CONDITION & FEASIBILITY STUDY

Project: 2252

7 Redington Gardens, London, NW3 7RU

22nd January 2024 – Revision A

7 Redington Gardens – Existing View of Front of Property

CONTENTS

1.INTRODUCTION

1.1 This Condition & Feasibility Study has been prepared by Wolff Architects in conjunction with Michael Alexander Consulting Engineers and Carnell Warren Associates Building Services Engineers to assess the reuse potential of the existing building. The Study seeks to demonstrate why retention of the existing building and refurbishment is neither viable nor practical. The report should be read alongside the documents prepared by Viro Consult and E&S Bristol. The Table on Page 45 of the Camden Planning Guidance (CPG) Energy Efficiency and Adaptation (January 2021) shows what should be covered in the assessment and has been used as a template for this report.

1.2 The application site is located within the Redington Frognal Conservation Area. The building is a neutral contributor to the character and appearance of the Conservation Area that is subservient to the more prominent original Neo-Georgian properties at the north-east end of the road. The Redington Frognal area is an area of very high value properties. Wolff Architects has worked extensively in this area over many years and our experience relates to a wide range of commercial and residential developments, including listed buildings, conservation areas and developments working in sensitive London locations. We are familiar with the site and surrounding area as well as relevant planning and design policies.

1.3 This Condition & Feasibility Study refers to the New London Plan which highlights the importance of retaining the value of existing buildings with the least preferable development option of recycling through demolition. Policy D3 of the New London Plan states the “best use of the land needs to be taken into consideration when deciding whether to retain existing buildings in a development.”

1.4 A pre-demolition audit identifying all materials within the building and documenting how they will be managed has been prepared. Please refer to attached Pre-Demolition Audit prepared by Viro Consult.

2.DEVELOPMENT OPTIONS

In assessing the opportunities for retention and refurbishment, we have assessed the condition of the existing building and explored the future potential of the site and the development options listed below.

I. Refit / Refurbish
II. Substantial refurbishment and extension
III. Reclaim and recycle

Three development options for the existing building have been considered under Studies A, B and C below.

The three studies are set out below:

Study A: Existing Building: provides detail of the existing structure to establish which elements require upgrading or replacement.
Study B: Refurbishment and Extension
Study C: New Build Construction

Study A : Existing Building

1.) Existing building constructed in circa 1960 and has not been extended or comprehensively internally upgraded.

2.) Basic traditional construction with limited insulation.

3.) Shallow mass concrete strip foundations, and defective ground floor slab, will be susceptible to continued movement.

4.) Existing unreinforced ground bearing concrete slab without insulation.

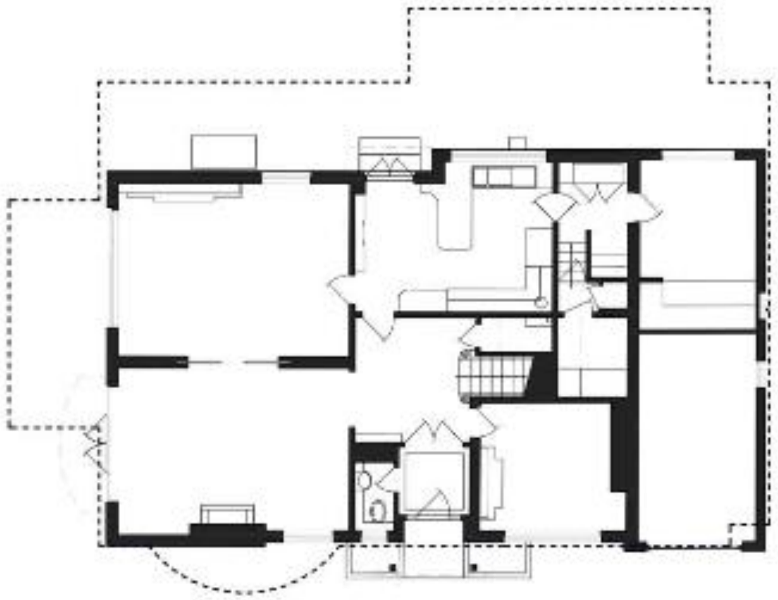
5.) External brick cavity walls without insulation.

