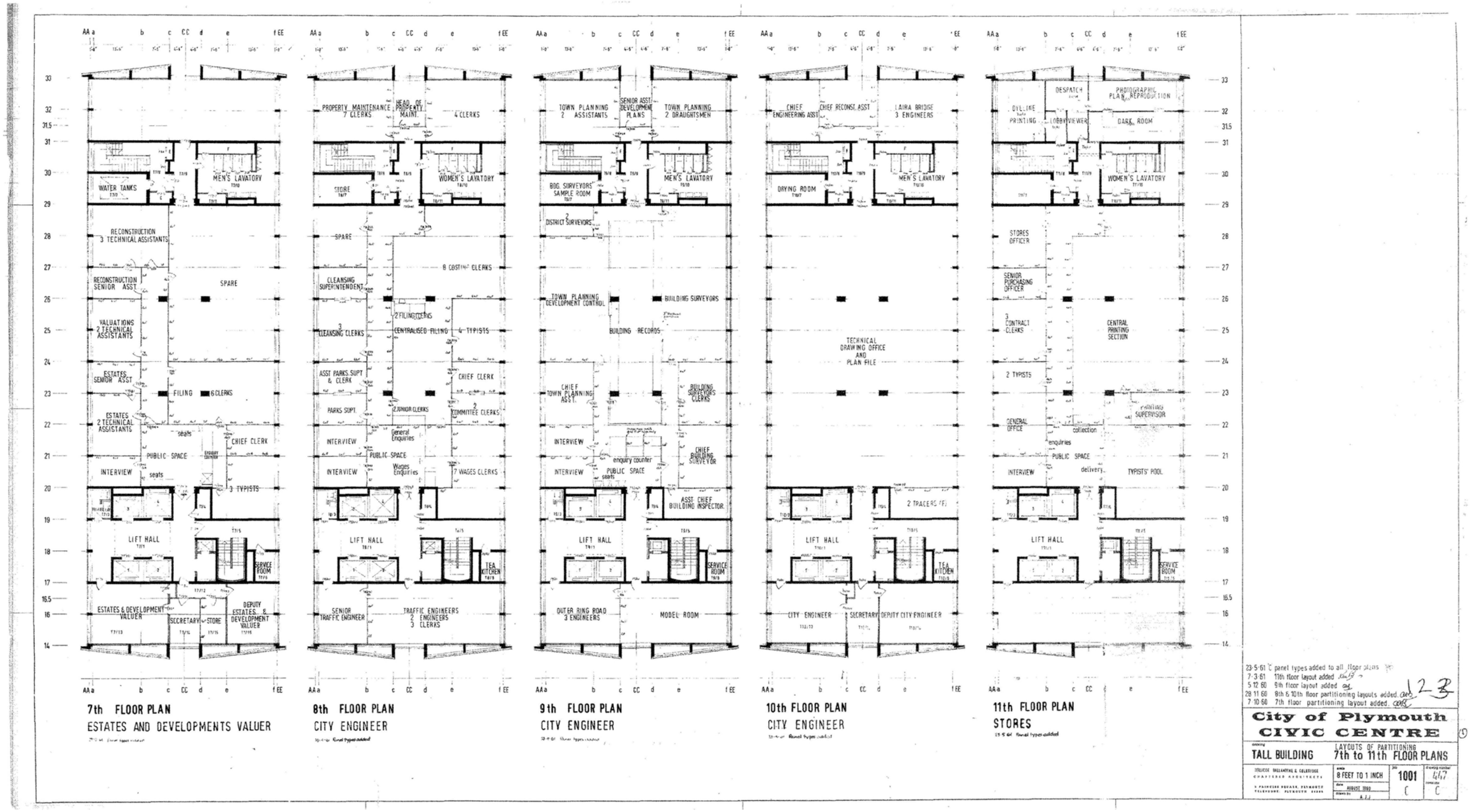
drawn by: A.J.J.

job: 1001 C
drawing number: 436 C



7th FLOOR PLAN
ESTATES AND DEVELOPMENTS VALUER

8th FLOOR PLAN
CITY ENGINEER

9th FLOOR PLAN
CITY ENGINEER

10th FLOOR PLAN
CITY ENGINEER

11th FLOOR PLAN
STORES

23-5-61 C panel types added to all floor plans
7-3-61 11th floor layout added
5-12-60 9th floor layout added
28-11-60 8th & 10th floor partitioning layouts added
7-10-60 7th floor partitioning layout added.

