



SOUTH GEORGIAN DUBLIN TOWNHOUSE RE-USE GUIDANCE DOCUMENT



Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council

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Guidance prepared by Shaffrey Architects

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FOREWORD

The Georgian squares, streets and townhouses of Dublin are internationally renowned, and form part of the unique heritage and identity of our city. In recent years there has been an increasing awareness of the need to increase residential occupancy in the city particularly in under-used upper floors of historic buildings. Such an approach not only helps alleviate the housing crisis; but increases the vitality of our streets and urban spaces, and crucially because it is recognised that a lived in historic building is the best way to ensure its protection in the long term.

The City Development Plan 2016-2022 promotes the use of the Georgian areas for residential uses as part of the mixed use approach for the city.

This Guidance Document arises from the above considerations as applied to the South Georgian Area. It sets out a range of possible solutions for the adaptation, densification and conversion of some typical Georgian town houses. Notwithstanding the fact that the study is based on the South Georgian Area, it is intended that the Guidance principles are transferable to other Georgian areas of the city and indeed to some Victorian typologies also.

It is hoped that the Guidance document will be of assistance to anyone wishing to refurbish or convert Georgian and Victorian houses into residential, particularly apartment use.

In this regard, Dublin City Council has established a Living City Initiative Unit, so that issues relating to conservation, Building Regulations, fire safety and universal access can be resolved in an integrated approach with quality outcomes. While the Living City Initiative Tax Incentive Scheme does not include the South Georgian area, it does apply to other parts of the city centre area. The Living City Unit will provide guidance in all these areas.

Finally, the City Council wishes to thank Shaffrey Architects for their expertise in preparing the Guidance Document.

John O'Hara
Dublin City Planning Officer

The Georgian townhouse has a rich history of use within the city of Dublin. It can be considered one of the more robust and resilient building and urban typologies, which its continued and diverse pattern of use confirms. It also comprises the basic component of the distinctive urban set-piece of the Georgian city, a set-piece of recognised significance, internationally and of enduring quality with regard to settlement.

Despite this long tradition of use and adaptability and it's acknowledged importance, the ongoing suitability of the Georgian townhouse to accommodate certain uses is being challenged, needing to meet an increasingly complex regulatory environment and be affordable to do so. In addition and, of immediate priority, is the imperative to ensure optimum use of the City's existing building stock, thus maximising existing resources and, in doing so, explore opportunities to create more homes and other needed accommodation in the city centre. While the South Georgian Area is outside the Living City Initiative (LCI)¹ Area, it is intended that the guidance in this document will be transferable to both the LCI area and other areas.

This Report is the result of a study of the South Georgian Dublin Townhouse and a range of issues involved in its reuse, most notably with regard to interventions and adaptations necessary to accommodate new uses and more particularly residential use.

The preliminary phase of the study involved: general assessment of site area; identification of different Georgian townhouse (architectural) typologies; review of recent planning permissions for change of use; consultation with relevant DCC Department officials; development of design layouts for a range of uses for each of the typologies identified; more detailed examination of a number of design scenarios, selected as more useful to broader application and, exploration of interventions and solutions to meet statutory planning and building regulation compliance.

This report presents the more readily transferable knowledge gained from the above study in an endeavour to assist those seeking to renovate and adapt a typical Georgian townhouse, both in the north city Georgian areas and other Georgian and nineteenth century parts of Dublin, to new uses (primarily residential).

The principal outputs of the study contained in this report are as follows:

1. Some fundamental conservation considerations and what to look out for at the outset: this includes identification of the different typologies (four have been identified) and some key factors which can inform the level of intervention and adaptation appropriate.
2. A new Active Land Management Approach within Dublin City Council for the statutory processes involved in renovating, adapting and changing use of Georgian and Victorian buildings throughout the city. To facilitate and encourage greater take-up of the LCI tax relief scheme and, in response to difficulties encountered in adapting protected Georgian type townhouse structures to new uses, Dublin City Council has established a new, in-house, inter-departmental approach to assist applicants seeking planning permission, Fire Safety Certificates, Disability Access Certificates and, in limited situations, Building Regulation dispensation with regard to protected structures. The intention is to address the often interconnected issues collaboratively within the relevant City Council departments so that solutions can be reviewed upfront which are more likely to achieve approval when assessed under the separate statutory processes. While the South Georgian Area is outside the LCI area, it is intended that the advice in this document will be transferable.
3. Provision of guidance with regard to typical and common interventions which recur when adapting the Georgian Townhouse to new use and, in particular residential use. This report does not aim to provide an exhaustive set of guidance information. Nor is what is set out here necessarily the only acceptable approach or the best approach. The focus of the guidance is on the 'main house' and its return, not the historic plot unit which would have included a coach house/mews to the rear onto an access/mews lane.² The interventions addressed in this Report respond to the following requirements:

- a. complying with Building Regulations – in particular relating to fire safety; sound and acoustic performance; Accessibility; background ventilation; Moisture and, Structure.

- b. meeting the statutory objectives and development standards of the City Development Plan

- c. taking into account the Architectural Heritage Protection Guidelines for Planning Authorities (2011) published by the Department of Culture, Heritage and the Gaeltacht (DCHG)

- d. altering the plan form to accommodate modern facilities and functions, including partitioning historic rooms

- e. introducing new building services to a building, in particular distributing services horizontally and vertically through the building and dealing with wet services (the plumbing)

4. A selected range of plan layouts showing some typical arrangements for the Georgian Townhouse building. These design scenarios, which principally explore multiple residential use and residential/office mixed use, are used to illustrate the guidance on intervention contained in Section 3 above.

The guidance in this report relates primarily to where the works being carried out will involve making a planning application. It should be noted that not all works may require planning permission. Planning permission will not be required where there is no material change of use of the building or part of it. In relation to proposed development works, these will be exempt from planning permission where a Section 57 Declaration³ issued for the protected structure specifically exempts the works proposed, or by where specified works are declared exempt by the planning authority via an application for a Section 5 Declaration. In all cases, reference should be made to the Architectural Heritage Protection Guidelines for planning Authorities (DCHG, 2011) prior to considering any works to a protected structure.

One of the prominent outcomes of the initial study has been that the most appropriate and successful way to adapt this building typology is to firstly understand the innate qualities and characteristics of the individual building and to work with these – enhancing, rather than disrupting or distorting. These buildings may not conform to today's conventional living requirements and so may not provide the ideal home for everyone. However, well adapted, they can provide a range of living spaces of distinction and comfort.

Taking on the renovation/restoration and adaptation of a statutorily protected Georgian townhouse is not always going to be a simple task. Expert professional advice will be required and, if availed of at the right stages can assist in a more straightforward and successful process.

Also, the right advice can lead to bespoke and alternative solutions which may better fit individual requirements and needs. The emergence of new technologies brings possibilities for alternative and innovative solutions, in particular in the area of building services installations.

It is important to note that the Guidance and examples given in this document are not prescriptive and need to be applied based on an understanding of each particular case.

¹ The Living City Initiative (LCI) is a tax relief scheme, introduced in 2015 and runs to 2021. It operates within designated areas of the six cities in Ireland. Further information at <http://www.dublincity.ie/livingcity>

² Where the historic plot survives and can form part of a more comprehensive development project, this can facilitate a much broader range of design solutions. The original study did examine potential layouts using the entire plot.

³ It is possible to seek a Declaration of Exemption from Planning for protected structures under Section 5 or Section 57 of the Planning and Development Acts 2000-2013.

1.1 Background Context

This report sets out a range of architectural issues and solutions in adapting the Georgian Townhouse typology to primarily residential uses and, in doing so, to improving use mix and residential intensification within Dublin's Georgian areas.

The information in this document arises from a study focused on the South Georgian Core (see Figure 2 map which shows the study area; also Figure 3 an aerial view of the study area), which has its own particular characteristics. It is also based on study of protected structures, thus buildings which have already been identified as being of architectural heritage value and given specific statutory designation.

Notwithstanding the specifics of the area studied, this document looks to the possibilities for the adaptation, densification, conversion and reuse of the typical Georgian townhouse found throughout Georgian Dublin's streets and squares. While several use types have been investigated as part of the initial study, the primary focus here is on residential use, although the combination of office/commercial use with residential is also addressed. The Georgian townhouse has a rich history of use within the city of Dublin. It has been considered by planners, architects and architectural historians as one of the more robust and resilient building and urban typologies, which its continual and diverse pattern of use confirms.

It also comprises the basic component of the distinctive urban set-piece of the Georgian city, a set-piece of recognised significance, internationally and of enduring quality with regard to settlement. Thus, Georgian increment comprises:

Square/public garden (in some instances); public carriageway (road); pavement (above functional cellars); decoratively railed front area giving light and access to basement with granite stepped entrance threshold to slightly elevated ground floors; the 'main house'; the return (attached to the rear of the main house); the garden (sometimes laid out above constructed cellars); the coach house/mews (often with its own garden screened from main house garden); coach yard; high boundary wall; mews lane (see Figure 1).

This sophisticated unit repeats one after the other adopting a simple architectural expression and material palette externally, saving more elaborate expression and decoration for the interiors of the main house. Construction technology is also simple and repetitive, short cuts often taken to save materials, with little tolerance for future intervention and alteration.

This type of unit has been compromised extensively in the twentieth century with the rear gardens and mews buildings separated off for development, or for car parking, in many situations in separate ownership. This severing of the historic plot can increase the challenges of adaptation and change of use of the main house, particularly in trying to resolve issues of access.

Despite the long tradition of use and adaptability and acknowledged importance, the ongoing suitability of the Georgian townhouse to accommodate certain uses is today being challenged. This challenge has led to a growing public and policy concern over the future of the Georgian townhouse.

This study is an important initiative, therefore, to address the apparent anomalies between a history of continuous and diverse occupation of the Georgian townhouse (comprising the full plot), a history which shows a relatively safe occupation, and, today's regulatory and economic context which appears to be limiting the potential for re-use and more particularly where changes of use are proposed.

In addition to the above, and perhaps of more immediate priority, is the imperative to ensure optimum use of existing building stock – thus maximising existing resources – and, in doing so, explore opportunities to create more homes and other needed accommodation in the city centre.

1.2 Some Challenges Facing the Reuse of the Georgian Townhouse:

There are a range of challenges which anyone wishing to adapt the Georgian townhouse to a new use may anticipate. Some are more readily overcome than others and often it is the perception of a significant challenge which can be sufficient to sow the seeds of doubt or discouragement in the mind of someone looking to buy and restore/adapt one of these buildings. The type of challenges frequently articulated are:

- meeting the Objectives, Policies, Development Standards and, Land Use zoning objectives set out in the statutory City Development Plan.
- compliance with Building Regulations and other building and safety related standards and regulations
- the limitations of possibilities for intervention and altering of a protected structure to meet individual requirements
- overcoming a mainstream perception that these buildings are difficult to adapt for all the above reasons – thus the intrepid 'developer' may consider themselves swimming against the tide and question the investment value
- negotiating one's way through the statutory compliance system for what can be a quite modest development in terms of scale
- the wider urban environment context. This might range from limited access to car parking provision to concern with regard to maintenance of public realm to the relatively small residential population in this part of the city centre and a sense of isolation this may create.

The last of these is not the focus of this report, albeit of considerable importance in facilitating settled, sustainable communities within the city centre.

1.3 Objectives of Report

This report is intended to assist with those planning for and implementing works to a typical Georgian townhouse and protected structure in Dublin. It sets out gen-

eral guidance and principles and can support existing guidance documentation (e.g. Technical Guidance Documentation; Architectural Heritage Protection Guidelines (DCHG, 2011) and Advice Series, etc.). It focuses on the more common issues arising from planning for change of use; interventions and alterations and so does not cover all aspects of detail and statutory compliance.

The report also sets out a framework for consultation with the statutory local authority which aims to bring together Planning; Conservation; Fire Safety; Accessibility (Universal Access) and other aspects of Building Control in a manner which can facilitate integrated feedback to those looking to undertake adaptation works to the protected Georgian townhouse building.

The research which informs the information in this report stems from an area based study of the South Dublin Georgian core and, while there are particular characteristics to this part of the city, the guidance in this report is likely to be generally transferable to other protected structures of similar plan form, construction and materiality.

An overriding aim of this report is to advocate for, and assist in delivering, good and successful restoration and adaptation works to the valuable asset which is our Georgian townhouse stock and, in so doing, to enhance the provision of good quality homes within the city centre. The Georgian townhouse has distinctive qualities which, handled appropriately, can continue to provide good accommodation for living, working and other activities.

1.4 A New Framework for Going Through Statutory Consent Processes

Dublin City Council has established a new in-house, inter departmental Active Land Management approach to assist applicants seeking Planning Permission, Fire Safety Certificates, Disability Access Certificates and, in limited situations Building Regulation dispensations / derogations with regard to Georgian and Victorian protected structures within the City. While the aim is to provide advice mainly for the Living City Initiative Tax Relief Area (which does not include the South Georgian Core) it is intended that the guidance in the report should be transferable to other parts of the City.



Figure 1. Typical cross-section through the Georgian plot

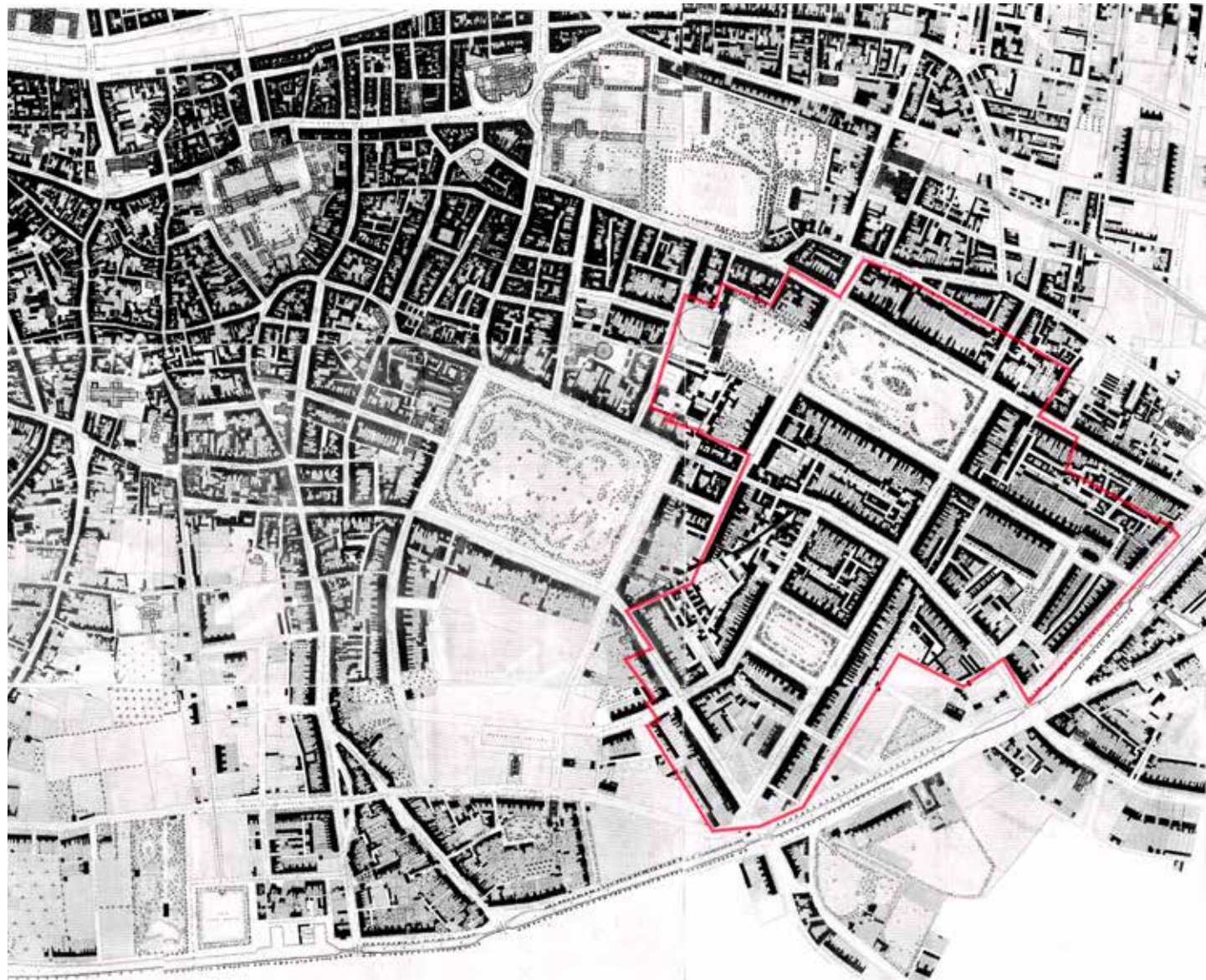


Figure 2. Map of study area. Dublin Ordnance Survey map 1847

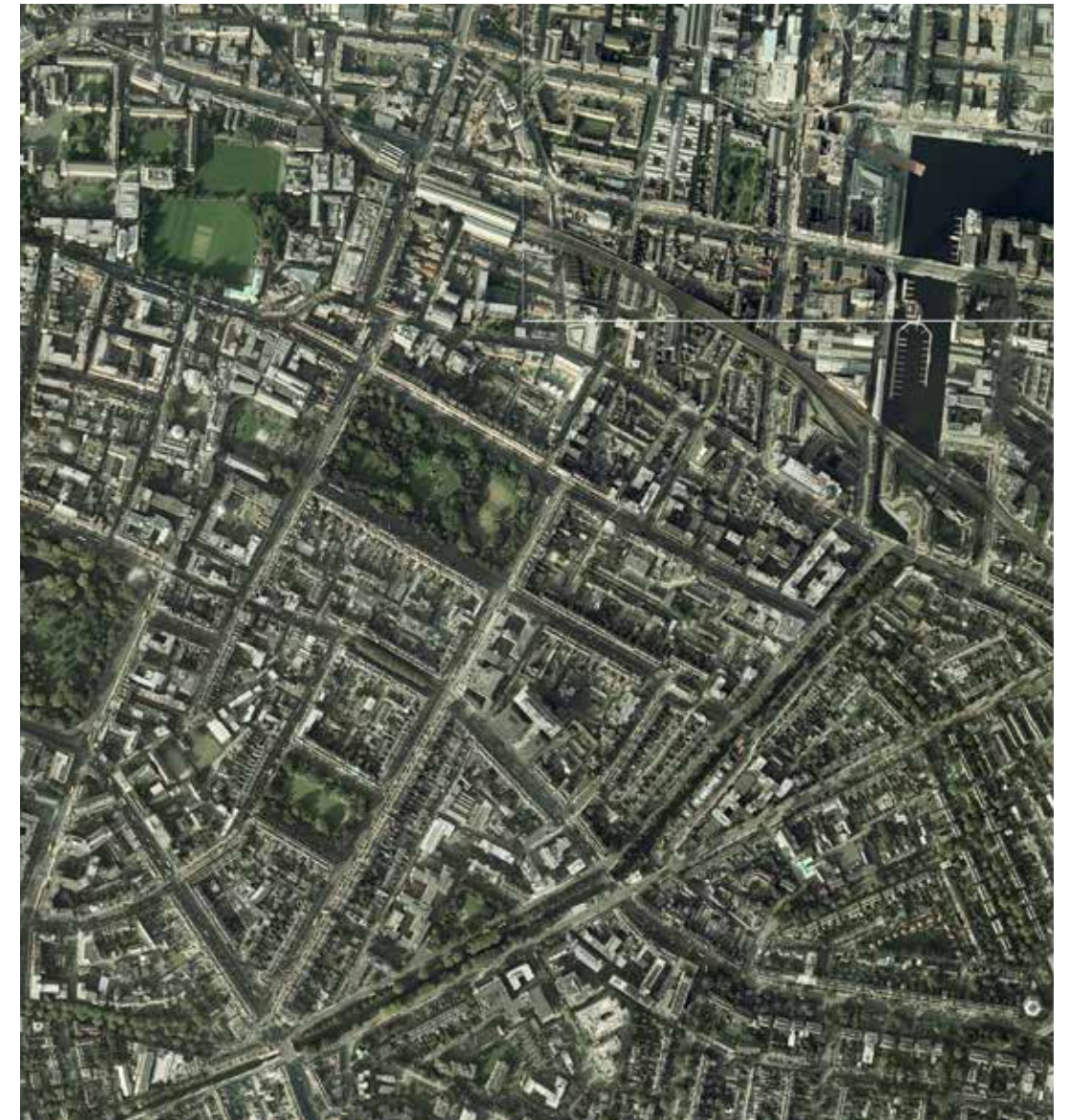


Figure 3. Aerial view of study area. Dublin City Council Mapping

2. TAKING STOCK

2.1 Identification of Typologies

The research process has identified four generic typologies of Georgian townhouse found within Dublin's South Georgian core.⁴ These describe different architectural, or physical characteristics, which are not exclusive to the South Georgian core. In addition to the principal elements of the Georgian 'unit' outlined in section 1.1 above, there are shared features which can be found in all typologies. Some of these are listed below with particular emphasis on aspects which may play an important role in adapting and renovating the building:

- Cellars below the (front) pavement which are accessed from the open well in front of the house in addition to coal holes set within the pavement, allowing coal to be dropped in to the coal cellar from the street above.
- In addition extensive networks of cellars to the rear can be found (often only traces survive following development of the rear plots), which sit below, or partially below, the gardens. At their most extreme, as found in Henrietta Street, this cellar network extends the full width and depth of the garden, providing a covered passageway to the rear coach house (and exploiting a natural change in ground levels across the plot). In other instances the cellars only partially extend under the gardens. However, the existence of these illustrate the way in which the Georgian builders utilised the site (the material excavated often providing building material for the house itself) to maximise space. Where surviving, the cellars can be usefully adapted for storage and location of services plant.
- The basements of the main house sit within excavated open areas, front and back, thus allowing natural light and ventilation into the basement rooms, in addition to front and back access. These qualities, added to relatively generous ceiling heights and independent stepped access from the street, allow for the basements to provide independent accommodation to the main house.
- Varying floor to ceiling heights from basement to top floor, with the highest typically the first floor (or piano nobile) which would have accommodated the principal drawing room of the house. Associated with these varying room heights is a range of window height – sometimes the first floor window cills being quite low to the ground (cills were often

raised in late 18th / early 19th century as glass technology improved and fashion evolved).

- Predominance of a plan form which has two rooms per floor at ground and first floor, often interconnected with a dog-leg stairs running from ground to second floor. Greater compartmentation occurs at second and third floors, with the front room being partitioned to create two rooms on the second floor and, often two rooms front and back at third floor (particularly where the upper stairs change direction as in Types A and B – see below).
- Rear returns are accessed off the main stairs half landing generally, leading to staggered floor levels throughout the house. This, added to the simple plan form, makes it difficult to integrate a passenger lift which can serve all parts of the house, or serve the main rooms without requiring sub-division of rooms.
- In terms of wall construction, external and internal walls are generally solid brick, although sometimes the basements will be stone (typically the local Dublin Calp limestone which may be rendered externally). Few of the Georgian townhouses have ashlar stone facing which is generally onto a brick structure behind. The upper floor internal rooms partitions can be lath and plaster instead of brick (partitions made of turf infill within a timber frame have also been found, when the plaster cover has been opened up), and this may be an important factor in meeting the required fire rating for compartmentation (see Section 3.1 for further information). Internal brick partition walls can incorporate considerable timber members – sometimes the builders appear to have adopted a form of timber framing with brick infill, and this construction has been identified in buildings of varying date (early 18th to early 19th century). The presence of such timber can be important to consider if introducing new openings within a partition wall, to avoid undermining structural stability. It also requires greater attention to keeping buildings dry, as water ingress over time will precipitate the many decay mechanisms which break-down the otherwise durable construction.
- Floors above basement are typically timber floorboards on joists with lath and plaster ceilings fixed to the underside of the joists. 'Pugging' – a dry and fine lime-mortar mix – is often found within the floor void, supported on laths between the joists and this acts as a sound and thermal insulation. Generally when adapting, this pugging will be removed in order to install services and modern methods of fire and sound proofing. Care is needed when removing the pugging not to damage the ceilings below. The floor void in

Georgian houses is one of the most useful spaces when renovating and adapting as it can accommodate infrastructure discretely. Care needs to be taken not to undermine the structural integrity of the joists, however, when routing cables, pipes, etc., within this space and the rules set out in the Building Regulations for this must be observed (see Section 3.1).

- Internal decoration: As noted previously, the interiors are often where the Georgians expressed flourish and style. Generally this was most expressive at ground and first floor, though in the more intact houses high-quality joinery survives at second floor also. Fireplaces, ceiling plasterwork, including cornices; doors and door surrounds and, in some cases, wall painting (murals), can be of significant quality and remain intact. It can be challenging to adapt these areas for new uses, such as residential and requires sensitive and skilled design solutions to introduce new elements such as partitions and services (e.g. kitchens and bathrooms). Reversibility is a useful conservation principle to adopt in these situations – such that the new element can be removed in the future without causing damage to the original, important, elements and features. Sometimes the considered design and integration of fitted furniture can be used to service routes which might not be possible to run through the floors. In introducing new elements to these principal rooms of the Georgian house, it can be useful to adopt a single, consistent, language of design and material, using a limited palette of new materials. Such an approach can allow for a comfortable clarity between old and new, while avoiding jarring juxtapositions.

For the purpose of this report the four Georgian typologies identified in the South Georgian core are described as House Type A, House Type B, House Type C and House Type D. They are further described on the following pages.

⁴ This identification of typologies has been informed by architectural historical input to this document by Frank Keohane and previous MUBC research by Nicola Matthews and Mary Bryan

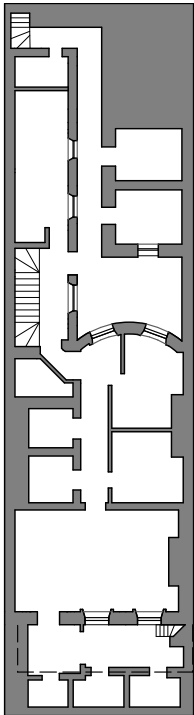
House Type A

- Typical characteristics:
- Four-storey over basement
 - Three-bay wide
 - Plot width 8-10 metres (25-30 feet)
 - Two or three-storey return to the rear, sometimes with an ornate lobby landing
 - Staircase 1 – ground to second floor (the main staircase)
 - Staircase 2 – second to third floor and running across width of house
 - Staircase 3 – basement to ground floor

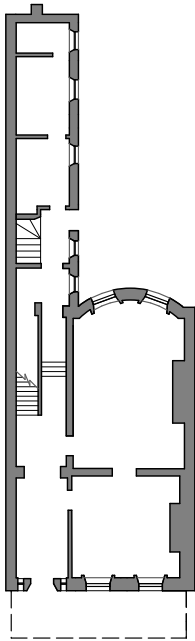
Locations where Type A is typically found:

- Merrion Square, Merrion Street

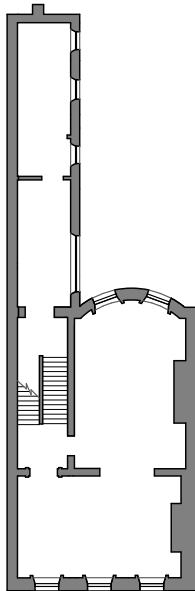
This house type (see typical floor plan and photographs) is the larger Georgian townhouse found in the South Georgian core. Often the internal decoration will have been of high artistic quality, typically seen in the joinery and decorative plasterwork. Architectural elaborations such bay-ended rear rooms (the rear façade being curved) and an elaborate room in the rear return off the first half-landing of the main stairs (sometimes roof-lit) The change in direction of the upper stairs between second and third floors can be useful if adapting these floors to a combined residential unit, offering an internal stairs within the two-storey duplex apartment.



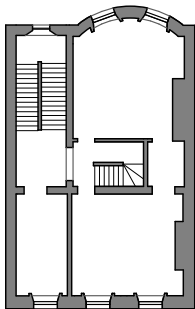
Basement floor



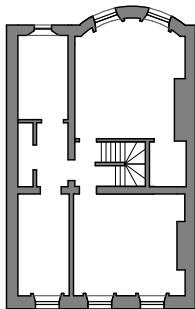
Ground floor



First floor



Second floor



Third floor

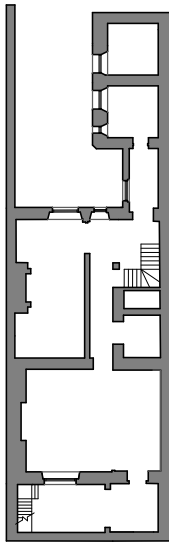
House Type B

- Typical characteristics:
- Four-storey over basement
 - Usually two-bay wide
 - Plot width 6-8 metres (20-25 feet)
 - Two or three-storey return to the rear, sometimes with an ornate lobby landing
 - Staircase 1 – ground to second floor (the main staircase)
 - Staircase 2 – second to third floor and running across width of house
 - Staircase 3 – basement to ground floor

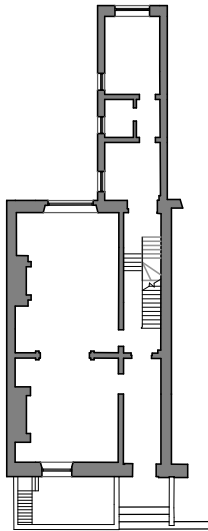
Locations where Type B is typically found:

- Baggot Street, Fitzwilliam Square, Fitzwilliam Street, Fitzwilliam Place, Merrion Square, Merrion Street, Mount Street, Leeson Street, Pembroke Street.

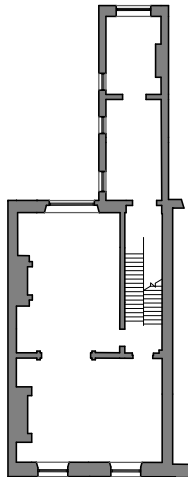
Smaller than Type A, this house type (see typical floor plan and photographs), may be more readily convertible to multi-residential use. While still often possessing very fine internal features and proportioned rooms, these houses can be more domestic in character than the Type A house, especially the ground and first floor rooms. As with the Type A house, however, the upper staircase between second and third floors can facilitate an independent two-storey unit quite well.



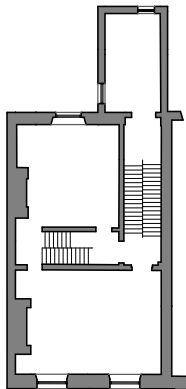
Basement floor



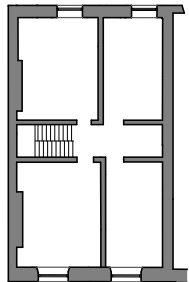
Ground floor



First floor



Second floor



Third floor

House Type C

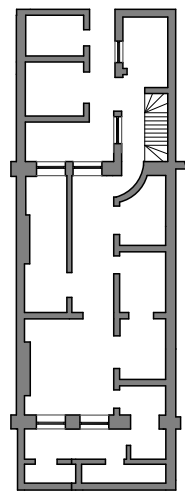
Typical characteristics:

- Three and four-storey over basement
- Usually two-bay wide
- Plot width 5.5-8 metres (18-25 feet)
- Two or three-storey return to the rear, occasionally with an ornate lobby landing
- Staircase 1 – single stairs serving all floors from ground to top (the main staircase)
- Staircase 2 – basement to ground floor

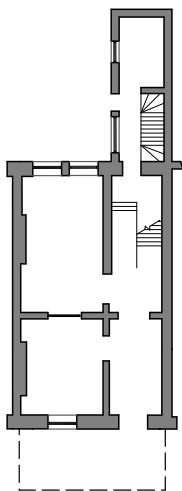
Locations where Type C is typically found:

- Baggot Street, Fitzwilliam Square, Fitzwilliam Street, Fitzwilliam Place, Merrion Square, Merrion Street, Mount Street, Leeson Street, Pembroke Street.

