

The image features a large, semi-circular graphic on the left side, filled with a green wireframe architectural drawing of a building complex. The drawing shows various structures, including a prominent curved building with a grid-like facade. The background of the entire page is white, with the green wireframe graphic extending from the top left towards the center.

**OCSC**

O'CONNOR · SUTTON · CRONIN  
MULTIDISCIPLINARY CONSULTING ENGINEERS

A609: **SANDFORD ROAD**

# JUSTIFICATION FOR DEMOLITION

For  
**Sandford Living Ltd.**

10 December 2025

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# 1 EXECUTIVE SUMMARY

This report has been prepared by O'Connor Sutton Cronin (OCSC). The purpose of this Justification for Demolition Report is to outline the review analysis undertaken in determining the demolition of the existing Finlay Wing, Milltown Park House, Milltown Park House Extension and Archive Building on the site located at the junction of Sandford Road and Milltown Road.

This report is prepared in response to Chapter 15, section 15.7.1 'Re-use of Existing Buildings' of the Dublin City Development Plan 2022-2028 and inputs of text and data were received from members of the design team:

*'Where development proposal comprises of existing buildings on the site, applicants are encouraged to reuse and repurpose the buildings for integration with the scheme, where possible in accordance Policy CA6 and CA7. Where demolition is proposed, the applicant must submit a demolition justification report to set out the rationale for the demolition having regard to the 'embodied carbon' of existing structures and demonstrate that all options other than demolition, such as refurbishment, extension or retrofitting are not possible; as well as the additional use of resources and energy arising from new construction relative to the reuse of existing structures.*

*Existing building materials should be incorporated and utilised in the new design proposals where feasible and a clear strategy for the reuse and disposal of the materials should be included where demolition is proposed.'*

In order to set out the rationale for the demolition with regards to the 'embodied carbon' of the Finlay Wing, Milltown Park House, Milltown Park House Extension, Archive Building and the proposed development, a Life Cycle Assessment has been carried out.

The LCA calculates the lifetime environmental impact of a building allowing more informed decisions to be taken in terms of reducing carbon emissions. This considers the whole life cycle of the building, including manufacturing, transport, use and final disposal of the resources required for the delivery of the building functions for the whole period which the assessment covers.

The following options have been assessed and compared after other options such retrofit as hotel were explored but found not to be feasible due to significant site, design, operational, and commercial constraints.

1. Option 1: Deep residential retrofit
2. Option 2: Demolition + New Build

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## 2 INTRODUCTION

O'Connor Sutton Cronin (OCSC) has been appointed to provide a Justification for Demolition Report as part of the Planning submission for Sandford Road development.

This report sets out the justification for the proposed demolition of the existing Finlay Wing, Milltown Park House, Milltown Park House Extension, Archive Building located at the junction of Sandford Road and Milltown Road. The assessment considers an analysis of the existing buildings and their potential for reuse. It summarises the buildings' contextual, architectural, spatial, structural, and environmental characteristics, along with their compliance with current building regulations and modern standards. It also assesses their suitability for refurbishment to create a modern, fully compliant residential-led mixed-use development. It compares the operational and embodied carbon impacts of the proposed new development with those of reusing and adapting the existing buildings, highlighting the improvements achieved by the preferred approach.

While refurbishment could in principle reduce operational energy demand, the level of intervention required to upgrade the external envelope, structure, and mechanical and electrical systems would generate substantial embodied carbon emissions and even with these upgrades, the refurbished building would remain limited in terms of layout and compliance with current planning and performance standards.

By comparison, demolition and redevelopment with a new residential scheme would not only deliver a modern, energy efficient building with a lower overall carbon footprint across its lifecycle, but also provide much needed housing. The introduction of new dwellings will help address local demand, support sustainable urban growth, and enhance the quality of life for future residents.

This report sets out to demonstrate that the proposed demolition of the existing structure represents the most appropriate and sustainable planning response, having regard to relevant planning policy, building performance standards and carbon reduction targets. The removal of the current building facilitates the delivery of a high-quality residential-led mixed-use development that is consistent with the site's zoning objective, supports compact urban growth, and aligns with both national and EU policy commitments to achieving carbon neutrality by 2050.

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## 3 NATIONAL POLICY

### 3.1 National Development Plan Review 2025 (NDP)

Ireland's population is growing rapidly, projected to reach around 6.1 million by 2040, driving strong demand for housing and infrastructure. To address this, the National Planning Framework and National Development Plan prioritise delivering 300,000 additional homes by 2030, alongside improvements in energy, transport, water, and digital infrastructure.

Meeting this housing demand is closely linked to Ireland's climate goals. Under the Climate Action Plan and related legislation, Ireland aims for:

- 40% reduction in residential building emissions by 2030
- Climate-neutrality across the economy by 2050
- Alignment with European and Paris Agreement targets

The NDP review prioritises projects based on housing delivery potential, economic impact, and feasibility, ensuring that infrastructure investment supports both housing expansion and reduction of greenhouse gas emissions in a coordinated way.

### 3.2 National Planning Framework First Revision (NFP)

The proposed development will contribute to the following National Strategic Outcomes set out within the NPF:

### 3.3 Compact growth

Ireland aims to sustainably develop its cities, towns, and villages by prioritising centrally located, often publicly owned sites. Strategic activation of these areas through coordinated development, infrastructure investment, and supporting amenities will promote higher density and consolidation, reducing urban sprawl while providing housing, jobs, and services.

#### 3.3.1 National Policy Objective 7

*'Deliver at least 40% of all new homes nationally, within the built-up footprint of existing settlements and ensure compact and sequential patterns of growth.'*

Delivering new housing on the currently underutilised proposed site directly supports compact growth within the existing built-up footprint of Dublin. Redevelopment ensures efficient land use, provides new homes close to existing infrastructure and public transport, and reduces the need for urban sprawl. Retaining the existing Finlay Wing, Milltown Park House, Milltown Park House Extension and Archive Building would not contribute to compact growth or housing delivery targets.

### 3.3.2 National Policy Objective 8

*'Deliver at least half (50%) of all new homes that are targeted in the five Cities and suburbs of Dublin, Cork, Limerick, Galway and Waterford, within their existing built-up footprints and ensure compact and sequential patterns of growth.'*

The demolition of the existing Finlay Wing, Milltown Park House, Milltown Park House Extension and Archive Building will allow the redeveloping of the site for a high-density residential use, contributing to the target of delivering 50% of new homes within Dublin's existing footprint. The proposed development will also support growth by using serviced land adjacent to the Luas Green Line and other amenities, ensuring that new housing is delivered in well-connected, sustainable locations.

## 3.4 Sustainable Mobility

In line with climate targets, Ireland is shifting travel away from private cars toward walking, cycling, and public transport. Where car use remains necessary, the focus is on increasing electric vehicle (EV) adoption to 30% of the fleet by 2030 and electrifying public transport. Freight transport is also moving toward zero-emission technologies, complemented by efficiency improvements. The rollout of national EV infrastructure is being coordinated by ZEVI, TII, and local authorities to support these transitions.

### 3.4.1 National Policy Objective 93

*'Improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport to the private car, the promotion of energy efficient buildings and homes, heating systems with zero local emissions, green and blue infrastructure planning and innovative design solutions.'*

The new residential-led mixed-use development will be designed with highly energy efficiency systems and no reliance on gas unlike the current plant installed in the existing building. By promoting walking, cycling, and public transport through its location and design, the proposed development will support healthier mobility patterns helping to improve local air quality, while the existing Finlay Wing, Milltown Park House, Milltown Park House Extension, and Archive Building are currently not aligned with this objective, as they perpetuate fossil fuel use and are not contributing to housing provision.