City of Plymouth
CIVIC CENTRE

drawing: TALL BUILDING
LAYOUTS OF PARTITIONING 7th to 11th FLOOR PLANS

ELLICOE BALLANTYNE & COLERIDGE CHARTERED ARCHITECTS
5 PRINCESS SQUARE, PLYMOUTH TELEPHONE PLYMOUTH 65565

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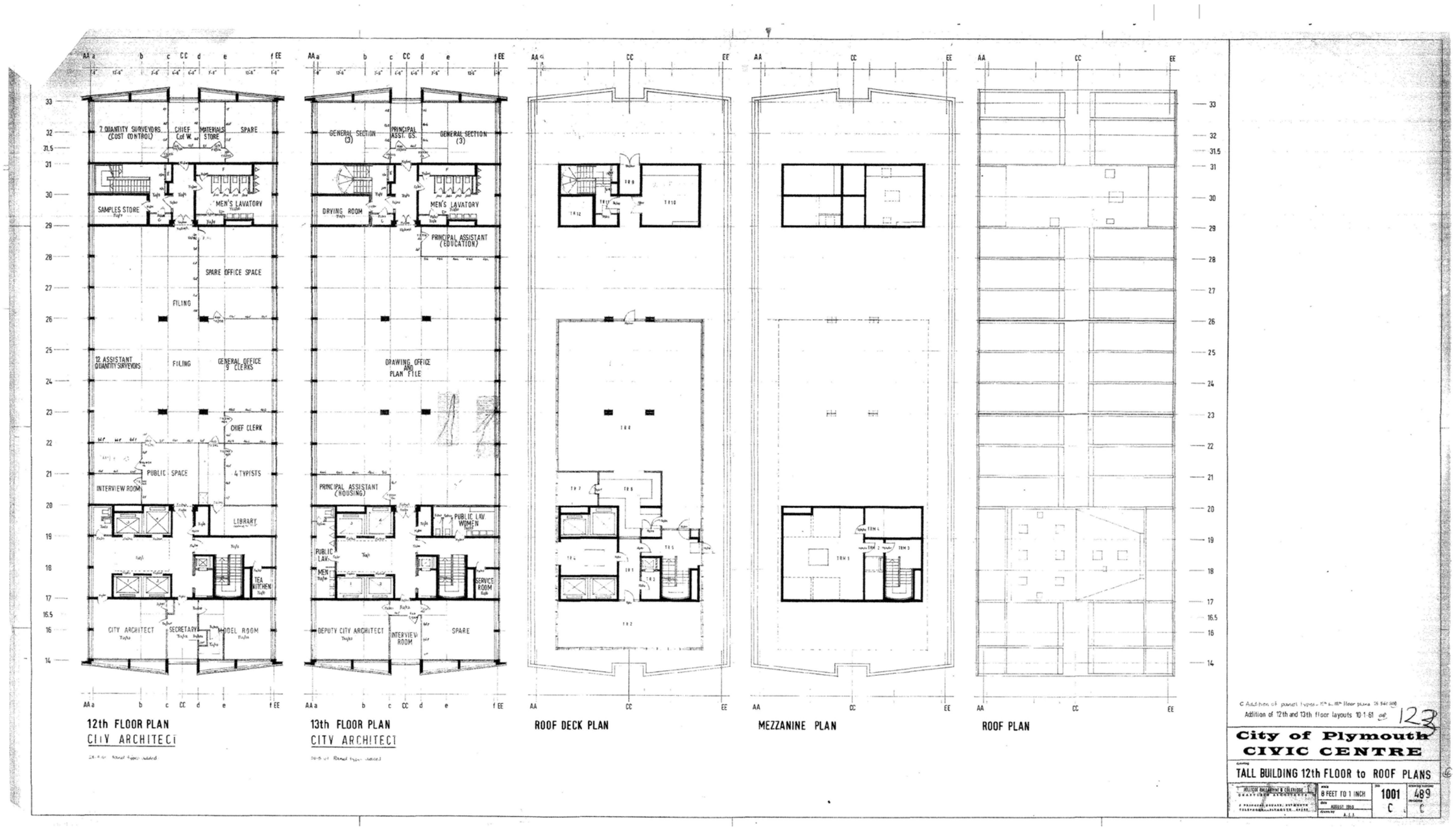
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MATERIALS STORE
SPARE
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MEN'S LAVATORY
SPARE OFFICE SPACE
FILING
12 ASSISTANT QUANTITY SURVEYORS
FILING
GENERAL OFFICE 9 CLERKS
CHIEF CLERK
PUBLIC SPACE
4 TYPISTS
INTERVIEW ROOM
LIBRARY
TEA KITCHEN
CITY ARCHITECT
SECRETARY
MODEL ROOM
GENERAL SECTION (3)
PRINCIPAL ASST. (S).