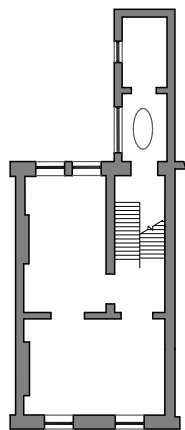
Often smaller than Type B, this house type (see typical floor plan and photographs), is found less within the South Georgian core, although it is commonly found in the wider Georgian city. With the single stairs running ground to top floor, and often only three storeys over basement, this type is probably more suited as a single dwelling or, a three storey dwelling over basement apartment. Depending on access and size, the return structure might be suitable for adapting as a single unit, though this may require insertion of a new stairs. The two-bay, three storey without basement and a small, single room, return (often only at ground level) off the stairs – though not found in the South Georgian core study area – is quite commonly found in other parts of the Georgian City. This house type has often been crudely adapted for multiple residential use with often sub-standard accommodation and little or now provision for essential functions such as bin storage, personal storage, etc. It can be challenging also to successfully meet current standards for fire safety and sound/acoustic performance – as such, it is recommended that such intensive sub-division is avoided.



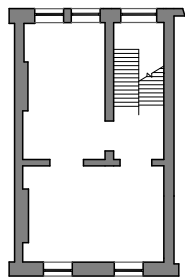
Basement floor



Ground floor



First floor



Second/Third floor

House Type D

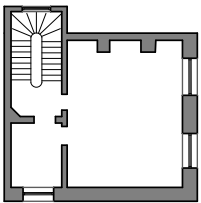
Typical characteristics:

- Non-standard plan. Usually corner-sited. Often with a centrally placed staircase
- Usually four storey over basement
- Often two-bay, sometimes four-bay frontage. Narrower one-bay facades found on corner sites
- Plot width 5.5-8 metres (18-25 feet)
- Generally lack returns due to plot location
- Varying staircase arrangements. Stair usually rises through full height of the house.

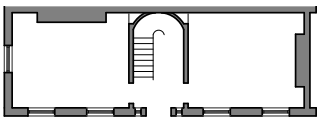
Locations where Type D is typically found:

- Baggot Street, Fitzwilliam Square, Fitzwilliam Street, Fitzwilliam Place, Merrion Square, Merrion Street, Mount Street, Leeson Street, Pembroke Street.

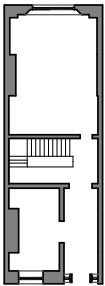
The Type D house (see typical floor plan and photographs), is atypical in form and often shows innovative design solutions to awkward and/or tight sites. Generally occurs at corner sites or mid-terrace in response to a narrow plot, these buildings illustrate the speculative drive of the original Georgian builders. Often only one room deep, or wide, with little open space to the rear and lacking connection to the mews lane network, these smaller houses are often difficult to sub-divide successfully. As a result, they probably better suit single residential or commercial occupancy and may suit a single ‘live/work’ type unit.



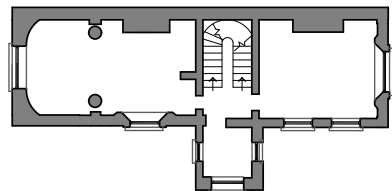
Corner plot with single stair and room



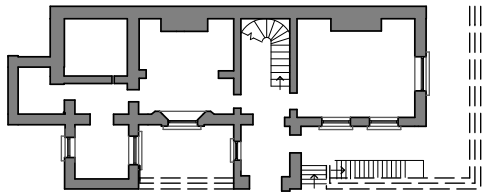
Shallow plan with single stair



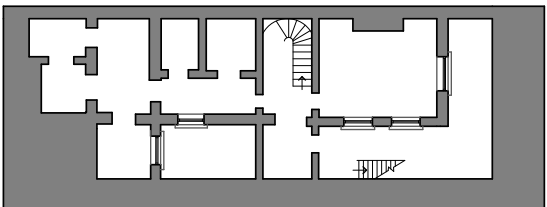
Narrow plan with single central stair



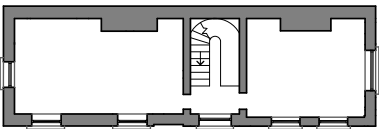
First floor



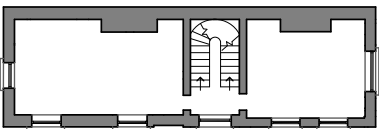
Ground floor



Basement floor



Third floor



Second floor

Figure 4. Source: Mary Bryan, MUBC Thesis on Fitzwilliam Square

2.2 Some things to look out for at the outset – fundamentals of early assessment and design strategy

All of the buildings examined in the South Georgian Core study are protected structures and, as such, are deemed to be of architectural heritage importance.

A building is deemed worthy of designation as a protected structure because it has certain characteristics of special interest which are set out in statutory guidelines on the protection of architectural heritage.⁵ The categories of special interest are: Architectural; Historical; Archaeological; Artistic; Cultural; Scientific, Technical and Social. Not all categories need to apply for a building to be deemed worthy of statutory protection. For the Georgian Townhouse, the special interest categories which typically apply are:

- Architectural – all would be of architectural special interest
- Historic, where the house may be associated with an important historic person or event and,
- Artistic, where the interiors contain decoration of notable artistic merit such as ornate plasterwork, wall and ceiling paintings, fine joinery, fireplaces, etc.

Local Authorities are responsible for designating protected structures and the Record of Protected Structures (RPS) is maintained by the Local Authority. The RPS identifies which buildings and structures have this designation; however it provides limited detail on the nature of the building's special interest. There are other useful sources of published information to consult, such as:

- The National Inventory of Architectural Heritage is a country-wide initiative which provides qualitative information of the country's buildings and structures and informs the local authority's RPS. The inventory of Dublin City is not yet complete, however the results of the survey to date are available online via the Buildings of Ireland website: <http://www.buildingsofireland.ie/niah/highlights.jsp?country=DU>. The survey has been completed for the Dublin Postal Districts 1, 7 and 8. The survey of the remainder of the South Inner City is due to be completed in 2018, as is the survey of the Clontarf area.
- *The Buildings of Ireland: Dublin*, by Christine Casey (Yale University Press, 2005) is a very

comprehensive guide to the City's buildings which provides useful descriptions and assessments of all the Georgian Streets and identifies some of the more important buildings and interiors. It is recommended that anyone considering buying or altering a building within the Georgian cores should consult this book.

- *The Georgian Squares of Dublin: An Architectural History*, published by Dublin City Council (2006) focuses on five Georgian Squares and covers the buildings; the urban layouts and the wider public realm context.
- Historic maps are an invaluable source of useful information describing changes to buildings and the urban context over time.

Sometimes more detailed research may be useful and the Irish Architectural Archive is a good starting point. The professional design team should include the relevant expertise and experience to be able to establish the relative significance of the Georgian building and it is important that this is addressed at the outset. It is important to develop design ideas and solutions for adaptation which are informed by a proper understanding of the building and what are the important features and characteristics. So, the recommended approach is to engage an architect/conservation architect to assess the building as it stands; advise on the building's capacity for change and intervention and, following these initial steps, to develop design options. Constructive feedback on the first two of these can usually be provided promptly on inspection of the building and possibly some preliminary desk-top research. The development of designs and their testing in terms of cost; statutory consent/compliance aspects and general feasibility is a more involved process.

It is important to note that any planning application which is proposing interventions and alterations to protected structures will require to include a Protected Structure Impact Assessment (PSIA)⁶ in addition to the standard drawings and documents. The PSIA will typically include:

- Relevant historic background description of the building. Inclusion of historic maps can be helpful, as can historic photographs and drawings, where available, etc.
- Description of its current presentation and general condition – part of this would include an assessment of the changes which may have occurred to the building. Photographs are very useful to illustrate the description and often well captioned photographs (ideally with positions

located on a key plan), can reduce the need for expansive text. The description should cover the general character of exterior and interior, including any features of significance. It should describe the degree of intactness of the historic plan-form and indicate where this is lost or where historic rooms may have been sub-divided and how (e.g., have modern partitions damaged decorative cornices or, as is often the case, do the historic cornices survive intact behind the partition?). In describing the building, the following, non-exhaustive list of features and elements should be referred to:

- Do decorative features survive: for example, plaster ceilings, cornices, staircases, doors and their surrounds, fireplaces?
- Floors and floor finishes – do quality historic floors survive?
- Other joinery, such as skirting boards?
- Does extent and quality of decoration change throughout the house – e.g. what are the upper (second and third) floors like)?
- Windows, are these of historic value (they may not be original but still be of historic importance)? Is there surviving hand-made glass in the windows?
- With regard to the rear of the building, the assessment should include the degree of change/intervention to the façade, rear returns and other structures, garden features of historic/architectural value.. Does the rear return contain a fine room and windows?
- Is the building interconnected to the neighbouring building and, if so, where and how?
- Are there existing services in the building and how have these been installed – could existing services routes be reused or, should damage caused by previous installations be re-done.
- Basements – are these vaulted; do any stone flags or other historic paving survive?
- Basement areas (i.e., the open spaces external to basements which generally exist to the front and rear, facilitating natural light and ventilation to the basement interiors as well as allowing for independent access: Are there cellars under pavements or the rear garden which are accessed directly from these basement areas? Does the front basement area incorporate

historic features such as water cisterns/tanks; stone/iron access steps?

- Assessment/statement of significance: this should articulate what are the important features of the building in terms of architectural heritage, making reference to the categories of special interest set out in the statutory Architectural Heritage Protection Guidelines. The relevant statutory designations and any specifically relevant objectives and policies of the City Development Plan might be included in this. This section can make reference to earlier descriptions and photographs/illustrations to avoid unnecessary duplication.
- Description of proposed works: incorporating proposal drawings, particularly the layout plans, within the report is helpful. The description should include sufficient information to describe the physical interventions which will, or are likely to, alter the character of the building. Design rationale is helpful to explain why certain approaches are proposed, however it should be credible, robust and clearly articulated. Where specific proposals, or details, are not fully worked out at planning stage, it may be possible to set out strategies which will be followed. Intervention strategies are often provided to show how the planning proposals can/will address Fire Safety requirements; Accessibility; Structural Interventions; Services Installations; Building Regulation Compliance (in addition to Fire and Accessibility); works to improve energy efficiency, etc. The process of defining strategies for these types of interventions forces an up-front consideration of very practical and real issues, many of which if not properly considered at planning stage may become challenging to address later on. In this regard it is important to know what interventions are likely to be required to obtain a Fire Safety Certificate or achieve compliance with Building Regulations, and ensure those interventions which need planning permission (because they materially alter those aspects of the protected structure deemed to be of special interest), are covered within the planning application documentation.
- Assessment of Impact: This assesses the proposals and strategies against what has been defined as the significant aspects of the building and describes the impact. Refinement of proposals through the design process and any pre-planning consultation with the local authority, should aim to avoid adverse impacts.

⁵ The Architectural Heritage Protection Guidelines for Planning Authorities is a statutory guidance document published by the Department of Arts, Heritage and The Gaeltacht, and is available for download at www.buildingsofireland.ie

⁶ The Dublin City Development Plan 2016-2022 sets out requirements for the PSIA (Chapter 11, sub-section 11.1.5.3)

In developing design proposals for alteration and change, there are a number of considerations which can helpfully guide general approaches:

- A house which retains its historic plan-form intact and retains historic decorative elements of artistic and craft quality is likely to have less capacity for significant changes and interventions. Where the return also survives substantially intact and contains spaces and features of architectural merit, this may also have less capacity for alteration. As noted previously, some houses are of particularly fine quality, proportion and decoration and opportunities for intervention within these ‘Grade 1’ buildings will be limited.
- Some of the Georgian typology houses, however, will be able to absorb intervention and alterations. The challenge here is to carry these out with appropriate sensitivity, skill and creative design. The conservation principle of future reversibility is important to ensure new additions and alterations can be ‘undone’ at a future time without adversely impacting on the historic architecture of value. Equally, however, additions and alterations should have an elegance and quality in themselves so that there is an overall architectural coherence between the historic existing and any new additions. For example, new partitions introduced to sub-divide historic rooms should be removable without damaging any historic features of significance and the design of such elements should be carefully considered and executed to provide elegant junctions between new and existing while also creating spaces of elegant proportion.
- Where previous interventions and alterations have been carried out, it may be appropriate to retain and incorporate these to assist in achieving the necessary accommodation layouts. For example, previously constructed openings in historic partition walls may facilitate interconnection between rooms or, previous loss of historic decorative ceilings may make compartmentation of rooms, introduction of services or opening up between floors, more readily achievable.

2.3 Some Preliminary Observations on the Wider Urban Context

This study is principally focused on the typical Georgian house, rather than the wider considerations of the plot or the typical urban square/street set-piece. Notwithstanding this there are some useful points to note and which may be of relevance to those wishing to adapt a Georgian house for a new use.

The traditional Georgian plot extends from the front steps and railings to the rear mews lane and comprises a series of external, internal, private and semi-private spaces which include the main house, generally a return structure to the rear and a separate mews, or coach, house with access from a lane running parallel to the main (front) street/square. This unit is replicated side by side to create streets or squares of terraced houses. Where the traditional unit survives and in single ownership, there is greater scope for a diversity of design solutions with opportunities for rear access and semi-private open spaces. Where the historic mews structure no longer survives, or has been substantially altered, there is potential for redevelopment of mews. The initial study informing this report explored a number of design solutions which proposed development of rear plots to achieved enhanced development potential for the main house. All of these suggested a subservient relationship between rear development and main house, thus retaining the historic hierarchies. Also consideration of natural light, views and open spaces/gardens to the rear, were taken on board. Further design guidance for the full plot may be useful at some stage.

The consequences of modern alterations to the historic plot have been observed during the initial survey phases of this study. Loss of gardens with their replacement by car parking is a significant recurring pattern across the South Georgian area. In some instances rear plots of adjoining properties have been amalgamated to create larger car parks. It is of concern that the value of this land for car parking may, in some instances, exceed its value for an alternative residential use. It is noted that the City Development Plan does not insist on provision of car parking for developments within the South Georgian area. Opportunities to reduce the land given to car parking and replace it with, for example, the reinstatement of a mews type development with gardens, would be beneficial to the sustainable environment of the city in terms of potential for small scale densification while encouraging urban pocket greening.

The works which may be required to adapt a Georgian townhouse to a new use will respond to both statutory and functional requirements. There are a number of common design issues which arise in meeting these requirements. These range from high-level spatial planning and layout needs – i.e. the arrangement of rooms and functions, including access and circulation to and around the building – to the detail design solutions for meeting standards e.g. for fire compartmentation or sound insulation and transfer.

This section provides information and, where appropriate, guidance on ways in which these requirements can be addressed, taking into account good conservation practice for protected structures. As noted elsewhere, this is not a comprehensive or exhaustive provision of guidance, rather some typical and regularly occurring issues and solutions are presented.

The information is provided in response to specific issues under the following headings:

- 3.1 Building Control Regulations and Building Regulations
- 3.2 Meeting the Statutory Standards, Policies and objectives of the Development Plan
- 3.3 Taking into consideration the Architectural Heritage Protection Guidelines (DCHG, 2011)
- 3.4 Guidance Principles for common Practical and Functional requirements

This guidance does not address any repair works which may be required due to the condition of the building. There is good guidance elsewhere on this (see Useful Sources of Information in Section 5).

The following information relates primarily to the adaptation of the Georgian Townhouse for multiple residential use or for a combination of residential and office/commercial type uses, however much of this guidance can be used for other situations such as a converting the building to a single dwelling, for single occupation office use, or cultural use.

While much of the guidance outlined in this section may appear to address detailed design issues which might commonly be considered after the planning process for new construction, it is important that the implications of the works which may be required, are considered in advance of making a planning application. This will ensure any interventions and alterations which may be material in terms of planning, can be assessed as part of the planning application. This will avoid the need to amend or apply for new planning permissions.

3.1 Building Control Regulations, Building Regulations & Other Relevant Building Legislation

3.1.1 Building Control Regulations

The Building Control Regulations are a set of procedures, notices, certificates and approvals to support the application of the Building Regulations and to help demonstrate the Building Regulations have been complied with.

Building Control Regulations procedures provide for, amongst other things:

- approval by the Building Control Authority of the compliance of a proposed design with Fire Safety and Accessibility requirements by way of issuing a Fire Safety Certificate and Disability Access Certificate respectively
- commencement notices which must be submitted in advance of the work to the Building Control Authority
- the appointment of competent registered designers to certify the compliance of the design with the Building Regulations
- inspection of the work during construction by a competent registered professional
- the submission of a certificate of compliance with the Building Regulations on completion of the work which is held on a statutory register.

It is very important to understand how the Building Control Regulations apply to any work which is being undertaken before the work starts. There are hierarchies of control and supervision depending on the complexity of the project, the use of the building, and other factors.

Adequate time must be allowed for any necessary statutory approvals to be granted. For example, a Fire Safety Certificate application may take weeks to prepare and a decision on the application will generally not be made by the Building Control Authority in less than two months.

If a commencement notice is not submitted before work starts where one is required there is no retrospective mechanism to regularise this situation. As a consequence the certificate of compliance on completion cannot be placed on the statutory register. This may create serious long term difficulties in the event of the future sale or lease of the property.

Failure to comply with the requirements of Building Control is an offence and prosecutions may be brought by the Building Control Authority.

3.1.2 Building Regulations

The aim of the Building Regulations is to provide for the safety and welfare of people in and about buildings.

The minimum performance requirements that a building must achieve are set out in the Second Schedule to the Building Regulations. A Technical Guidance Document is published to accompany each part of the Building Regulations indicating how the requirements of that part can be achieved in practice.

With regard to material works and material changes of use to existing buildings, the Building Regulations set out particular requirements. It is important to distinguish between the requirements which pertain for existing buildings as opposed to new works and the following extracts from the Building Regulations are of particular relevance.

The following is taken from a guidance document provided by the Department of Planning, Housing and Local Government, available online at: <https://www.housing.gov.ie/housing/building-standards/other/application-building-regulations-works-existing-buildings>

The Application of the Building Regulations to Works in Existing Buildings

“Building Regulations apply to existing buildings where works are being performed on a building as prescribed in the Building Regulations 1997 (S.I. No. 497 of 1997) as amended by the Building Regulations (Part L Amendment) Regulations 2008 (S.I. No. 259 of 2008) and by the Building Regulations (Part M Amendment) Regulations 2010 (S.I. No. 513 of 2010).

Article 9(2) of the Building Regulations 1997 (as amended) prescribes that no works⁷ shall be carried out to a building which would cause a new or greater contravention in the building of any provision of Building Regulations.

In addition, subject to Article 3 (Application) and Article 8 (Exemptions) the Building Regulations 1997 (as amended) have specific provisions applying to:

1. *Material alterations, extensions and repair and renewals;*
2. *Provision of services, fittings and equipment (by way of new work or by way of replacement);*
3. *Material changes of use.*

“1. Material alterations, extensions and repair and renewals⁸

With regard to material alterations, extensions of buildings and repair and renewals, Article 11 of the Building Regulations 1997 (as amended) applies to:

(a) all works in connection with the material alteration⁸ or extension of an existing building,

(b) every part of a building affected by such works referred to in paragraph (a) above but only to the extent of prohibiting any such works which would cause a new or greater contravention, in such building, of any of the provisions of the Building Regulations,

(c) any repair or renewal likely to affect the structural integrity of the building or building element been repaired or renewed⁹,

(d) Part L of the Second Schedule to the Building Regulations shall apply to renewal works to existing buildings involving the replacement of external doors, windows and roof lights,

(e) Part L of the Second Schedule to the Building Regulations also requires that replacement oil or gas boilers where practicable should have a boiler efficiency of greater than 90% in dwellings (condensing boilers have an efficiency of > 86%) as defined on the HARP database,

(f) Part L of the Second Schedule to the Building Regulations do not apply to works (including extensions) to an existing building which is a ‘protected structure’ or a ‘proposed protected structure’ within the meaning of the Planning and Development Act 2000 (S.I. 30 of 2000).”

⁸ Repair or renewal means works of maintenance or restoration of a routine nature relating to:

a. the keeping of a building in good condition or working order, or,
b. the return of the fabric of the building to its original condition.
“Material alteration” means an alteration, where the work or part of the work carried out by itself would be the subject of a requirement of Part A (Structure), B (Fire Safety) or M (Access and Use) of the Second Schedule to the Building Regulations 1997 (as amended).

⁹ The Building Regulations 1997 (as amended) apply to any repair or renewal of an existing building on or after 1 January 2003, which is likely to affect the structural integrity of the building, or building element, being repaired or renewed. This implements a recommendation of the Report of the Working Party on the Safety of Parapets and Analogous Building Elements (September 2001).

⁷ “Works” includes any act or operation in connection with the construction, extension, alteration, repair or renewal of a building

“2. Provision of Services, Fittings and Equipment

With regard to building services, Article 12 of the Building Regulations 1997 (as amended) applies to all works in connection with the provision (by way of new work or by way of replacement) in relation to a building of services, fittings and equipment where Parts G (Hygiene), H (Drainage and Waste Water Disposal) or J (Heat Producing Appliances) of the Second Schedule to the Building Regulations impose a requirement.”

“3. Material change of use”¹⁰

Where a material change of use to a building takes place, Article 13(1) of the Building Regulations 1997 (as amended) provides that the requirements of:

- Parts A1 and A2 (Structure),
- Part B (Fire Safety),
- Part C4 (Site Preparation and Resistance to Moisture),
- Part E1 (Sound, dwelling only)
- Part F (Ventilation),
- Part G (Hygiene),
- Part H (Drainage and Waste Water Disposal),
- Part J (Heat Producing Appliances), and
- Part L (Conservation of Fuel and Energy) apply to the building undergoing the change of use (it should be noted that Part L does not apply to protected structures).

In addition, “Part M also applies to the building, where a material change of use as described in Articles 13(2)(b)(i), 13(2)(b)(ii), 13(2)(b)(iv), 13(2)(b)(vi), 13(2)(b)(vii) or 13(2)(b)

¹⁰ “material change of use” means—
(a) a change of use, deemed by Section 3(3) of the Act to be a material change of use, takes place, or
(b) a building which was not being used as—
(i) a day centre, becomes so used, or
(ii) a hotel, hostel or guest building, becomes so used, or
(iii) an industrial building, becomes so used, or
(iv) an institutional building, becomes so used, or
(v) as office (which is not ancillary of the primary use of the building), becomes so used, or
(vi) a place of assembly, becomes so used, or
(vii) a shop (which is not ancillary to the primary use of the building), becomes so used, or
(viii) a shopping center, becomes so used;

Extract from Building Control Act:
“(3) In addition to the provisions of any regulations made for the purposes of subsection (1)(d), there shall be deemed to be a material change in the purposes for which a building is used if, on or after the operative day—
(a) a building, being a building which was not originally constructed for occupation as a dwelling, or which, though so constructed, has been appropriated to other purposes, becomes used as a dwelling,
(b) a building, being a building which was originally constructed for occupation as a dwelling by one family only, becomes occupied by two or more families, or
(c) where building regulations contain special provisions in relation to buildings used for any particular purpose, a building to which the regulations apply and which was not being used for that purpose, becomes so used.”

(viii) of the Building Regulations 1997 (as amended) takes place. Part M will apply to a material change of use of a building only when it includes a material alteration. Part M does not apply to works in connection with extensions to and the material alterations of existing dwellings, provided that such works do not create a new dwelling. Such works, if any, as are necessary to ensure that the building complies with the said requirements, shall be carried out in accordance with Article 11 of the Building Regulations (as amended).”

From the above extract it can be noted that in many instances works to existing buildings will not require to meet all of the current standards set out in the Building Regulations – in many instances the requirement is to not make an existing condition worse. However, where certain changes of use are proposed and which are deemed ‘material’ – e.g. a change of use from office to multi-residential use – then a number of the Building Regulations must be met and this is likely to require interventions and upgrading works to the existing building - e.g., ensuring certain minimal standards of sound insulation are met.

Technical Guidance Documentation (TGD) published by the Department of Housing Planning, Community and Local Government sets out detail guidance on how the various Building Regulations can be met. Adherence to the approach outlined in a Technical Guidance Document is regarded as evidence of compliance with the requirements of the relevant part of the Building Regulations. However, the Technical Guidance Documentation may not always provide the most appropriate solution for an existing building and particularly where it is a protected structure and so alternative solutions to meeting compliance may be required. In some instances, it may be appropriate and reasonable to seek a derogation or a dispensation from the Building Control Authority where the specific standards set out in the Building Regulations and/or as further detailed in the relevant TGD cannot be met. Examples of this might be in meeting Part M and Dublin City Council grant dispensations for Part M Compliance in certain circumstances where other qualitative standards are being met.

Alternative Compliance

In the case of material alterations or changes of use of existing buildings, the adoption of the technical guidance in the technical guidance documents without modification may not, in all circumstances, be appropriate. In particular, the adherence to guidance, including codes, standards or technical specifications, intended for application to new work may be unduly restrictive or impracticable. Buildings of architectural or historical interest are especially likely to give rise to such circumstances. In these situations, alternative approaches based on the principles contained in the document may be more relevant and should be considered.

The following sections **Part A** to **Part M** describe some of the common issues and interventions which might be considered in addressing compliance with those parts of the Building Regulations which apply to Material Changes of Use:¹¹

To support the guidance below we have used one of the selected Design Layouts in Section 4. This is Design Option 2 and relates a Type B townhouse providing for two residential units over a two-storey office unit. To supplement the general guidance we have used a Question and Answer/Explanation format to address some common issues which arise.

Part A: Structure

Where the building undergoes a material change of use compliance with Part A1 and Part A2 of the Building Regulations is required.

The Building Regulations apply to all works in connection with material alterations arising and to every part of a building affected by works but only to the extent of prohibiting any works which would cause a new or greater contravention.

It is essential that a full structural survey and assessment of the building is carried out by an engineer suitably qualified and experienced in working with traditional buildings

Appropriate investigation and assessment will help ensure that repairs to historic masonry are carried out where necessary and that unnecessary work is not undertaken

Guidance relevant to structural appraisals related to ‘change of use’ is given in the following documents:

- a. BRE Digest 366: Structural Appraisal of Existing Buildings, Including for a Material Change of Use, 2012
- b. The Institution of Structural Engineers Technical Publication Appraisal of Existing Structures (third edition), 2010

¹¹ Note, not all parts of the Building Regulations relating to Material Changes of Use are addressed here. The focus is on aspects which more typically require physical interventions and alterations which may need to be considered as part of any planning application and which can be more challenging to resolve in the context of protected structures and, more particularly, the typical Georgian townhouse as found in the study area. Also, while Part E, sound, is not explicitly referred to under Material Changes of Use for Existing Buildings, it is an increasing important and challenging standard to meet and, for multi-residential units in traditionally constructed Georgian type buildings achieving a satisfactory standard of sound insulation between units is an important factor in providing sustainable and quality residential accommodation.

A1 Loading

A1 states:
“(1) A building shall be designed and constructed, with due regard to the theory and practice of structural engineering, so as to ensure that the combined actions that are liable to act on it are sustained and transmitted to the ground” -
(a) safely, and
(b) without causing such deflection or deformation of any part of the building, or such movement of the ground, as will impair the stability of any part of another building.
(2) In assessing whether a building complies with sub-paragraph (1), regard shall be had to the variable actions to which it is likely to be subjected in the ordinary course of its use for the purpose for which it is intended.”

Q Can the existing building deal with the loading arising from the change in use?

- Are there increased floor loads due to change in occupation?
- Is strengthening of the structure required?
- Are the existing foundations adequate?

Generally the loading requirements for residential use will be less than the existing other use (typically office). Loading capacities should be properly assessed as the capacity of the existing structural elements may be deficient for the change of use.

- Typical structural deficiencies:
- Undersized timber floor joists (in some cases the floorboards act as a horizontal bracing membrane) particularly in long span rooms
 - Notches and holes in timber members. Decay of bearing ends of timber members arising from moisture ingress.

- Action:
- Understand the structure and load paths
 - Understand the material - Check timber member sizes, stress grade timber.
 - Always consider augmentation of existing timber other than outright replacement either by splicing new sections at bearing ends or through the introduction of sister joists i.e. doubling up of joists. In some case the sister joist can stop short at bearing ends where existing timber joists are sound where there is sufficient shear capacity.

In extreme cases where the doubling up of joists do not achieve sufficient load carrying capacity the introduction of span breaker beams may be necessary. Ideally these can be contained within the floor depth, especially where sensitive ceilings exist below.

Q Arising from occupancy will there be increased loading arising on stairs and landings?

Load carrying capacity should be checked.

- Typical deficiencies:
- Undersized stair carriage beams, poor fixing to timber landing trimmer
 - Horizontal loading capacity of balustrades deficient.

For material changes of use, existing buildings are exempt from Part K. However, to meet the requirements of Part B will generally require compliance with Part K. An exception to this requirement may be made where an existing stairway in an existing building is capable of affording safe passage for the user of the building.

Q Consider the implications of removal of internal walls:

The load paths and transfer mechanisms are often difficult to determine and removal of internal walls and partitions without careful consideration and planning can cause structural distress.

Q Does work involve a significant change in the applied loading to the roof?

Where the work involves a significant change in the applied loading to the roof the structural integrity of the roof structure and the supporting structure should be checked to ensure that upon completion of the work the building is not less compliant with Requirement A1 than the original building.

A significant change in roof loading is when the loading upon the roof is increased by more than 15%. Where checking of the existing roof structure indicates that the construction is unable to sustain any proposed increase in loading (e.g. due to overstressed members or unacceptable deflection leading to ponding), appropriate strengthening work or augmentation of roofing members should be undertaken.

Outright replacement should only be considered as a last resort.

Q Will works effect the existing foundations?

Where existing basement floors are being removed to facilitate upgrade works to the floor which will increase the depth of the floor there is a consequential risk of undermining existing wall footings.

Where this is being considered, the foundation depth of walls should be established in advance to assess if underpinning is necessary or alternative mitigation measures can be taken.

It is generally the case that the adjoining property owners jointly own the party structure and neither of them can make a unilateral decision to significantly alter a party structure.

The best way to approach any changes to party walls/ structures with neighbouring properties is to discuss the changes first and to aim to carry out any works with the neighbour's understanding and consent.

Party walls and and Conveyancing Law Reform Act 2009 addresses and seeks to clarify the law in relation to party structures.

Q What are common structural defects found in historic Georgian typology buildings?

Structural defects are caused by static load that eventually has a dynamic effect. Most often they become evident as deformation cracks caused by crushing of masonry and visible local damage.

- Weakness in masonry can be due to:**
- Decay of bond timbers which are embedded in the wall
 - Decay in wall plate with subsequent rotation of parapet wall due to adjustment in lateral restraint

- Inadequate lateral restraint can arise from:**
- Poor connectivity between wall and floor plate

Q. Roofs - Some typical issues
Spreading out of the A-frame is often indicative of inadequate ties or decay at eaves level. Inserting additional, often lower collars (tie beams) between rafters, assists greatly in reducing roof-spread, and this consequently restrains the outward thrust on walls.