6.) Room sizes are generally too small with low ceilings; the house's length and shallow depth with central staircase is a very inefficient layout.

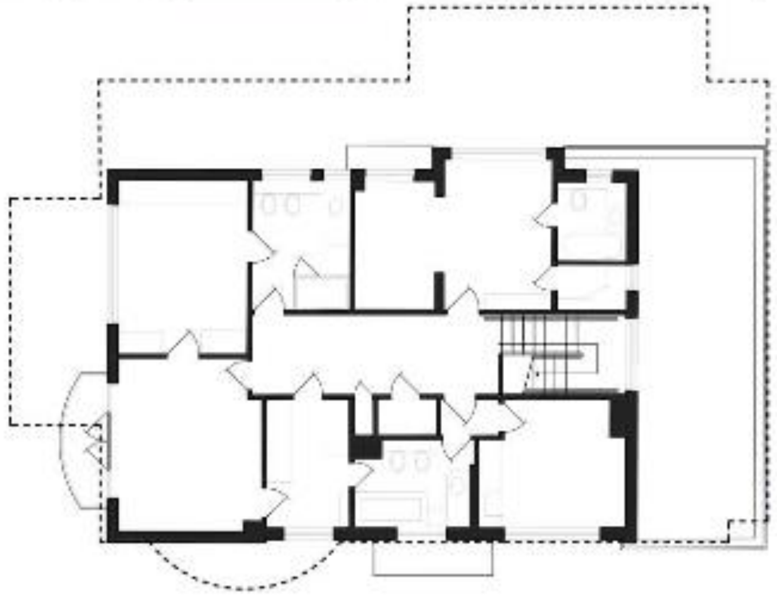
7.) Single glazed windows.

8.) Roof is a shallow double pitched timber construction with copper panelled coverings without insulation.

9.) Internal walls and floors would require replacement for new internal layout.



Ground Floor



First Floor

Key:
------------ Proposed building outline

Study A: Existing Building

1. The existing detached residential property was constructed in circa 1960 and provides residential accommodation on the ground and first floors. It has not been extended or comprehensively internally upgraded. It falls short of meeting modern requirements by a large margin.

   The large corner site is located on the north-western side of Redington Gardens, to the east of the junction with Redington Road. The property is smaller than many of the neighbouring properties which sit on much smaller plots, many of which have been replaced or substantially extended.

2. The building is of basic traditional construction with external brick cavity walls. The roof is a shallow double pitched timber construction with copper panelled coverings. There is limited insulation throughout the existing building fabric resulting in increased thermal bridging and poor building airtightness.

3. The existing footings are of a traditional construction, with the external brick walls extending below the external ground level to a shallow depth of approximately 0.6m, where they are supported on thin mass concrete strip foundations.

4. The existing ground floor slab appears to be an unreinforced ground bearing concrete slab. The shallow foundations, and defective ground floor slab, will be susceptible to continued movement, due to variations in moisture content of the ground; the movement will be exacerbated with the growth of the trees and their high-water demand, particularly with increasingly dry summers.

5. The existing uninsulated external brick cavity walls could cause thermal bridging and poor building airtightness.

6. The room sizes are generally too small with low ceilings, the kitchen is small and primitive, and the house’s length and shallow depth with central staircase is a very inefficient layout.

7. The existing windows are single glazed. They would need to be replaced to meet the current minimum standards for thermal elements.
8. The existing roof is a shallow double pitched timber construction with copper panelled coverings without insulation.

9. The existing internal walls and floors would require replacement for new internal layout.

Study A: Existing Building – Conclusion

Based on the above, it is recommended that, if the existing house is to be refurbished, the existing ground floor slab is removed in its entirety and replaced with a new suspended slab on new deeper foundations.

It is also recommended that all the internal and external walls, in the vicinity of the zones of influence of the trees, are underpinned to protect against future movement.