GENERAL SECTION (3)
DRYING ROOM
MEN'S LAVATORY
PRINCIPAL ASSISTANT (EDUCATION)
DRAWING OFFICE AND PLAN FILE
PRINCIPAL ASSISTANT (HOUSING)
PUBLIC LAV WOMEN
PUBLIC LAV.
MEN
SERVICE ROOM
DEPUTY CITY ARCHITECT
INTERVIEW ROOM
SPARE
12th FLOOR PLAN
CITY ARCHITECT
13th FLOOR PLAN
CITY ARCHITECT
ROOF DECK PLAN
MEZZANINE PLAN
ROOF PLAN
City of Plymouth
CIVIC CENTRE
TALL BUILDING 12th FLOOR to ROOF PLANS
8 FEET TO 1 INCH
1001
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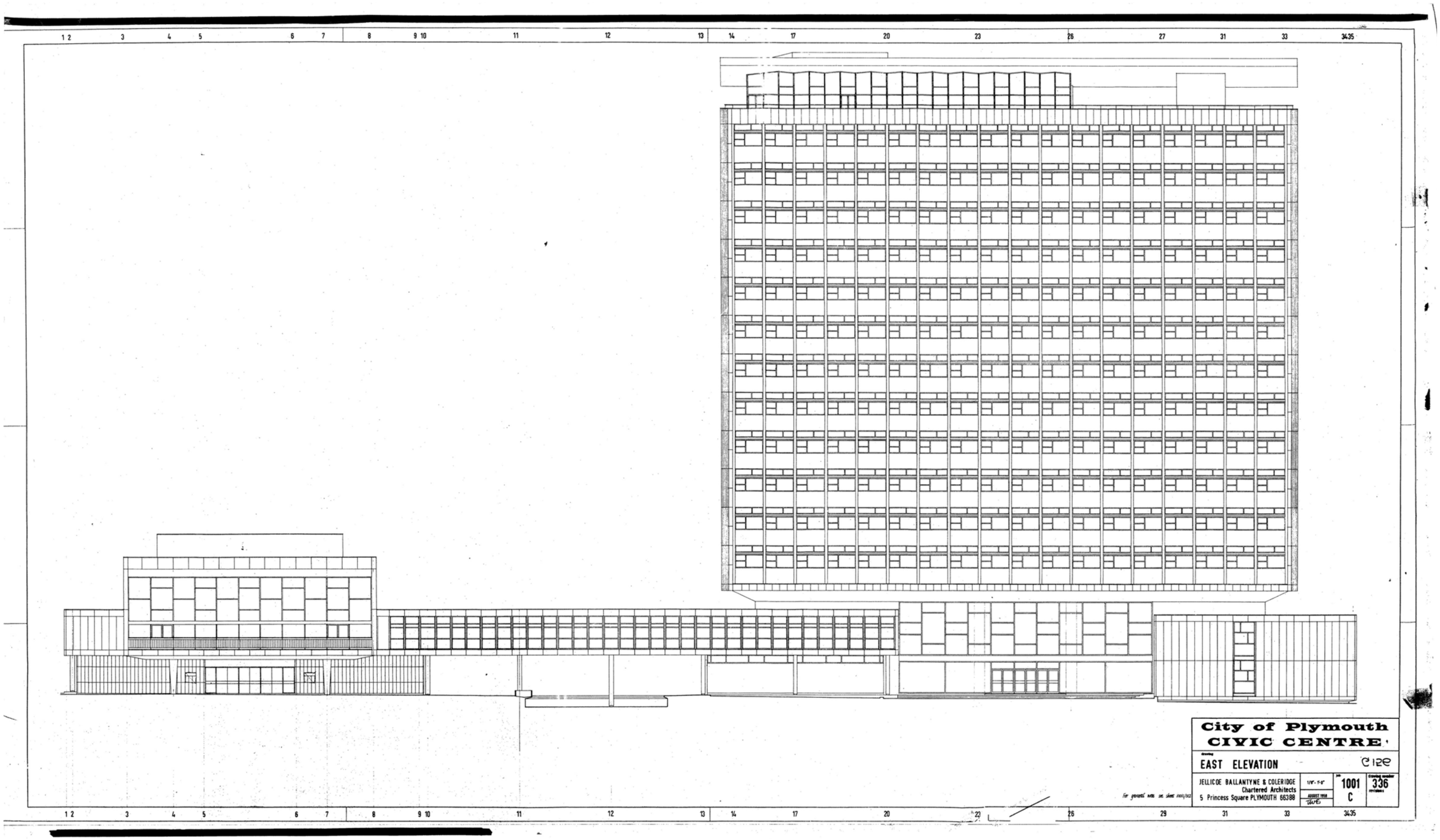
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Size
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Chartered Architects
5 Princess Square PLYMOUTH 66388