Timber is commonly used but an alternative is steel wires bolted in a substantial, but sensible way to the timber and tensioned. Improved rigidity can also be achieved by securely bolting a gusset made of ply to a ceiling joist below. This strengthens the joint and triangulates the roof.

The spreading of a roof truss may be restrained by adding a second collar, or a rafter may be doubled up with a new timber either close by or attached to the original. In some cases the appropriate roof repair solution is a new framework built around or over the old.

This technique is especially useful in roof spaces where the collars are necessarily high for headroom. It is an effective solution but shouldn't really be on show. Where the junction of trusses and collars have weakened or slipped, a simple steel Y-shaped plate bolted in place can stabilise the structure.

Q Walls - Some typical issues
Wall thickness may vary but generally walls are of solid brick construction, except at basement level where stone typically is used. Internal walls of earlier buildings can have timber framing with brick infill panels. Where a building has been subject to water damage embedded timbers are susceptible to fungal decay. Movement and cracking of masonry can occur due to loss of integrity of timber and desiccation of embedded timber when the building dries out. Bonding and leveling timbers are also common in solid wall construction often occurring in an irregular pattern. Plaster may need to be removed to assess substrate condition. Poorly bonded junctions of party wall to external wall is common - often no bond exists - identifiable by vertical cracking at the interface. Stitching techniques using helical steel reinforcing bars bedded in the mortar joints or concrete lozenges set into a brick course, can be used to repair cracked masonry and tie walls together to improve rigidity and lateral stability.

It is not uncommon for earlier façades to have been re-faced, delamination of the outer skin is observed where inadequate bonding has not been provided. Excessive use of snapped header bricks in the original construction can also trigger similar issues and is commonly found in Georgian buildings. Retrofitting with metal ties is an effective solution and requires specialist and experienced skills.

There are a number of causes for bowing or bulging of masonry walls but typically this is triggered by a lack of restraint between the external walls and the floor joists, beams and partitions. Excessive bulging or bowing may require rebuilding but in other instances providing a positive connection using proprietary tie systems between wall and abutting element such as the floor, will provide the necessary restraint to stabilise the wall.

Window and door heads over openings in solid wall construction typically consist of a brick arch with permanent timber lintel formwork although in some instances only a timber lintel may be present. Where decay has occurred in the timber lintel, typically at the bearing end, cracking is observed in the arch head arising from movement at the springing point. Where decay of the timber lintel has occurred, in most instances the lintel will need to be replaced, often using concrete lintels but replacement with timber lintels should also be considered.

Erosion and spalling of brick can also lead to instability. Brick walls are typically durable, but they are not impervious to erosion and spalling. Brick and mortar expands and contracts as moisture is absorbed and evaporates. Over time, where the causes of excessive moisture action are not addressed, the natural expansion and contraction of the brick and mortar caused by water infiltration leads to erosion, or crumbling of the mortar or

brick and weakening of the wall. The only recourse will be to rebuild destabilised sections of wall.

Water damage is the primary trigger of instability in masonry walling and in most instances instability arises from associated decay mechanisms such as fungal attack of timber. Load transfer paths can be complex in traditionally built construction as the building adapts to changes of the building structural dynamics. When dealing with structural defects the advice of a Structural Engineer should be sought.

Q Foundations - Some typical issues
Georgian houses within the study generally have basements with stone masonry walls that typically had bearing straight onto the excavated ground with no attempt being made to spread the load over a broad foundation. Sometimes walls are supported on one or two wider courses in a series of steps (a form of 'corbelling') to provide a better distribution of the load on the soil. The weight of the ground removed to form the basement partially compensates for the weight of the new building.

During construction, buildings settle as the ground adjusts to the new weight imposed upon it. Where built on rocks, gravel or sands, constructional settlement is substantially complete by the end of construction. For clays, silts and peat however, settlement takes many years. Once constructional settlement is complete it will not recur, unless the status quo alters. Constructional settlement is not usually detrimental provided the structure settles uniformly or is robust enough to accommodate differential settlement. Variable ground can produce excessive differential settlement.

Constructional settlement may also occur when existing structures are substantially extended or underpinned, as the stress in the ground is increased at a greater depth than before.

A2 Ground Movement

A2 states:
"A building shall be designed and constructed, with due regard to the theory and practice of structural engineering, so as to ensure that movements of the subsoil caused by subsidence, swelling, shrinkage or freezing will not impair the stability of any part of the building".

Foundation of extensions should not cause negative impact on existing foundations or alter the ground conditions in a manner which impacts adversely on the existing foundations.

Upgrading of existing foundations, such as underpinning etc., should meet requirements of A2.

A3 Disproportional Collapse

A3 states
“(1) A building shall be designed and constructed, with due regard to the theory and practice of structural engineering, so as to ensure that in the event of an accident the structure will not be damaged to an extent disproportionate to the cause of the damage.

(2) For the purposes of sub-paragraph (1), whereas building is rendered structurally discontinuous by a vertical joint, the building on each side of the joint may be treated as a separate building whether or not such joint passes through the substructure.”

Existing buildings do not need to meet the requirements of Part A3 but any extension to the building needs to meet the full requirements of the regulations.

Where considering the addition of a storey to a rear return consideration of disproportional collapse may be necessary and also a requirement for greater robustness arising from a consequential changes in class. The advise of a Structural Engineer will be essential in all such situations.

Part B: Fire Safety

The following sets out in italics those parts of the Part B TGD which relate to existing buildings. This is supported by guidance.

“Where the building under goes a material change of use compliance with Part B1. Part B2, Part B3, Part B4, Part B5 of the Building Regulations is required.

The Building Regulations apply to all works in connection with material alterations arising and to every part of a building affected by works but only to the extent of prohibiting any works which would cause a new or greater contravention.

B1 aims to ensure that a satisfactory standard of means of escape is provided for persons in the event of fire in a building.

B2 aims to ensure that fire spread over the internal linings of buildings is inhibited.

B3 aims to ensure the stability of buildings in the event of fire, that there is a sufficient degree of fire separation within buildings and between adjoining buildings, and to inhibit the unseen spread of fire and smoke in concealed spaces in building.

B4 aims to ensure that external walls and roofs have adequate resistance to the spread of fire over their external surfaces, and that spread of fire from one building to another is restricted.

B5 aims to ensure satisfactory access for fire appliances to buildings and facilities in buildings to assist fire fighters in the protection of life and property”.

Adaptation can be problematic with regard to what are commonly referred to as Code Compliant Solutions. These are solutions which rely on conformity with established standard systems, such as Irish Standards, British Standards, Euro Norms and, the primary system being the TGD. Code compliant solutions can be unduly restrictive for existing buildings and will mostly provide a single solution which may require an undesirable level of intervention.

- Traditionally a prescriptive approach following the TGDs relies on:
- Escape routes – stairs, common corridors
 - Containment by passive means
 - Smoke detection
 - Smoke venting in common area

Fire engineering allows for a range of solutions that can be adopted to meet the particular building typology.

Alternative, engineered, solutions must maintain standard comparison with the code compliant solution. Achieving a higher standard under one fire safety requirement may be of benefit in respect of one or more of other fire safety requirements. Compensatory features to address a specific risk or hazard may be beneficial.

B1 Means of Escape

B1 states:
“A building shall be so designed and constructed that there are adequate means of escape in case of fire from the building to a place of safety outside the building, capable of being safely and effectively used”.

There are two distinct components to planning means of escape from buildings containing flats/apartments: escape from within each flat/apartment and escape from each flat/apartment to the final exit from the building.

Q Can a fully code compliant solution be achieved without adverse impact on historic character on the historic building?

In most cases a fully code compliant solution cannot be achieved and a fire engineered solution is required.

In some design scenarios risk assessment modeling may be necessary using such tools as the BRE (Building Research Establishment) evacuation and fire spread computer modeling known as CRISP.

Georgian townhouses typologies can vary but essentially fit the generic profile of:

- Three - four storeys over basement
- Single stair building
- Stairs connects to basement level (in larger type buildings the basement stairs may be in the return)
- Third floor > than 11m above external ground level
- Second Floor > than 4.5m (and can exceed 7.5m) above external ground level
- Return Second floor > than 4.5m above external ground level
- Interconnected rooms at each level

The standard maximum number of storeys considered acceptable without an alternative escape or ventilated lobbies is four (Ground + three) with any floor not more than 11m above the external ground level.

The generic Georgian Townhouse profile is typically four storeys but with its upper floor more than 11m above ground level and therefore mitigation measures will be necessary for it to be assessed against the standards for a smaller single stair building.

Means of escape consist of two components:

1. Means of escape from the building
2. Means of escape within the apartment

1. Mean of escape from the building
The primary means of escape is using the stairs.

The first consideration is the protection of the escape route:

Stair Enclosure Protection
The stair enclosure in most circumstances is required to be have 60 minutes fire resistance and in most cases the existing construction inherently achieves this, but an assessment should be carried out as it is not always the case that solid walls have been used.

The weak points in the enclosure are the openings and reduction in the number of these opening into the stairs enhances the level of protection.

- Generally two options arise with regard to the existing doors:
- i. Replace with replica historic certified fire door
 - ii. Upgrade the existing door

The preferred option is retention and upgrade of existing doors as currently it can be difficult to match historic profiles and panel thickness using certified construction.

Where upgrading of existing doors is proposed the doors should be independently assessed by a third party certifier that can provide design certification for upgrade works.

- Separate Occupancies
The mixed use solution where there will be separate occupancies in the building can work effectively where the main stairs is shared between the different occupancies. There are two common use mixes:
- i. Residential over office
 - ii. Office over residential

Protection of the stair route needs to be considered for the occupancy located above.

Generally the simplest solution is lobby protection, for instance, a double door solution. An alternative for consideration is a sprinkler system (mist) where successful integration of the lobby is challenging.

In case of residential accommodation separation of the higher fire risk areas may only be required and this will be dependent on the particular internal arrangement of the residential unit.

Vented Lobby protection will normally be required at

basement level. Natural ventilation is the simplest where a ventilated lobby extends to an external wall but the vent size requirement can be unduly prohibitive to accommodate and therefore mechanical smoke ventilation systems may need to be considered.

A means of smoke control will be required in the stairs for the protection of fire personnel. In some cases, this can be achieved with the provision of an automatic opening vent (AOV) rooflight over the stairs. Where this is not feasible an AOV window at the highest level will be required. In many Type A and Type B Georgian townhouses this will be the situation as the main (common) stairs ends at second floor level and therefore will require adapting the upper stairs window to act as an AOV. In this instance certification may require a non-standard approach. In some instances such intervention may be difficult to achieve acceptably and it may not be feasible to have multiple occupancies sharing the single stairs.

2. Means of escape within the apartment
The internal arrangement for the apartments are either on a single level or two levels (duplex arrangement). Other configurations are possible but the principles outlined here will be generally applicable.

Single Level Apartment Internal Arrangement
Typically living accommodation will be to the front with sleeping accommodation to the rear.

Rooms containing the cooking area (kitchen) present the significant higher risk. Fire protection should address separation of living area and sleeping area. This can be achieved by a 30 minute fire resisting partition, either with alterations to the existing separation or provision of new fire rated partition.

Where upgrade of the existing separation or provision of new partition is not possible, a residential sprinkler system may be an alternative solution subject to agreement with Building Control.

Provision of a protected entrance hall can be challenging on the primary floors where integration of new partitions without adverse impact can be difficult. This is based on the premise that lobby protection to the stairs in the first instance is not achieved. A double door solution is possible but may not be very practicable in reality where one of the doors is on a hold open device.

Where the protected entrance lobby is not being provided the likely arrangement will have the bedroom as an inner room with outer access room serving as an entrance hall (partitions not taken full height due to quality of interior for instance decorative ceiling etc.). Compensatory fire safety measures to provide protection to the stair may require provision of sprinkler system in-lieu of the protected lobby subject to agreement with Building Control.

Apartment on More Than One Level
In most of the design scenarios presented in this guidance the duplex arrangement is better accommodated and suited to second and third floor levels particularly where the stairs connecting these floors can be readily separated from the main stair.

Within the duplex configuration for the Type B design scenarios there are two options for internal planning:

- Option 1:
Living accommodation at second floor level with sleeping accommodation above.
- Option 2:
Sleeping accommodation at second floor level with living accommodation on the upper, third, floor.

The design scenario with living accommodation at the lower level is more desirable as the architectural quality is generally of a higher order. However, this also poses the higher risk as there is no alternative escape route available from the upper level containing the sleeping accommodation. Escape from sleeping quarters is via the higher risk, living quarters.

The internal arrangement of the Type A and B plan with the separate stairs/stairhall between second and third floors, facilitates a fire protected entrance. This can allow living areas to be fire separated at second floor. Fire compensatory measures may be necessary in-lieu of provision of alternative escape route from floors at a level greater than 7.5m.

Omission of lobby protection to the stairs may be a consideration as there will be no occupancy above the duplex level. This may allow an open plan arrangement where the living accommodation is located at third floor level. Fire compensatory measures such as automatic opening vent over the stairs and a sprinkler system may be necessary subject to agreement with Building Control.

B2: Internal Fire Spread (Linings)

B2 states:
“For the purpose of inhibiting the spread of fire within a building, the internal linings:
(a) shall have, either a rate of heat release or a rate of fire growth and a resistance to ignition which is reasonable in the circumstances
(b) shall offer adequate resistance to the spread of flame over their surfaces”.

The choice of materials for the lining of walls and ceilings can significantly affect the spread of a fire, and its rate of growth, even though they are not likely to be the materials first ignited. This is particularly important in circulation spaces where linings would offer the main vehicle for fire

spread, and where rapid spread would be most likely to prevent occupants from escaping.

Surface treatment of linings is not, in general, a suitable method of achieving classification performance however, in the case of existing lining materials, which satisfy the assessment criteria indicated in TGD B, surface treatment to achieve the required performance may be considered.

Care should be taken to ensure that a build up of combustible paints does not reduce the classification of any wall or ceiling lining.

- Materials for consideration:
- Painted plaster
 - Wallpaper applied to plaster surface
 - Timber wall panelling

Compliance can be achieved without sacrificing the aesthetic appearance although retention of historic finishing may be restricted where enhancement of surface spread of flame is required.

B3: Internal Fire Spread (Structure)

B3 states:
“(1) A building shall be so designed and constructed that, in the event of fire, its stability will be maintained for a reasonable period.
(2) (a) A wall common to two or more buildings shall be so designed and constructed that it offers adequate resistance to the spread of fire between those buildings.
(b) A building shall be sub-divided with fire resisting construction where this is necessary to inhibit the spread of fire within the building.
(3) A building shall be so designed and constructed that the unseen spread of fire and smoke within concealed spaces in its structure or fabric is inhibited where necessary.
(4) For the purposes of sub-paragraph 2(a), a house in a terrace and a semi-detached house are each to be treated as being a separate building.”

There is inherent vulnerability arising from traditional construction techniques used in Georgian house construction such as floors with lath and plaster ceilings, paneled and timber framed walls, lath and plaster stud work.

- There are two primary areas of concern:
1. Floor construction to provide fire separation
 2. Walls to provide fire protected enclosure

1. Floor construction to provide fire separation.
Typically this will require floors to be upgraded to provide 60 minutes fire protection.

There are proprietary systems available that can readily achieve the required fire resistance by the introduction of a fire barrier between the floor joists within the depth of the floor. Some of the systems have been tested without contribution from the ceiling plaster. The appropriateness and, or, suitability of a particular system will be dependent on the existing construction condition including depth, thickness and spacing of floor joists.

Consideration also needs to be given to penetrations through the fire barrier as test certification of products may not allow for penetration of the fire barrier and a local modified fire stopping detail may be necessary. Ceiling augmentation to historic lath and plaster is an instance where there will penetration of the fire barrier and co-ordination and sequencing of works needs careful consideration as it is likely to involve a number of trades.

2. Walls to provide fire protected enclosure
The two areas for consideration are:
 - i. the stair enclosure
 - ii. protected lobby or fire separation to higher risk areas

- i. The stair enclosure
The typical construction of wall enclosure to the stairs is a single leaf solid brick walling although it can be 1/2 brick in 3 storey houses (Type C). In some instances the wall may be timber framed with brick infill, sometimes with the brick laid on edge.

A full investigative assessment should be carried out to establish the nature and extent of the construction. A qualitative assessment of the fire resistance capacity of the existing construction maybe required.

Typically the stair enclosures tend to achieve the 60 minute fire rating without the need to upgrade further.

- Areas with potential to not meet the required ratings are:
- the entrance hall separation wall to ground floor front room where the entrance hall will form part of an extended stair enclosure
 - stair enclosure at second and third floors where the stair at this level is not directly over the main stair.

The enclosure walls in these instances are commonly lath and plaster timber stud partitions. Upgrading of lath and plaster timber stud walls needs careful consideration as in most circumstances a decorative cornice will be present and in some instances there will also be a decorative frieze.

- ii. Protected lobby or fire separation to higher risk areas
In most instances formation of a protected lobby or fire separations will be with new construction but junctions with the existing fabric need to be carefully considered.

B4: External Fire Spread

B4 states:
“The external walls and roof of a building shall be so designed and constructed that they afford adequate resistance to the spread of fire to and from neighboring buildings.”

In most circumstance there will be no change and consideration is only required where a new extension is added to the building.

B5: Access and Facilities for the Fire Service

B5 states:
“A building shall be so designed and constructed that there is adequate provision for access for fire appliances and such other facilities as may be reasonably required to assist the fire service in protection of life and property.”

The primary consideration is that fire personnel have safe access within the building. Fundamental to this is the fire protection of the stair enclosures and the provision for smoke venting of the stair using automatic openable vents.

Developing Solutions

The Designer has a range of techniques available to protect occupants against fire and smoke. These include:

- Passive Fire Protection**
- Passive Fire Protection measures to physically limit the spread and effects of the fire, protect escape routes against heat and smoke and stop the building collapsing.

- Active Fire Protection**
- Detection and alarm systems, to quickly alert occupants and ensure a rapid response.
 - Smoke control systems to limit the spread of smoke, or contain it so that it does not hinder escape
 - Extinguishing systems of various types (fixed or portable) to either put the fire out or limit its growth.

In addition, facilities can be provided to assist the fire service in their efforts to extinguish or control the fire and rescue trapped occupants.

Designing for Passive Fire Protection

Most construction materials have some natural resistance to fire and as such comprise built-in fire protection.

This natural fire resistance may be enhanced by the use of added materials or components.

These are called passive because they do not need any special energisation or command signal to operate.

Passive Fire Protection includes:

- Structural frame fire protection systems
- Fire-resisting door sets and fire door furniture
- Compartment walls and compartment floors
- Fire walls or fire separating elements
- Floors
- Ceilings
- Fire stopping

Designing for Active Fire Protection

Active fire protection is the fire protection which requires special energisation or a command signal to operate. Active systems all need to be actuated by a signal. Detectors will operate from heat, smoke, CO, CO2 etc.

Active Fire Protection includes:

- Detection systems
- Alarm systems
- Sprinkler systems
- Other fire suppression systems
- Smoke control systems

Residential Sprinkler Systems

The publication of the British Standard (BS 9251:2005) has seen the introduction of residential sprinkler systems. These systems are designed to mitigate and protect occupants and buildings against the effects of fire. A sprinkler system will detect, give warning, control, contain or even extinguish a fire.

The introduction of a sprinkler system will add capital and maintenance costs. It also requires space for water storage and associated plant and involves interventions for pipe routes and sprinkler heads. However, the provision of a sprinkler system can mitigate the need for other, potentially more invasive, fire safety measures. Examples of such mitigation include:

- Reduced fire resistance of doors
- Avoid requirement for alternative means of escape
- Increase in travel distance by 25%
- Reduced coverage and standard for Automatic Fire Detection

Enhanced fire alarm and defection system

Aspirating Smoke Detection as part of an LD1 system, also known as Air Sampling Detection (ASD) systems can detect fires at a very early stage, often before visible smoldering takes place, before an open fire occurs and before intense smoke develops.

Aspirating Smoke Detection systems can detect fires significantly faster than point or beam smoke detectors enabling a fast response to the first signs of smoke. This early detection is particularly useful in higher risk areas.

The provision of an aspirating smoke detection may mitigate the need for certain fire safety measures.

Part C - Site Preparation and Resistance to Moisture

Where the building under goes a material change of use the requirements of Part **C4** of the Building Regulations shall apply to the building.

“Such works, if any, as are necessary to ensure that the building complies with the said requirements, shall be carried out in accordance with article 11 of the Building Regulations”.

C4 Resistance to Weather and Ground Moisture

C4 states:

“The floors, walls and roof of a building shall be so designed and constructed as to prevent the passage of moisture to the inside of the building or damage to the fabric of the building.”

Roofs

Roof should resist the penetration of rain or snow to the inside of the building or may be damaged by it.

Typical deficiencies which occur:

- Deterioration of roof cladding material, e.g. slating and fixings (nails)
- Deterioration/failure of flashings etc.

Walls

Meeting the requirements of C4 for the typical wall construction of the Georgian townhouse can be challenging and particularly onerous.

The TDGs state: *“Walls should resist the penetration of rain or snow to the inside of the building or be damaged by it. External wall should give protection against precipitation”.*

This protection can be given by a solid wall of sufficient thickness. Any solid wall will meet the requirement if it will hold moisture arising from rain and snow until it can be released in a dry period without penetrating to the inside of the building, or causing damage to the building. The wall thickness will depend on the type of masonry and on the severity of wind-driven rain. (i.e., location).

Tops of wall should also have protection and assessment of the parapet wall condition should be carried out.

*“All walls should meet the following criteria:
(a) prevent moisture from the ground from reaching the inside of the building and
(b) not be damaged by moisture from the ground, and
(c) not carry moisture from the ground to any part of the building which would be damaged by it.”*

Meeting this requirement in new construction is generally achieved by the use of a damp proof course which is not readily integrated into existing construction particularly random rubble stone masonry.

BS8102:2009 Code of practice for protection of below ground structures against water from the ground identifies three types for basements:

- Type A: Barrier protection (commonly referred to as Tanking, as the system creates a tank keeping water out) is either applied externally or internally. It relies on an unbroken ‘monolithic’ membrane that will act to keep water out.
- Type B: Structural integral protection where the structure itself (e.g., waterproof reinforced concrete) is the protection. When constructing a new basement the use of Waterproof Reinforced Concrete is used to form the structure and floors.
- Type C: Drained protection. This system removes water using a cavity drain membrane (CDM) laid over the floors and walls. The system works by directing any water that comes through the earth and retaining walls, to internal drains. It is then taken outside using pumps or gravity drains.

The options typically considered for the Georgian typology are:

1. Lime based renders, mortars and plasters maintaining the traditional construction and materiality
2. Drained cavity type using proprietary egg-crate system suitable for plaster finish application
3. Injection of chemical damp proof course
4. Insertion of physical damp proof course

It essential that proper informed evaluation is made that distinguishes between rising damp and other sources of damp.

The preferred conservation approach is Option 1, to use a lime plaster application in order to maintain ‘breathable construction’.

Breathability describes how waters move through a wall structure (water vapour permeability) and the wall’s ability to absorb and release water as a vapour (hygroscopicity) and/or as a liquid (capillarity). The most significant transport of water vapour is by air, either through ventilation, or through air leakage in the shell of the building.

Water vapour movement through walls is mainly by entrainment in air flowing through the wall under wind pressure or thermal expansion pressure. Diffusion plays a relatively little part until the water vapour is within a homogeneous material, such as a wall plaster.

For this reason the airtightness of a building is critical both in controlling vapour movement and also in attempts to use the hygroscopic and vapour permeability qualities of building materials.

The use of lime plaster may not in all cases address a damp problem in the building if there is not sufficient ventilation at wall surface. The primary source of water ingress may be an external issue. Protection measures at the base of the wall should also be considered as part of a solution. French drains may be considered as part of a solution but as with all drains, they need to be maintained.

Potential alternative plasters for consideration are ‘restoration plasters’ which conform to German WTA guidelines (WTA Code of Practice 2-9-04/D) which have high porosity and hydrophobicity properties. These plasters also have high salt absorption and retention capacity. Use of these type of plasters requires careful consideration particularly if the wall has a high level of salt content as long term accumulation of salts in plaster can ultimately lead to failure. It essential that a breathable paint is used to maintain vapour permeability.

Options 3 and Option 4 are challenging at the party wall condition as full depth is not readily achieved. In particular the injection of a chemical damp proof course, Option 3, is not likely to provide a continuous homogeneous DPC, requiring a waterproof plaster application (types of ‘restoration mortars’ may be suitable). Insertion in solid rubble masonry construction is particularity challenging. This option is not generally recommended for traditional solid wall masonry construction due to the difficulty in successfully installing which can then trigger other problems through changing the behavioural patterns of the moisture .

Likewise the insertion of the physical insertion of a damp-proof course, Option 4, will also require a waterproof plaster application where continuity with underfloor membrane cannot be achieved. As with Option 3 incomplete installation can cause other problems by altering the patterns of moisture penetration and movement.

Ultimately, the solutions adopted should consider all factors and may require expert independent advice. Alternative methods of compliance to the TGDs may also be appropriate.

Floors
“A floor next to the ground should prevent ground moisture from reaching the upper surface of the floor and not be damaged by moisture from the ground”.

Meeting this requirement is generally readily achievable.

In most cases the existing floor is replaced with new floor construction incorporating a damp proof membrane.

Careful attention needs to be taken with the junction of floor and wall in all waterproofing systems as this junction can result in concentrations of moisture.

An alternative approach for consideration is a breathable floor construction where the moisture-impermeable damp proof layer is omitted and moisture control is introduced in the hardcore layer which resists the capillary movement of moisture. The materials uses in the floor construction should also be vapour permeable.

Where a new floor slab is to be formed, one option is to use a slab based on lime (limecrete) which is breathable. A limecrete floor can be designed to meet modern insulation requirements and can incorporate under-floor heating (UFH).

Preventing ground water penetration requires some form of capillary break. This is achieved using recycled foam glass or expanded clay aggregate insulation. Being made from re-cycled glass or clay, these have an open pore structure which have low capillary attraction to moisture.

**Part E Sound
(Only applies to dwellings)**

“Where the building under goes a material change of use the requirements of Part E1 of the building regulations shall apply to the building.

Such works, if any, as are necessary to ensure that the building complies with the said requirements, shall be carried out in accordance with article 11 of the Building regulations.”

Part E1 Sound

E1 states:
“Each wall and floor separating a dwelling from -
(a) another dwelling or dwellings,
(b) other parts of the same building,
(c) adjoining buildings,
shall be designed and constructed in such a way so as to provide reasonable resistance to sound.”

Section 1 of TGD E, Sound, provides sound performance levels required to meet the requirement of Regulation E1. Table 1 below reproduces the relevant performance levels.

Separating Construction	Airborne Sound Insulation D _{nT,w} (dB)	Impact Sound Insulation L _{nT,w} (dB)
Walls	53 (min)	-
Floors (including stairs with a separating function)	53 (min)	56 (max)

The regulations include specific commentary on dealing with Protected Structures. These are defined as buildings that have been identified as having a particular cultural significance and heritage value.

Section 1.1.3 of Part E states the following in relation to Protected Structures:

“Protected structures will, prior to conversion, display unique characteristics as far as sound insulation is concerned. The original building design and construction, and any subsequent alterations, will influence the level of sound insulation achievable for any separating walls and separating floors. For this reason, the adoption without modification of standard solutions may not always be appropriate.

In the case of material alterations or changes of use to protected structures, the recommended approach is as follows:

(i) An acoustic assessment of the existing structure should be carried out, including a sound insulation test in accordance with Section 2 [of TGD E]. This should enable the acoustic performance of the existing

construction to be established. The design and construction of the existing structure should also be established
(ii) Expert acoustic advice should be sought on appropriate solutions to improve the sound insulation without damaging or creating the potential for damage to the character and special interest of the building.

In certain circumstances, achieving the sound insulation standards set out in Table 1 may not be practicable for protected structures. However, the aim should be to improve the sound insulation value as much as practicably possible. Such improvements should not be to the detriment of the character and special interest of the protected structure or contravene any specific planning condition prohibiting modification of an identified existing feature.

In such cases, a dispensation or relaxation (or partial dispensation or relaxation) of the Requirements may be granted by the local Building Control Authority.”

Achieving compliance
The approach to be taken is to consider the existing sound insulation performance of the separating constructions, as tested, and to enhance, as far as practicable, the sound insulation performance of the separating constructions within the constraints of the existing building structure.

The results of assessments of the existing level of sound insulation between the separating floors of traditional construction (floorboards on joists with lath and plaster ceilings) will in all cases fall significantly short of the Building Regulations performance values for both impact and airborne sound.

Typically the measured impact sound insulation can be in the range of 66 to 75dB L’nT,w. and measured airborne sound insulation in the range of 35 to 39dB DnT,w.

Achieving compliance is not practicable and the following constraints are the determining influencing factors.

Ceiling finish:
Where ceilings are original, or historic, and intact there will be little scope to alter or augment the ceiling finish to enhance sound insulation without adverse impact particularly where decorative ceilings and cornices exist.

A dropped ceiling could be introduced which could enhance sound insulation but will adversely impact on the architectural quality of the space and is generally not desirable.

Floor finish:
To isolate the flooring requires adjusting floor levels and there is limited scope to do this without significant adverse impact, notably at the interface with skirtings, door surrounds, stairs and other architectural features.

Options to improve the sound insulation performance are confined therefore to the void between the existing ceiling and the floor covering between the joists. Altering the floor level above the joists is restricted due to the surrounding stairwell and hallway floor levels.

In most instances to enhance the airborne and impact sound insulation of the floor the following can be achieved:

1. Insulation over-layer above existing plaster (this can also upgrade the fire resistance of the floor)
2. Resilient layer fixed to top of the joists
3. Dense layer fitted to underside of floorboards

With these interventions the expected airborne and impact sound insulation will not meet the stated minimum and maximum limits set out in the TGDs, however they can achieve close to these standards.

Dispensation will be required from the Building Control Officer based on achieving an acceptable, albeit non-TGD compliant, standard¹² and based on the quality of design interventions and their acceptable impact on the architectural heritage.

Walls:
Separating walls are also not likely to meet the TGD standards (airborne sound insulation minimum value set at 53 dB L'nT,w) without alteration which can be difficult to implement without significant adverse impact. Therefore, dispensation will also need to address wall performance.

Noise transfer within dwellings
There are no statutory guidelines governing the sound insulation of separating walls or floors between rooms within the same dwelling. Part E of the Irish Building Regulations 2014 does not specify any design guidance for internal separating constructions. In the absence of such guidance, reference can be made to the UK's Building Regulations Part E, Resistance to the Passage of Sound.

¹² Desktop assessment of a test detail design which incorporates these measures, anticipates values for airborne sound insulation in the order of 49-51 dB D'nT,w (minimum in TGD is 53) with the impact sound insulation expected to be of the order of 60-65 dB L'nT,w. (maximum in TGD is 58). Figures 9 & 10 in Section 3.4.2 illustrates indicative details.

Performance values from both the English and Scottish Building Regulations are summarised in Table 2. These relate airborne sound insulation for internal walls and floors within the same dwelling.