## 3.5 Transition to a Carbon Neutral and Climate Resilient Society

Ireland's Climate Action and Low Carbon Development Act (2021) commits to a 51% reduction in greenhouse gas emissions by 2030, 80% renewable electricity generation by 2030, and net-zero emissions by 2050. Achieving this requires major investment in renewable energy systems (wind, wave, solar) and new transmission grids to connect energy-rich regions with centres of demand. These commitments, guided by the Climate Action Plan 2024 and the National Adaptation Framework, will shape infrastructure and investment decisions for decades.

### 3.5.1 National Policy Objective 68

*'Support the growth and development of efficient district heating, electrification of heating, and utilisation of geothermal energy.'*

The proposed development will integrate modern heating technologies. These systems are incompatible with the existing buildings without significant and invasive retrofitting. The proposed residential-led mixed-use development therefore better supports the electrification of heating and decarbonisation goals.

### 3.5.2 National Policy Objective 69

*'Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions as expressed in the most recently adopted carbon budgets.'*

The proposed residential-led mixed-use development will contribute to compact urban growth which lowers transport emissions, while the energy efficient building design and renewable energy integration through PV panels will reduce operational carbon and support national targets.

### 3.5.3 National Policy Objective 76

*'Sustainably manage waste generation including construction and demolition waste, invest in different types of waste treatment and support circular economy principles, prioritising prevention, reuse, recycling and recovery, to support a healthy environment, economy and society.'*

Although the demolition of the existing Finlay Wing, Milltown Park House, Milltown Park House Extension and Archive Building will generate some construction waste, the redevelopment will be managed in line with circular economy principles, prioritising reuse and recycling of materials where feasible.

## 3.6 Climate Action Plan 2025

Supports the urgent need to reduce and ultimately phase out Ireland's fossil fuels and replace heating systems with low carbon alternatives such as heat pumps and district heating systems.

The Climate Action Plan calls for the phasing out of fossil fuels and the adoption of low carbon heating technologies. The existing Finlay Wing, Milltown Park House, Milltown Park House Extension and Archive Building cannot meet this objective without involving major building fabric upgrades, full replacement of mechanical and electrical services, significant improvements to airtightness and moisture control, and extensive structural and spatial alterations to accommodate modern low-temperature heating and ventilation systems.

The new proposed residential-led mixed-use development, by contrast, will integrate renewable energy sources fully supporting Ireland's transition to a carbon-neutral built environment.

## 4 PLANNING POLICY

The Dublin City Development Plan 2022 – 2028 was adopted on 2<sup>nd</sup> November 2022 and came into effect on 5<sup>th</sup> December 2022. The Plan sets out how the city will develop to meet the needs of all residents, workers and visitors, not only for the six-year life of the plan, but for the long term.

*'The plan guides future growth and development, and provides the overall strategy to achieve proper planning and sustainable development, through a range of policies and objectives.'*

This report aims to address how the proposed Sandford Road scheme will support the target of reducing energy-related GHG emissions by 51% by 2030, as set out in the Climate Action Plan 2025, the Dublin City Council Climate Action Plan, and the climate action principles outlined in the National Planning Framework (NPF) 1<sup>st</sup> Revision (2025) and the Regional Spatial and Economic Strategy (RSES).

The proposed Sandford Road development will comply with the following stipulations outlined in the Dublin City Development Plan 2022-2028.

### 4.1.1 Policy CA6 – Retrofitting and Reuse of Existing Buildings

*'To promote and support the retrofitting and reuse of existing buildings rather than their demolition and reconstruction, where possible.'*

The retrofitting and reuse of the Chapel and Tabor House demonstrate the development's commitment to minimising waste and reducing emissions that contribute to climate change. Where retention has not been feasible, this report outlines the necessity for demolition to ensure compliance with sustainable development principles.

### 4.1.2 Policy CA7 – Energy Efficiency in Existing Buildings

*'To support high levels of energy conservation, energy efficiency and the use of renewable energy sources in existing buildings, including retro-fitting of appropriate energy efficiency measures in the existing building stock, and to actively retrofit Dublin Council housing stock to a B2 Building Energy Rating (BER) in line with the Government's Housing for All Plan retrofit targets for 2030.'*

The proposed development will incorporate low carbon energy and heating solutions for the Chapel and Tabor House for their future culture/community uses, aiming to achieve the lowest energy consumption that is technically, environmentally, and economically feasible.

### 4.1.3 Policy CA11 Energy from Renewable Sources

*'To support, encourage and facilitate the production of energy from renewable sources, such as from solar energy, hydro energy, wave/tidal energy, geothermal, wind energy, combined heat and power (CHP), heat energy distribution such as district heating/cooling systems, and any other renewable energy sources, subject to normal planning and environmental considerations.'*

The proposed development will support, encourage, and facilitate the generation of renewable energy by incorporating heat pump technologies, as well as utilising solar power as part of the development design strategy.

### 4.1.4 Policy SC13 Green Infrastructure

*'To recognise and promote Green Infrastructure and landscape as a key mechanism to address climate change and as an integral part of the form and structure of the city, including streets and public spaces.'*

The landscape design will be developed to create spaces that promote human well-being, while also integrating pedestrian and cycle routes, reinforcing the development's commitment to sustainability.

### 4.1.5 Policy CA23 – The Circular Economy

*'To support the shift towards the circular economy approach as set out in a Waste Action Plan for a Circular Economy 2020 to 2025, Ireland's National using-less/ Waste Policy, as updated together with The Whole of Government Circular Economy Strategy 2022- 2023.'*

The proposed development will contribute to Ireland's transition to a circular economy by prioritising sustainable construction practices. This includes the careful selection of low-impact materials (refer to section 11.3.2), minimising waste generation through the adaptive reuse and retrofit of The Chapel and Tabor House, and promoting the reuse, recycling, and correct segregation of materials to avoid landfill disposal. These measures will support a closed-loop resource system and enhance the proposed development's environmental performance.

### 4.1.6 Policy BHA21 – Retrofitting Sustainability Measures

*'To have regard to the Department of Environment, Heritage and Local Government's publication on Energy Efficiency in Traditional Buildings (2010) and the Irish Standard IS EN 16883:2017 Conservation of Cultural Heritage- Guidelines for Improving the Energy Performance of Historic Buildings (2017) and any future updates or advisory documents in assessing proposed works on heritage buildings.'*

The proposed development aims to enhance the energy efficiency of The Chapel and Tabor House while preserving their historical, architectural, and cultural significance. All upgrades will be carried out with sensitivity to the original fabric and character of the buildings, ensuring that the highest possible energy performance is achieved in a manner that is technically, environmentally, and economically feasible.

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#### 4.1.7 Policy BHA24 – Reuse and Refurbishment of Historic Buildings

*'Dublin City Council will positively encourage and facilitate the careful refurbishment of the historic built environment for sustainable and economically viable uses and support the implementation of the National Policy on Architecture as it relates to historic buildings, streetscapes, towns and villages, by ensuring the delivery of high quality architecture and quality place-making, and by demonstrating best practice in the care and maintenance of historic properties in public ownership.'*

The proposed development will promote the careful refurbishment of The Chapel and Tabor House for community, and cultural uses. This approach prioritises the conservation of streetscapes and urban fabric, adheres to best practices in the care and maintenance of heritage assets, and ensures that architectural integrity and cultural value are preserved for future generations.

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## 5 SITE DESCRIPTION AND CONTEXT

The site formerly accommodated facilities used by the Jesuit community for theological formation and pastoral ministry, later expanding to include lay education. A sustained decline in vocations and reduced demand for these programmes led to the closure of the facilities, the relocation of students, and the eventual sale of the lands to the applicant in 2019.