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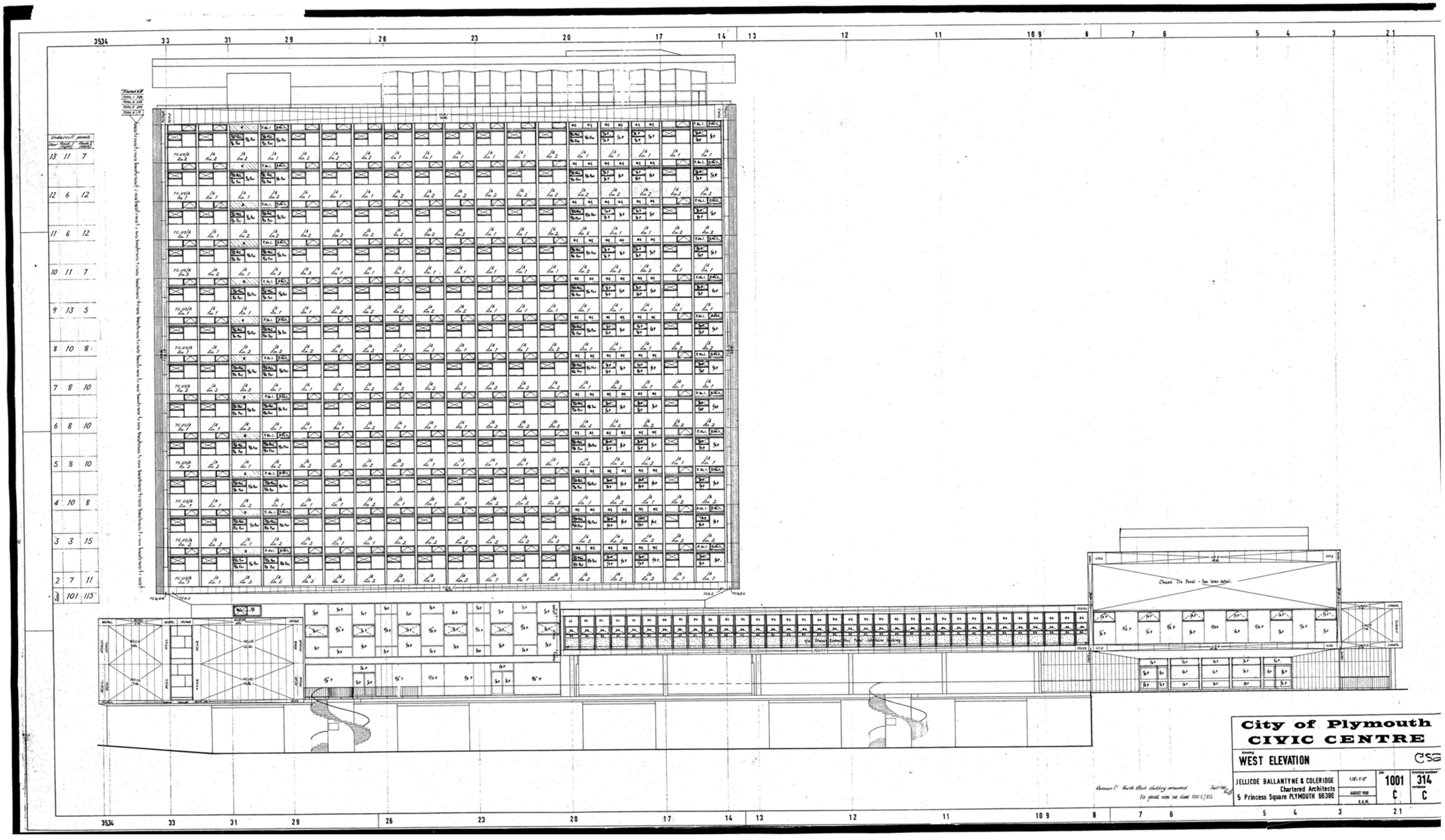
City of Plymouth
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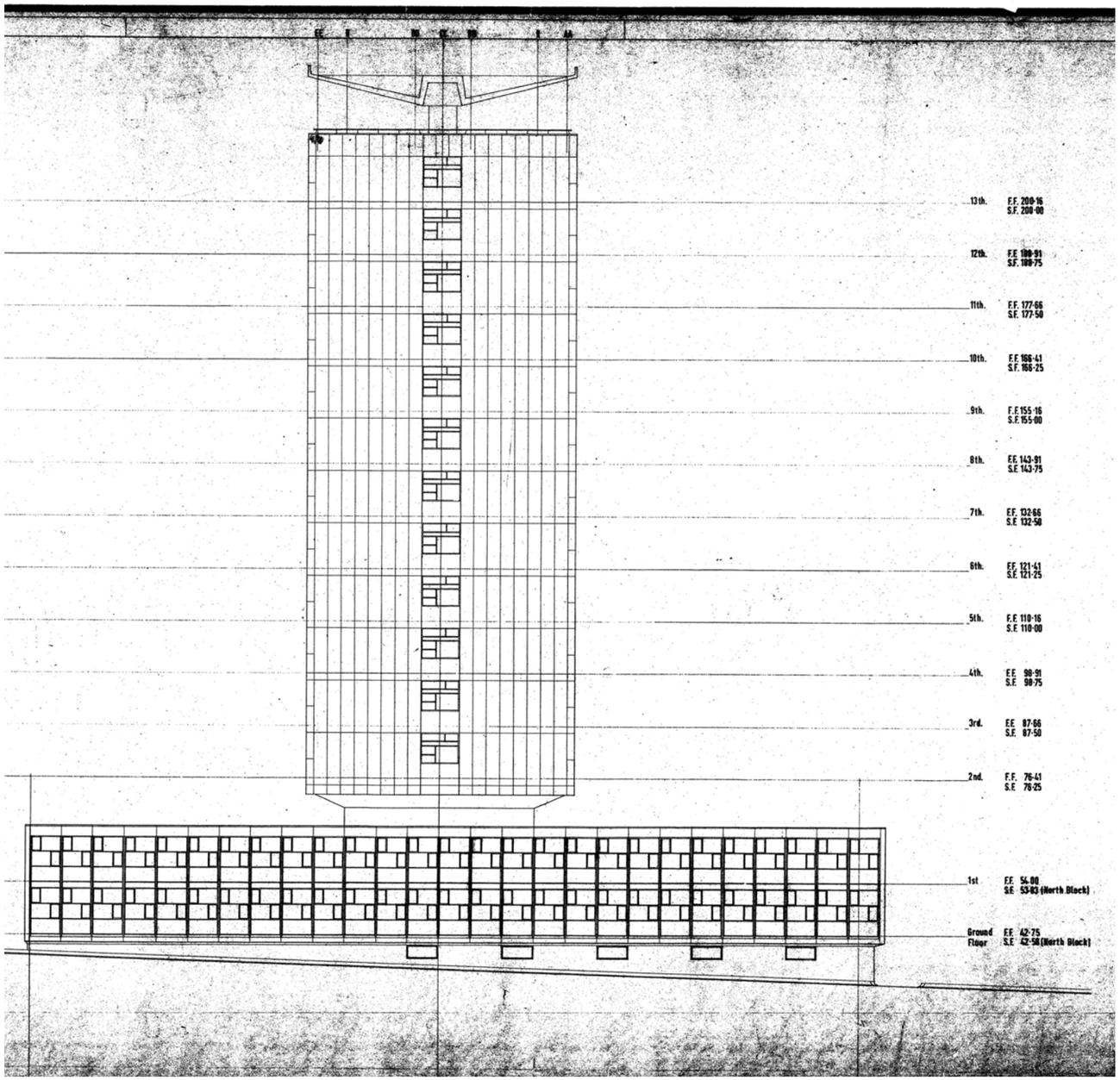
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9th. F.F. 155·16 S.F. 155·00
8th. F.F. 143·91 S.F. 143·75
7th. F.F. 132·66 S.F. 132·50