Construction	Airborne Sound Insulation, dB R _w (Minimum Values)	
	England	Scottish
Walls	40	40
Floors	40	43

Table 2 Sound Insulation Values for Internal Constructions within Dwellings

The English and Scottish Building Regulations do not specify any impact sound insulation requirements between separating floors within the same dwelling. Best practice is to reduce the level of impact sound as far as practicable. For rooms used for residential purposes, a maximum impact sound insulation value of 64dB L'nT,w is recommended.

Facade sound insulation
There are no statutory requirements or guidelines governing the sound transfer between the exterior and interior through the external facade.

Appropriate guidance for internal ambient noise levels is contained within BS8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings. This British Standard sets out recommended noise limits for indoor ambient noise levels.

Noise surveys would need to be carried out in the building to determine the range of internal noise levels at different floor levels over day and night-time periods.

Consideration may be given to mitigating the level of noise intrusion to the residential units where levels exceed the recommended internal noise levels for living spaces and bedrooms during day and night-time periods.

Achieving enhanced standard
Window Upgrades
In most cases surviving historic window systems will be retained as part of the refurbishment work. In order to enhance the sound insulation of the glazing (likely to be single glazing), there are two options for consideration:

1. Retrofit slimline double glazing to sash and incorporate perimeter seals to window frame
2. Maintain the existing window in situ and install a secondary glazed system to the internal side of the window frame.

With the inclusion of the enhanced glazing and the window seals, the expected performance of the system is of the order of 31dB Rw against traffic noise intrusion. Assuming this is installed with a full sealed system, the glazing performance can be improved by the order of 4 to 5dB compared to the existing glazing system.

The sound insulation performance of a secondary glazing system is expected to be 37dB Rw against traffic noise intrusion. An enhanced level of sound insulation is afforded by a secondary glazing system due to the air void between the existing and the new frames. In addition, the frame of the secondary glazed unit can be installed with an airtight seal around its perimeter with absorption to the reveals, thus enhancing the overall sound insulation performance to the system.

Where the air gap between frames is restricted, a minimum spacing of 50mm between frames is recommended i.e. 3/4mm existing pane – 50mm air gap – 6mm new glazing sealed frame

The overall sound insulation performance is reduced, particularly at lower frequencies. The expected sound insulation performance is of the order of 33dB Rw against traffic noise intrusion.

The appropriateness of either of these solutions needs to be assessed on a case by case basis.

Noise transfer between offices
There is no statutory standards applicable for sound insulation between offices. Guidance relating to suitable levels of sound insulation between acoustically sensitive spaces within offices is provided for in BS8233 Guidance Sound Insulation and Noise Reduction for Buildings 2014. The level of performance is dependent on the level of activity within the source room and the level of privacy required, the recommended level of sound insulation across separating wall constructions is in the range of 38 to 48 Dw.

There are no specific design goals relating to impact sound insulation between offices. Best practice design guidance is taken from other development project types which include design guidance for constructions separating offices and other noise sensitive spaces.

The following documents provide guidance on these issues:

- Department of Education and Skills 2013 TGD-021-5 Acoustic Performance in Schools
- the UK's Department of Health HTM08 document Health Technical Memorandum – Acoustics 2013.

For impact sound insulation, the following impact and airborne sound insulation values are deemed appropriate for floors separating offices and other non-residential floors:

- Offices Impact Across Floors: ≤65dB L'nT,w1
- Office Airborne Floor: >40dB DnT,w

Part F - Ventilation

“Where the building under goes a material change of use the requirements of Part F of the Building Regulations shall apply to the building.

Such works, if any, as are necessary to ensure that the building complies with the said requirements, shall be carried out in accordance with article 11 of the Building Regulations.”

F1 Means of Ventilation

F1 states:
"Adequate means of ventilation shall be provided for people in buildings. This shall be achieved by

- a) limiting the moisture content of the air within the building so that it does not contribute to condensation and mould growth, and
- b) limiting the concentration of harmful pollutants in the air within the building".

Means of Ventilation
Ventilation is the supply of fresh outside air and the removal of stale indoor air to or from spaces in a building.

The means of ventilation should be capable of providing a satisfactory indoor air quality for human respiration.

Ventilation to achieve the objectives above may be achieved by natural ventilation, or through the supply or extraction of air by mechanical means, or by a combination of these methods.

The general strategy for compliance is:

1. General ventilation to provide fresh air to the building and remove water vapour and other pollutants that are released throughout the building and to dilute and disperse residual water vapour and pollutants. General ventilation provides nominal continuous air exchange.
2. Extract ventilation from rooms or spaces where most water vapour and/or pollutants are released, e.g. where cooking and in bathrooms. The purpose of extract ventilation is to minimise the spread of water vapour and/or pollutants to the rest of the building. Extract ventilation may be intermittent or continuous.
3. Purge ventilation is applicable throughout the building to facilitate removal of high concentrations of pollutants or water vapour that may develop from time to time.

1. General ventilation by means of natural ventilation

Where air permeability is 5m3/(h.m2) or greater, the minimum total equivalent area of background ventilators providing general ventilation should be 30,000 mm² with an additional 5,000 mm² for each additional 10 m² floor area above the first 70m² of floor area measured. Air permeability for a typical Georgian house is unlikely to be less than 5m3/(h.m2). For single storey dwellings situated at ground level or on any storey up to four storeys, an additional 5,000 mm² per dwelling should be provided.

Integrating background ventilators into the existing fabric successfully is challenging.

- Available options:
- 1. Integrate into existing windows
 - 2. Provide vent in external wall

Integration of vents into existing windows can be a more discrete solution but may not fully meet requirements whereas an opening in the external wall solution will have visual impact on the external facade, particularly where it is located in the front facade.

2. Extract Ventilation
For wet rooms, e.g. kitchens, utility rooms, bathrooms or rooms with sanitary facilities (without bath) mechanical extract ventilation is normally provided.

Minimum Intermittent Extract Rate (l/s)	
Kitchen:	60l/s generally 30l/s if immediately adjacent to cooker
Bathroom:	15 l/s

Careful planning of duct routes is required. Reuse of chimney flues may be an option for extract.

3. Purge Ventilation
Purge ventilation is generally not an issue as windows tend to have sufficient open free area when open.

Alternative Solutions
Passive stack ventilation (PSV) may be used instead of mechanical extract in any location where an extract fan is required. Passive stack ventilation should be designed and installed in accordance with BRE IP 13/94 and, for kitchens and utility rooms, incorporate an automatic humidity sensitive ventilation inlet control grille. Background ventilators are not required where a PSV is located.

Where a kitchen contains an open-flued appliance, for instance a fire place which has a flue with a free area of at least the equivalent of a 125 mm diameter duct and, where both flue and air inlets are permanently open, for instance with no control dampers, additional provision

for extract ventilation, for example by means of mechanical extract ventilation or passive stack ventilation, should not be necessary.

Mechanical Ventilation with Heat Recovery (MVHR)
A Mechanical Ventilation with Heat Recovery system should be capable of providing adequate general ventilation at all times and of meeting requirements for extract ventilation that may need to be met from time to time. A Mechanical Ventilation with Heat Recovery system should normally provide air supply to each habitable room with extract from wet rooms.

Routing of ducts either vertically or horizontally will need careful consideration and planning. PSV or MVHR might be more easily incorporated in the top floor apartments but may be more challenging in the more sensitive ground and first floor units.

F2 Condensation in Roofs

F2 states:
"Adequate provision shall be made to prevent excessive condensation in a roof or in a roof void above an insulated ceiling."

- "Condensation in a roof and in the spaces above insulated ceilings should be limited so that, under normal conditions:*
- a. the thermal performance of the insulating materials, and,*
 - b. the structural performance of the roof construction will not be substantially and permanently reduced."*

Where the existing roof is being upgraded for thermal performance in most cases the existing roof will be un-vented and, where a previous re-roofing has been carried out it is likely a non-vapour permeable roofing membrane will have been installed.

Pitched roof spaces should have ventilation openings at eaves level to promote cross-ventilation. These openings should have an area on opposite sides at least equal to continuous ventilation running the full length of the eaves and 10 mm wide. Where the insulation follows the pitch of the roof, ventilation at the ridge, at least equal to continuous ventilation running the length of the ridge and 5 mm wide, may also be needed.

There are two approaches to improving the thermal efficiency of the roof and these will determine the appropriate ventilation strategy:

- 1. Cold roof construction
- 2. Warm roof construction

1. Cold Roof
In cold roof construction insulation is installed at the ceiling level which places the dew point (point of condensation), within the roof void and requires through-ventilation to remove humid air. It is more difficult to achieve a continuous thermal envelope with a cold roof and where coving exists, there is likely to be a reduction in insulation depth in the zone of the coving unless the insulation is fitted below the rafter in which case it will impact on the interior space.

Ventilation is introduced in most instances by inserting vents into the roof plane and/or through the introduction of a vapour permeable roofing membrane.

Use of vapour permeable membranes is generally on the basis that a vapour control is in place at ceiling level. Where the ceilings are lath and plaster - historic or reinstated - these will not provide vapour control and therefore ventilation of the roof spaces will be required.

2. Warm Roof
In warm roof construction the insulation is placed in line with the roof slope and on top of the rafters. This construction has the benefit of moving the dew point outside the building envelope thus minimising the risk of condensation. It also minimises thermal bridging and is easier to achieve a continuous thermal envelope.

This form of construction does not require ventilation.

Warm roof construction requires careful consideration as it will result in changes in the roof plane level and likely increasing the height of the roof by the thickness of the insulation. This may have planning implications where the building is located in a terrace situation with ridge lines aligning with adjoining roofs.

Part G - Hygiene

Where the building under goes a material change of use the requirements of Part G of the Building Regulations shall apply to the building.

Such works, if any, as are necessary to ensure that the building complies with the said requirements, shall be carried out in accordance with article 11 of the Building Regulations.

G1 Bathrooms and kitchens.

G1 states:
"A dwelling shall be provided with:
(a) a bathroom containing either a fixed bath or a shower bath, and a washbasin, and
(b) a kitchen containing a sink of adequate size and a draining board, and
(c) a suitable installation for the provision of hot and cold water to the bath or shower bath, washbasin and sink."

G2: Sanitary conveniences and washing facilities.

G2 states [A dwelling shall be provided with]:
"(1) Adequate sanitary conveniences shall be provided in a building in rooms provided for that purpose, or in bathrooms, and every room or bathroom which contains a sanitary convenience shall be adequately separated from any place where food is prepared or cooked.
(2) Adequate washbasins shall be provided in:
(a) rooms containing sanitary conveniences; or
(b) rooms or spaces adjacent to rooms containing sanitary conveniences.
(3) There shall be a suitable installation for the provision of hot and cold water to washbasins provided in accordance with sub- paragraph (2).
(4) Sanitary conveniences shall be of such design as to facilitate efficient use of water for flushing.
(5) Sanitary conveniences and washbasins shall be of such design and be so installed as to allow for effective cleaning."

Every dwelling (house or flat) should have at least one bathroom, with a fixed bath or shower, and a washbasin. and a kitchen which is adequately fitted for the installation and use of cooking equipment.

Spatial planning of internal arrangements to meet these requirements within the historic plan layouts and rooms needs careful consideration, in particular the planning and location of service routes both horizontally and vertically. Stacked configurations should be considered to rationalise routes and lessen impact. Placing facilities to the rear will, where feasible, lead to more acceptable

Part H - Drainage and Waste Water

Where the building under goes a material change of use the requirements of Part **H** of the Building Regulations shall apply to the building.

Such works, if any, as are necessary to ensure that the building complies with the said requirements, shall be carried out in accordance with article 11 of the Building Regulations.

H1 Drainage systems

H1states:
“(1) A building shall be provided with such a drainage system as may be necessary for the hygienic and adequate disposal of foul wastewater from the building.
(2) A building shall be provided with such a drainage system as may be necessary for the adequate disposal of surface water from the building.
(3) No part of a drainage system conveying foul wastewater shall be connected to a sewer reserved for surface water and no part of a drainage system conveying surface water shall be connected to a sewer reserved for foul wastewater.”

Installing Drainage Systems - Issues to Consider
Spatial planning of internal arrangements to meet requirements of the regulations, within the historic rooms and plan layouts will need careful consideration and in particular planning and location of drainage routes both horizontally and vertically. Stacked configurations should be considered to rationalize routes and lessen impact. Locating functions requiring drainage to the rear of the building will generally lead to more acceptable solutions for pipe runs, internal and external.

Alternatives:
Vacuum drainage systems
The use of vacuum drainage systems inside a building can allow more flexibility in spatial planning for locating bathrooms and kitchens, and critically greater flexibility for pipework locations which can reduce necessary interventions and impacts on the building fabric. Vacuum systems use air i to transport wastewater. As negative air pressure is used in small pipes, the waste water can be routed vertically or be transported horizontally including around obstacles within the floor depth. Pumps will be required so their location needs consideration and there will be greater need for maintenance.

H2 Wastewater treatment systems
H2 will not be applicable in Georgian Townhouse context

Part J - Heat Producing Appliances

Where the building under goes a material change of use the requirements of Part **J** of the Building Regulations shall apply to the building.

Such works, if any, as are necessary to ensure that the building complies with the said requirements, shall be carried out in accordance with article 11 of the Building Regulations.

J1Air supply.

J1 states:
“A heat producing appliance shall be so installed that there is an adequate supply of air to it for combustion, to prevent overheating and for the efficient working of any flue pipe or chimney serving the appliance.”

Discharge of products of combustion.
J2(a)
A heat producing appliance shall have adequate provision for the discharge of the products of combustion to the outside air.

J2 Warning of release of Carbon Monoxide.

J2(b) states:
“Reasonable provision shall be made to avoid danger to the health and safety of the occupants of a dwelling caused by the release of carbon monoxide from heat producing appliances.”

J3 Protection of building.

J3 states:
“A heat producing appliance and any flue pipe shall be so designed and installed, and any fireplace and any chimney shall be so designed and constructed, as to reduce to a reasonable level the risk of the building catching fire in consequence of its use.”

J4 Provision of information

J4(a) states:
“Where a hearth, fireplace, flue or chimney is provided or extended, a durable notice containing information on the type of heat producing appliance which can be safely served by the hearth, fireplace, flue or chimney shall be affixed in a suitable place in the building.”

J4(b) states:
“Information on the system installed and any continuing maintenance required, to ensure its safe and effective operation and avoid risk to health, shall be provided to the owner.”

J5 Fuel storage system – protection against spread of fire to the system.

J5 state:
“A fixed fuel storage system, which serves a heat producing appliance, and any associated pipework carrying fuel to that appliance, shall be so located as to reduce to a reasonable level the risk of fuel ignition due to fire spreading from the building being served or an adjacent building or premises.”

J6 Liquid fuel storage system – protection against pollution by the system.

J6 states:
“A fixed liquid fuel storage tank, which serves a heat producing appliance, and the pipes connecting it to that appliance shall be so located, constructed and protected as to reduce to a reasonable level the risk of the fuel escaping and causing pollution.”

The primary impact considerations of Part J with regard to the historic fabric are:

1. Hearth - historic fireplace hearths
 2. Flue for exhaust - historic flues
 3. Air supply
1. Hearth
Need to assess suitability of the existing/historic hearth for use with appliances. Typically existing hearths are set flush with the floor, often made of stone or slate laid on bricks or mortar and held within a timber frame formed by trimming joists. Where installing stoves within an historic fireplace it may be necessary to alter the hearth for compliance.
2. Flue for exhaust
A full survey should be carried out of all flues to assess suitability for reuse. Camera surveys and smoke tests are carried out by specialist firms. Typically lime mortar parging originally applied to flue lining will have deteriorated through use and the brick flue feathers can be in poor condition. The flue is likely to need relining for use.
- There are number of methods for lining flues and any decision to reline should be full informed by the existing condition.
3. Air supply
Integration of a background ventilator for external air supply into the existing fabric may be required and the location of such a vent requires careful consideration, particularly in front rooms.

Part K - Stairways, Ladders, Ramps and Guards

Where the building under goes a material change of use the requirements of Part **K** of the Building Regulations **shall not** apply to the building.

Such works, if any, as are necessary to ensure that the building complies with the said requirements, shall be carried out in accordance with article 11 of the Building Regulations.

K1 Stairways, ladders and ramps.
K1 Stairways, ladders and ramps shall be such as to afford safe passage for the users of a building.

K2 Protection from falling.
K2 In a building the sides of every floor, balcony and every part of a roof to which people normally have access, and sunken areas connected to a building, shall be guarded to protect users from the risk of falling.

K3 Vehicle ramps, floors and roofs.
K3 In a building, the sides of every vehicle ramp and every floor and roof to which vehicles have access shall be guarded against the risk of vehicles falling therefrom.

While Part K does not apply to existing buildings subject to material change of use, It should be noted that Part B and Part M refer to Part K and compliance with these parts may, as a consequence, require compliance with Part K.

A further consideration will be the Health and Safety implications of low window sills to open-able up and down sash windows. This common scenario in the Georgian Townhouse (particularly at ground and first floor levels), may require restriction of window opening, or discrete protective guardrails. The latter may be problematic where three are decorative window surrounds with operating shutters.

Part L - Conservation of Fuel and Energy

Where the building under goes a material change of use the requirements of Part L of the Building Regulations **do not apply to** the buildings that are **Protected Structures**.

Protected Structures

All the Georgian Townhouse buildings within the Study Area are protected structures and are therefore exempt from Part L. However, where feasible, it is recommended that consideration be given to upgrading building fabric and fixed services so as to reduce further CO2 emissions associated with the operation and use of the building.

When considering upgrading for thermal efficiency reasonable care should be taken to ensure continuity of insulation and to limit local thermal bridging to avoid condensation problems.

Upgrading works should mitigate mould growth and surface condensation.

Building envelope air permeability
To avoid excessive heat losses, reasonable care should be taken to limit the air permeability of the envelope of each dwelling. In practice this is mostly achieved by draught-proofing the windows. There are proprietary systems available but replacement of parting beads and staff beads should be avoided.

The above criteria should be used as a guide to develop a building specific strategy for the particular building under consideration.

Non-Protected Structures

For **non-protected structures**, and it is noted that there are historic buildings of similar construction, plan form, and material typology to the Georgian Townhouse which are often not protected, **the provisions of Part L do apply** as follows:

L1 states:
“A building shall be designed and constructed so as to ensure that the energy performance of the building is such as to limit the amount of energy required for the operation of the building and the amount of carbon dioxide (CO2) emissions associated with this energy use insofar as is reasonably practicable.”

L2 states:
“For existing dwellings, the requirements of L1 shall be met by:
(a) limiting heat loss and, where appropriate, maximizing heat gain through the fabric of the building;

(b) controlling, as appropriate, the output of the space heating and hot water systems;
(c) limiting the heat loss from pipes, ducts and vessels used for the transport or storage of heated water or air;
(d) providing that all oil and gas fired boilers installed as replacements in existing dwellings shall meet a minimum seasonal efficiency of 90% where practicable.”

Achieving Part L compliance for non-protected structures subject to a material change of use can be challenging. The Technical Guidance Document does not provide sufficient guidance for many historic buildings of traditionally, solid wall, breathable construction. The selection of insulation systems to achieve the required standards needs to consider vapour permeability and condensation risk amongst other factors. Determining whether to apply insulation to the external face or internally, will require additional consideration to its performance, durability and suitability to mitigate mould growth and condensation, such as whether the building is located in an Architectural Conservation Area and the application of external insulation may therefore require planning permission.

Of particular concern is the risk of applying systems and solutions which might indicate compliance when assessed at design and specification stage but which may stimulate certain building performance problems. Specialist advice may be required. It may be appropriate to consult with the Building Control Officer and seek a dispensation.

Part M - Access and Use

The TGDs state:
Part M aims to foster an inclusive approach to the design and construction of the built environment. The requirements of Part M (M1 - M4) aim to ensure that regardless of age, size or disability:

...
(b) extensions to existing buildings other than dwellings are where practicable, accessible and useable;
(c) material alterations to existing buildings other than dwellings increase the accessibility and usability of existing buildings where practicable;
(d) certain changes of use to existing buildings other than dwellings increase the accessibility and usability of existing buildings where practicable...

Understanding how and where Part M applies and when a Disability Access Certificate is required is complex.

Q Is a Disability Access Certificate Required?

In 2009, SI No 351/2009 of the Building Control Act introduced the Disability Access Certificate (DAC) and when it was required. The Building Control (Amendment) Regulations 2018 (S.I. No. 526 of 2018) have since changed the circumstances where a DAC is required. The main change has been to separate the requirements for a Disability Access Certificate from the requirements for a Fire Safety Certificate.

The 2018 Amendments “explicitly specify the buildings or works, which require/do not require a Disability Access Certificate with respect to the requirements of Part M (Access and Use) of the Second Schedule to the Building Regulations. The amendment primarily clarifies the application of Disability Access Certificates to existing buildings when brought back into use”.

Article 20D (1)(e) clarifies that a DAC is not required for the Material Change of Use to a building, where:

- a) a flat, becomes so used,
- b) an office, becomes so used, or
- c) an industrial building, becomes so used.

The implication of the 2018 Amendments is that where a Georgian Townhouse building is being converted to flats, this Material Change of Use will not require a DAC. However, this does not exempt the works from the requirements of Part M (Access and Use) of the Second Schedule to the Building Regulations (where there is a Part M requirement). Part M continues to apply in the case of Material Alterations to a flat, or to a building containing a flat where Part M is applicable (but only to those works), as per Article 11 of the Building Regulations 1997 – 2017 (as amended).

Where the Georgian Townhouse is to be converted to more than one office unit, the material alterations will continue to require a DAC. The situations where there may be a combination of residential and office use is likely to require specialist advice, or prior consultation with the Local Authority Building Control Officer to determine if a DAC is required or not.

Where the Georgian Townhouse is being converted to a single dwelling from an alternative use, e.g. office or multiple residential, or office and residential, there remains no requirement for a DAC.

Q Does Part M apply even if a DAC may not be required?

It is likely that many, if not most conversions of the Georgian Townhouse will undergo material alterations as defined in the legislation, probably to ensure compliance with Part B, Fire Safety and therefore the circumstances where Part M does not apply are likely to be rare. However if, for example, a recently upgraded office use in a Georgian Townhouse, is converted to three apartments without requiring any material alterations (any works under Part A or Part B), Part M may not apply. It is recommended that either specialist advice or the Building Control Officer is consulted in such scenarios to ensure a correct interpretation of the Building Regulations and Building Control Act.

Where Part M does apply, the following guidance is provided. A key challenge is understanding and applying the principle of ‘practicability’ as allowed for within Part M.

M1 Access and Use

M1 states:
Adequate provision shall be made for people to access and use a building, its facilities and its environs.

Application of the Part

M2 states:
Adequate provision shall be made for people to approach and access an extension to a building.

M3 states:
If sanitary facilities are provided in a building that is to be extended, adequate sanitary facilities shall be provided for people within the extension.

M4 states:
Part M does not apply to works in connection with extensions to and material alterations of existing dwellings, provided that such works do not create a new dwelling.

Q Can the building be successfully adapted to meet the requirements of Part M in a practicable manner?

The term ‘practicability’ is used in connection with works (e.g. material alterations and certain material changes of use) to existing buildings where achieving standards of accessibility associated with new buildings is not feasible because of particular circumstances.

Determination of practicability

TDG M states:

“In the determination of ‘practicability’ with respect to works to an existing building, its facilities or its environs the following non-exhaustive list of circumstances should be considered.

- (i) Where the works would have a significant adverse effect on the historical significance of the existing building, facility or environs e.g. works to a Protected Structure;*
- (ii) Where the existing structural conditions would require moving or altering a load bearing member which is an essential part of the overall structural stability of the building*
- (iii) Where other existing physical or site constraints would prohibit modification of an existing feature.*
- (iv) Where the works would need to be carried out on part of a building, its facilities or its environs that are not under the same control/ownership e.g. in the case of a sub-leaseholder in a multi-occupancy building.*
- (v) Where specific alternative guidance to Section 1 is provided in Section 2 and an existing feature or facility satisfies that guidance.*
- (vi) Where a specific planning condition prohibits modification of an identified existing feature.”*

Section 1 of Part M applies to both new and existing buildings and sets out minimum requirements to meet Part M. Where it is not practicable to apply Section 1 guidance to existing buildings, adherence to the guidance in Section 2 will also prima facie indicate compliance with Part M.

Part M Section 2 - Access and Use of Existing Buildings other than Dwellings

The guidance in Section 2 applies to certain elements and features of existing buildings other than dwellings and their environs. The guidance in Section 2 also applies to the common areas of existing apartment blocks and their environs. This would include a Georgian townhouse converted to a number of residential units. Section 2 states:

“Works to existing buildings, such as extensions, material alterations and certain material changes of use, can present many design challenges because of the individual character, appearance and environs of existing buildings.

The adoption without modification of the guidance in the TGD Part M document may not in all circumstances be appropriate.

While each existing building and site will present its own unique access opportunities and constraints, which may result in different ways of addressing accessibility, the fundamental priorities of accessibility should be as set out in M1, i.e. accessing and using a building, its facilities and environs.

The application of this Part may pose particular challenges for buildings which are of architectural or historical interest. When considering works to an historic building, it is important to establish what is important or significant about the building.

Historic buildings can be significant in many different ways, for example, in its physical fabric, in its historical associations or in its archaeological potential. The better the understanding of what is important, the easier it will be to design appropriate accessible solutions.

Information about the significance of a building may be obtained from a conservation plan or statement, where these exist, or from the architectural conservation officer from the relevant local authority.

Whilst the provisions of the Building Regulations do not relate to management, the role it can play in improving the accessibility of existing buildings is acknowledged. Designers/owners should be mindful of this and consider enhancing the accessibility of existing buildings through appropriate management solutions or compensating for existing buildings that have to apply for a (partial) dispensation or relaxation from Part M.“

It is important to note that Part M will apply only to material alterations being carried out and those areas affected by the material alterations.

Section 2 refers to the ‘Advice Series: Access – improving the accessibility of historic buildings and places’ by the [Department of the Environment, Heritage and Local Government] Department of Culture, Heritage and the Gaeltacht for guidance and also advises consulting with the Local Authority Building Control Office.

Practicability and The Georgian Townhouse

The Georgian Townhouse represents a particularly challenging building typology to achieve Part M compliance. With its multiple levels and relatively small floor area at each floor level, introducing lifts or ramps has limited application and is likely to provide only partial access.

It is recommended that an accessibility audit is carried out on the building to identify deficiencies with regard to compliance with Part M arising from the proposed design. The single most challenging issue is dealing with changes in level within the inherent constraints of the building form and its settings.

An assessment of ‘Practicability’ should be carried out based on criteria set out in Determination of practicability in TGD M.

Where it is not practicable to implement the guidance in TGD Part M (section 2) an assessment of alternative design options should be considered to ensure proposals would represent the most sensitive access solution available.

In specific cases, where a Georgian townhouse is being returned to residential use and the quality of the design and residential amenities is of high quality, a dispensation or relaxation (or partial dispensation or relaxation) of the Requirements may be granted by the local Building Control Authority.

3.1.3 Other Legislation

The Safety, Health and Welfare at Work Act, 2005

Health and safety regulations such as the Workplace (Health, Safety and Welfare) Regulations may impose requirements on employers and those in control of build-ings used as workplaces in relation to certain physical characteristics of the workplace.

Fire Services Act 1981 & 2003

The current structure of the Fire Service in Ireland is based upon the legislation of the Fire Services Act of 1981 & 2003.

While the “duty of care” in respect to Fire Safety in Build-ings rests with the Owner/Occupier under the Fire Ser-vice Act, 1981, the Fire Authorities have various powers of inspection and enforcement for Fire Prevention/safety measures in existing Buildings.

“It shall be the duty of every person having control over premises to take all reasonable precautions to guard against outbreak of fire on such premises and to ensure as far as reasonably practicable the safety of persons on the premises in the event of an out-break of fire” (extract from Fire Services Act).

Disability Act 2005

This sets requirements for certain public buildings to be accessible. The nature of the use and occupier will influence the nature of accessibility to be provided and the application of the principle of practicability as set out in Part M of the Building Regulations.

It is important to consider at the outset, the appropri-ateness of a public use in a Georgian townhouse type building, especially where the building may be of partic-ular architectural heritage significance and can present considerable challenges in meeting the social impera-tives and statutory requirements for access while also ensuring the aspects of special architectural importance are maintained.

3.2 The Statutory Development Plan – Devel-opment Standards and Objectives

The current Dublin City Development Plan 2016-2022 contains a number of policies and objectives which are of particular relevance to anyone taking on the adapta-tion and refurbishment of a protected Georgian town-house. These include:

3.3.1 Built Heritage Policies and Objectives (Section 11)

Policy CHC2 states (following is extract from this Policy):

- “To ensure that the special interest of protected structures is protected. Development will conserve and enhance Protected Structures and their curti-lage and will:
- (a) Protect or, where appropriate, restore form, features and fabric which contribute to the special interest
- (b) Incorporate high standards of craftsmanship and relate sensitively to the scale, proportions, design, period and architectural detail of the original build-ing, using traditional materials in most circumstanc-es
- (c) Be highly sensitive to the historic fabric and spe-cial interest of the interior, including its plan form, hierarchy of spaces, structure and architectural detail, fixtures and fittings and materials
- (d) Not cause harm to the curtilage of the structure; therefore, the design, form, scale, height, propor-tions, siting and materials of new development should relate to and complement the special char-acter of the protected structure
- (e) Protect architectural items of interest from damage or theft while buildings are empty or during course of works
- (f) Have regard to ecological considerations for ex-ample, protection of species such as bats,

Changes of use of protected structures, which will have no detrimental impact on the special interest and are compatible with their future long-term con-servation, will be promoted.

Under 11.1.5.3, Policy Application, the Development Plan states:

“Any development which affects the interior of a protected structure must be highly sensitive to the historic fabric and special interest of the interior, including its plan form, hierarchy of spaces, struc-ture and architectural detail, fixtures and fittings and materials. The original plan form of protected

structures should be protected or re-instated and not compromised by unsympathetic alteration or extension. Proposals for amalgamation between protected structures which compromise the orig-inal plan form will be considered unacceptable where they adversely affect the historic integrity and special interest of the structure. Breaches between party walls will not be acceptable in sensitive parts of protected structures”. (11.1.5.3)

“Where a change of use is proposed, the building should be capable of being converted into the new use without harmful extensions or modifications, especially if the change of use would require new openings, staircases and substantial sub- divisions to the historic floor plan or loss of historic fabric. Issues such as fire protection, sound proofing, servicing and access will also require detailed consideration. In finding the optimum viable use for protected structures, other land-use policies may need to be relaxed to achieve long-term conserva-tion.” (11.1.5.3)

3.3.2 Land Use Zoning Objectives

With regard to Land Use Zoning objectives (Section 14) the following specific objective applies to Protected Structures:

14.5 Relaxation of Zoning Objectives for Protected Structures
Dublin City Council actively encourages uses that are compatible with the character of protected structures. In certain limited cases, and to ensure the long-term viability of a protected structure, it may be appropriate not to stringently apply city-wide zoning restrictions - including site develop-ment standards - provided the protected structure is being restored to the highest standard; the special interest, character and setting of the building is pro-ected; and the use and development is consistent with conservation policies and the proper planning and sustainable development of the area.

This objective is of considerable significance and can allow for design proposals which might not conform with all the relevant standards of the City Development Plan, while ensuring that overall quality and sensitivity of approach is achieved.