The entire electrical installation is unsafe and fails to meet the requirements of the current Building Regulations.

The heating and hot water generation system will be unable to be adapted to meet the requirements of the space, and the requirements of the Building Regulations and as such would be required to be replaced throughout.

On the ground floor, the floor to ceiling height is below the 3m or so that is now required in houses of this type. The floor to ceiling heights generally are below requirements.

The Dining Room and Reception are too small. There is no space for Pantry/Boot room/Utility room areas.

The stepped entrance to the porch and small Cloak Room does not satisfy Part M of the Building Regulations

The garage is too short for the large modern cars that residents of this area typically own.

On the first floor, the master bedroom suite is too small with no space for the separate his and her en-suite facilities that are now sought in this area.
The bedroom sizes generally are constrained by the narrow depth of the house.

Study B : Refurbishment & Extension

1.) Refurbishment and extension model working with the existing fabric.

2.) Retains external walls to two elevations of the main house (highlighted in dark blue on key plan and model).

3.) Existing foundations not adequate to support an additional second floor and would need to be underpinned or replaced with new.

4.) Existing ground floor slab removed in its entirety and replaced with a new insulated suspended slab on new deeper foundations.

5.) New insulated slab on piled foundations to rear and side extension.

6.) New external cavity walls with insulated void.

7.) Existing retained external walls upgraded with thermal insulation externally with new external brick skin to create cavity wall.

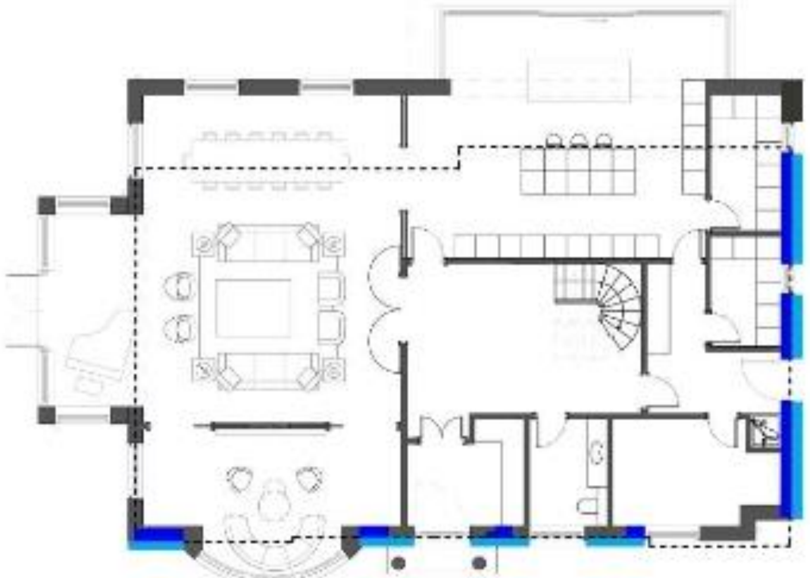
8.) New Roof: existing roof construction could not be adapted or strengthened to accommodate a second floor extension and would need to be replaced with a new structure with substantial insulation.

9.) New internal floors: the existing structure of the first floor would need to be replaced with a new structure to accommodate an additional second floor.