6th. F.F. 121·41 S.F. 121·25
5th. F.F. 110·16 S.F. 110·00
4th. F.F. 98·91 S.F. 98·75
3rd. F.F. 87·66 S.F. 87·50
2nd. F.F. 76·41 S.F. 76·25
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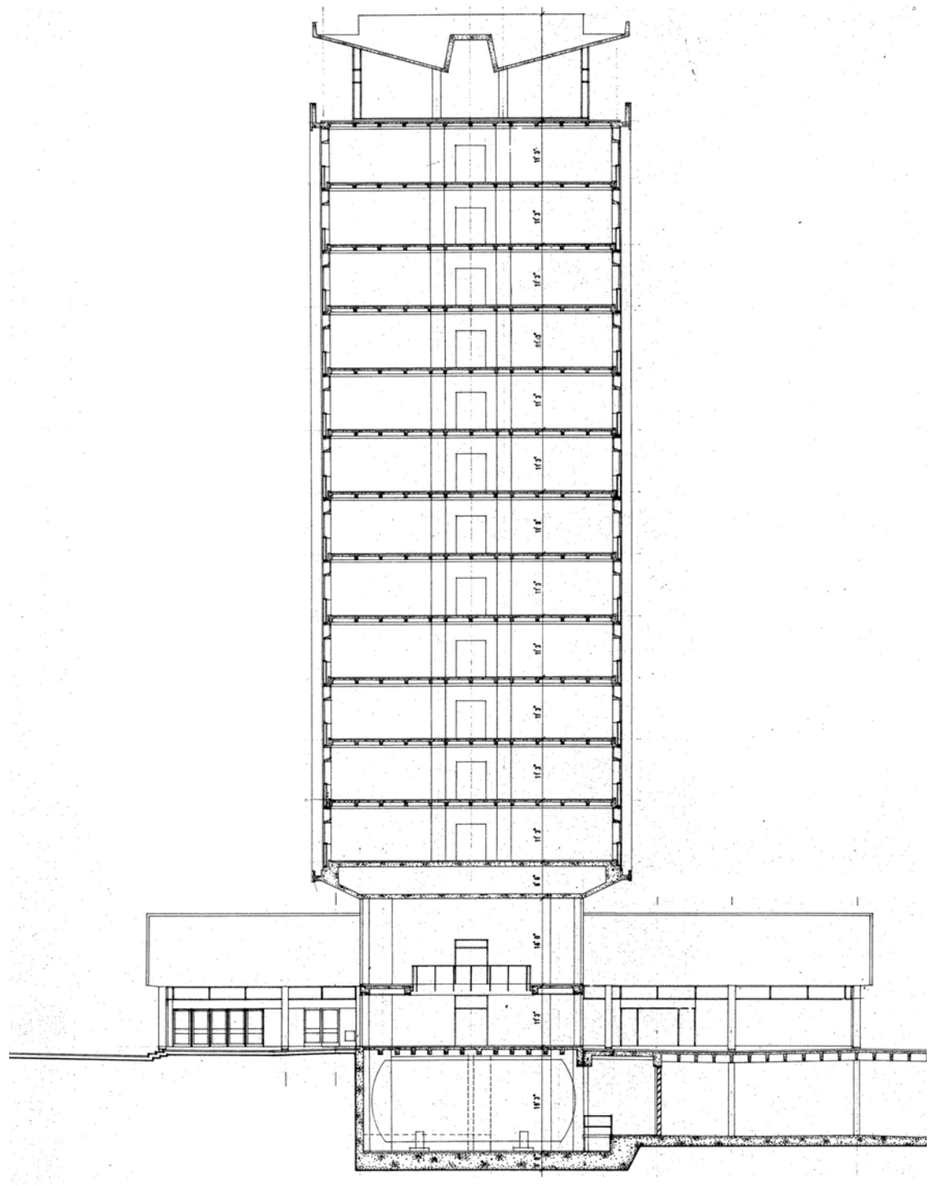
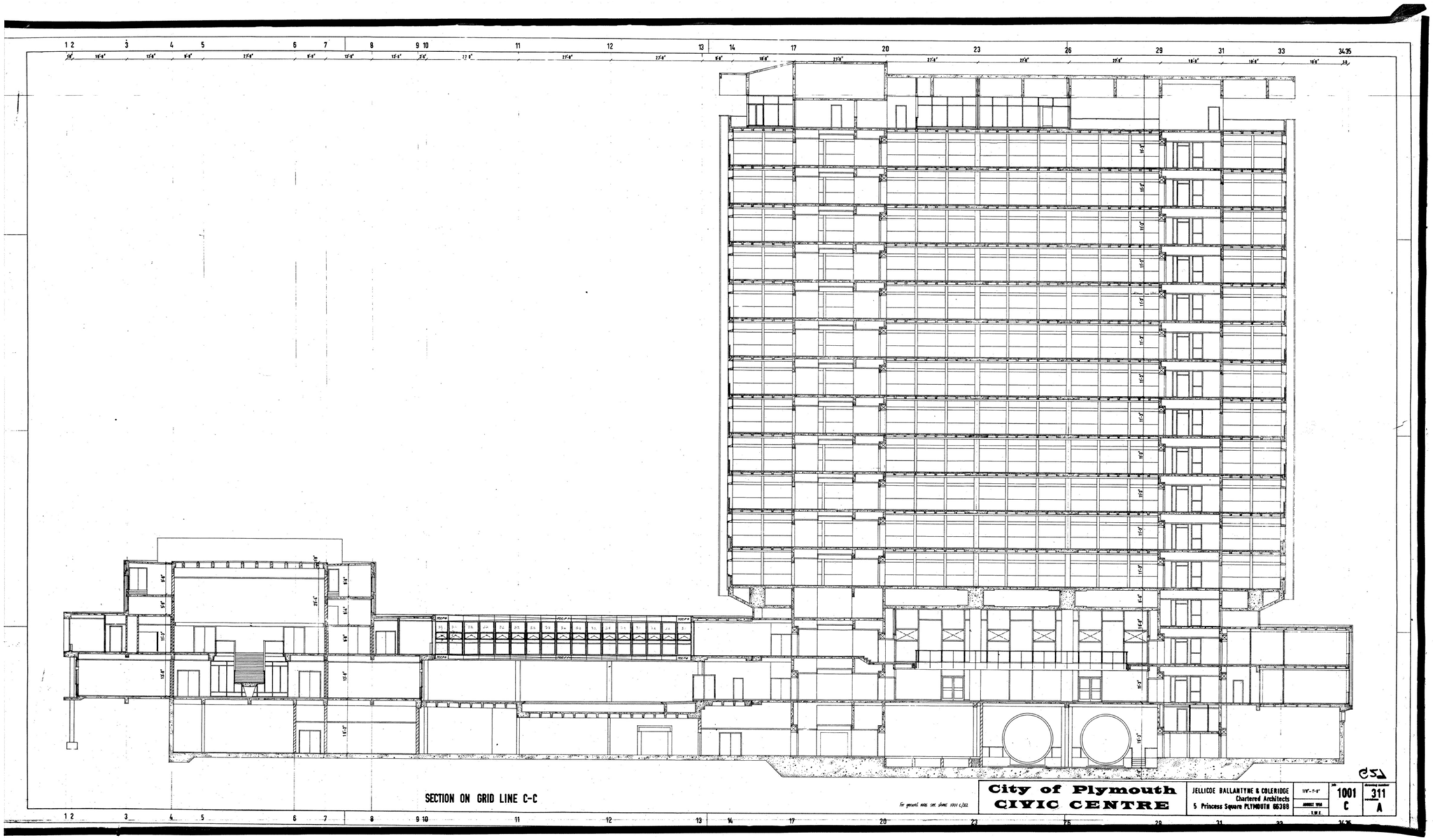
Ground Floor F.F. 42·75 S.F. 42·58 (North Block)