3.3.3 Development Plan Standards for Residential Accommodation

Section 16.10 of the Development Plan outlines the standards for residential accommodation. This section provides for relaxation of standards for existing buildings as follows:

“The standards for residential accommodation may be relaxed in relation to the refurbishment of exist-ing buildings to take account of specific circum-stances, subject to the provision of good quality accommodation. Such specific circumstances relate to the need to encourage residential uses of existing vacant inner city buildings and include the regeneration area designated under the Liv-ing City Initiative to promote the residential use of upper floors, including protected structures. In such specific circumstances, the minimum floor area for 1 bed units shall be 45sq.m. if 10 square metres of storage is made available within the building or on site to include storage for bicycles and wet storage if possible”.

The Department of Housing, Planning and Local Govern-ment has also published revised department Guildeines in 2016 which provide for smaller apartments/studios.

There are some development plan standards which Dub-lin City Council will be unlikely to relax, such as provision of daylight and sunlight; waste management provision (bin storage, collection, etc.) and general standards for storage. However, requirements for private open space may be relaxed where quality room proportions, multiple aspects, sunlight and proximity to public parks, etc., are available. The DHPLG has also published revised de-partment Guidelines in 2016, which provide for smaller apartment/studios.

3.3.4 Development Contributions:

Dublin City Council Draft Development Contribution Scheme 2016-2020 (under Section 48, Planning & Development Act, 2000 as amended) provides for ex-emption of Development Contributions for “Works to, and change of use from residential use to commercial and vice versa, of buildings included in the Record of Protected Structures. Protected Structure refers to the actual structure(s) and does not include development within its curtilage”.

Part V Planning and Development Act 2015:

Social and Affordable Housing requirements: Multi-res-idential units being accommodated within a protected Georgian Townhouse are exempt from the provision of Part V where the works comprise “the conversion of an existing building or the reconstruction of a building to create one or more dwellings provided that at least 50% of the external fabric is retained”.

3.3 Taking into consideration the Architectural Heritage Protection Guidelines (DCHG, 2011)

In addition to providing guidance with regards to the implementation of Part IV of the Planning and Development Act which addresses Protection of Architectural Heritage, these Guidelines also provide detailed guidance notes on a range of different aspects and elements of protected structures, addressing roofs; interiors; walls and other structural elements; openings (doors and windows); curtilage and attendant grounds; enabling and temporary works; alterations to enhance fire safety; improving access, amongst others.

The Guidelines set out Conservation Principles which are listed below. These acknowledge that “*Good conservation practice allows a structure to evolve and adapt to meet changing needs while retaining its particular significance. The challenge facing owners, planning authorities and all others involved in architectural conservation is to identify how and where change can occur and to ensure that the heritage is not damaged by inappropriate intervention. Additions and other interventions should be sympathetic to the earlier structure and of quality in themselves and should not cause damage to the fabric of the structure, whether in the long or short term.*”

- Keeping a Building in Use
- Researching and Analysing
- Using Expert Conservation Advice
- Protecting the Special Interest
- Promoting Minimum Intervention
- Respecting Earlier Alterations of Interest
- Repairing Rather than Replacing
- Promoting Honesty of Repairs and Alterations
- Using Appropriate Materials and Methods
- Ensuring Reversibility of Alteration
- Avoiding Incremental Damage
- Discouraging the Use of Architectural Salvage from Other Buildings
- Complying with the Building Regulations

The DCHG has also published an Advice Series of more detailed guidance on a number of particular aspects of historic building repair and alteration. Of particular relevance are those on Maintenance; Windows; Brick; Roofs; Access; Iron and Paving.

These Guidance documents are available on-line in PDF format. See Chapter 5 Useful Sources of Information for the relevant access links.

3.4 Guidance Principles for Practical and Functional Requirements:

This section looks at some common alterations and interventions encountered which address more general

aspects of function and accommodation requirements. It sets out some practical guidance on key considerations and provides some suggested ways to integrate these requirements sensitively. Most of the interventions below will be considered material alterations to a Georgian house which is a protected structure, and would therefore require planning permission. The guidance is therefore general and depending on the particular condition and qualities of the specific building, the approaches below will be more or less appropriate. Pre-planning consultation with the local authority is always advised to avoid pursuing designs which may not ultimately be permitted. This consultation may also lead to alternative and better solutions which may not have been previously considered.

A general design principle should be to consider the introduction of new physical interventions as opportunities to serve more than one function. For example, a new partition might also become a storage wall with shelving, or might allow for the passage of light (borrowed light) into a newly created internal space. Or, a wall of storage units in a bedroom might conceal the waste pipe and ventilation duct running from the adjacent bathroom. While this may require bespoke fittings, these do not necessarily have to be high cost solutions. However, where made to suit the dimensions and particular characteristics of the building, they can also be more efficient and effective as well as integrating more comfortably.

3.4.1 Compartmentation and Plan Layout

As noted in the introduction to this report, often the best design layouts will work with the existing plan form of the house. However, the typical floor plan of the Georgian townhouse has a small number of large rooms – two at ground and first floor, with the upper floors often with two rooms to the front and one, or two, to the back. The basements often have greater subdivision. Where the building footprint is large – for example the Type A houses – this can mean the historic rooms are large. Where making separate residential units on each floor, or over two floors, there is a need to integrate bathrooms and storage areas and this will likely require introducing new partitions to sub-divide the original spaces. It may also require forming new openings or closing existing openings.

Partitions

Where existing partitioning exists is this suitable for retention? Does it provide sufficient sound insulation between rooms? Has the partition caused damage to decorative ceiling plasterwork and cornices? Is the partition weight creating a loading problem on floors? Are the sub-divided rooms receiving sufficient daylight

and ventilation for the purposes proposed? Where the answers to these questions suggest the partition is not a problem, then its retention may make sense. However, often the partitioning carried out in the 20th century may not be the most suitable and may need to be replaced. Its removal/replacement may present the opportunity to recover some of the architectural integrity of the room where the partition caused damage.

In planning layouts and designing for new partitions, the following considerations may be of use:

- Consider future reversibility of the partition. This means that the partition can be removed at a later date without having caused damage to any of the historic/existing fabric and finishes which are of innate quality.
- Where running full height, locate partitions to create comfortably proportioned rooms. Ensure daylight and ventilation can be provided in the rooms where needed.
- Consider the partition as a new element with a clarity of design between the historic walls and the new partition.
- Consider the junctions between the new partition and the existing fabric and features, particularly where the new partition might meet decorative cornices and joinery – avoid cutting into and damaging these historic decorative elements.
- Consider opportunities to introduce glazing into partition. In particular, where there are high ceilings well designed high level glazing (clerestory) can lighten the overall look (as well as actual weight) of a partition in addition to allowing for natural light to pass through. Obscure/semi-translucent and coloured glazing can be used where a level of visual concealment may be required. The glass may need to meet certain fire or sound insulation ratings.
- Consider the impact of the weight of a partition on the floors. Do the floors require strengthening to take the additional loading? The advice of a structural engineer may be necessary.
- Ensure the partition meets the necessary building regulation requirements for fire and sound where and if these might apply.

Taking an integrated approach to all new sub-division elements can create a clear and elegant architecture for the new interventions. Thus, storage elements (wardrobes, storage), kitchen fittings, new partitions, etc., might all be treated as new elements of ‘furniture’. Recent successful examples of this have used good quality solid and veneer timbers for the new elements. Alternatively, painted timber finishes might achieve a similar effect. The design concept is to have a distinction between the original fabric and the new interventions, however, ensuring that the new interventions are made of quality materials and well crafted in their making.

Openings

Where existing doors are to be closed off to suit a new layout, if the door is historic and of quality, then it may be desirable to leave the door in place and partition over it to achieve the necessary fire and/or sound protection as necessary. The removal of door handles may be necessary to achieve a finish flush with the adjacent wall within which the door sits. If this approach is not feasible, or the door is not of particular architectural heritage value, then it can be removed and a new partition placed in the door opening. It may be desirable to indicate the former presence of the door in some way – perhaps by leaving a small recess on one side – especially if this will lend clarity to the historic plan form where it is being altered.

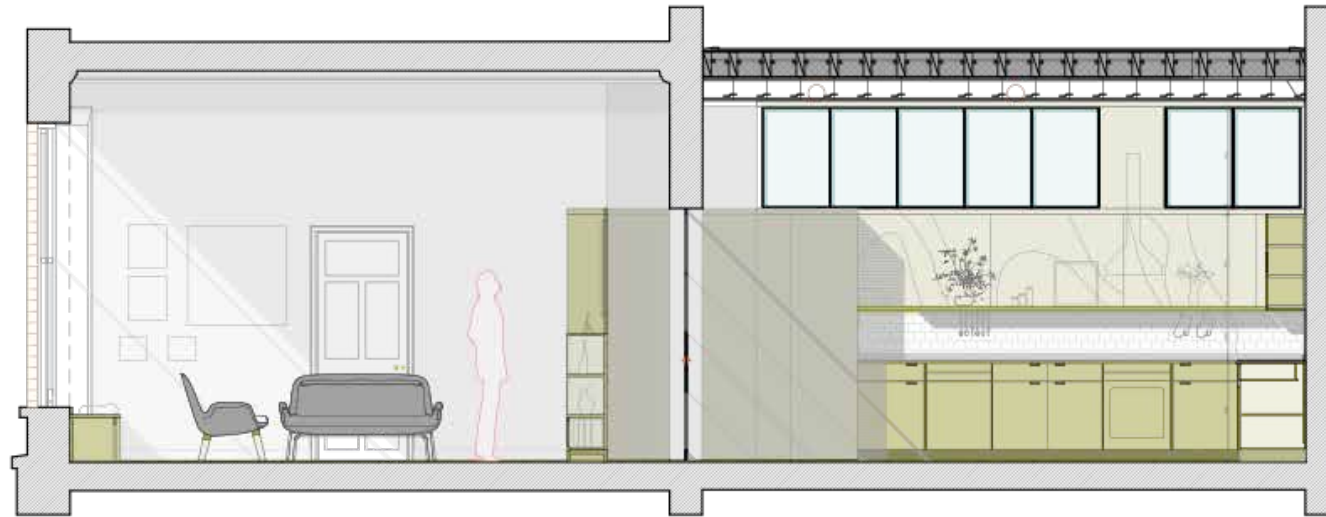
The introduction of new openings is challenging and requires careful consideration and understanding of the spatial quality of the rooms being affected by this new intervention. Where forming new openings avoid clumsy interface with historic joinery, windows and other decorative elements. Care is needed to avoid forming openings which might cause structural damage. The typical construction of a Georgian type building does not allow for extensive new openings to be formed in walls without sufficient structural intervention, so the necessary expert advice will be required.



Figure 5. Apartment in refurbished Victorian House, Dublin 4 (source: www.lawrenceandlong.com)



Figure 6. Steel and glass partitions in historic residential scheme. It can be difficult to achieve the slim profiles shown where partitions require to be fire-rated. (source: www.koldby.com & www.trendecora.com)



Section 3- Apt 62/30 GF Kitchen /Living Room



Section 4- Apt 62/30 GF Bedroom/Living Room



Figure 7. Cross-section drawings showing proposed layouts for residential apartments in Dublin 2 Georgian houses (source: Shaffrey Architects)

3.4.2. Introducing Building Services

One of the most challenging and demanding interventions on the historic Georgian townhouse is the introduction of building services to support residential use. Building services can be divided into wet and dry. Wet services are all those involving water – typically water based heating systems; supply of hot and cold water and, drainage. Dry services include power (electricity); data (IT, telecoms) and the general wiring associated with fire protection systems. Some fire safety solutions will also involve wet based systems such as misting systems to allow for early suppression of fire (Section 3.1.2 addresses the fire safety requirements more specifically). Ventilation is also a dry service and, while day to day ventilation can generally be provided naturally through the sophisticated sash window, background ventilation requirements (See 4.1.5) and ventilation of bathrooms may require power and some level of ductwork.

The main challenge in designing for building services is how to neatly integrate the vertical and horizontal routes for the necessary cables, pipes and ducts. The following sets out some useful principles when planning for introduction of new services in the historic Georgian building:

Existing Services:

These need to be carefully assessed to establish if they can be safely retained and reused. In addition to assessing the condition and re-usability of the services elements themselves (boilers, radiators, pipework, cables), any damage caused by their installation also needs to be assessed. Often floor joists will have been notched and drilled in a manner which had undermined their structural integrity. Other common damage is where surface pipework or cabling cuts through decorative cornices or joinery. Repairs to these should be incorporated in building works.

Routes for New Services

Reuse of existing routes may be appropriate where these have not caused damage to existing structure and fabric. Review existing services carefully in advance.

Access and reversibility (future replacement) should also be considered and different services will have different access requirements. Also, the need to alter and access wiring in a residential context is likely to be different to that in an office which will normally be more demanding. Advances in wireless technology offer solutions where providing the cabling infrastructure may require undesired amount of intervention. However it should be noted that some wireless fittings, such as security alarm contacts (typically placed on windows) may be significantly larger than wired and careful concealing of such wiring (e.g. within the shutter box surround to the window) may provide a neat route and a better solution.

Vertical Services Risers

Existing routes may be suitable for reuse. This might help in avoiding new chasing into historic plasterwork. Chasing into historic plasterwork should be limited and located to avoid any decorative finishes of significance. It may be possible to route services vertically through new partitions to avoid awkward boxing out. Care is needed to ensure the required protection and separation of services when passing from one compartment to another so that compliance with the relevant Building Regulations (e.g. fire protection separation and sound insulation) is maintained. This can be very challenging when integrating within an existing building condition and requires careful building execution.

With regard to drainage, it is generally preferable to deal with foul stacks externally and to the rear of the building. Therefore the location of bathrooms and other functions with wet services (kitchens), should consider the route from waste outlets to the rear wall, making allowance for the necessary falls, etc. Pumped systems are possible but a less desirable solution imposing greater demand for maintenance. Running vertical risers internally is possible for access for maintenance and repair needs consideration as well as ensuring proper fire and sound proofing.

Horizontal Services Routes

The typical timber floor construction of the Georgian house allows for integrating horizontal services routes within its voids. In this respect, it is a very resilient construction method. However, certain rules need to be adhered to with regard to any notching and drilling of floor joists to allow for the passage of services and this is to ensure the structural integrity of the floor structure is not compromised. Where possible, services routes should run parallel with the joists, thus minimising the need for drilling or notching the timber joist. The floor is a critical element, often forming a significant boundary element between different units and is required to achieve minimum standards for fire and acoustic protection. So, introducing services into this zone needs to ensure all standards can be met. Identifying the routes for services early on in a design can avoid problems arising during construction.

Sockets and Switches

Wireless and remote IT technologies allow for reduced physical intervention of wall finishes for cabling, e.g. through wireless light switches or lighting control systems which are controlled remotely from a smart phone/tablet. If implementing conventional systems, then reuse of existing routes and minimising chasing of important plaster is advised.

The integration of sockets for power and data within the floor void can avoid the need to chase walls, remove skirtings, etc., where this may be desirable. Neat covers can be integrated within historic timber flooring, though these are more awkward to integrate within a carpet finish. For office uses there are proprietary floor box systems with covers which allow for carpet and other finishes and these can be quite acceptable in the office environment.

Lighting

Consideration might be given to lighting layouts which avoid or minimise ceiling fittings. This could be helpful where future access is restricted due to potential impact on the integrity of the floor above as a means of compartmentation between different units.

Space Heating

Typically radiator panel heating has been installed in the Georgian townhouse. Underfloor heating can be appropriate however it requires careful detailed design and coordination when installing. It is also more suitable where room layouts are unlikely to change or be subject to future sub-compartmentation. Specialist advice is recommended where considering underfloor heating.

Ventilation

Ventilation is also dealt with in 4.1.5 (Part F) of this report. Ventilation of internal bathrooms and kitchens can be challenging in finding an clear route to the external air. Existing chimney flues may be suitable to provide ventilation. Advance investigation is required to ascertain sufficient dimension, their construction integrity and a clear vertical route to the external air. Installation of flue liners can provide the necessary route for ventilation duct. The need for any fans, their location and access for their maintenance also needs to be taken into account. Other solutions may involve integrating ductwork in the design of bespoke furniture elements, e.g. wall mounted



Figure 8. Free-standing kitchen unit in Georgian room. Designed as piece of furniture and carefully located to allow for waste and water pipework to run within floor zone (source: Shaffrey Architects)

continuous storage units might conceal a horizontal services route which might otherwise be visible as a somewhat unsightly boxed out projection.

Installing Lifts

As noted in Section 3.1.6 (Part M) of this report, Dublin City Council has been prepared to issue Part M dispensations for Georgian type protected structures with multiple levels where the proposal is to create good quality residential units which have proper regard to conservation objectives and policies of the City Development Plan. However, in some instances and perhaps for commercial of particular reasons, the integration of a lift may be desirable. The layout of the typical Georgian townhouse does not make for the easy insertion of a standard passenger lift within the main body of the house and it can also prove inefficient in terms of space lost to circulation, fire lobbies, etc. Subdivision of primary rooms to incorporate lift shafts and potential disruption of decorative ceilings, etc., are going to prove difficult to resolve without adverse impacts.

There may be certain circumstances where lifts can be constructed as new extensions to the rear of the main house and be integrated sympathetically. The lift at the rear of the Irish Architectural Archive in Merrion Square is a successful example. However, its efficiency is primarily due to the unusual plan form and width of the building. In other situations where two or more houses may already be interconnected, the introduction of a passenger lift may be more practicable where the lift can be planned to serve a number of rooms at every floor. Another recent example is the Tenement Museum Dublin in Henrietta Street where a brick lift shaft built on the footprint of a former rear return structure and separated from the rear facade by a timber and glass enclosure, serves the three public floors of the museum.

There are several successful examples of the integration of wheelchair lifts within the front basement areas which provide universal access to basement floors. No 8 Merrion Square (the headquarters of the RIAI), is one such example which has also been able to accommodate a small vertical lift serving basement and ground floor levels. In this way some of the building floors can be made accessible if not all.

Other solutions for providing partial lift access may arise where redevelopment to the rear forms part of an overall development and a lift might be more easily accommodated in rear structures with links to the main house, or main house return. However, the often half level condition of the return (accessed off the stairs' half landings), limits this.

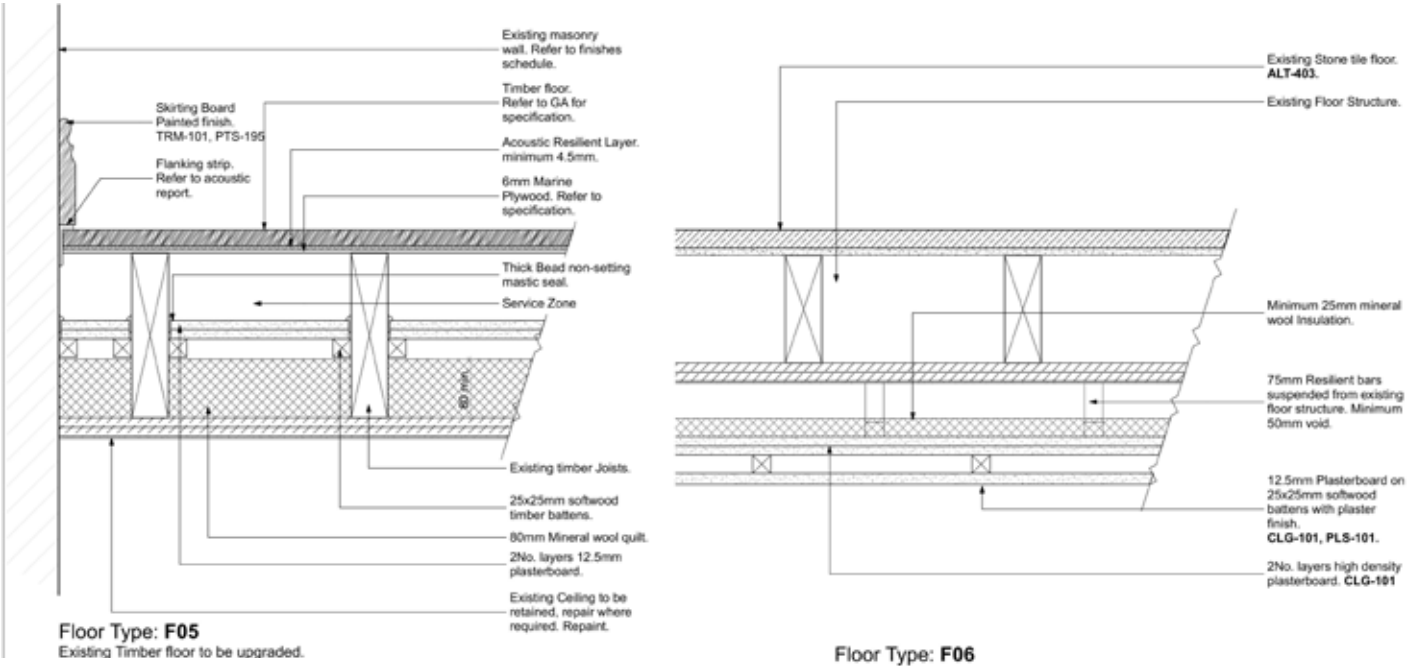


Figure 9. Indicative details for upgrading a typical Georgian floor to address Fire and Sound regulations. These details are provided for general information only and not for compliance purposes. It can be noted that these details form part of a Part E dispensation granted for a Georgian house conversion to multi-dwelling use. The above details are proposed where existing decorative cornices and ceilings of significance occur. Copyright of detail and drawing: Shaffrey Architects

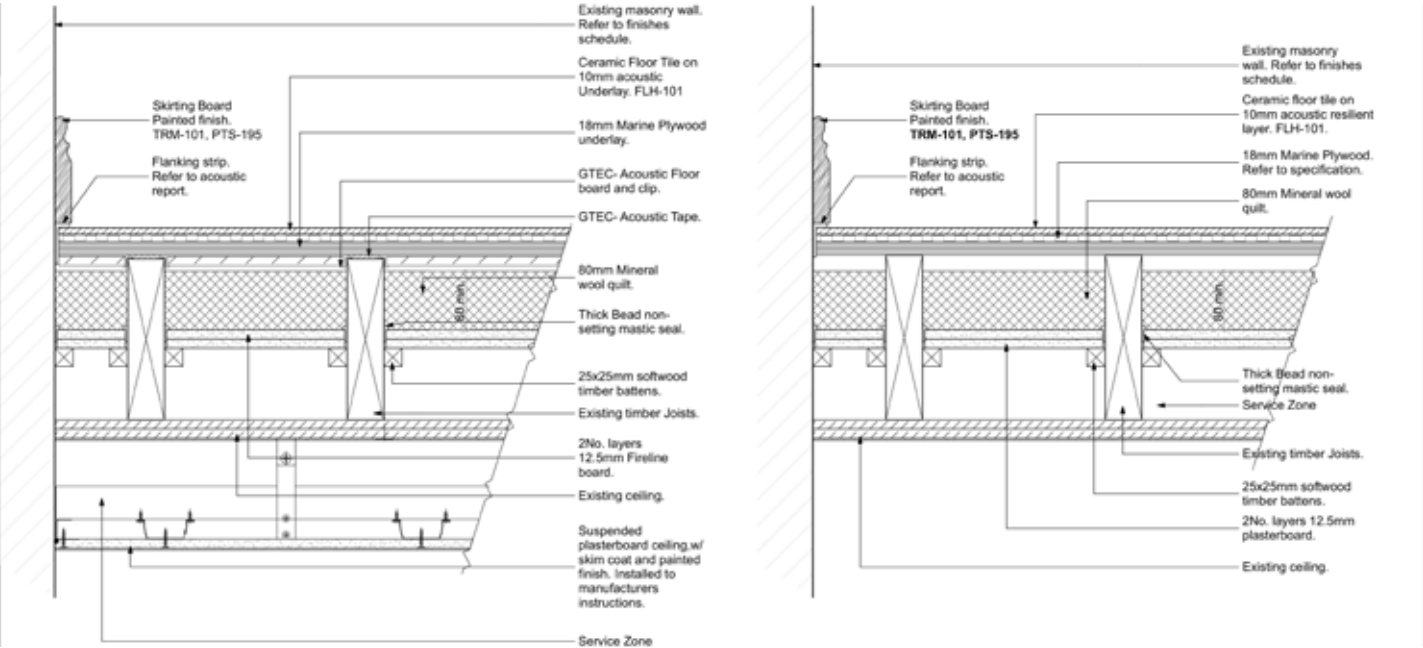


Figure 10. Indicative details for upgrading a typical Georgian floor to address Fire and Sound regulations. These details are provided for general information only and not for compliance purposes. It can be noted that these details form part of a Part E dispensation granted for a Georgian house conversion to multi-dwelling use. The above details are proposed where existing ceilings are plain and there is sufficient space between ceilings and joinery (typically window architraves). Copyright of detail and drawing: Shaffrey Architects

3.4.3 Storage

The concept of treating storage within the main house rooms – either for a residential apartment or and office – as bespoke furniture which can also function as a device to create separate areas and sub-divide rooms, can work well architecturally.

It may be difficult to provide all the storage requirements within the residential unit being formed and often storage can more readily be accommodated within the rear return or there may be cellars under the footpath and accessed off the front basement area. These types of spaces can be suitable also for bins, bicycles, water tanks, shared laundry facilities, and other space requirements which could serve the entire building. As the number of separate units being created in a single house is always likely to be small, collective and shared solutions can be workable and practical and can allow those parts of the building which are difficult to incorporate into the individual unit to be put to good use. Such solutions, however, require good management and maintenance procedures to be implemented.

The impact of storage weight on the floors needs to be considered. The typical timber floors of the Georgian townhouse are generally capable of taking domestic type loading. However, it is important to check that floor joists have not previously been undermined through notching, cutting etc., to allow for the running of pipes and cables.¹³ Office loading is more demanding and may require some strengthening of floors.



Figure 11. Apartment in refurbished Victorian House, Dublin 4. (Source www.lawrenceandlong.

¹³ The timber may also have suffered decay especially where joist ends may be bedded in external walls. There are simple well tested techniques to repair the timber elements, however this study does not address repair techniques and there are other useful sources of information advice on this.



Figure 12. In-built storage design. (Source: www.mclarenexcell.com)



Figure 13. Kitchen units. (Source: www.mclarenexcell.com)

3.4.4. Parking

As noted previously, provision of car parking for most types of development uses will not be required in the South Georgian Quarter. The opportunity to recover rear gardens which have been converted to parking, within the context of a redevelopment proposal should be taken – there are better uses to be made of this important ground as outlined in Section 2.3 above. Where car parking may be required, arrangements can be made to obtain residential parking permits at a set fee from Dublin City Council. Off-street car parking can also be rented where required.

3.4.5 Improving Energy Efficiency

Protected structures are exempt from the requirements of Part L of the Building Regulations and so there is no statutory requirement to carry out works to improve the thermal or energy performance of the Georgian townhouse which is a protected structure. However, where measures can be taken to improve efficiency which can be achieved without adversely impacting on the protected structure these will be encouraged and facilitated through the planning process. The Dublin City Development Plan 2016-2022 contains a specific policy on this:

CHC6: To ensure a sustainable future for historic and other buildings subject to heritage protection. The City Council will encourage and support works to upgrade the environmental performance of the existing building stock that incorporates good standards of design and appearance. Where these works involve historic buildings subject to protection (this includes buildings referenced on the Record of Protected Structures and non-protected structures in an Architectural Conservation Area), the works shall not adversely affect the special interest of the structure and thus a sensitive approach will be required, taking into account:

- *The significance of the structure, and*
- *The extent of intervention, including impact on historic fabric, traditional construction, visibility, siting and design.*

The installation of renewable energy measures and equipment will be acceptable where sited and designed to minimise the visual impact and does not result in any significant loss of historic fabric or otherwise affect the significance of the structure.

The City Development Plan goes on to advise: “*For historic structures, simple measures such as draught proofing, energy and water efficient appliances, roof insulation and repair and maintenance work can bring substantial*

improvements and have minimal other impacts, both visually and on historic fabric and traditional construction. Such minor interventions should always be considered first as these are usually non-contentious, may not require planning permission and can provide significant benefits at low cost.”

There are other measures which might assist in improving the thermal performance of the historic building and there are references to some useful sources of information on these at the end of this report. An increasingly common measure, often popular in Georgian buildings due to the size of windows, is to introduce secondary glazing systems which can also assist in reducing external sound impacts. However, fitting secondary glazing can sometimes be difficult to integrate neatly within the typical Georgian window condition. Where the shutter box surround is tight against the sash windows, it may be necessary to alter the position of the shutter box and provide sufficient space for a second window. This work requires skilled and experienced joinery and is likely to require planning permission. Other systems for improving performance of windows is the use of relatively new and thermally enhanced types of glazing which can be retrofitted into the typical narrow glazing bar dimension.

The impacts of these alterations may have planning implications and advise should be sought in pre-planning consultation.

Where it is not proposed to use historic fireplaces, another possible measure to improve thermal efficiency, can be to insert chimney balloons, or pillows, which reduce significant heat loss through the flues while allowing a level of ventilation to be maintained. They are visually discreet and so the fire surrounds and settings – often important decorative features in the Georgian room – are retained. These systems are also reversible, however they do need maintenance.

More elaborate solutions to improve thermal efficiency, such as internal insulation¹⁴ need careful consideration. They can be costly, can be difficult to install in a manner which avoids some level of condensation (unless full coverage can be achieved to an external wall there will be a risk of condensation occurring at the interface between the insulated fabric and the uninsulated section of wall) and can be challenging to apply around decorative cornices; fireplaces and decorative joinery elements (window surrounds, door surrounds, skirtings, picture rails, dado rails, etc). This work will more than likely require planning permission and is really only worthwhile considering if part of an extensive refurbishment project. The type of insulation material also needs to be carefully specified, normally breathable insulations which allows the historic solid masonry external wall continue to perform as originally designed.

¹⁴ External insulation is unlikely to be an option for the vast majority of these buildings which are primarily brick.

4 SOME DESIGN SCENARIOS

On the following pages are a number of designs which illustrate a range of layouts and different use mixes for the principle Georgian townhouse typologies that were described in Section 2. These layouts were selected from a larger number of designs developed as part of this study. The layouts presented here reflect some of the more typical and common scenarios of use mix and are restricted to the main house and its return.

Some of the other solutions explored integration with development to the rear and interconnection of Georgian houses, however as these depend on quite specific and less common conditions, they have limited wider application and so have not been included in this report.

The following table lists the design layouts and the use mixes:

House Typology	Design Option	Proposed Use Mix	Floor Areas
Type A			
	Option 1	Four-storey office over basement apartment	Office: 582 m2 Apartment: 150 m2
	Option 2	Duplex apartment over three-storey Office	Apartment: 255 m2 Office: 452 m2
	Option 3	Duplex apartment at second and third floor First floor single level apartment Duplex apartment at basement and ground floor	Upper duplex: 255 m2 FF apartment: 115 m2 Lower duplex: 235 m2
Type B			
	Option 1	Duplex apartment at second and third floor Apartment at first floor level main house & first and second floors of rear return Duplex apartment at basement and ground floor	Upper duplex: 165 m2 FF apartment: 156 m2 Lower duplex: 183 m2
	Option 2	Duplex apartment at second and third floor Apartment at first floor level main house & first and second floors of rear return Office at basement and ground floor	Upper duplex: 165 m2 FF apartment: 156 m2 Office: 157m2
	Option 3	Duplex apartment over three-storey office with second stairs	Apartment: 155 m2 Office: 330 m2

The design layouts are intended as general guidance for more typical projects and there will always be particular conditions relating to every building which will require specific solutions. The designs presented here have also been developed for specific buildings and so their direct transferability will not be universally applicable. However, they present a range of approaches and responses with some generally consistent considerations.