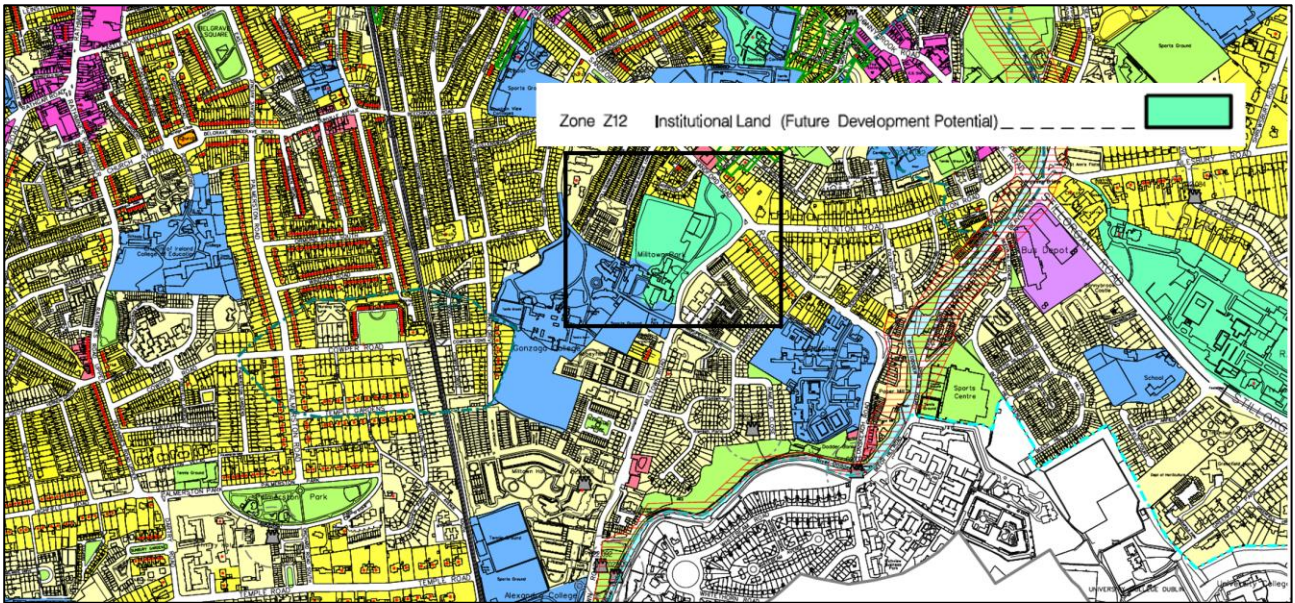
There are no protected structures within the application site, and none of the existing buildings are listed in the National Inventory of Architectural Heritage, as the Inventory does not extend to this area. The building group, which dates from the late eighteenth century to the mid twentieth century, is situated in the southern part of the site and centres on Milltown Park House, an eighteenth-century residence later expanded through a series of interconnected buildings.

At present, the site is underutilised, vacant, and inaccessible to the public, representing an inefficient use of well serviced urban land in a highly accessible location close to frequent public transport and employment areas.

The site is designated Z12 Institutional Land (Figure 1) under the Dublin City Development Plan 2022 to 2028, with the zoning objective stated in Chapter 14, Section 14.7.12 as follows:

*“To ensure existing environmental amenities are protected in the predominantly residential future use of these lands.”*

The proposed development has been designed to comply with this objective by delivering new residential uses and providing generous public open space. Without the proposed development, the lands would remain closed, and the extensive public open space and new pedestrian links planned as part of the scheme would not be delivered. The community would also lose the opportunity for new cultural/community facilities, a café/restaurant, a creche and meaningful public access through the lands for the first time.



*Figure 1. Land-use Zoning of the Proposed Site: Zone 12 Institutional Land (Future Development Potential)*

The proposed development is organised into five distinct character areas, each offering subtle variations in scale, building height, and material as can be seen in the following figure.



*Figure 2. Zones of the proposed development*

The existing buildings to be demolished are located in Zone 03. The evaluation of this zone has considered the condition, functionality, and development potential of the existing structures as stated in Section 7 and 8 of this report.

## 6 PROPOSED DEVELOPMENT

The demolition of c. 4,847.5 sq m will allow the construction of Block F of the proposed development, which includes a crèche (375 sq m) and a commercial café/ restaurant (179 sq m) at ground floor ranging in height from 5 to 7 storeys and comprising 81 apartment units, the demolition includes:

- Milltown Park House (880 sq m);
- Milltown Park House Rear Extension (2,031 sq m);
- The Finlay Wing (622 sq m);
- The Archive (1,240 sq m) and
- The link building between Tabor House and Milltown Park House rear extension to the front of the Chapel (74.5 sq m).

The proposed Block F, will strengthen the enclosure of the area, finalising the arrangement and giving clear form to the forecourt. The creche will ensure the development provides adequate childcare capacity and supports a sustainable new community as the existing structures cannot feasibly be adapted to meet contemporary childcare standards, including room sizes, accessibility requirements, safeguarding provisions, and the need for dedicated external play space.

Additionally, the thoughtful integration of historic buildings with new contemporary structures will contribute to the overall quality and distinctive identity of the scheme.



*Figure 3. Proposed Block F in Zone 03 - Historic*

## 7 OPTIONS EXPLORED

As part of the design process, the reuse potential of the existing buildings was rigorously examined. Although the structures are not protected, the assessment proceeded on the basis that any retained elements must fully comply with current statutory requirements, including Disability Access Certificate (DAC) standards and fire safety. For example, the fire consultants advised that the existing configuration presents significant deficiencies that cannot be addressed without major intervention:

*'Tabor House and the Chapel layout would generally be easier to adapt to community use. The other existing buildings have a number of issues in terms of fire strategy. Principally the layout is more difficult with a number of change of levels, which wouldn't be compliant for means of escape. Additionally the location of the buildings from fire tender accessibility would in our opinion require a significant redesign (including existing stair core locations), in order to develop a fire strategy.'*

The analysis identified substantial functional and regulatory constraints, summarised in Table 3. Furthermore, the current layout creates notable challenges for fire tender access, and resolving these issues would necessitate extensive redesign measures such as relocating stair cores and reconfiguring circulation to achieve a compliant and robust fire strategy.

Significant functional and regulatory constraints were identified, and these are set out in the Table 1.



*Figure 4. Side Elevation of Finlay Wing and Milltown Park*

*Table 1: Considerations and Limitations of Options Considered for Carbon Analysis*

	Finlay Wing	Milltown Park House	Milltown Park House Extension	Archive Building
<b>Use</b>	<b>Residential</b>	<b>Residential</b>	<b>Residential</b>	<b>Residential</b>
<b>Demolition/ Retention</b>	<b>Full retention</b>	<b>Full retention</b>	<b>Full retention</b>	<b>Full retention</b>
<b>New/ Refurbishment</b>	<b>Refurbishment</b>	<b>Refurbishment</b>	<b>Refurbishment</b>	<b>Refurbishment</b>
<b>Detailed Description</b>	<ul style="list-style-type: none"> <li>➤ Retention of the main structural elements.</li> <li>➤ Full replacement of interior finishes.</li> <li>➤ New glazing and additional insulation.</li> <li>➤ Lift installed in MPH extension.</li> <li>➤ Dry riser installation.</li> <li>➤ New fire rated ceiling soffits.</li> <li>➤ Total of 7 units.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Retention of the main structural elements.</li> <li>➤ Full replacement of interior finishes.</li> <li>➤ New glazing and additional insulation.</li> <li>➤ Lift installed in MPH extension.</li> <li>➤ Dry riser installation.</li> <li>➤ New fire rated ceiling soffits.</li> <li>➤ Addition of shaft services.</li> <li>➤ Protected stair with openable windows or AOV.</li> <li>➤ Total of 10 units.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Retention of the main structural elements.</li> <li>➤ Full replacement of interior finishes.</li> <li>➤ New glazing and additional insulation.</li> <li>➤ New lift</li> <li>➤ Dry riser installation.</li> <li>➤ Extension of existing stair from GF-01 Up to 4F with dry riser.</li> <li>➤ Link to Chapel removed.</li> <li>➤ New fire rated ceiling soffits.</li> <li>➤ Addition of shaft services.</li> <li>➤ Total of 11 units</li> </ul>	<ul style="list-style-type: none"> <li>➤ Retention of the main structural elements.</li> <li>➤ Full replacement of interior finishes.</li> <li>➤ New glazing and additional insulation.</li> <li>➤ New lift.</li> <li>➤ Protected stair with openable windows or AOV.</li> <li>➤ Enclosure of stairs.</li> <li>➤ Link to MPH removed.</li> <li>➤ New entrance.</li> <li>➤ Infill of atrium on upper levels.</li> <li>➤ New fire rated ceiling soffits.</li> <li>➤ Addition of shaft services.</li> <li>➤ Total of 14 units.</li> </ul>
<b>Limitations Constrains</b>	➤ Existing building does not meet current Part L U-values.	➤ Existing building does not meet current Part L U-values.	➤ Existing building does not meet current Part L U-values.	➤ Existing building does not meet current Part L U-values.