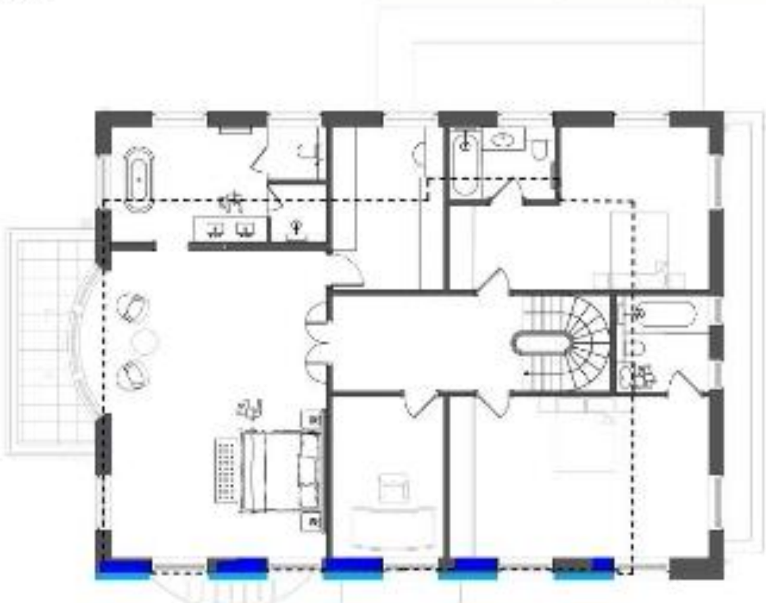
10.) New internal walls: the existing internal walls would not be adequate to support an additional second floor and would require strengthening and partial replacement with new structure.

11.) All mechanical, electrical and plumbing services need to be replaced with new, which would require extensive opening up works of the structure and the lifting of all floor boarding.

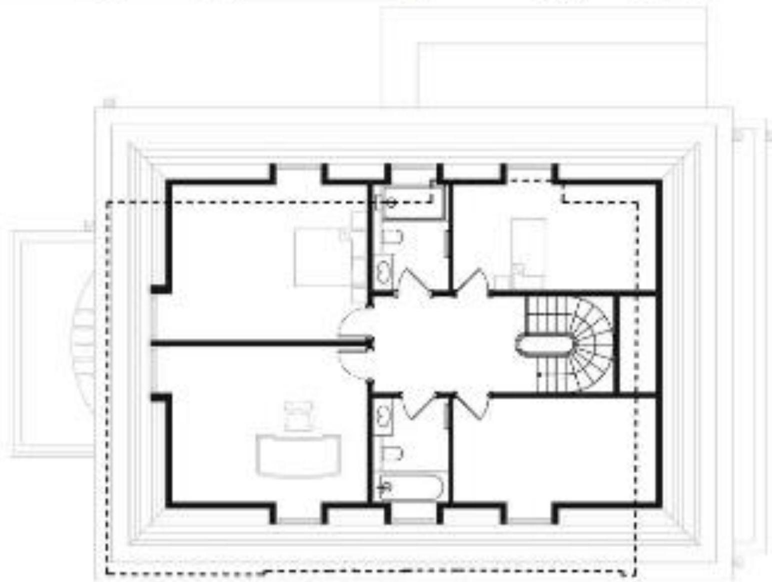
12.) New windows: all single glazed windows to be replaced with new double glazed units.



Ground Floor



First Floor



Second Floor

Key:

- - - - - - - - - Existing Building Outline

Retained brickwork

Insulation and external skin added

Study B: Refurbishment & Extension

1.) Refurbishment and extension model working with the existing fabric. The existing building was constructed in circa 1960 and has not been extended or comprehensively internally upgraded. It falls short of meeting modern requirements by a large margin. To be realistically marketable, a refurbished house would have to be to the highest modern standards.

2.) Retains external walls to two elevations of the main house (highlighted in dark blue on key plan and model).

3.) The existing foundations would not be adequate to support an additional second floor and would need to be underpinned or replaced with new.

4.) It is recommended that if the house is to be refurbished and extended, the existing ground floor slab is removed in its entirety and replaced with a new suspended slab on new deeper foundations.

5.) New insulated slab on piled foundations to rear and side extension.
A site-specific ground investigation was completed by Geotechnical and Environmental Associates (GEA). The GEA Report concludes that, due to the poor nature of the ground and the proximity of the trees, piled foundations shall be required for the long-term stability of the structure of the proposed new building; this shall ensure that the building is not affected by the weak ground at the upper levels and the influence of the trees, which can have a severe adverse effect on shallow foundations.

6.) New external cavity walls with insulated void.