House Typology	Design Option	Proposed Use Mix	Floor Areas
Type C			
	Option 1	One-bed apartments at first, second and third floors over duplex apartment at basement and ground floor	FF Apartment: 63 m2 SF Apartment: 63 m2 TF Apartment: 63 m2 Duplex Apartment: 150 m2
	Option 2	Three-storey house/apartment over basement apartment	Three-storey house/apt: 281 m2 Basement apt: 100 m2

While the study did develop a number of design solutions for a Type D house, as this typology varies considerably (it being the ‘atypical’ plan) and therefore has limited universal application, these are not presented in this report.

The Design Scenarios share common design intervention issues as well as presenting specific design challenges. Some are more straightforward in their layouts and raise less difficulties in meeting the various regulatory standards. Others are presented here for consideration by the statutory authority – their layouts do not directly align with standard guidance documentation.

Some of the more challenging layouts have precedent within the Georgian city and reflect a use mix for which it is understood that there is a commercial demand for. This would include the arrangement of residential over a single office unit with a single stairs. The Design Scenarios – Type A Option 2 and Type B Option 3 explore this layout and provide some possible solutions to addressing fire.

Other layouts present challenges in terms of integrating services, in particular waste water outlets and ventilation of kitchens. This would include the first floor apartment of Type A Option 3 which has the kitchen unit in the front room. Such a layout will require a pumped solution to take the waste water to the rear. There are discrete units which can be integrated within the kitchen unit and use a slim dimension waste pipe which can be accommodated within the floor zone. Here, the structural restrictions on notching and/or drilling joists to take services must be adhered to. Dealing with the cooker extract may require an external vent on the front facade –this needs to be designed and addressed in the planning application so that any impacts can be fully assessed. There are neat and quality metal vents which may be possible to insert within the brick facade discretely. An alternative solution involves the insertion of a vertical services riser

within the main stairhall. Depending on the architectural decoration, this may be more or less challenging. So, a decision on which is the preferable option may need to balance external against internal impacts.

Each Design Scenario is set out with some descriptive text outlining some of the particular design interventions involved and some key design, conservation and building regulation issues. The descriptions will not cover every intervention involved, nor are they to be considered the best or only solution in any particular case and, as such, are intended as general guidance only.

The Design Scenarios proposed in this chapter are indicative only and are for guidance purposes to illustrate possible solutions. They are not binding on the planning authority. In dealing with pre-application consultations and planning applications each proposal will be considered on its merits having regard to the provisions of the Dublin City Development Plan 2016-2022 and the Architectural Heritage Protection Guidelines for Planning Authorities (DCHG, 2011), together with the principles and methodologies outlined in this guidance document.

HOUSE TYPE A – OPTION 1

Proposed Use Mix:

Four storey office over basement apartment.

Outline Description:

This is quite a common scenario for the Dublin Georgian townhouse and provides for a two-bed residential unit at basement level, with offices on the floors above.

The residential unit can be independently accessed from the front basement area which typically has separate external steps from the public pavement. In addition to the front basement area, there may be scope for further private residential open space to the rear of the basement unit as there will usually be a sunken open area to the rear allowing for natural light and ventilation of the rear basement rooms. The rear return provides access to this external area, as well as accommodating a small utility and bathroom.

The internal layout of the residential unit provides the living/kitchen/dining space in the large rear room which, in this example enjoys the curve of the bow-ended form. The two bedrooms are to the front of the unit with a small bathroom adjacent.

The office unit above uses the historic plan form and single stairs. Wet areas – toilets, kitchen – can be accommodated in the ground floor return and third floor rear rooms. In this example the first floor of the return contains a fine rooflit space of quality.

Key Design Issues:

The layout illustrated retains the stairs from ground to basement, however, where this stairs can be deemed to not have architectural heritage value, it may be appropriate to remove. The stairwell space should be retained, however, to allow for future reinstatement of stairs should the use mix change.

Key Conservation Issues:

This is a relatively low-impact layout, however, as with all the adaptation works, sensitive design for new services, partitions, fire-doors, etc., will be required and needs to be considered at planning submission stage.

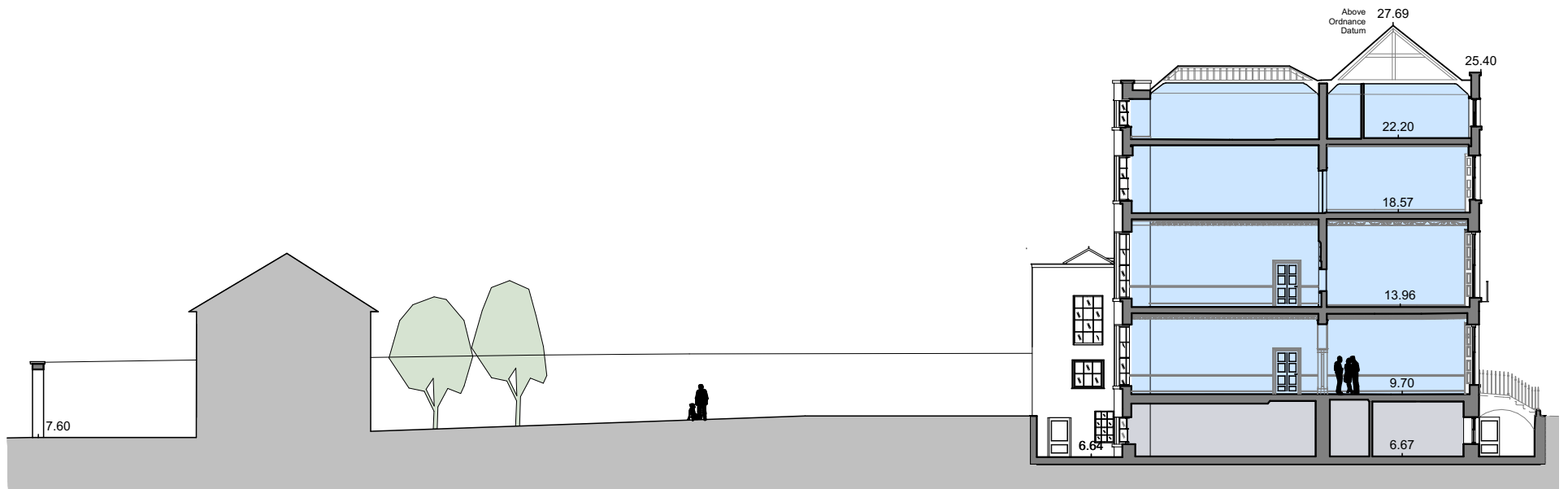
Key Building Regulation Issues:

Separation of the two compartments at ground floor will involve intervention within the floor zone to achieve required fire and sound standards. Other fire safety requirements will include fire rating of doors and detection and alarm systems.

Background ventilation (Part F) will also need to be addressed.

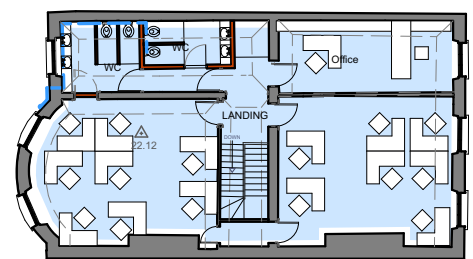
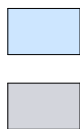
Part C4 Resistance to Moisture consideration will be required for the basement residential unit.

Part M: This layout relies on the guidance set out in Section 3 of this report.

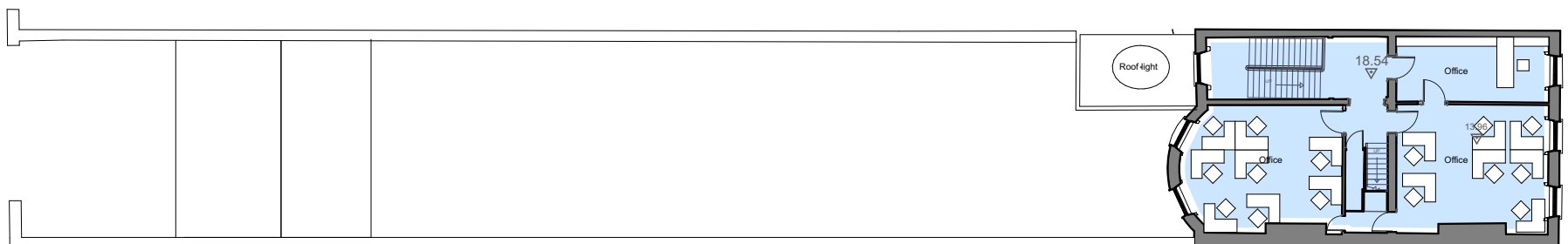


Section

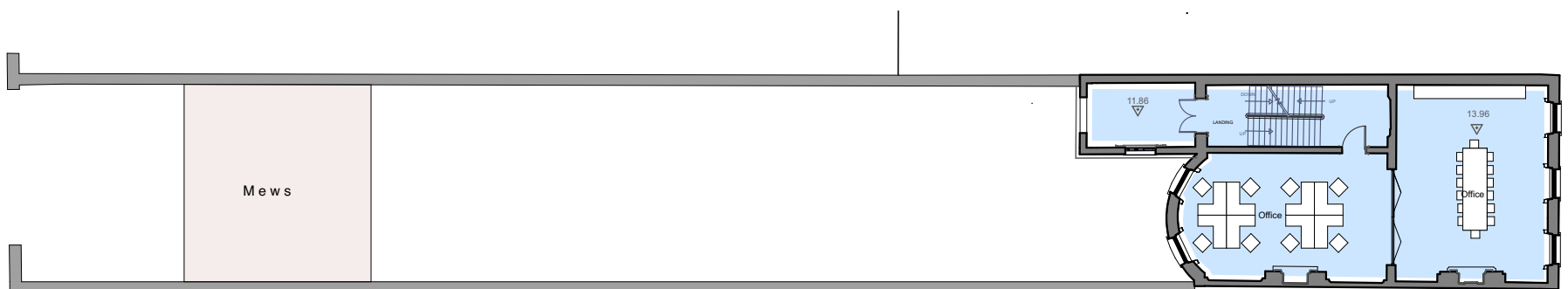
GF- FF- SF-TF Office
Office 582 sq.m
Basement Apartment
Two bed apartment 150 sq.m
Common area



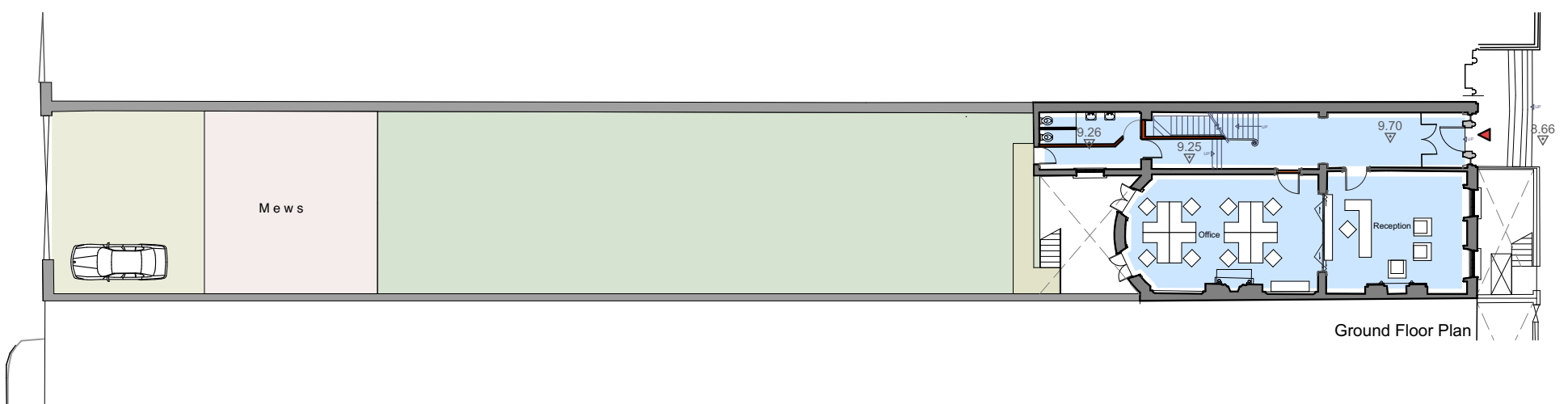
Third Floor Plan



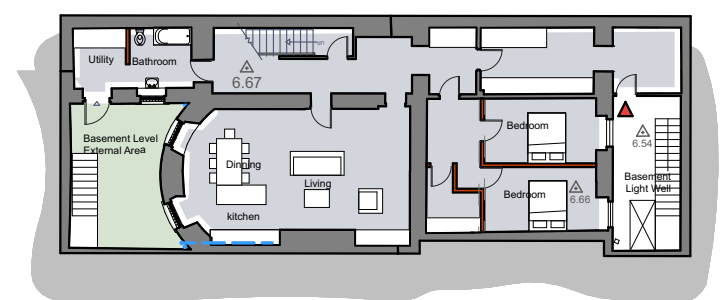
Second Floor Plan



First Floor Plan



Ground Floor Plan



Basement Floor Plan



HOUSE TYPE A - OPTION 1

NB: The Design Scenarios illustrated here are suggestive only and are for guidance purposes to indicate possible solutions.

1:300 @A3

HOUSE TYPE A – OPTION 2

Proposed Use Mix:

Duplex apartment at second and third floors over a three storey office at basement, ground and first floors.

Outline Description:

This provides a two-storey residential unit at the top of the house with office use on the lower floors.

The residential unit is accessed from the main stairs, however because of the separate stairs running between second and third floors, circulation between the two residential floors is internal within this apartment. The layout proposes the living accommodation on the second floor with the bedrooms and bathrooms above.

The kitchen units are shown as freestanding within the bow-ended rear room, allowing for wet services to have a short run to the rear external wall where they can run vertically. The partition forming the two front rooms is retained on on the second floor, providing a larger living room with a small study room off this. This particular house is of a size which allows for interconnection between front and back rooms along the party wall.

The top, bedroom floor, contains three bedrooms, one of which has an ensuite bathroom and, a second bathroom off the upper stairhall. The location of the bathrooms allows for relatively easy routing of waste pipes to the rear. New partitions are proposed to provide for storage either side of the apartment stairs and these partitions should be carefully designed and articulated to take account of any decorative cornices.

The office unit is relatively straightforward, using the existing/historic plan layout at each level which provides large open rooms and there is access via the front basement area and the rear return, in addition to the main front door. An external platform lift within the front open basement area can provide wheelchair access to the basement floor and this may be appropriate in some situations.

Key Design Issues:

The layout works with existing stairs and partitions. One implication of the common main stairs (which serves both office and apartment), is the likely need to secure access to the office rooms from the stairs. Wet areas (kitchens, bathrooms) are located to the rear where services can be more readily routed to the rear exterior wall where they can run vertically to ground/basement level – careful consideration of routes is required to ensure a discrete arrangement.

The ground and first floors of the return are shown as part of the common area, thus allowing for rear entrance (where available within the site), and some potential bin and cycle storage either within the rear return as indicated, or in the rear garden/yard.

Key Conservation Issues:

This is a relatively low-impact layout, however, as with all the adaptation works, sensitive design for new services, partitions, fire-doors, etc., will be required and needs to be considered at planning submission stage.

Key Building Regulation Issues:

Separation of the two compartments at second floor will involve intervention within the floor zone to achieve required fire and sound standards. Other fire safety requirements will include fire rating of doors and detection and alarm systems.

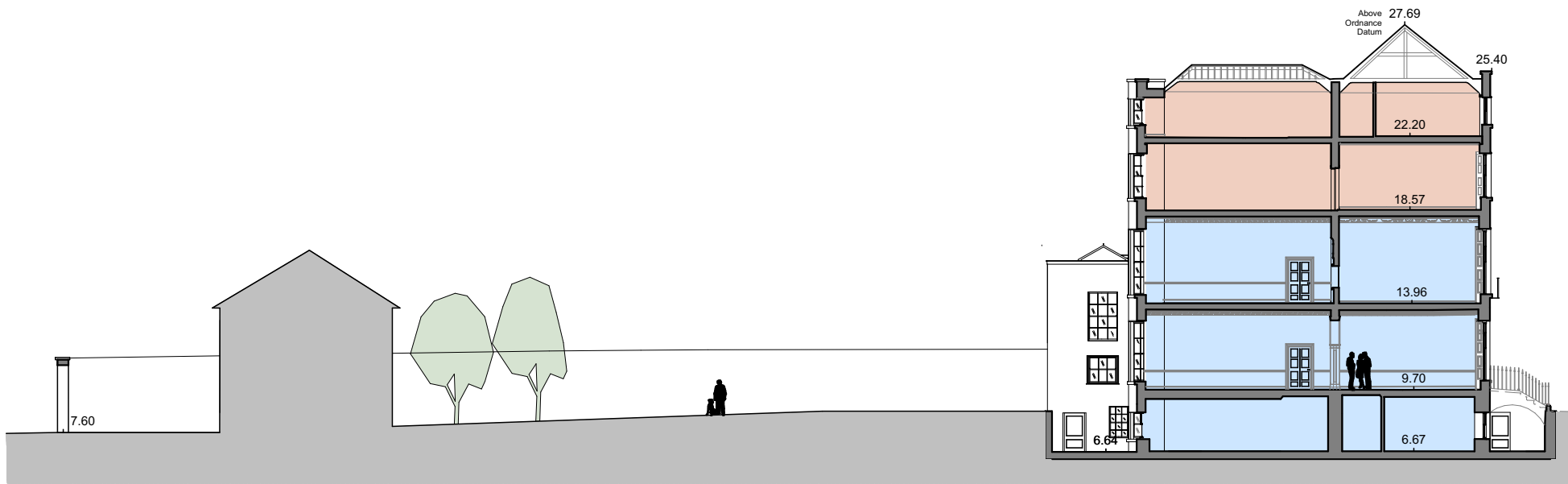
The location of the living/kitchen quarters on the lower level of the apartment is likely to require an engineered fire safety strategy and may require localised suppression system in the kitchen area.

The stair enclosure within the apartment will need to be fire rated.

The single stairs serving both units may also require a suppression system in the residential unit.

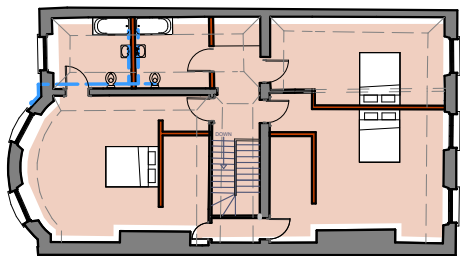
Background ventilation (Part F) will also need to be addressed.

Part M: While the layout indicates a platform lift serving the basement floor, this layout primarily relies on the guidance set out in Section 3 of this report for addressing Part M compliance.

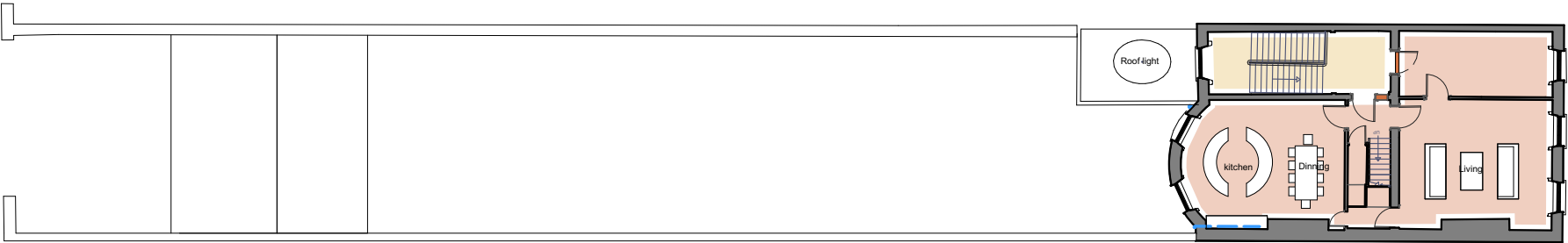


Section

SF - TF Duplex apartment.
 Three bed duplex 255 sq.m
 Basement - GF- FF Office
 Office 452 sq.m
 Common area



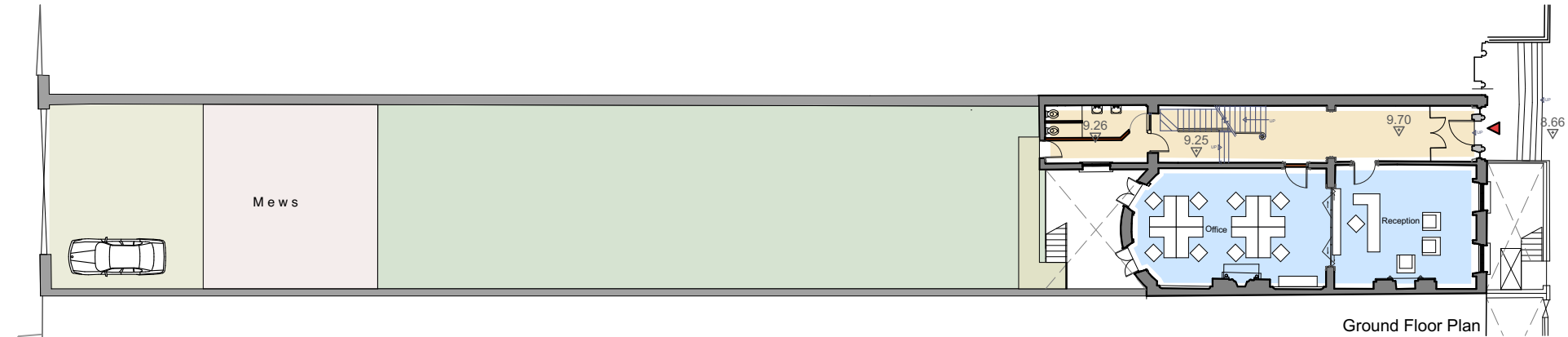
Third Floor Plan



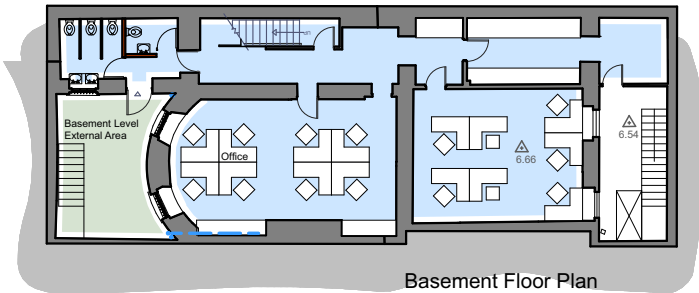
Second Floor Plan



First Floor Plan



Ground Floor Plan



Basement Floor Plan



HOUSE TYPE A - OPTION 2

NB: The Design Scenarios illustrated here are suggestive only
 and are for guidance purposes to indicate possible solutions.

1:300 @A3

HOUSE TYPE A – OPTION 3

Proposed Use Mix:

Three apartments provided as follows:
Duplex apartment at second and third floors
Single level apartment at first floor
Duplex apartment at ground and basement floors.

Outline Description:

This sub-divides the building into three apartments.

The upper duplex apartment is similar in layout to Option 2, benefiting from the second stairs which runs perpendicular to the main stairs and allows for independent vertical circulation between the two floors of this apartment.

The first floor accommodates a large one-bed apartment with the living/kitchen/dining to the front within the full width three bay room (in this case overlooking a Georgian square). The large, rear, bow-ended room accommodates a bedroom, entrance hall/lobby and bathroom “pod”. The partitions forming these spaces are designed to be partial height only, as the floor to ceiling heights are generous and to allow the full volume of the room to read, while avoiding any physical disruption or intervention of any existing decorative ceiling plasterwork (it is likely there will be decorative cornices at least). This layout will require an engineered fire solution if the partitions are not to run full height and will need agreement of Fire Office (see Key Building Regulation Issues below). Services should run within the floor void where possible, or be integrated within the new furniture/partition insertions.

The kitchen fittings in the front room are shown running along the party wall and care will be needed in how the services - waste pipe/water feeds/vents - are routed both horizontally and vertically. There are discrete sink units which can be integrated within the kitchen unit and use a slim dimension waste pipe which can be accommodated within the floor zone. Here, the structural restrictions on notching and/or drilling joists to take services must be adhered too. Dealing with the cooker extract may require an external vent on the front facade – this needs to be designed and addressed in the planning application so that any impacts can be fully assessed. There are neat and quality metal vents which may be possible to insert within the brick facade discretely. An alternative solution involves the insertion of a vertical services riser within the main stairhall. Depending on the architectural decoration, this may be more or less challenging. So, a decision on which is the preferable option may need to balance external against internal impacts.

The lower duplex unit has three bedrooms located in the basement floor which allows the finer, ground floor rooms, to accommodate the kitchen/dining (to the rear) and living (front) spaces. This lower unit can enjoy benefit of the open basement area to the front, and may, as shown here, also enjoy a small open yard/garden to the rear, accessed from the basement return. The layout shows a new stairs inserted in the rear rooms providing

independent access between basement and ground floors for this duplex apartment. This removes what can be a very awkward arrangement if depending on access between floors by using the existing basement stairs which is likely to continue down from the main stairs of the house, albeit usually being of simpler design and construction to the main stairs. However, the arrangement shown in this layout will only be acceptable where no special features of architectural heritage interest would be affected, for example, where the basement ceilings may be vaulted, or where significant original, or historic floor finishes exist. This new stairs must be carefully designed and located to avoid adverse disturbance of the historic volume of the ground floor room and so, surrounding partitions/balustrades, etc., are to be kept low and require a care of detail in design and making. Sufficient detail will be required at planning stage to assess the impacts.

The ground and first floors of the rear return structure are indicated as common/landlord areas and may allow for shared services, such as meter boards and some storage. The drawn example also shows bins and bicycles store in the external area to the rear of the return.

Key Design Issues:

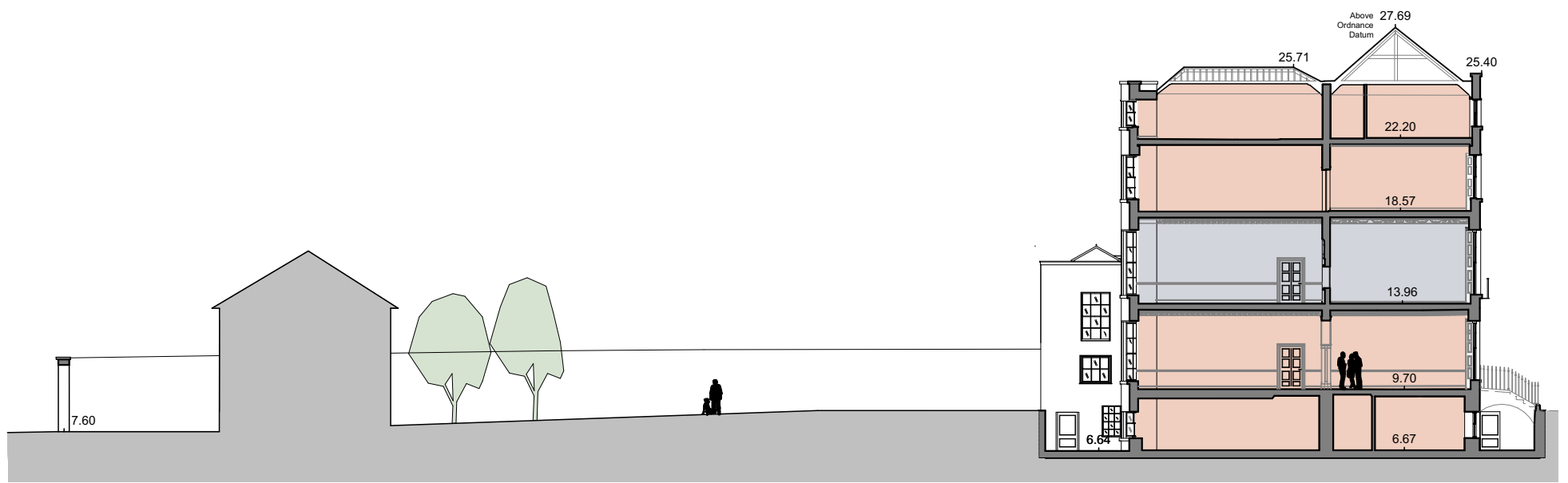
Many of the design issues described in the previous options also apply here. However, this option involves greater intervention into the existing building, for example, the proposed new stairs within the lower duplex unit and the new partitions within the first floor unit. Also the services strategy will be challenging, for example, the kitchen unit in front room of first floor unit. Advance design details and intervention strategies backed up by comprehensive and robust protected structure impact assessments will be required as part of the planning application.

Key Conservation Issues:

This design option will have a number of significant impacts on the existing fabric and layout and may not be appropriate for the more intact Georgian buildings. However, with careful, sensitive and well developed design solutions and well planned strategies for interventions (fire, sound, services, etc)., it can provide for a small number of very fine homes.

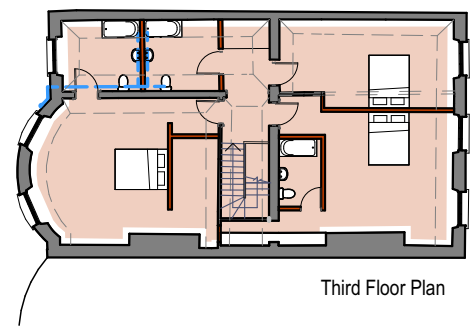
Key Building Regulation Issues:

Part A: Services routes within the floors will need to ensure and notching or drilling of joists do not compromise structural capacity. Also bearing capacity of floors to take new partitions will need consideration.
Fire (Part B): As per all options, fire safety separation will require intervention within floor zones, as well as upgrading of doors to meet the relevant standards. The first floor apartment layout raises challenges in terms of lobbies and travel distances and, as shown, deviates from normally accepted solutions - i.e., the omission of lobby to the stairs and/or in the apartment entrance hall. The latter could be provided by extending the bathroom ‘pod’ partitions to the ceilings - however this is likely to compromise any decorative plasterwork here. The layout depends on acceptance of a fire rated partition (including The location of the living/kitchen quarters on the lower level of the apartment is likely to require an engineered fire safety strategy and may require localised suppression system in the kitchen area.
The stair enclosure within the apartment will need to be fire rated
The single stairs serving the two upper units may also require a suppression system in the upper residential unit. Background ventilation (Part F) will also need to be addressed.
Part M: While the layout indicates a platform lift serving the basement floor, this layout primarily relies on the guidance set out in Section 3 of this report for addressing Part M compliance.