<ul style="list-style-type: none"> <li>➤ Additional insulation will limit the usable area.</li> <li>➤ Additional insulation will alter the character of the space.</li> <li>➤ Only lift available within MPH extension results in inefficient internal circulation.</li> <li>➤ Restricted access through the main MPH entrance complicates circulation through the building.</li> <li>➤ Units do not stack requiring additional services to be installed.</li> <li>➤ Perimeter trench significantly reduces daylight to lower-floor units.</li> <li>➤ Floor to ceiling height on the lower floor below regulations.</li> <li>➤ Disproportionated floor to ceiling on the upper floor.</li> <li>➤ Extensive internal alterations required resulting in the loss of character.</li> <li>➤ Not all units have access to private amenity space.</li> <li>➤ Extensive, invasive and costly reconstruction works to restore the compromised fabric due to long-term flooding.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Additional insulation will limit the usable area.</li> <li>➤ Additional insulation will alter the character of the space.</li> <li>➤ Differences in floor level between the building and the MPH extension.</li> <li>➤ Existing stair only 0.9 m wide.</li> <li>➤ Floor to ceiling height below regulations in some of the units.</li> <li>➤ The addition of service shafts will compromise structure.</li> <li>➤ Level changes hinder fire safety and accessible compliance.</li> <li>➤ Inefficient units.</li> <li>➤ Extensive internal alterations required resulting in the loss of character.</li> <li>➤ Not all units have access to private amenity space.</li> <li>➤ Limited density.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Additional insulation will limit the usable area.</li> <li>➤ Additional insulation will alter the character of the space.</li> <li>➤ The inclusion of a lift may compromise the structure.</li> <li>➤ Differences in floor level between the building and the MPH.</li> <li>➤ Floor to ceiling height below regulations or excessive in some of the units.</li> <li>➤ The addition of service shafts will compromise structure.</li> <li>➤ Level changes hinder fire safety and accessible compliance.</li> <li>➤ Oversized or inefficient units.</li> <li>➤ Extensive internal alterations required resulting in the loss of character.</li> <li>➤ Not all units have access to private amenity space.</li> <li>➤ Concern regarding potential fire spread within the existing enclosed courtyard between the building and the chapel.</li> <li>➤ Corridors excessively wide.</li> <li>➤ Limited access to daylight due to boundary wall and proximity to the existing buildings.</li> <li>➤ Limited density.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Additional insulation will limit the usable area.</li> <li>➤ Additional insulation will alter the character of the space.</li> <li>➤ The inclusion of a lift may compromise the structure.</li> <li>➤ Current stairs do not provide fire protection.</li> <li>➤ Enclosure of stairs</li> <li>➤ Differences in floor level between the building and the MPH extension.</li> <li>➤ Given its close proximity to the site boundary, the entrance will have restricted visibility and limited ease of access.</li> <li>➤ Limited circulation spaces and escape routes have to be on the infilled atrium.</li> <li>➤ Infill of atrium will change the character of the space.</li> <li>➤ Floor to ceiling height below regulations.</li> <li>➤ The addition of service shafts will compromise structure.</li> <li>➤ Addition of balconies is limited due to narrow existing windows.</li> <li>➤ Quality and usability of units is compromise due to limited access to daylight.</li> <li>➤ Limited density.</li> </ul>
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## 8 OPTIONS FOR ANALYSIS

There are 6 existing buildings within the site boundary as can be seen in the following Figure.



Figure 5. Existing Building Layout

Of the existing buildings, only four are proposed for demolition after an evaluation of their potential for residential retrofit: Milltown Park House and its extension, the Finlay Wing, and the Archive Building. These are highlighted in the following figure.

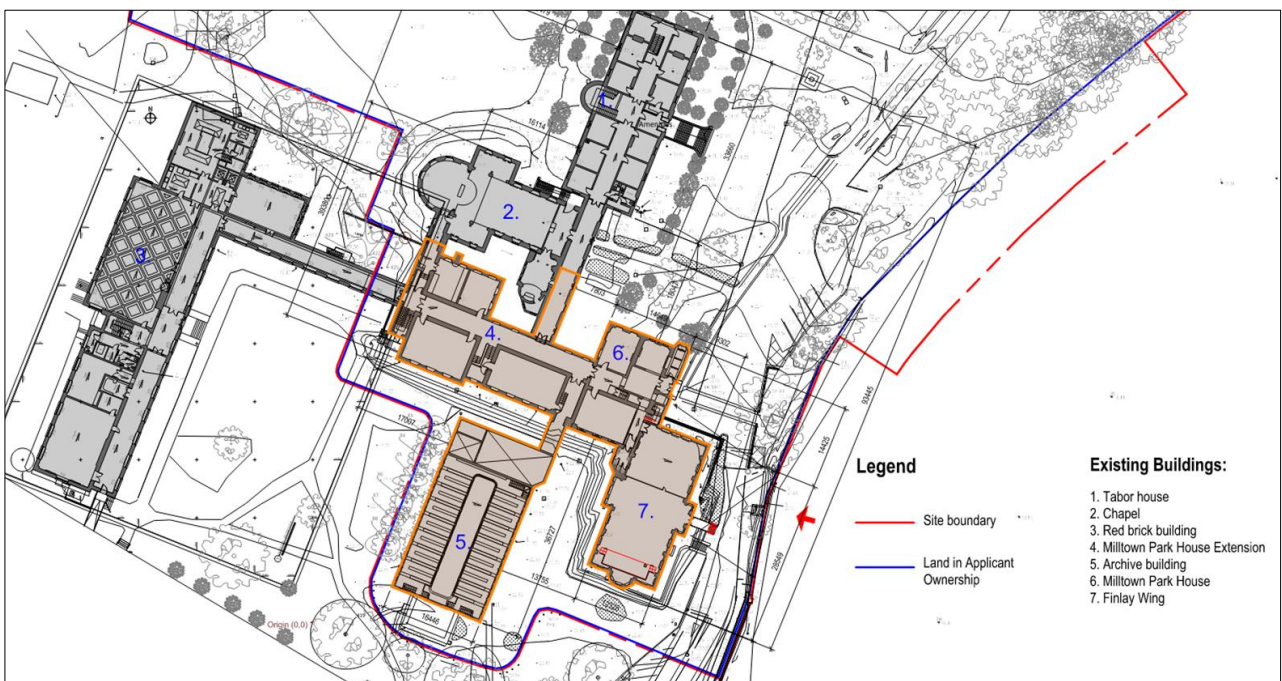


Figure 6. Proposed Buildings to be Demolished.