7.) Existing retained external walls upgraded with thermal insulation externally with new external brick skin to create cavity wall.
A refurbishment would have to meet modern building control standards. This would be an expensive process for a house of this size and age. Extensive excavation would be needed to provide these facilities. This would involve:

Upgrading the thermal properties of the existing fabric, which due to the facing brick finish to the elevations, could only take place from the inside of the house. We have considerable experience of this, which usually involves extending the walls by about 170mm. This would obviously harmfully reduce the living space and the proportions of the existing rooms, many of which are relatively small already.
- Replacing all the windows with double glazed units.
- Replacing all the floors with material that satisfies noise transmission and thermal standards.
- The entire electrical installation is unsafe and fails to meet the requirements of the current Building Regulations.

The heating and hot water generation system will be unable to be adapted to meet the requirements of the space, and the requirements of the Building Regulations and as such would be required to be replaced throughout.

8.) New Roof required. If the building were to be extensively remodelled, reconfigured, and extended the existing roof construction could not be adapted or strengthened to accommodate a second-floor extension and would need to be replaced with a new structure.

9.) New internal floors: the existing structure of the first-floor ceiling would need to be replaced with a new structure to accommodate an additional second floor. The existing external walls and internal walls would not be adequate to support an additional second floor and would require strengthening and partial replacement with new structure.

10.) New internal walls: the existing internal walls would not be adequate to support an additional second floor and would require strengthening and partial replacement with new structure.

11.) All mechanical, electrical, and plumbing services need to be replaced with new, which would require extensive opening up works of the structure and the lifting of all floor boarding.

12.) New windows: all single glazed windows to be replaced with new double-glazed units to meet the current minimum standards for thermal elements.

Study B: Refurbishment & Extension - Conclusion

A feasibility study was carried out to achieve the favourable ‘neo-Georgian’ style of the design proposal whilst retaining the front façade, but the arrangement of openings left very little of the original facade remaining and it would be better to rebuild the front elevation.

The proposed extension works and requirement for bedrooms within the loft place, require the existing roof and rear elevation to be removed. The new internal configuration results in amended window locations which further erodes the number of walls to be retained.
Resulting in very little of the existing fabric being able to be retained. These factors contribute to the benefit of new build construction.

Study C : New Build Construction

1.) Complete demolition and new build using super insulated construction, exceeding minimum standards for U Value requirements.

2.) Existing building carefully demolished with selective deconstruction techniques and materials storage to maximise reuse. Where feasible any existing materials will be reused. All new materials on site will be considered for re-use and future recycling.

3.) New insulated suspended slab on new deeper foundations reducing linear thermal bridging and improving building airtightness.

4.) New structural steel framing and concrete construction.

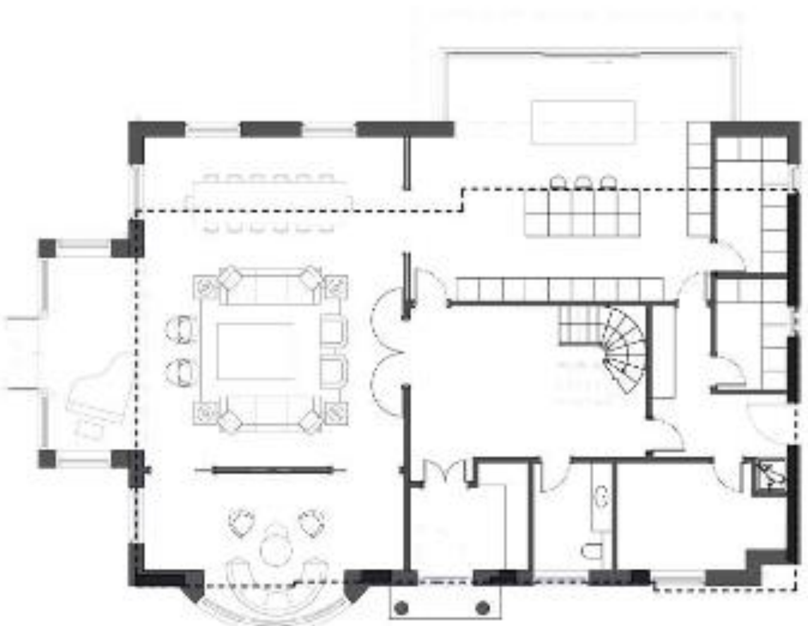
5.) New external cavity wall construction with full-fill insulation reducing linear thermal bridging and improving building airtightness.