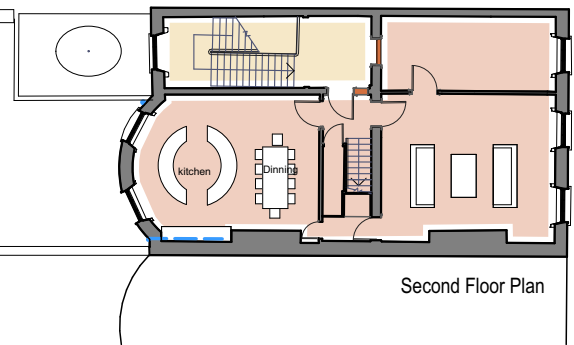


Section

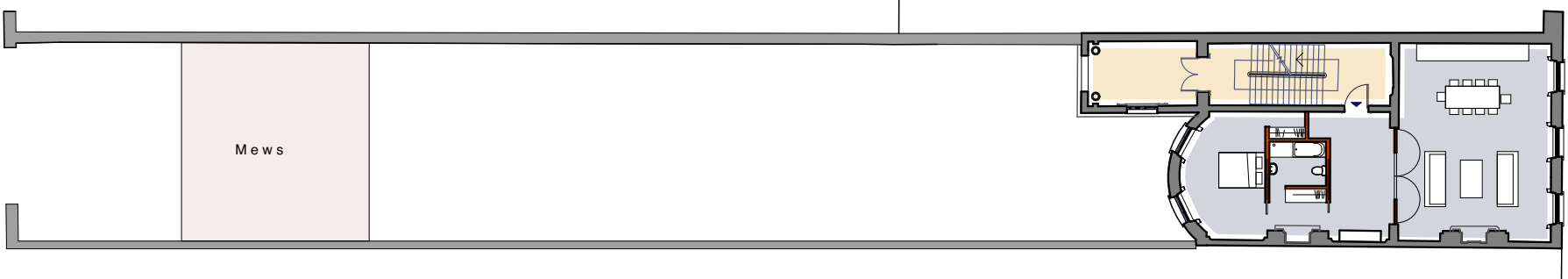
- SF - TF Duplex apartment.
- Three bed duplex 255 sq.m
- FF Apartment
- Two bedroom apartment 115 sq.m
- Basement - GF Duplex apartment.
- Two bed duplex 235 sq.m
- Common area



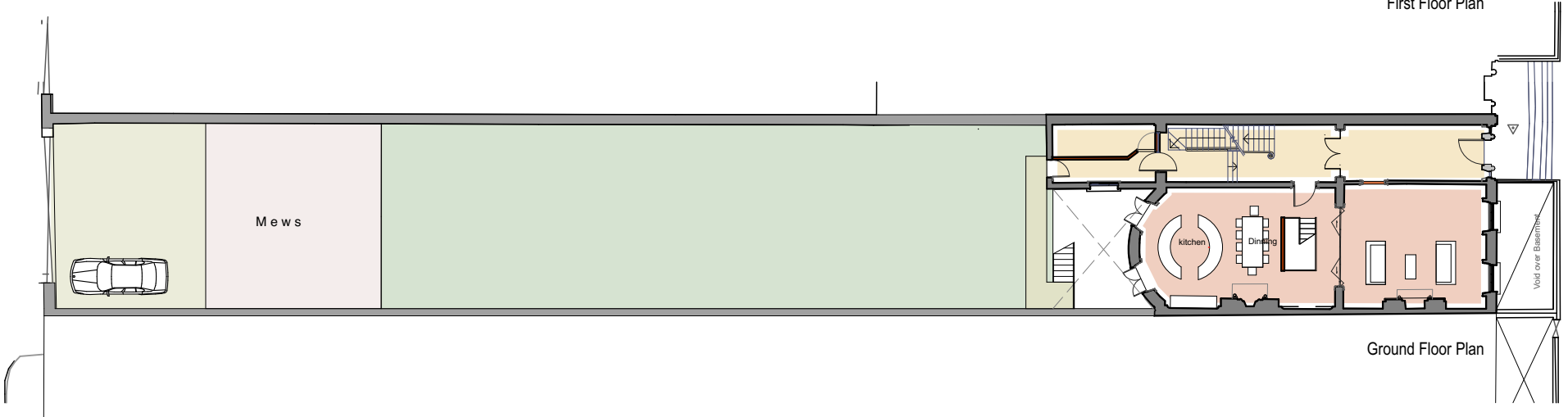
Third Floor Plan



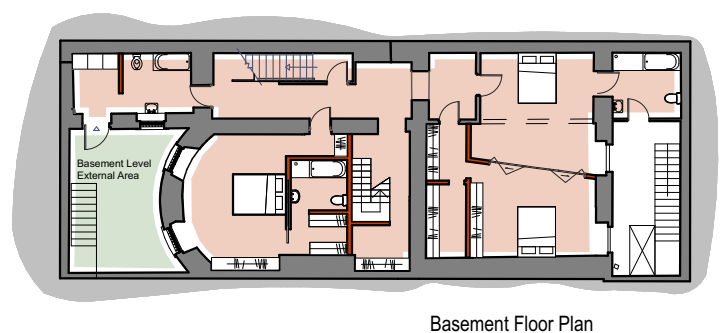
Second Floor Plan



First Floor Plan



Ground Floor Plan



Basement Floor Plan



HOUSE TYPE A - OPTION 3

NB: The Design Scenarios illustrated here are suggestive only and are for guidance purposes to indicate possible solutions.

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HOUSE TYPE B – OPTION 1

Proposed Use Mix:

Three apartments provided as follows:
Duplex apartment at second and third floors
Single level apartment at first floor and incorporating the first and second floors of the rear returns
Duplex apartment at ground and basement floors.
The ground floor of the rear return is common area with storage (bins, bikes) and potential for access to any available rear garden.

Outline Description:

The specific building which this design scenario was based on displays modern alterations of the rear facade. This includes insertion of new windows in altered openings with remaking of surrounding brick masonry. This has provided an opportunity for additions and interventions which may not be appropriate in other situations. The plans and sections on the following pages also indicate some rebuilding and alteration of the rear return (highlighted in red) to accommodate the proposed layouts. However, the return is substantially retained in its historic form.

Option 1 sub-divides the building into three apartments.

Ground Floor/Basement Duplex:

The lower duplex apartment can be entered from the ground floor entrance hall and from the front basement area. Two ensuite bedrooms are located in the basement floor with a separate wc/utility in the return which provides access to a small garden space at the rear. The upper level is accessed internally via the original stairs which runs within the main stairwell. This will need some alteration to enable fire compartmentation between this stairs - which is internal and exclusive to this apartment - and the main stairs which is part of the common area. An extension to the rear opens out to the small rear garden area from the rear bedroom. This extension is considered appropriate in this scheme as the rear facade of the building has been altered. This extension is described in greater detail further on in this text.

The ground floor of this apartment contains a living room in the front room with kitchen/dining in the rear room. These two spacious rooms are interconnected by an historic double doors arrangement. A new door opening in the rear of the Kitchen gives onto the stairs linking with the basement rooms. The rear window is extended to ground level with French doors opening onto an open terrace on the roof of the extension below.

First Floor Apartment

This apartment is accessed via the rear return (three storeys above basement) and entered off the stairs half landing between ground and first floor. This level contains a small wc in the entrance area and an ensuite bedroom. A new stairs provides the half-storey connection between the return and the first floor of the main house, accessed via a winter garden extension to the rear room of the first floor, again availing of the previously altered rear elevation. This stairs continues to the upper floor

of the return which contains the second bedroom and ensuite in the small extension.

The first floor contains a large, full-width living room to the front with the kitchen in the rear room opening onto the winter garden described above. Existing, historic doubles doors provide interconnection between front and rear rooms.

Second Floor/Third Floor Duplex

The upper duplex apartment is accessed from the main stairs, and, as in Type A, because of the separate stairs running between second and third floors, circulation between the two residential floors is internal within this apartment. The layout proposes the living accommodation on the second floor with three bedrooms and bathrooms above.

A slightly shallower winter garden extension off the lower level rear room (where kitchen/dining room is located) provides additional space with a small balcony possible due to the set back in depth from the winter garden room to the apartment below. Depending on the significance of any surviving roof to the return, it may be possible to alter this to provide a roof terrace serving the upper duplex apartment and this would be accessed via the second level winter garden and some steps. Note that the introduction of a roof garden can be problematic in relation to privacy/amenity considerations and the degree to which the original pitched roof is intact and contributes to the character of the building.

As with the first floor apartment the living room occupies the full width of the building in the second floor front room.

The top, bedroom floor, contains three bedrooms, one of which has an ensuite bathroom and, a second bathroom off the upper stairhall. The location of the bathrooms allows for relatively easy routing of waste pipes to the rear. Partitioning of the upper duplex is made easier as the decoration is likely to be much plainer with often no cornices at third floor due to the coved ceilings.

Key Design Issues:

This design option provides for three generous apartments all with potential for private open space. Apart from alterations to the rear and new partitions in basement and third floor, the layouts reflect the historic plan forms. The design of the rear alterations and extended winter garden will require sensitive and skillful design, detailing and construction. It will also need consideration of impacts on adjoining property and may require modification of width and depth of any extension (this will be a key planning concern).

With regard to services, rooms requiring water and waste are located in the rear rooms.

Advance design details and intervention strategies backed up by comprehensive and robust protected structure impact assessments will be required as part of the planning application.

The introduction of roof gardens and balconies can be challenging and will depend on ability to address amenity and overlooking considerations satisfactorily in addition to the particular condition and degree of intactness of any surviving historic roofs; rear facades, etc.

Key Conservation Issues:

The significant conservation issues relate to the interventions to the rear. Altering and enlarging windows in the rear facade and adding a winter garden structure extension to this will impact on the main house. Also, the proposal indicates alterations to the return structure. The extent and nature of such alterations should be determined by the historic intactness and architectural quality of what exists. Comprehensive, clear and robust protected structure impact reports along with careful, sensitive and well developed design solutions and well planned strategies for interventions (fire, sound, services, etc.), will be required to justify such an approach. Without such documentation provided planning assessments should take a cautionary approach.

Key Building Regulation Issues:

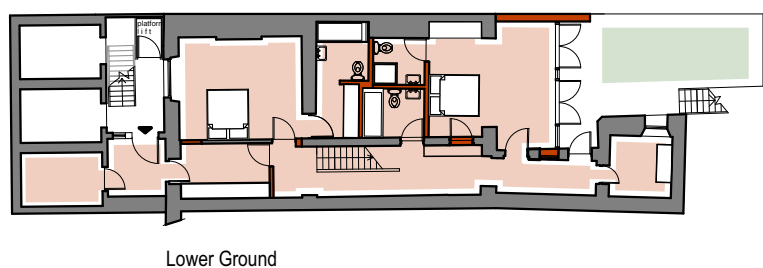
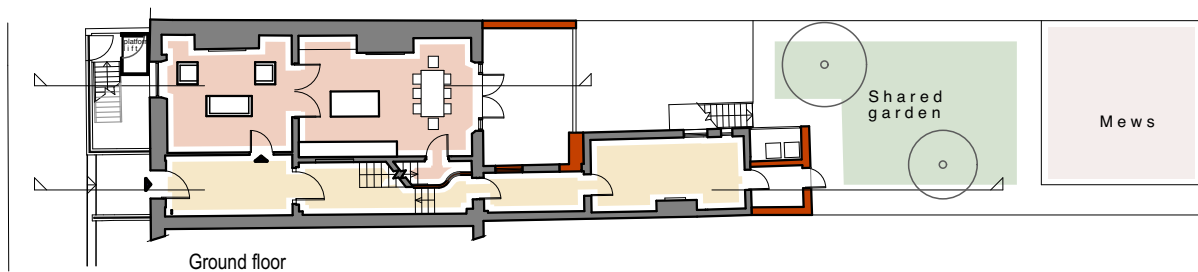
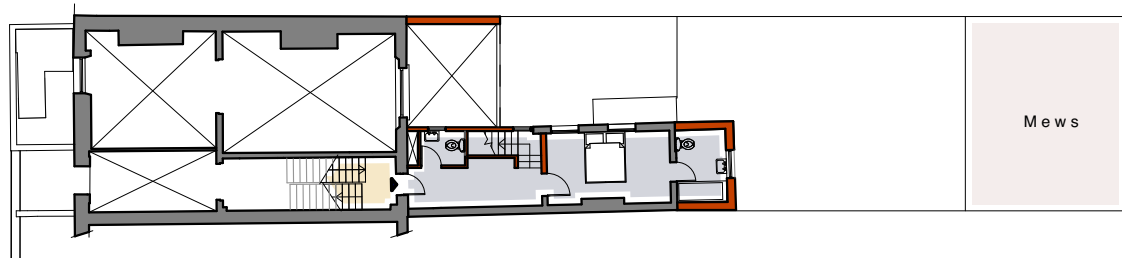
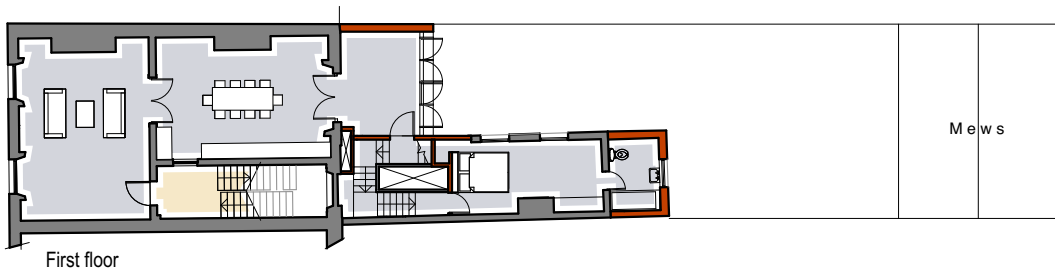
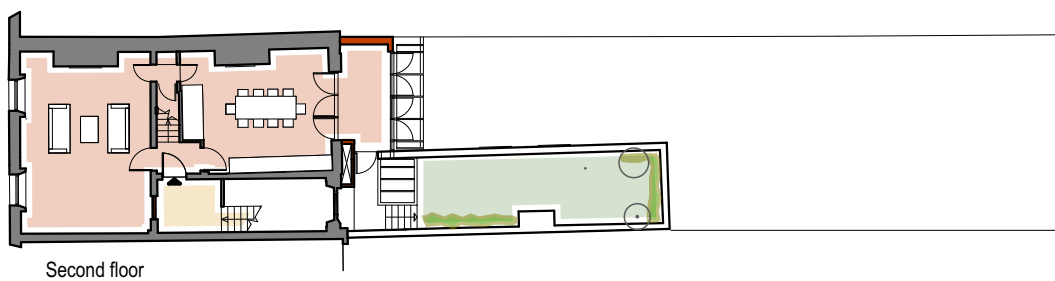
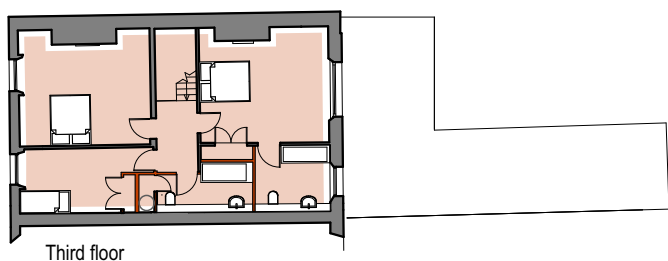
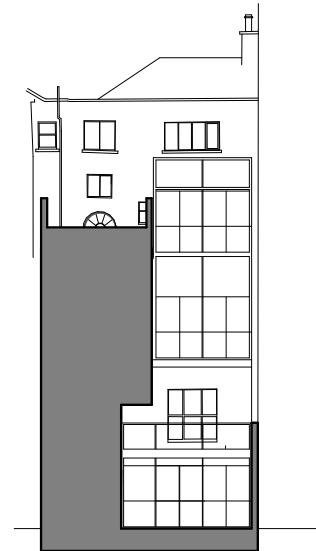
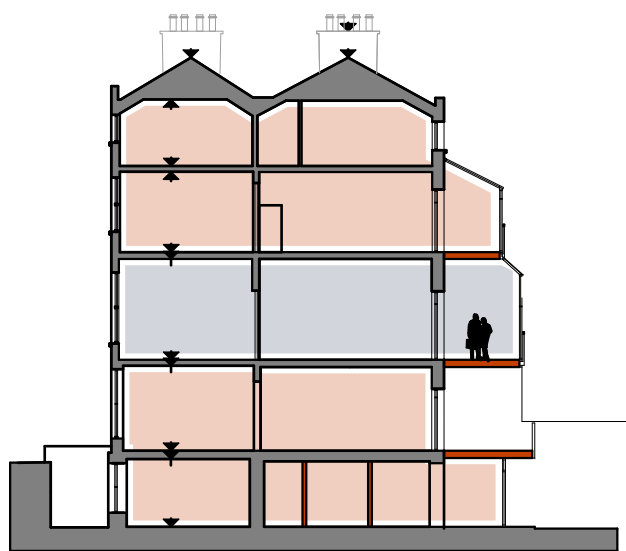
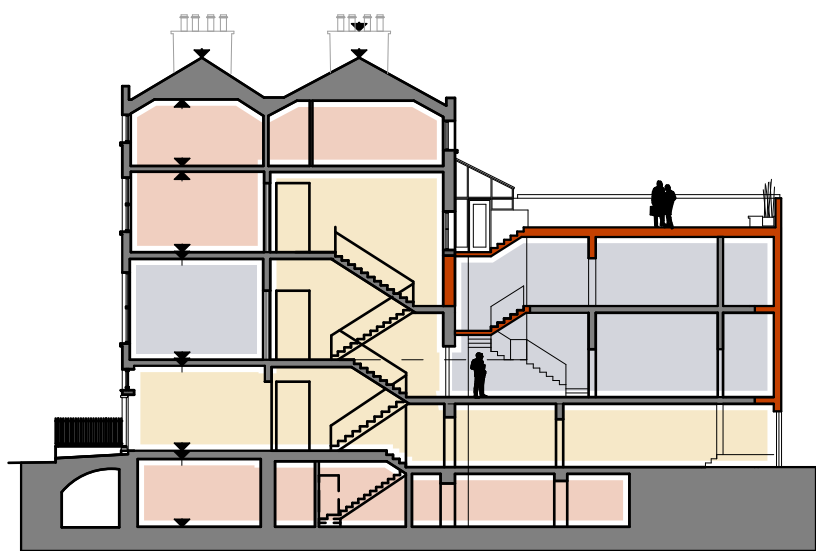
Part A: Services routes within the floors will need to ensure any notching or drilling of joists do not compromise structural capacity. Also bearing capacity of floors to take new partitions will need consideration.

Fire (Part B): As per all options, fire safety separation will require intervention within floor zones, as well as upgrading of doors to meet the relevant standards. The ground floor entrance to the lower duplex may present challenges to avoid a lobby, however this might be omitted with entrance only via front basement area. If this ground floor door was to become non-functional, the proposed treatment of the historic door and door surround would need to be shown at planning stage. The location of the living/kitchen quarters on the lower level of the top duplex apartment is likely to require an engineered fire safety strategy and may require localised suppression system in the kitchen area. The stair enclosures within all three apartments will need to be fire rated. The single stairs serving the top two units may also require suppression systems in these units.

Part E sound will require works to floors and partitions between apartments and common areas. It may be necessary to seek a derogation based on achieving an acceptable standards (which may not be consistent with the standards set out in the technical guidance documents).

Background ventilation (Part F) will also need to be addressed.

Part M: While the layout indicates a platform lift serving the basement floor, this layout primarily relies on the guidance set out in section 3 of this report for addressing Part M compliance.



SF - TF Duplex apartment.

Three bed duplex 165 sq.m

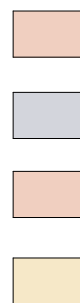
FF Apartment

Two bedroom apartment 156 sq.m

Basement - GF Duplex apartment.

Two bed duplex 183 sq.m

Common area



HOUSE TYPE B - OPTION 1

NB: The Design Scenarios illustrated here are suggestive only and are for guidance purposes to indicate possible solutions.

HOUSE TYPE B – OPTION 2

Proposed Use Mix:

Two apartments and office unit provided as follows:
Duplex apartment at second and third floors
Single level apartment at first floor and incorporating the first and second floors of the rear returns
Interlinked office at ground and basement levels.
The ground floor of the rear return is a common area with storage (bins, bikes) and potential for access to any available rear garden.

Outline Description:

The specific building which this design scenario was based on displays modern alterations of the rear facade. This includes insertion of new windows in altered openings with remaking of surrounding brick masonry. This has provided an opportunity for additions and interventions which may not be appropriate in other situations. The plans and sections on the following pages also indicate some rebuilding and alteration of the rear return (highlighted in red) to accommodate the proposed layouts. However, the return is substantially retained in its historic form.

Option 1 sub-divides the building into two apartments and office use.

Ground Floor/Basement Office:

The office is proposed as a single occupancy at both levels with entry from front basement area and off the ground floor entrance hall. The two levels are accessed internally via the original stairs which runs within the main stairwell. This will need some alteration to enable fire compartmentation between this stairs – which is internal to the office – and the main stairs which is part of the common area. In some instances the stairs between ground and basement may not be significant to the character of the house and so it may be appropriate to replace this.

An extension to the rear allows for additional office space (and also supports the upper level winter gardens). As in Option 1, this extension is considered appropriate in this scheme as the rear facade of the building has been altered.

Staff canteen and WCs are located in the basement with the two ground floor rooms providing interconnected office accommodation.

First Floor Apartment

This apartment is accessed via the rear return (three storeys above basement) and entered off the stairs half landing between ground and first floor. This level contains a small wc in the entrance area and an ensuite bedroom. A new stairs provides the half-storey connection between the return and the first floor of the main house, accessed via a narrow extension and new opening in rear facade again availing of the previously altered rear elevation. This stair continues to the upper floor of the return which contains the second bedroom and ensuite in the small extension.

The first floor contains a large, full-width living room to the front with the kitchen in the rear room opening onto the winter garden described above. Existing, historic double doors provide interconnection between front and rear rooms.

Second Floor/Third Floor Duplex

The upper duplex apartment is accessed from the main stairs, and, as in Type A, because of the separate stairs running between second and third floors, circulation between the two residential floors is internal within this apartment. The layout proposes the living accommodation on the third floor with three bedrooms and bathroom on the lower floor. This layout flips that of Option 1 and is a preferred layout in terms of Part B (Fire Safety) compliance.

The lower, bedroom floor, contains three bedrooms and a single bathroom. The third (upper) floor contains kitchen/dining to the rear with the living room and a study room to the front. A second bathroom is located on this upper floor.

Key Design Issues:

This design option provides for two generous apartments with an office at the lower levels. As with Option 1 the main internal alterations are at basement, second and third floor levels of the main house and in the return. Interventions to the rear facade and return structure involve less alteration than Option 1. Nonetheless, these will require sensitive and skillful design, detailing and construction. They will also need consideration of impacts on adjoining property and may require modification of width and depth of any extension (this will be a key planning concern).

With regard to services, rooms requiring water and waste are located in the basement or rooms close to rear of house where provision of horizontal service routes to the rear is easier.

Advance design details and intervention strategies backed up by comprehensive and robust protected structure impact assessments will be required as part of the planning application.

Key Conservation Issues:

As with Option 1 the significant conservation issues relate to the interventions to the rear. Altering and enlarging windows in the rear facade and adding a winter garden structure extension to this will impact on the main house. Also the proposal indicates alterations to the return structure. The extent and nature of such alterations should be determined by the historic intactness and architectural quality of what exists. Comprehensive, clear and robust protected structure impact reports along with careful, sensitive and well developed design solutions and well planned strategies for interventions (fire, sound, services, etc.), will be required to justify such an approach. Without such documentation provided planning assessments should take a cautionary approach.

Key Building Regulation Issues:

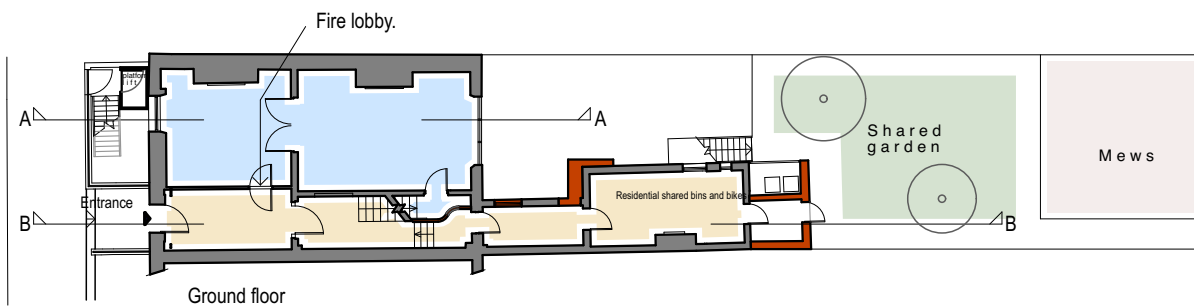
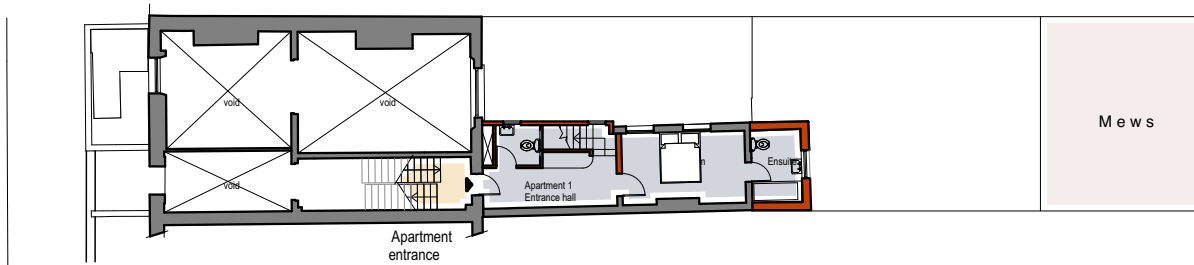
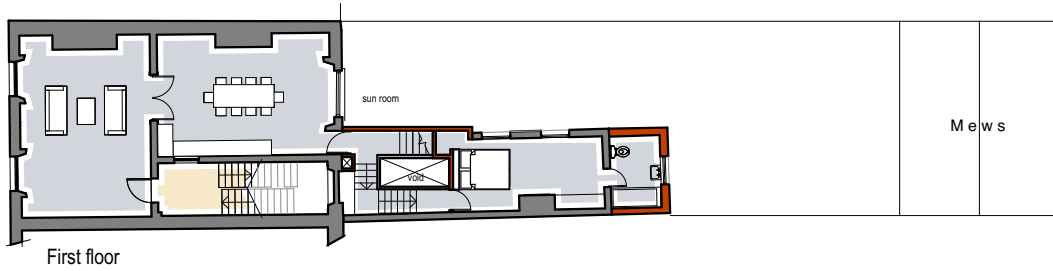
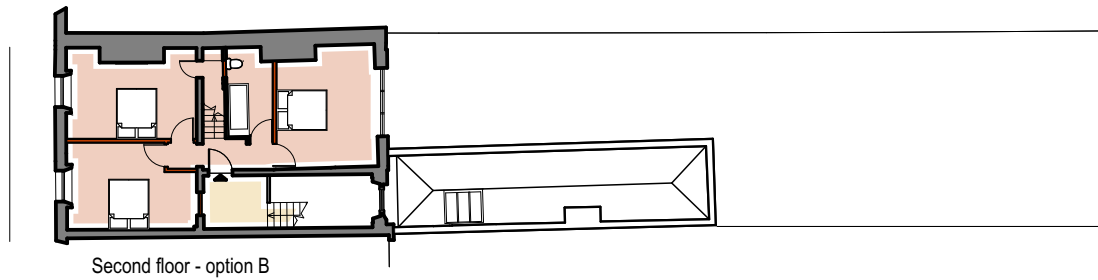
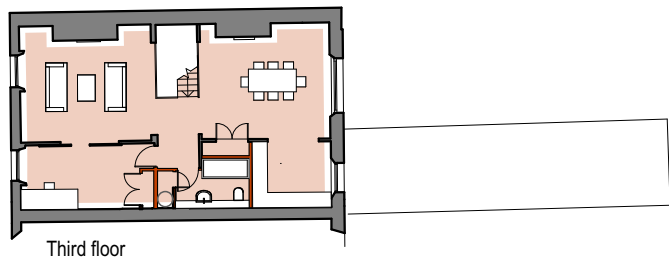
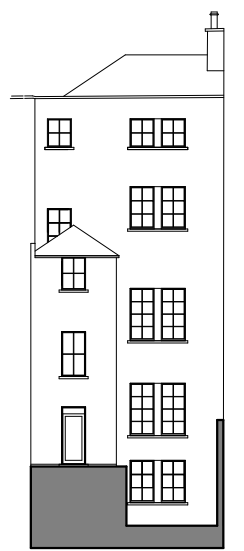
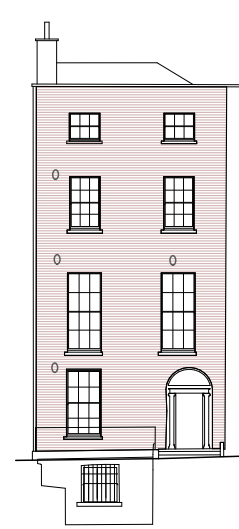
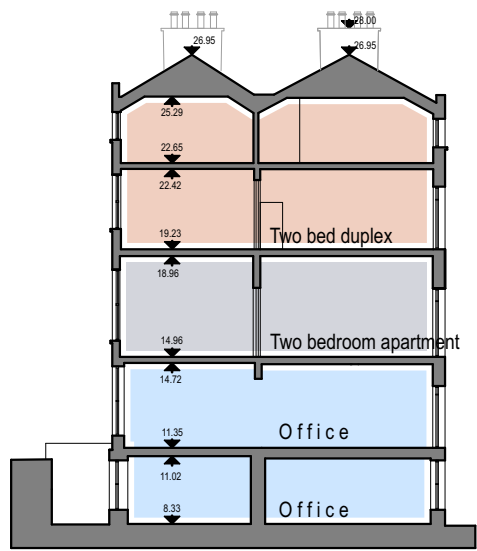
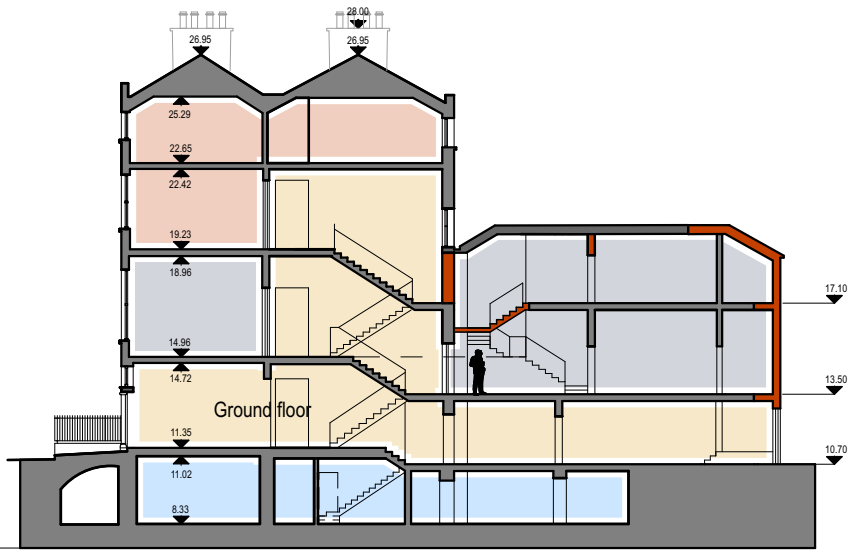
Part A: Services routes within the floors will need to ensure any notching or drilling of joists do not compromise structural capacity. Also bearing capacity of floors to take new partitions will need consideration.