## 8.1 Milltown Park House

Milltown Park House has undergone extensive and repeated modification from the late 19<sup>th</sup> century onwards, resulting in the near total loss of its original form, layout, materials, and architectural character. The front elevation has been altered multiple times and internally only isolated fragments of original fabric remain. Most rooms have been spatially altered beyond recognition, with loss of original stair, floors, partitions, plasterwork, and joinery. All rooms are suffering some form of water ingress due to significant roof breaches as seen below.



*Figure 7. Basement level (Source: Molloy & Associates Conservation Architects)*



*Figure 8. Amalgamated room, with evidence of water ingress and exposed services*



*Figure 9. Example of water ingress (Source: Molloy & Associates Conservation Architects)*

Milltown Park House has been so extensively altered through successive extensions, reconfigurations, and fabric loss that its original architectural form, layout, and character are no longer legible. Additions on three sides, the removal of the original stair and internal hierarchy, widespread water damage, and the loss of original plasterwork, joinery, and finishes have resulted in a building that is structurally compromised and architecturally incoherent. Only a later vestibule retains artistic detail, and its elements are proposed for salvage.

Due to the extensive loss of fabric, extensions, and connections to adjoining blocks, adapting the building for residential use would require large scale and carbon intensive works that conflict with conservation principles and are economically unsustainable. Moreover, even after significant refurbishment, the existing grid would not meet modern residential standards for daylighting, accessibility, energy efficiency, and fire safety. Demolition, with full recording and salvage of artistic elements, represents a reasonable and justified approach consistent with best conservation practice.

## 8.2 Milltown Park House Extension

Milltown Park House features a vertical extension that comprises a series of interconnected additions, constructed progressively from the late 19<sup>th</sup> century through to the mid-20<sup>th</sup> century designed around institutional needs rather than any architectural continuity which creates significant challenges for refurbishment.

Many façades are either obscured or tightly enclosed by adjacent buildings to the north (The Chapel) and south (The Archive), limiting natural light, ventilation and opportunities for meaningful architectural enhancement. Internally, much of the accommodation is arranged as small cellular rooms along central corridors, with access routes threaded awkwardly through altered openings in the original House, further complicating circulation and reuse.



*Figure 10. North Elevation of the MPH Extension (Source: Molloy & Associates Conservation Architects)*

### 8.3 The Finlay Wing

The Finlay Wing, originally built in 1908 as a four storey structure above a basement, was severely damaged by a fire in 1949 and subsequently rebuilt as a single volume building over a basement. Its external appearance is restrained and reflects the cost conscious architectural approach of mid 20<sup>th</sup> century reconstruction.

Although connected to Milltown Park House at its primary entrance, the building is unique within the complex for also having an independent entrance on the east side through a defined porch and lobby which only leads to the upper floor. Internally, the basement is severely constrained, surrounded by a 2 meter trench that restricts daylight and natural ventilation, and shows evidence of long-term flooding, further compromising its environmental quality. The entrance hall, once a single-volume space, is simply detailed and subdivided by a sliding screen, providing minimal flexibility or reuse potential. Its proximity to adjacent structures and limited openings further restrict adaptation.



*Figure 11. West Elevation of the Finlay Wing (Source: Molloy & Associates Conservation Architects)*



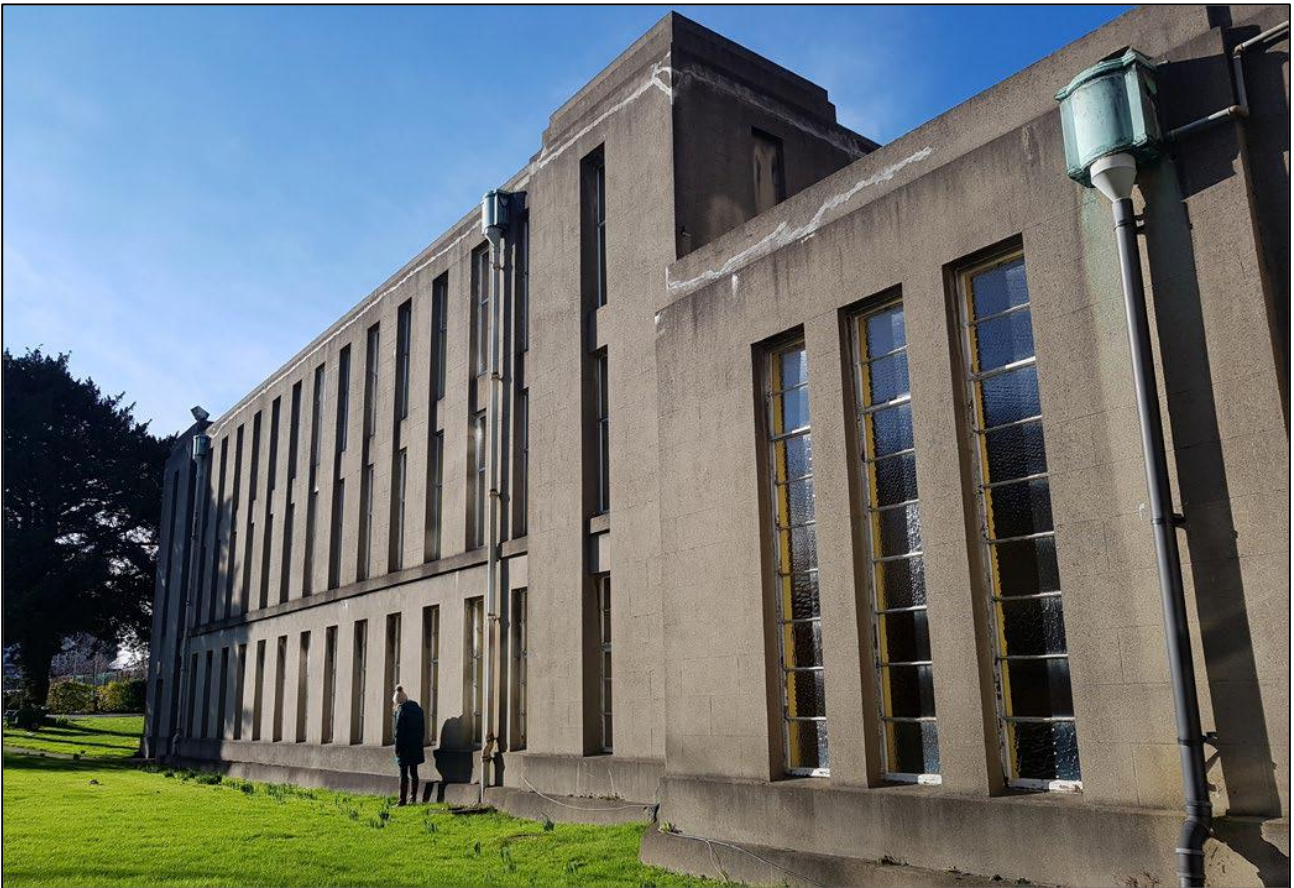
*Figure 12. East Elevation of the Finlay Wing (Source: O'Mahony Pike Architects)*

## 8.4 The Archive

The Archive Building was originally designed and constructed to house the Jesuit Community's private archive. It is a modest, simply rendered concrete block building, with an interior specifically configured for the storage and protection of archival material. The Archive has no independent external entrance. Access is solely through the Milltown Park Extension, via a series of internal level changes.

The building is fundamentally a single-volume space subdivided vertically into three tiers of library shelving and reading areas behind its structural frame. The flat roof, enclosed by a tall parapet with rooflight is in poor condition, with evidence of leaks.

This highly specialised layout poses significant challenges for any adaptive re-use. The building's compartmentalised plan, limited floor-to-ceiling heights on the upper levels, would lead to substantial alterations of most architectural features to support a new function.