6.) New roof with super insulated construction reducing linear thermal bridging and improving building airtightness.

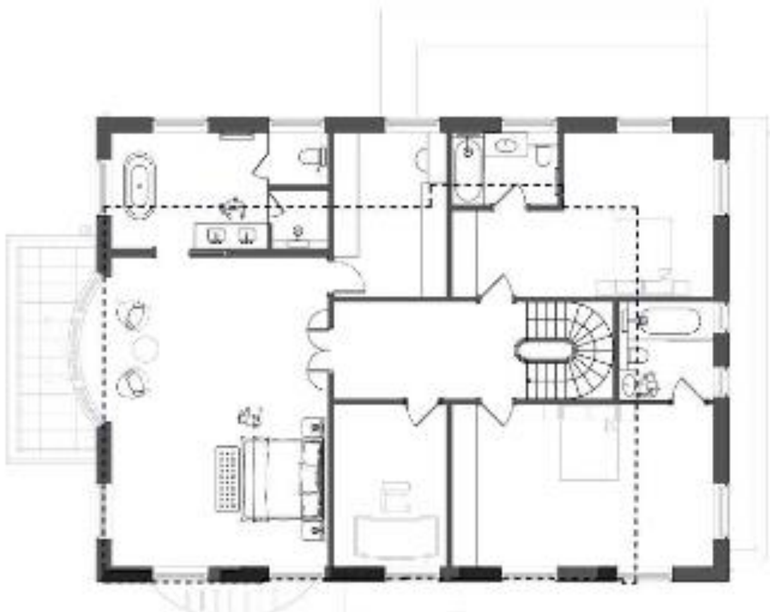
7.) New internal walls and floors with material that satisfies noise transmission and thermal standards.

8.) Proposed internal arrangement of rooms and facilities brings the property up to the standard required by modern family living.

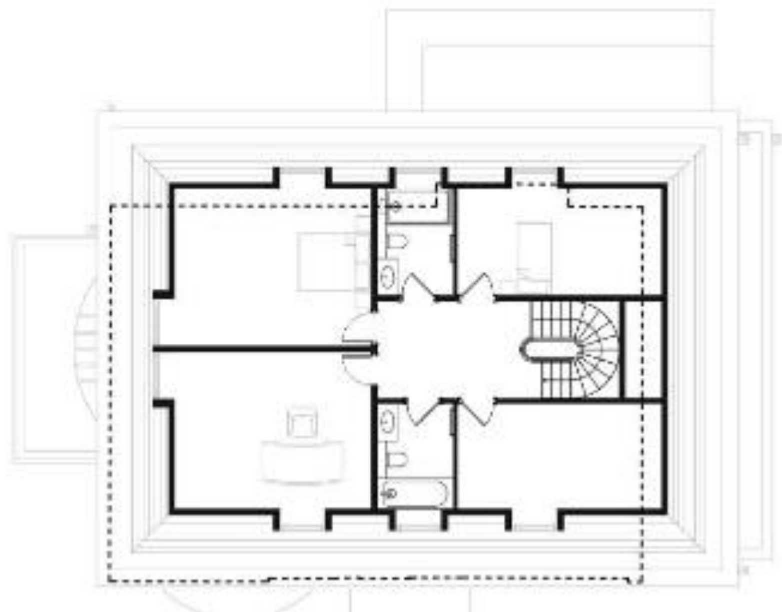
9.) No basement proposed, which results in a lower carbon footprint than similarly constructed neighbouring properties which do include basements.



Ground Floor



First Floor



Second Floor

Key:
--------- Existing Building Outline

Study C: New Build Construction

1.) Complete demolition and new build using super insulated construction, exceeding minimum standards for U Value requirements.