Fire (Part B): As per all options, fire safety separation will require intervention within floor zones, as well as upgrading of doors to meet the relevant standards. The ground floor entrance to the office may present challenges to avoid a lobby.
The stair enclosures within duplex units will need to be fire rated.
The single stairs serving the two residential units may also require suppression systems in these units.

Part E sound will require works to floors and partitions between residential/office units and common areas. It may be necessary to seek a derogation for the residential units based on achieving an acceptable standard (which may not be consistent with the standards set out in the technical guidance documents).

Background ventilation (Part F) will also need to be addressed.

Part M: While the layout indicates a platform lift serving the basement level of the office, this layout primarily relies on the guidance set out in Section 3 of this report for addressing Part M compliance.



SF - TF Duplex apartment.
Three bed duplex 165 sq.m

FF Apartment
Two bedroom apartment 156 sq.m

Basement - GF Office
Office 157 sq.m



HOUSE TYPE B - OPTION 2

NB: The Design Scenarios illustrated here are suggestive only and are for guidance purposes to indicate possible solutions.

HOUSE TYPE B – OPTION 3

Proposed Use Mix:

Duplex apartment at second and third floors over a three level office unit at basement, ground and first floors. The ground floor of the rear return is a common area with storage (bins, bikes) and potential for access to any available rear garden. The other floors of the return form part of the office accommodation.

Outline Description:

The specific building which this design scenario was based on displays modern alterations of the rear facade, as described in Options 1 and 2. This includes insertion of new windows in altered openings with remaking of surrounding brick masonry. This has provided an opportunity for additions and interventions which may not be appropriate in other situations. The plans and sections on the following pages also indicate some rebuilding and alteration of the rear return (highlighted in red) to accommodate the proposed layouts. However, the return is substantially retained in its historic form.

Option 1 sub-divides the building into a single, duplex, apartment and office use. What distinguishes this scheme from Options 1 and 2 is that a separate stairs is provided within the return to serve the upper level apartment. This requires alterations to the return structure, notably at the junction between return and main house – to allow for construction of a enclosed, fire rated, stairwell which is for the exclusive use of the apartment. Where rear access to the return is available, this would allow for complete separation of office and residential internal circulation.

Other than this, the office unit can be accommodated within the historic ground and first floor layouts providing open plan office arrangements. Part-height partitioning could also be provided as reversible sub-division of the large rooms if required (full-height partitions may have both conservation and fire implications). Access between basement and ground floor remains as Option 2 with a similar layout at basement level.

Second Floor/Third Floor Duplex

The upper duplex apartment is accessed from the new stairs in the rear return. This can be either via a narrow extension to the return and new opening in the rear facade, as drawn, or through a larger winter garden extension to the rear facade and enlargement of the rear window to form door opening. The layout of the apartment is similar to Option 1 with living on the lower level and bedrooms/bathrooms on the third floor. Kitchen/ dining is located to the rear, the living room spans the full width of the building to the front. There are three bedrooms and two bathrooms on the top floor. As with Option 1, depending on the significance of any surviving roof to the return, it may be possible to alter this to provide a roof terrace for this apartment, accessed from the new stairs.

Key Design Issues:

The principle design challenges relate to alterations to accommodate the new stairs in the return, alteration of the roof of the return to provide a roof garden and, at the second floor level, the addition of a winter garden structure to the rear facade, which provides access to this apartment. Note that the introduction of a roof garden can be problematic in relation to privacy/amenity considerations and the degree to which the original pitched roof is intact and contributes to the character of the building.

The design of these rear alterations and extended winter garden will require sensitive and skillful design, detailing and construction. It will also need consideration of impacts on adjoining property and may require modification of width and depth of any extension (this will be a key planning concern).

With regard to services, rooms requiring water and waste are located in the basement or rooms close to rear of house where provision of horizontal service routes to the rear is easier.

The introduction of roof gardens and balconies can be challenging and will depend on ability to address amenity and overlooking considerations satisfactorily in addition to the particular condition and degree of intactness of any surviving historic roofs; rear facades, etc.

Advance design details and intervention strategies backed up by comprehensive and robust protected structure impact assessments will be required as part of the planning application.

Key Conservation Issues:

As with Options 1 and 2 the significant conservation issues relate to the interventions to the rear. Altering and enlarging windows in the rear facade and adding a winter garden structure extension to this will impact on the main house. Also the proposal indicates alterations to the return structure. The extent and nature of such alterations should be determined by the historic intactness and architectural quality of what exists. Comprehensive, clear and robust protected structure impact reports along with careful, sensitive and well developed design solutions and well planned strategies for interventions (fire, sound, services, etc.), will be required to justify such an approach. Without such documentation provided planning assessments should take a cautionary approach.

Key Building Regulation Issues:

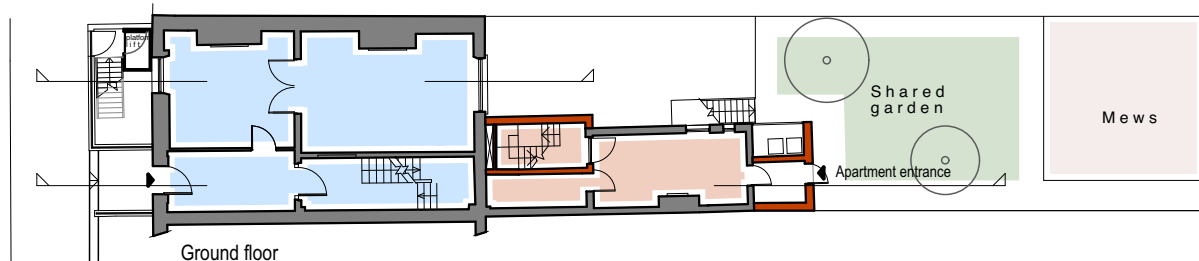
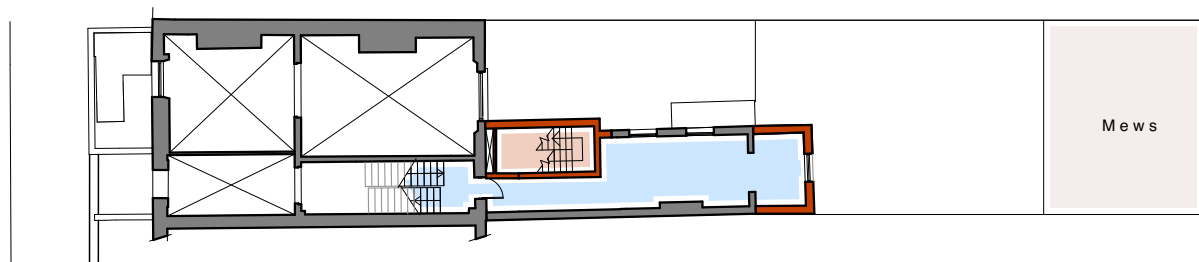
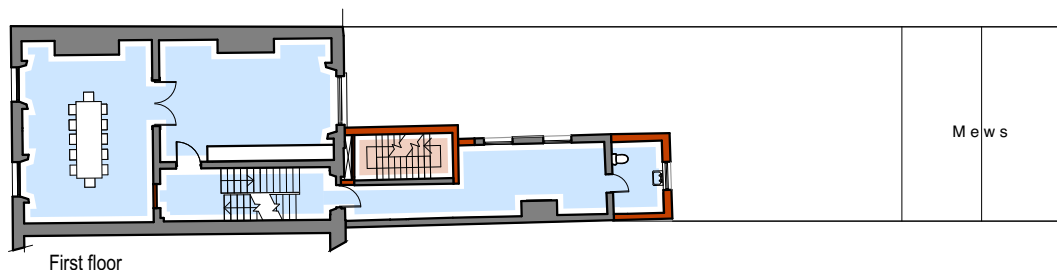
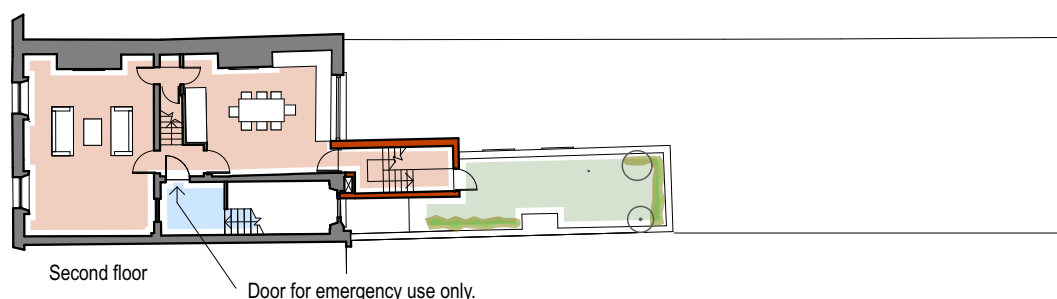
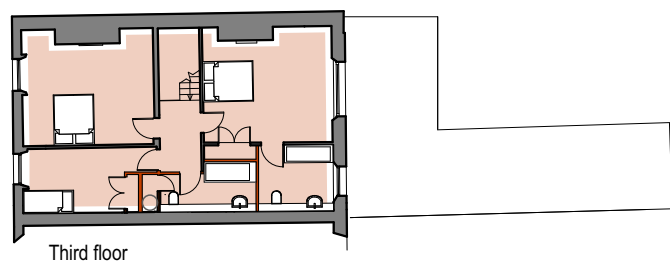
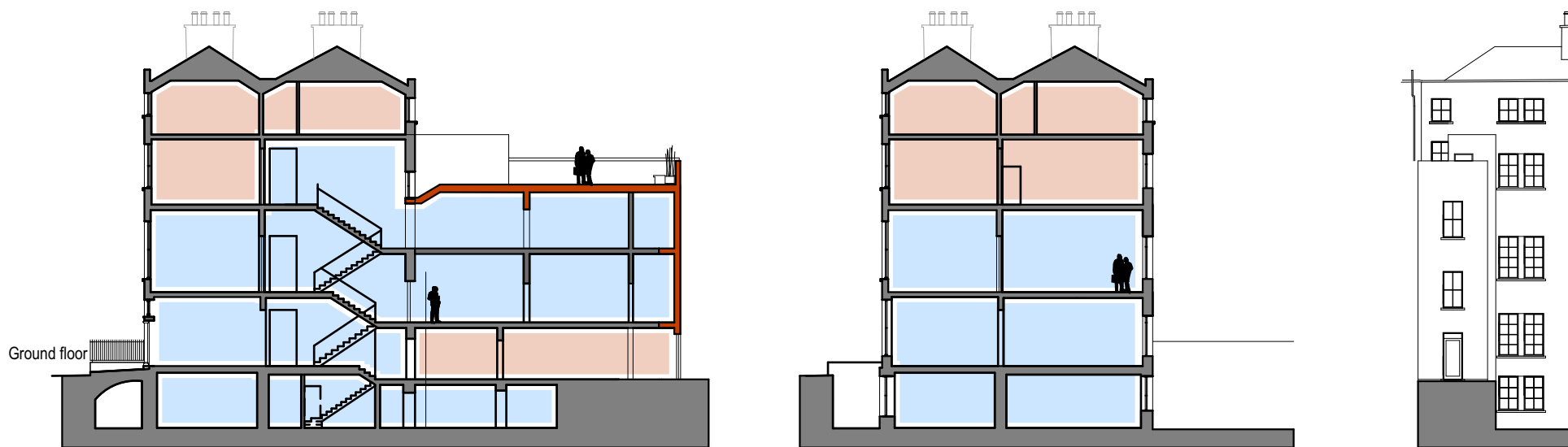
Part A: Services routes within the floors will need to ensure and notching or drilling of joists do not compromise structural capacity. Also bearing capacity of floors to take new partitions will need consideration.

Fire (Part B): As per all options, fire safety separation will require intervention within floor zones, as well as upgrading of doors to meet the relevant standards. The ground floor entrance to the office may present challenges to avoid a lobby. The location of the living/kitchen quarters on the lower level of the top duplex apartment is likely to require an engineered fire safety strategy and may require localised suppression system in the kitchen area. The stair enclosures within the duplex apartment will need to be fire rated.

Part E sound will require works to floors and partitions between residential and office units and common areas. It may be necessary to seek a derogation for the residential unit based on achieving an acceptable standard (which may not be consistent with the standards set out in the technical guidance documents).

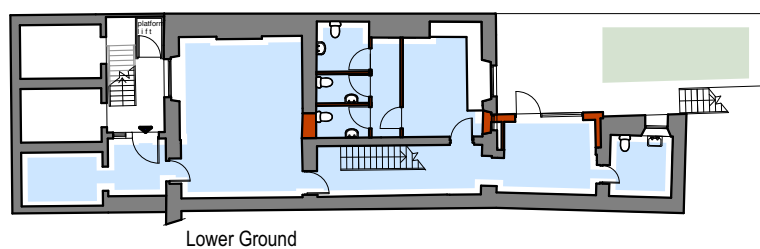
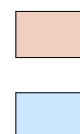
Background ventilation (Part F) will also need to be addressed.

Part M: While the layout indicates a platform lift serving the basement level of the office, this layout primarily relies on the guidance set out in Section 3 of this report for addressing Part M compliance.



SF - TF Duplex apartment.
Three bed duplex 155 sq.m

Basement - GF- FF Office
Office 330 sq.m



HOUSE TYPE B - OPTION 3

NB: The Design Scenarios illustrated here are suggestive only and are for guidance purposes to indicate possible solutions.

HOUSE TYPE C - OPTION 1

Proposed Use Mix:

Three apartments proposed for this three storey over basement Type C house, with one bed apartments at second and first floors and a three-bed duplex apartment at ground and basement levels, including the basement of the return.

Outline Description:

First and Second floor apartments:

One-bed apartments are provide in the two upper floors, accessed from the main stairs. The apartment is entered at mid-plan with new partitions in the rear room to define bathroom, bedroom and entrance lobby. The kitchen, dining and living spaces are contained in the large rooms to the front, spanning the full width of the house.

Basement/Ground Floor duplex apartment

This apartment is entered off the ground floor back stairhall, with the door between front entrance hall and front ground floor room closed off and fire rated. A new stairs, inserted in the middle of the plan connects the two levels of this apartment. The living room is located in the front ground floor room with kitchen/dining in the rear room at this level. Bedrooms and bathrooms are located in the basement, including return. There is also scope for storage and utility space in the more internal rooms at basement level, under the stairhall, which do not have access to natural light or ventilation. The basement opens onto the front open area with access to any surviving under-pavement cellars for additional storage. The rear return can also provide access to a small open courtyard area at the rear.

Key Design Issues:

The main design interventions involve the partitioning of the upper floor levels to separate bathroom, bedroom and entrance hall and the insertion of a new stairs to provide independent internal circulation between the two levels of the basement/ground floor duplex apartment.

The design of the upper level partitions might adopt some of the guidance set out in Section 3.3 of this document, treating the partitions as carefully articulated insertions, considering reversibility and introduction of borrowed light to the inner rooms, through high-level glazing.

The new stairs between basement and ground level should also be designed as a contemporary insertion, with careful consideration of junctions between existing (historic) and new elements.

All such new interventions require a quality of materiality and detail.

With regard to services, the front kitchen in the upper level apartments will require careful detail design to accommodate water and waste routes and ventilation, both horizontally and vertically. There are discrete sink units which can be integrated within the kitchen unit and use a slim dimension waste pipe which can be accommodated within the floor zone. Here, the structural restrictions on notching and/or drilling joists to take services must be

adhered too. Dealing with the cooker extract may require an external vent on the front facade – this needs to be designed and addressed in the planning application so that any impacts can be fully assessed. There are neat and quality metal vents which may be possible to insert within the brick facade discretely. An alternative solution involves the insertion of a vertical services riser within the main stairhall. Depending on the architectural decoration, this may be more or less challenging. So, a decision on which is the preferable option may need to balance external against internal impacts.

Advance design details and intervention strategies backed up by comprehensive and robust protected structure impact assessments will be required as part of the planning application.

Key Conservation Issues:

The principal conservation issues are the insertion of a new stairs between ground and basement level and the partitioning of the upper floors, though this may be less of a impact on the top/second floor, assuming that there is little decorative detail of significance.

The validity of such interventions will depend on the quality and interest of the existing interiors and must be supported by sufficient evidence and detailed design documentation. Comprehensive, clear and robust protected structure impact reports along with careful, sensitive and well developed design solutions and well planned strategies for interventions (fire, sound, services, etc.), will be required to justify these interventions.

Key Building Regulation Issues:

Part A: Services routes within the floors will need to ensure any notching or drilling of joists do not compromise structural capacity. Also bearing capacity of floors to take new partitions will need consideration.

Fire (Part B): Fire safety separation will require intervention within floor zones, as well as upgrading of doors to meet the relevant standards. The ground floor entrance arrangement allows for a lobby within the stair compartment, though treatment of the front door requires sensitive alteration for fire rating.

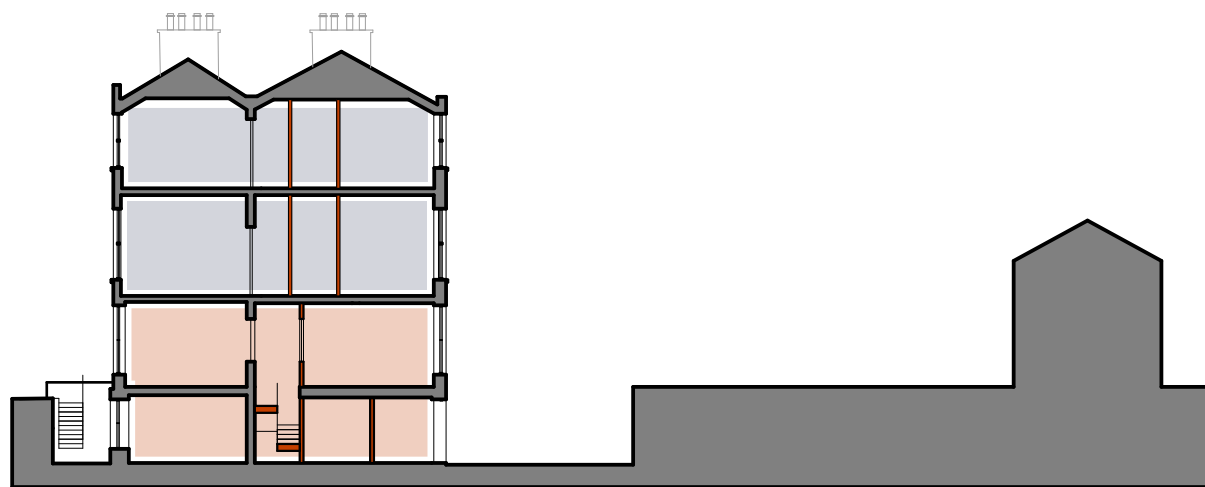
The stair enclosures within the duplex apartment will need to be fire rated.

The single stairs serving the two upper residential units may require suppression systems in these units.

Part E sound will require works to floors and partitions between residential units and common areas. It may be necessary to seek a derogation for the residential unit based on achieving an acceptable standard (which may not be consistent with the standards set out in the technical guidance documents).

Background ventilation (Part F) will need to be addressed.

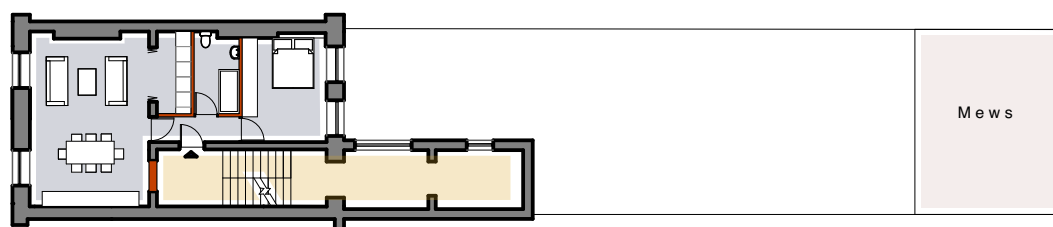
Part M: This layout primarily relies on the guidance set out in Section 3 of this report for addressing Part M compliance.



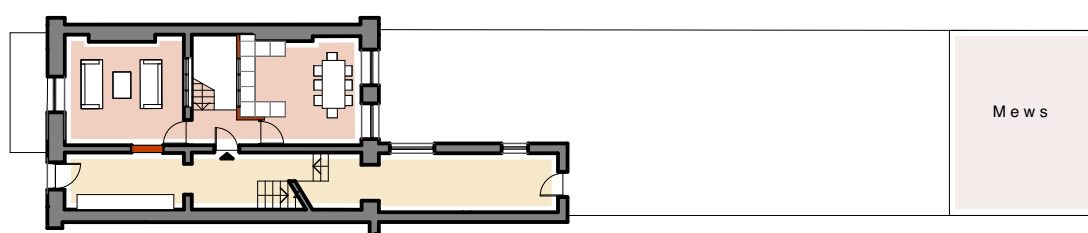
Section



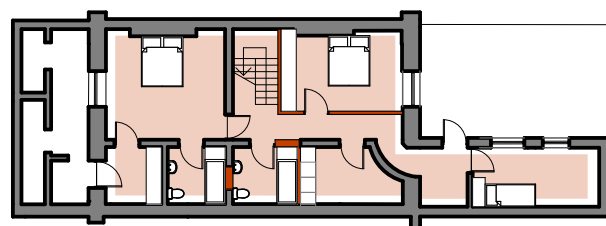
Second floor



First floor



Ground floor



Lower Ground

SF Apartment

One bedroom apartment 63 sq.m

FF Apartment

One bedroom apartment 63 sq.m

Basment - GF Duplex apartment.

Three bed duplex 150 sq.m

Common area.



HOUSE TYPE C - OPTION 1

NB: The Design Scenarios illustrated here are suggestive only and are for guidance purposes to indicate possible solutions.

HOUSE TYPE C – OPTION 2

Proposed Use Mix:
Three storey residential unit over basement apartment.

Outline Description:
This reflects a very common arrangement, effectively creating a basement apartment below the main house. The basement unit is designed to be completely independent from the house above, accessed from the front basement area.

Basement Apartment
This apartment is entered from the front basement area. A small entrance hall/porch opens into the living/kitchen/dining room which is lit from the front windows. This leads to a small corridor at the rear, off which is located a bedroom and bathroom and which connects to the rear return. A second, smaller, bedroom is accommodated in the return in addition to a door giving access to an open courtyard area, at a lower level to the main garden.

Three storey apartment/house
This unit is suitable for family use or as shared accommodation.

It is entered via the principal front entrance door. This scheme shows the main living accommodation at ground level – with kitchen/dining to the rear and sitting room to the front. Depending on the extent and quality of any historic decorative elements the insertion of some storage between these spaces may be possible (as indicated in the plans). A second living room is shown at first floor level in the front room, enjoying the full width of the house. There is a bedroom with ensuite bathroom and wardrobe storage to the rear. Two bedrooms, one ensuite, and a separate bathroom are provided on the top floor.

The rear return in this scenario is two storeys over basement. The ground floor of the return is shown accommodating utility and storage with access to the rear garden. At the first floor of the return is a study. Depending on size, architectural significance and orientation, the return could be adapted as a living space opening onto the garden with a fourth bedroom at first floor level.

Key Design Issues:
The main design interventions involve the introduction of partitioning to create bathroom, bedroom and storage. The design of such insertions might adopt some of the guidance set out in Section 3.3 of this document, treating the partitions as carefully articulated insertions, considering reversibility and introduction of borrowed light to the inner rooms, through high-level glazing. All such new interventions require a quality of materiality and detail.

With regard to water-based services, kitchens and bathrooms are located away from the more sensitive front part of the building.

Advance design details and intervention strategies backed up by comprehensive and robust protected structure impact assessments will be required as part of the planning application.

Key Conservation Issues:
This is a very common sub-division of this type of Georgian house and can be accommodated without adverse conservation impacts. Design and detailing of interventions and alterations will, as in all options illustrated, require sensitivity and consideration of, for example, junctions with existing decorative finishes, quality of spatial proportions and light, etc.,

The validity of all interventions will depend on the quality and interest of the existing interiors and must be supported by sufficient evidence and detailed design documentation. Comprehensive, clear and robust protected structure impact reports along with careful, sensitive and well developed design solutions and well planned strategies for interventions (fire, sound, services, etc.), will be required to justify these interventions.

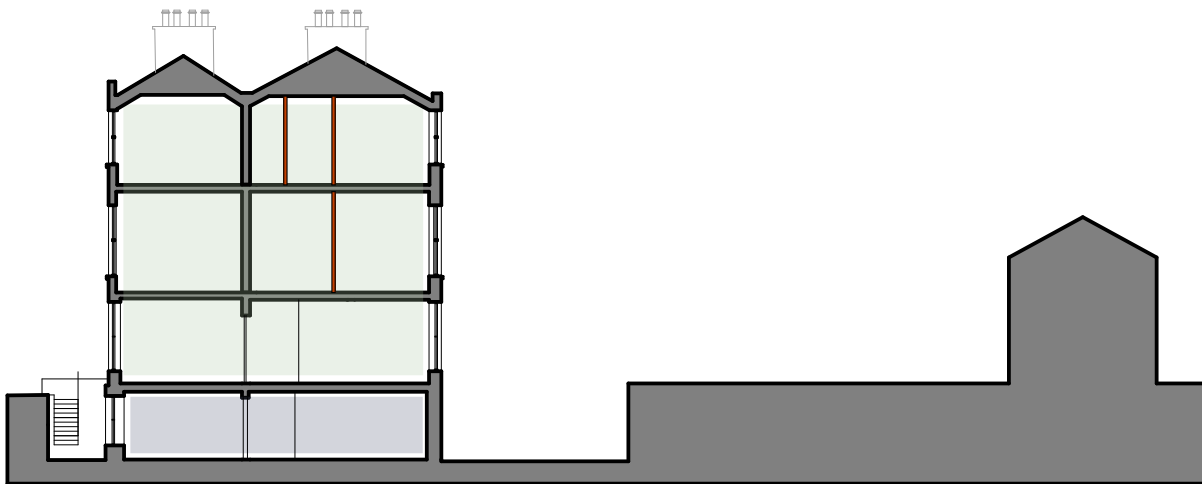
Key Building Regulation Issues:
Part A: Services routes within the floors will need to ensure any notching or drilling of joists do not compromise structural capacity. Also bearing capacity of floors to take new partitions will need consideration.

Fire (Part B): Where sub-dividing an existing single dwelling, this layout is considered a material change of use and will require a Fire Safety Certificate. Fire safety separation will require intervention within floor zones, as well as upgrading of doors to meet the relevant standards.

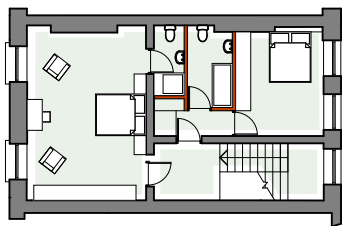
Part E sound will require works to floors and partitions between residential units and common areas. It may be necessary to seek a derogation for the residential unit based on achieving an acceptable standard (which may not be consistent with the standards set out in the technical guidance documents).

Background ventilation (Part F) will need to be addressed.

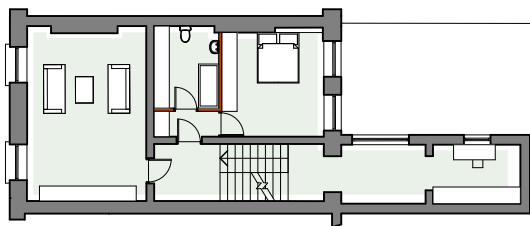
Part M: This layout primarily relies on the guidance set out in Section 3 of this report for addressing Part M compliance.



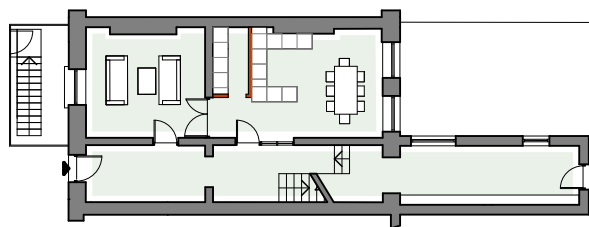
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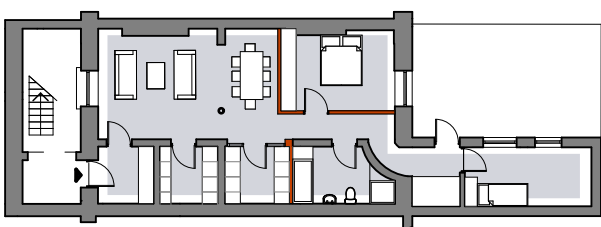
Second floor



First floor



Ground floor



Lower Ground

Mews

Mews

Three story house

Three bedroom house 281 sq.m

Basement - apartment.

Two bedroom apartment 100 sq.m



HOUSE TYPE C - OPTION 2

NB: The Design Scenarios illustrated here are suggestive only and are for guidance purposes to indicate possible solutions.

5 USEFUL SOURCES OF INFORMATION

Below are some useful sources of further information:

Publications

- Architectural Heritage Protection Guidelines, published by Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs. This is a statutory guidance document for protected structures and Architectural Conservation Areas. <https://www.chg.gov.ie/app/uploads/2015/07/Architectural-Heritage-Protection-Guidelines-2011.pdf>
- Advice for Owners Guidance Documents published by Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs: This series of advice guides provide useful information for owners of protected structures on several aspects to maintaining, repairing and carrying out works to their properties. There are 11 guides published to date, and these can be accessed at www.chg.gov.ie/heritage/built-heritage/architectural...advisory.../advice-for-owner...
- Dublin's Georgian Squares (Dublin City Council)
- Casey, Christine: Dublin: The Buildings of Ireland, Pevsner Architectural Guides, Yale University Press (2005, London and New Haven).
- Irish Period Houses – A Conservation Guidance Manual, published by Dublin Civic Trust, 2015 (available to purchase through www.dublincivictrust.ie)
- Bringing Back Homes - Manual for the Reuse of Existing Buildings - Guidance published by Department of Housing Planning & Local Government, December 2018 (www.housing.gov.ie/sites/default/files/publications/files/bringing_back_homes_final.pdf)
- Historic Scotland (www.historicenvironment.scot), Historic England (www.historicengland.org.uk) and the Society for Protection of Ancient Buildings (The SPAB – www.spab.org.uk) all publish useful technical guidance on a range of building conservation, repair, adaptation, upgrading,

Organisations

Dublin City Council
Department of Culture, Heritage and the Gaeltacht – Built Heritage, Architecture Policy & Strategic Infrastructure Section
Heritage Council
Department of Housing Planning & Local Government, Building Standards Section
Dublin Civic Trust
Irish Georgian Society
Irish Architectural Archive
RIAI – Accredited Conservation Architects
Engineers Ireland – Conservation Engineers
RSAI – Accredited Conservation Building Surveyors
CIF – Register of Heritage Contractors

Courses

- Conserving your Dublin Period House: contact the Irish Georgian Society/ Dublin City Council Heritage Officer for future courses.

Acknowledgments

This report was prepared by Shaffrey Architects with specialist advice provided by:

Frank Keohane who contributed to Chapter 2 Taking Stock, assessment of the South Georgian townhouse typologies
Maurice Johnston & Partners - Fire Safety (Part B)
Arup - Building Services installations
The indicative details addressing acoustic performance (Part E) have been informed by previous analysis carried out by AWN Consulting.