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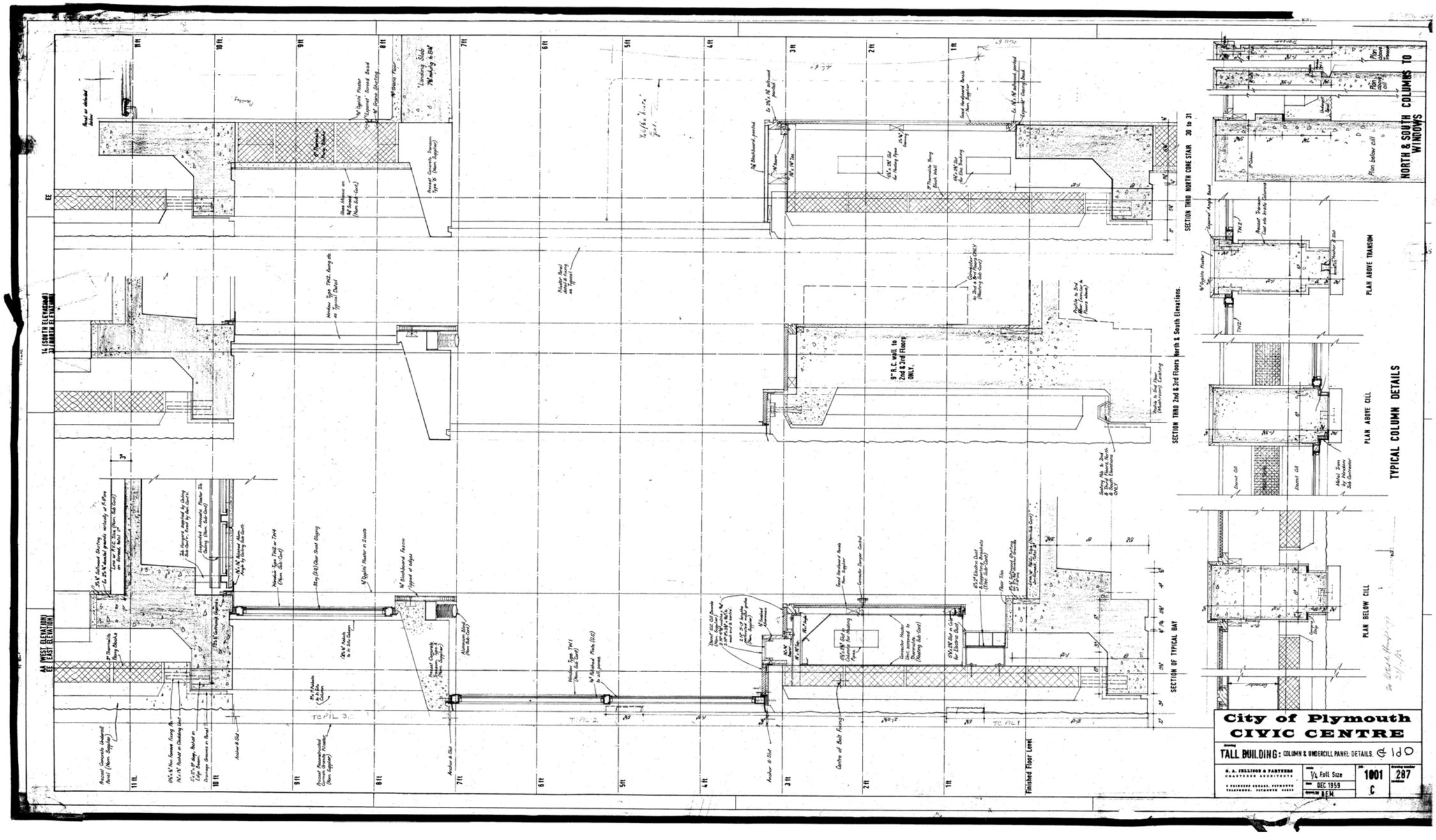
JELLICOE BALLANTYNE & COLERIDGE
Chartered Architects
5 Princess Square PLYMOUTH 66388
1001
C
311
A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SECTION THRO 2nd & 3rd Floors North & South Elevations.
SECTION OF TYPICAL BAY
NORTH & SOUTH COLUMNS TO WINDOWS
PLAN ABOVE TRANSOM
PLAN ABOVE CILL
PLAN BELOW CILL
TYPICAL COLUMN DETAILS
City of Plymouth
CIVIC CENTRE
TALL BUILDING: COLUMN & UNDERCILL PANEL DETAILS. @ 1d0
G. A. JELLICOE & PARTNERS
1/4 Full Size
DEC 1959
1001
C
287
Finished Floor Level

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Textphone: 01793 414878
E-mail: customers@english-heritage.org.uk