2.) Existing building carefully demolished with selective deconstruction techniques and materials.
storage to maximise reuse. Where feasible any existing materials will be reused. All new materials on site will be considered for re-use and future recycling.

3.) New insulated suspended slab on new deeper foundations reducing linear thermal bridging and improving building airtightness.
The GEA Report also includes recommendations for the use of a fully suspended ground floor slab, over a suitable void, to protect against potential ground movement and in accordance with the National House Building Council (NHBC) guidelines.
There is evidence of significant settlement of the existing ground floor slab, which is particularly noticeable in the main reception rooms, closest to the trees.

4.) New structural steel framing and concrete construction.

5.) New external cavity wall construction with full-fill insulation reducing linear thermal bridging and improving building airtightness.

6.) New roof with super insulated construction reducing linear thermal bridging and improving building airtightness.

7.) New internal walls and floors with material that satisfies noise transmission and thermal standards.

8.) Proposed internal arrangement of rooms and facilities brings the property up to the standard required by modern family living.

9.) No basement proposed, which results in a lower carbon footprint than similarly constructed neighbouring properties which do include basements.

10.) The proposed new building has a raised ground floor level thus reducing the risk of damage from flooding on this site.
The site lies within a flood risk zone of 1 and is identified as being at risk of surface water flooding on the Environment Agencies Flood Risk Map for Planning and is located in an area with a public transport accessibility level (PTAL) of 0. The best use of the site for a new building which is raised above ground level. The proposal would reduce the risk of flooding, in accordance with CLP Policy CC3.

4. CONCLUSIONS

Having reviewed the current state of the existing building we have arrived at the following conclusions:

4.1 The extensions and alterations required by a refurbishment scheme would be aesthetically unsatisfactory and could result in a compromised building that contributes less to the Conservation Area than the neutral contribution it makes at present.

4.2 The proposed 'neo-Georgian' style of the replacement dwelling was considered acceptable during the pre-application meeting with the planning and conservation officers. The planning officer also noted in the pre-planning advice ref: 2023/0764/PRE that the proposed replacement dwelling has been designed in a replica neo-Georgian style, taking cues from the four original dwellings at the south-east. End of the road (Nos. 1,2,3 and 15). A feasibility study was carried out to achieve this favourable 'neo-Georgian' style whilst retaining the front façade, but the arrangement of openings left very little of the original facade remaining and it would be better to rebuild the front elevation.

4.3 No Basement proposed, which reduces the proposed carbon footprint over similarly constructed neighbouring properties.

4.4 The proposed internal arrangement of rooms and facilities brings the property up to the standard required by modern family living.

4.5 The present house fails to meet present Building Regulations standards in many ways and satisfying these would inevitably detrimentally change the character of the building.

4.6 As shown above, the rooms that could be achieved by a refurbishment are well below the size, layout and height required by modern standards.

4.7 Taking all this into account, in our view it is highly questionable whether an effective refurbishment of the existing house is possible, let alone viable, and the risk is that this house would eventually take on a derelict appearance in the Conservation Area.

4.8 Where it has been demonstrated that the options of refit, refurbish and extension are not feasible, we have included a pre-demolition audit identifying all materials within the building and documenting how they will be managed. Please refer to attached Pre-Demolition Audit. Time will be provided in the project plan for selective deconstruction techniques and materials storage to maximise reuse. Where feasible any existing materials will be reused. All new materials on site will be considered for re-use and future recycling.

4.9 New London Plan policy SI7 expects 95% of construction and demolition waste to be diverted from landfill (reuse, recycle, recovery), and 95% of excavation waste to be put to beneficial use. At this option a Whole Life Carbon assessment (including embodied carbon) should be submitted, following the GLA draft SPG and including long term carbon factors (as set out in the GLA Whole Life Carbon SPG). This has been provided, please refer to the *RICS Whole Life Cycle Assessment (WLCA)* prepared by Green Build Consult and submitted with this planning application.