*Figure 13. East Elevation of the Archive (Source: O'Mahony Pie Architects)*

## 9 CARBON RESULTS

From the residential retrofit previously assessed, a Life Cycle Assessment (LCA) was undertaken for each of the existing buildings and for the proposed Block F. The retrofit was assessed to demonstrate the scale of carbon-intensive works required to retain and upgrade the existing structure to meet current standards.

The results obtained from the Life Cycle Analysis are a consequence of the substantial interventions necessary to bring the buildings in line with current standards and include:

- **New internal finishes:** Removal and replacement of all internal surfaces, including floors, walls, and ceilings, resulting in high material input and waste generation.
- **New glazing systems:** Complete replacement of all windows to achieve current thermal and acoustic performance standards.
- **New atrium roof:** The existing atrium roof would require full replacement of its glazing and supporting frame to achieve current energy performance, weatherproofing, and safety standards, increasing the overall intervention intensity.
- **Construction of new internal partitions:** Partitions and reconfiguration of internal layouts is required for the proposed units leading to further material consumption.
- **Upgrade of the external envelope:** to comply with Part L values and improve airtightness targets, installation of new insulation systems is required;
- **Full MEP replacement:** Complete renewal of mechanical, electrical, and plumbing systems, introducing additional embodied carbon and construction complexity;
- **New roof waterproof:** New waterproofing materials, further increasing material and carbon intensity.

These works would introduce new loads and multiple penetrations through the existing fabric, which would need to be carefully assessed and potentially reinforced to maintain structural safety and integrity.

The scale of these interventions would be significant. Furthermore, the existing layout and configuration may limit compliance with current accessibility and energy performance requirements. Consideration would also need to be given to the modest number of units achieved through the retrofit, which restrict the potential to optimise the site's proximity to public transport and existing infrastructure.

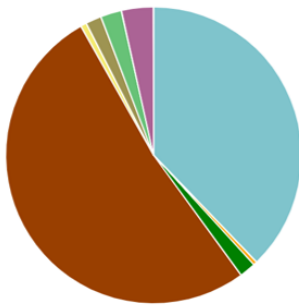
### 9.1 Milltown Park House

	Retrofit of Existing Building
GFA (m <sup>2</sup> )	880
Demolition/ Deconstruction (Tons CO <sub>2</sub> e)	16.6
Embodied Carbon (Tons CO <sub>2</sub> e)	391.90
Operational Energy (kWh/m <sup>2</sup> /y)	249.47
Operational Carbon (Tons CO <sub>2</sub> e)	955.89
Total (Tons CO <sub>2</sub> e)	1,364
Total (Tons CO <sub>2</sub> /m <sup>2</sup> )	1.550

Figure 14. Embodied and Operational Carbon for the Retrofit of Milltown Park House

Global Warming Potential total kg CO<sub>2</sub>e - Life-cycle stages

- A1-A3 Materials - 37.8%
- A4 Transport - 0.4%
- A5 Construction - 1.8%
- B4-B5 Replacement - 51.9%
- C1 Deconstruction/demolition - 0.7%
- C2 Waste transport - 1.7%
- C3 Waste processing - 2.3%
- C3-balancing Biogenic waste processing - 3.5%
- C4 Waste disposal - 0.0%
- C4-balancing Biogenic waste disposal - 0.0%



Global Warming Potential total kg CO<sub>2</sub>e - Classifications

- 1.3.2 Internal walls, partitions and doors - 5.4%
- 1.4.2 Façade openings - 5.1%
- 1.5 Roof - 10.7%
- 2.1.3 Ceilings - 10.5%
- 2.1.5 Floor coverings and finishes - 17.5%
- 2.2 In-built lighting system - 2.5%
- 2.3.3 Electricity generation and distribution - 32.4%
- 2.4 Ventilation system - 7.0%
- 2.6.3 Communication and security installations - 2.2%
- Other classifications - 6.8%

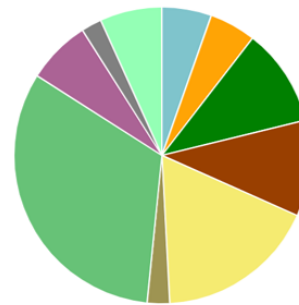


Figure 15. Embodied Carbon Breakdown for Milltown Park House Retrofit

### 9.2 Milltown Park House Extension

	Retrofit of Existing Building
GFA (m <sup>2</sup> )	2,105.5 <sup>a</sup>
Demolition/ Deconstruction (Tons CO <sub>2</sub> e)	43.39
Embodied Carbon (Tons CO <sub>2</sub> e)	756.27
Operational Energy (kWh/m <sup>2</sup> /y)	249.47
Operational Carbon (Tons CO <sub>2</sub> e)	2,287.08
Total (Tons CO <sub>2</sub> e)	3,087
Total (Tons CO <sub>2</sub> /m <sup>2</sup> )	1.46

<sup>a</sup> Includes the link Building between Tabor House and Milltown Park House Rear Extension to the front of the Chapel (74.5 sq m)

Figure 16, Embodied and Operational Carbon for the Retrofit of Milltown Park House Extension

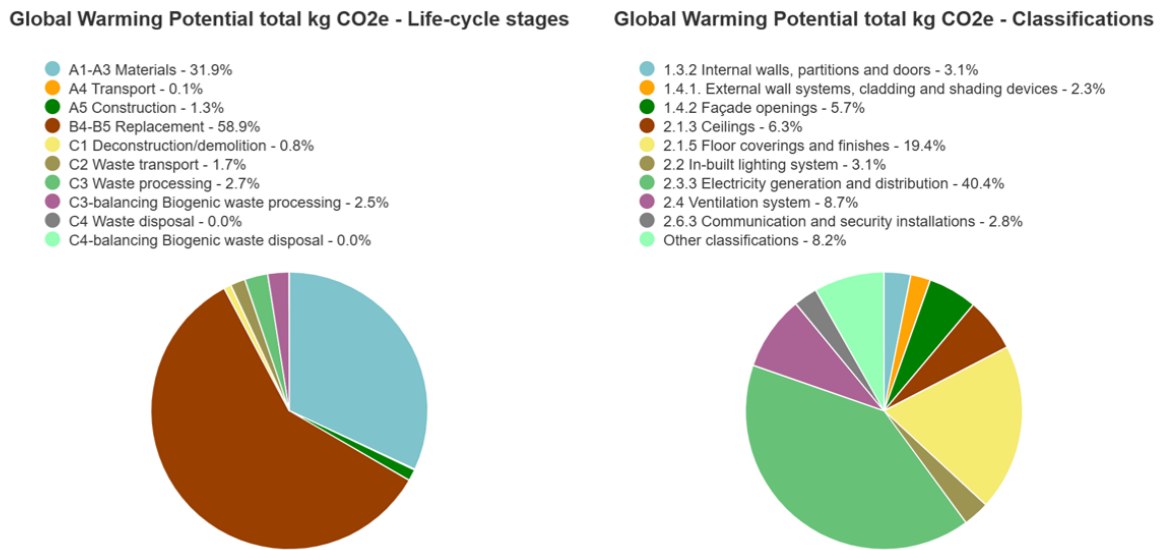


Figure 17. Embodied Carbon Breakdown for Milltown Park House Extension Retrofit

### 9.3 The Finlay Wing

	Retrofit of Existing Building
GFA (m <sup>2</sup> )	622
Demolition/ Deconstruction (Tons CO <sub>2</sub> e)	17.93
Embodied Carbon (Tons CO <sub>2</sub> e)	260.66
Operational Energy (kWh/m <sup>2</sup> /y)	249.47
Operational Carbon (Tons CO <sub>2</sub> e)	675.64
Total (Tons CO <sub>2</sub> e)	954
Total (Tons CO <sub>2</sub> /m <sup>2</sup> )	1.53