5. APPENDIX:
SUMMARY OF MEP SERVICING, THERMAL PERFORMANCE & EFFICIENCY FOR EACH BUILDING COMPONENT.

Summary of MEP (Mechanical, Electrical, Plumbing) servicing, thermal performance and efficiency for each building component.

The existing building is provided with LPHW heating from a boiler plant located in the garage, serving radiators throughout the property.
Hot water is generated by a pressurised mains fed hot water cylinder.
There is limited existing mechanical ventilation.
There is electrical distribution to small power and lighting throughout.

The mechanical plant installation has been renewed in the past 2-3 years, with the boiler being relocated to the garage, however the distribution installation and accompanying radiators is believed to be dated to the original construction at approaching 60 years old is beyond its useful life. Whilst the new installation within the plant area has been insulated, it is reasonable to predict that the distribution pipework throughout the floors is uninsulated resulting in energy losses.
The arrangement of the existing system is unlikely to meet the requirements of any proposed new layout and the location of the existing plant within the centre of the house, if retained, would limit opportunities to remodel the layouts.

The systems are NOT configured to provide zonal control, and this would be difficult to implement in any refurbishment.

The property has limited ventilation of sanitary accommodation and falls below the expectations of Building Regulations in this regard.

The electrical installation appears to date to the original construction and as such is way below current safety standards and would require complete removal and replacement.

- Identify remaining lifespan of plant and discuss pros/cons of plant upgrade.

Gas Boiler – 10 -12 years
HWS Cylinder – 10-12 years
Distribution pipework and radiators – 0 years
Electrical Installation – 0 years.

Current building regulations, and guidance on building services systems is to accommodate systems that operate using renewable energy technology. In this regard the existing building and existing systems are unlikely to be able to be improved sufficiently to ensure that renewable technologies such as Air Source Heat Pumps can be employed as the primary heat source.

- Energy performance of the façade

U values for refurbishment

Table 4.3 Limiting U-values for existing elements in existing dwellings

Element	U-value[1] $W/(m^2{\cdot}K)$	
	(a) Threshold	(b) Improved
Roof[2][3][4]	0.35	0.16
Wall – cavity insulation[2][5]	0.70	0.55
Wall – internal or external insulation[2][6]	0.70	0.30
Floor[7][8]	0.70	0.25

It is very difficult to improve upon the threshold values when upgrading existing thermal elements of a building without detriment to the internal spaces of the building.

U values for new build

Table 4.1 Limiting U-values for new fabric elements and air permeability in new dwellings

Element type	Maximum U-value[1] $W/(m^2 \cdot K)$
All roof types[2]	0.16
Wall[2]	0.26
Floor	0.18
Party wall	0.20
Swimming pool basin[3]	0.25
Window[4][5]	1.6
Rooflight[6][7]	2.2
Doors (including glazed doors)	1.6
Air permeability	$8.0m^3/(h \cdot m^2)$ @ 50Pa $1.57m^3/(h \cdot m^2)$ @ 4Pa

Any new build scheme would strive to significantly improve on this baseline criteria. With significantly improved thermal efficiencies of glazing and air permeability. Typically, all new windows would be provided with a U value of 1.1w/m^{2}K, and air permeability better than 4.00m^3/hm^2, being targeted.

• SBEM (Simplified Building Energy Model) energy modelling.

A full SAP calculation has been prepared for the proposed new build and is attached, this demonstrates that the proposed construction and associated building services will provide an improvement of 50% of carbon dioxide emissions over the baseline TER (Target Emission Rate)

• Details of Air Tightness, thermal bridge modelling and condensation analysis in exploration of limits to fabric upgrade in existing building.

When striving to improve thermal efficiency of existing buildings, it is often very difficult to improve air permeability and thermal bridging without complicated and difficult to implement construction details. It is conversely true that new construction will allow air permeability and thermal bridging details to be addressed in a simple easy to implement manner. Specialist designers can be employed to ensure that both elements of the design are addressed and adhered to during construction.

• Future projections for carbon content of electric load should incorporate latest BEIS carbon factors.

All calculations for the project have been carried out using the latest SAP10, carbon emission factors.