Figure 18. Embodied and Operational Carbon for the Retrofit of Finlay Wing

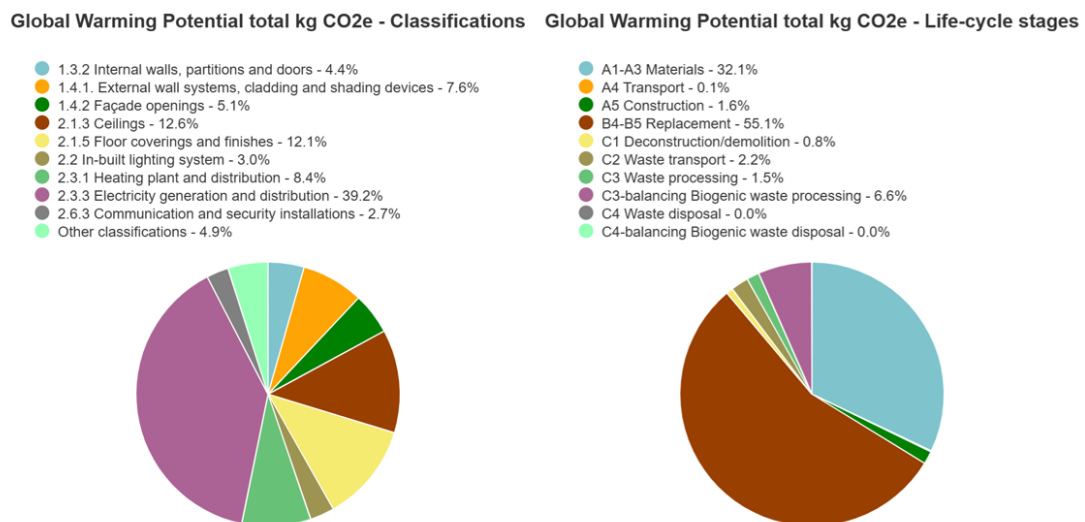


Figure 19. Embodied Carbon Results Breakdown for Finlay Wing Retrofit

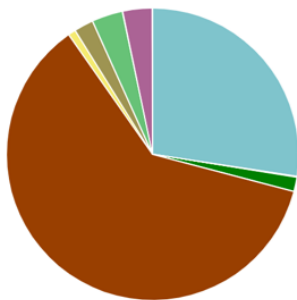
### 9.4 The Archive

	Retrofit of Existing Building
GFA (m <sup>2</sup> )	1240
Demolition/ Deconstruction (Tons CO <sub>2</sub> e)	14.99
Embodied Carbon (Tons CO <sub>2</sub> e)	157.87
Operational Energy (kWh/m <sup>2</sup> /y)	249.47
Operational Carbon (Tons CO <sub>2</sub> e)	1,346.94
Total (Tons CO <sub>2</sub> e)	1,520
Total (Tons CO <sub>2</sub> /m <sup>2</sup> )	1.226

Figure 20. Embodied and Operational Carbon for the Retrofit of the Archive

#### Global Warming Potential total kg CO<sub>2</sub>e - Life-cycle stages

- A1-A3 Materials - 27.4%
- A4 Transport - 0.1%
- A5 Construction - 1.6%
- B4-B5 Replacement - 61.2%
- C1 Deconstruction/demolition - 0.8%
- C2 Waste transport - 2.2%
- C3 Waste processing - 3.4%
- C3-balancing Biogenic waste processing - 3.3%
- C4 Waste disposal - 0.0%
- C4-balancing Biogenic waste disposal - 0.0%



#### Global Warming Potential total kg CO<sub>2</sub>e - Classifications

- 1.3.2 Internal walls, partitions and doors - 5.1%
- 1.4.1. External wall systems, cladding and shading devices - 2.0%
- 1.4.2 Façade openings - 5.6%
- 1.5 Roof - 6.2%
- 2.1.3 Ceilings - 13.3%
- 2.1.5 Floor coverings and finishes - 24.5%
- 2.2 In-built lighting system - 1.8%
- 2.3.3 Electricity generation and distribution - 26.7%
- 2.4 Ventilation system - 7.6%
- Other classifications - 7.1%

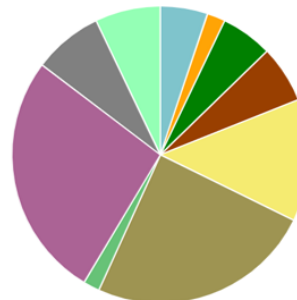


Figure 21. Embodied Carbon Breakdown for the Archive Retrofit

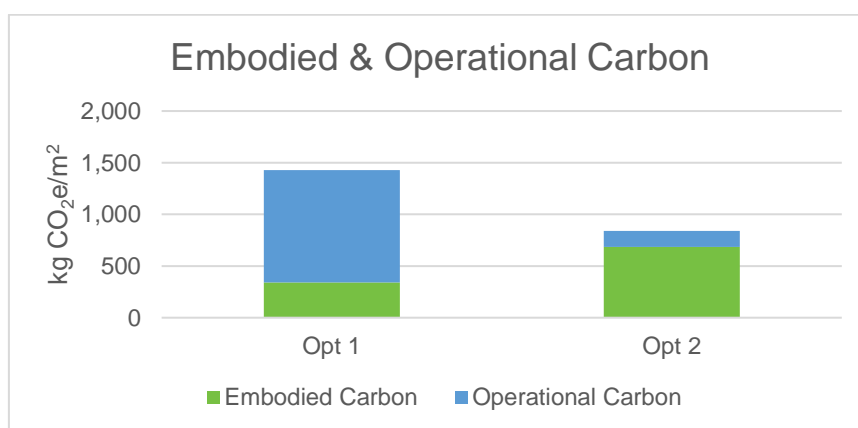
## 9.5 Proposed Development

The following table presents a comparison of total emissions from the existing buildings against those estimated for the proposed Block F, which is intended to replace them. The figures reflect both the extensive works required for a residential retrofit and the limited energy performance achievable due to the inherent conditions of the existing structures.

*Table 2: Embodied and Operational Carbon Summary of Results*

	Option 1 Retrofit of Existing Buildings	Option 2 Proposed Development (Block F)
GFA (m <sup>2</sup> )	4,847.5	7,367.5
Demolition/ Deconstruction (t CO <sub>2</sub> e/m <sup>2</sup> )	27	52 <sup>b</sup>
Embodied Carbon (kg CO <sub>2</sub> e/m <sup>2</sup> )	323	652.1
Operational Energy (kWh/m <sup>2</sup> /yr)	249	47.9
Operational Carbon (kg CO <sub>2</sub> e/m <sup>2</sup> )	1,086	153.3
Total WLCA cumulative (kg CO <sub>2</sub> e/m <sup>2</sup> )	1,415	812
% Improvement	-	-41%

As illustrated in the figure below, when compared the retrofit of existing buildings (Option 1) and proposed development (Option 2), the embodied carbon remains the primary contributor to total emissions in Option 2. However, the high-performance design of the building, combined with an efficient thermal envelope and highly efficient building systems significantly reduces operational carbon. This reduction in operational emissions brings the development much closer to aligning with the carbon neutrality goals set for 2050. The integration of the high efficiency design ensures that, despite the initial higher embodied carbon associated with new construction, the overall carbon footprint is optimised over the building's lifecycle.



*Figure 22. Embodied and Operational carbon for Option 1 and 2*

<sup>b</sup> Based on Chapter 12: Air Quality & Climate

As expected, retaining the existing buildings result in the lowest total embodied carbon, primarily due to the preservation of the existing structure. However, the upgrades required to meet future legislative compliance, coupled with the inherent limitations and suboptimal energy performance of the building, lead to the highest carbon intensity.

In contrast, the proposed Block F demonstrates exceptional operational carbon performance, significantly outperforming the Option 1 (Retrofit).

Option 2 (Proposed development) achieves 41% reduction in total kgCO<sub>2</sub>e/m<sup>2</sup> compared to retaining the existing buildings. Although the main structural elements are retained, the existing building's configuration imposes constraints to achieve the same level of energy performance as the proposed development, which benefits from a more sophisticated and optimised design that offers far greater potential for energy efficiency improvements, including a careful design that optimises daylight, a strategy not feasible in Option 1 due to structural constraints.

As part of the proposed development's strong commitment to sustainability and environmental responsibility, comprehensive measures will be implemented to minimise demolition emissions, as detailed in Section 11.

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## 10 RATIONALE FOR DEMOLITION OF THE EXISTING BUILDINGS AND NEW DEVELOPMENT

The proposed Block F will be constructed as a highly sustainable structure, ensuring durability, energy efficiency, and long-term energy performance. External elevations will incorporate high-quality brick façades to provide a robust, contextually appropriate finish that complements the surrounding built environment. High-performance glazing will maximise natural light, support passive solar gain, and contribute to improved residential amenity, while also enhancing the architectural quality of the scheme”.

The following indicators collectively demonstrate that the retention and refurbishment of the existing structure are not feasible from a technical, environmental, or economic perspective. The building’s condition, layout, and outdated services significantly limit its potential for adaptation to current standards or for integration within the proposed development. In this context, the demolition of the existing building represents the most appropriate and sustainable approach, allowing the site to be redeveloped in accordance with current planning objectives, energy efficiency targets, and Ireland’s long-term decarbonisation goals.

### 10.1 Architectural perspective

From an architectural perspective, the existing buildings have limited design quality, compromised condition, and lack of meaningful heritage value. According to the Appraisal of Architectural Significance the existing buildings do not possess the five qualities listed in the paragraph 2.5.7 of the Architectural Heritage Protection Guidelines for Planning Authorities to be considered of special architectural interest (it should be an exemplar of good architectural design; it should be the work of a known and distinguished architect, engineer, or craftsman; it should represent a notable building type, planform, or style, or demonstrate a harmonious interrelationship of styles; it should make a positive contribution to its setting; and it should contain interiors of design quality, richness, or spatial merit. Their forms are heavily altered, lack harmony, and do not contribute positively to the surrounding context, often overwhelming or enclosing adjacent structures rather than enhancing them.

### 10.2 Spatial quality

#### 10.2.1 Indoor air

Indoor air quality is a critical factor for any building occupant. An inadequate indoor environment reduces comfort levels and can contribute to Sick Building Syndrome. A healthy and productive environment requires improved internal comfort conditions alongside enhanced air quality.

Inspection of the existing buildings indicates that ventilation is currently reliant on natural methods, primarily through openable sections of the external glazing units. However, mould growth observed on site and visible dampness demonstrate that adequate ventilation rates are not being achieved. During winter months, the introduction of fresh air through open windows often results in uncomfortable draughts, leading occupants to

keep windows closed for extended periods. This practice increases indoor CO<sub>2</sub> concentrations, creating poor breathing conditions and exacerbating risks of condensation and mould formation.

To address this in the proposed new build, a highly efficient mechanical ventilation system will be implemented. This system will ensure consistent air exchange, significantly improving indoor air quality while preventing moisture build-up. As a result, occupants will benefit from healthier living conditions, enhanced comfort, and increased satisfaction with the internal environment.

These issues are further intensified by the dwelling layout and the building's exposed orientation, with direct sea breezes from the north compounding infiltration and discomfort. The lack of consistent fresh air circulation throughout the building ultimately undermines occupant health, comfort, and long-term building performance.

### **10.2.2 Daylight**

The existing buildings provide limited daylight penetration due to their traditional masonry façades, localised small window openings, and the use of outdated glazing systems. In many areas, this results in poor natural light levels, increased reliance on artificial lighting, and reduced visual comfort for occupants. The deterioration of glazing units further compounds the issue, with restricted transparency and poor orientation leading to uneven daylight distribution. Collectively, these factors contribute to lower occupant satisfaction and higher energy demand for lighting.

In contrast, the proposed is designed to maximise daylight access through carefully considered façade design, larger high-performance glazing units, and optimised building orientation. The integration of modern daylighting strategies will ensure balanced natural light levels throughout the dwellings, reducing dependence on artificial lighting and improving visual comfort. This approach will enhance occupant well-being, increase satisfaction rates, and contribute to overall energy efficiency.

### **10.2.3 Balconies**

Balconies are an effective means of providing private open space for building occupants. At present, the existing buildings lack balconies, and therefore no private amenity space is available to residents. Retrofitting balconies would require extensive interventions, including the creation of new openings in external walls, which would further compromise the architectural character of the buildings.

Moreover, any balconies would need to be cantilevered, resulting in adverse impacts on daylight and sunlight penetration to apartments on the lower floors, thereby diminishing the overall quality of the units. Consequently, if the existing buildings were to be retained and repurposed for residential use, the feasibility of incorporating balconies as private amenity space is very low. The only alternative would be to increase external communal amenity provision, which in turn would conflict with the site's designated public open space requirements.

## **10.3 Permeability**

The existing buildings has limited visual and physical permeability due to its enclosed form and general lack of any independent external access overcomplicating internal circulation.

The site would remain a large area of formerly institutional parkland within a mixed urban setting, but with no access available to the general public. In its current form, the layout and configuration of buildings result in very limited physical and visual permeability.

While the site contributes visual amenity and some ecosystem services as part of the wider green infrastructure network, it functions as a closed private estate. In the context of compact growth and sustainable land use, its continued use as inaccessible private open land is considered an inefficient use of a valuable urban resource, particularly as the public have never enjoyed any right of access to these privately owned lands.



*Figure 23. CGI of the proposed development (Source: 3D Design Bureau)*

## 10.4 Requirements to Provide More Units

The existing buildings can accommodate a maximum of 42 units. However, many of these units would fail to meet the required standards for floor to ceiling height and adequate daylight access. Retaining the current structures therefore limits both the quality and quantity of residential accommodation that can be delivered on the site.

The proposed redevelopment will provide 81 units, representing a 93 percent increase in residential provision compared with what is achievable within the existing buildings. This enhanced density, combined with compliance with modern design and amenity standards, demonstrates the need to replace the existing structures rather than retain them.

*Table 3. Comparison of Number of Units*

Unit description	Existing Buildings	Block F	% Increment
3 Bed	2	4	↑ 100%
2 Bed	17	46	↑ 171%
1Bed	13	13	↑ 0%
Studio	10	18	↑ 80%
Total	42	81	↑ 93%

## 10.5 Fire Safety

The existing buildings present significant challenges in relation to fire safety. The internal layout includes multiple changes in level, creating complex circulation routes that do not comply with current requirements for means of escape. In addition, the position of the buildings within the site restricts access for fire tenders, which would necessitate extensive redesign measures, including the relocation or reconstruction of existing stair cores, to establish a compliant fire strategy.

By contrast, the proposed development has been designed from the outset to meet all relevant fire safety standards. It will address and resolve the issues identified in the existing buildings, providing clear and compliant escape routes, appropriate levels, and full accessibility for emergency services. This demonstrates a further justification for the replacement of the current structures.





Figure 25. Example of Fire Safety Mark ups of proposed re-use (Finlay Wing, MPH and MPH extension)

## 10.6 Structural & Functional perspective

From a structural and spatial perspective, the existing grids introduce a dense pattern of internal walls that interrupts floor space, compromises internal layouts, and prevents the creation of residential use. Modern requirements demand larger, more flexible, and higher-performing floor plates capable of meeting height to ceiling requirements, and the existing structural arrangement falls far below those expectations as can be seen in the Figures below.

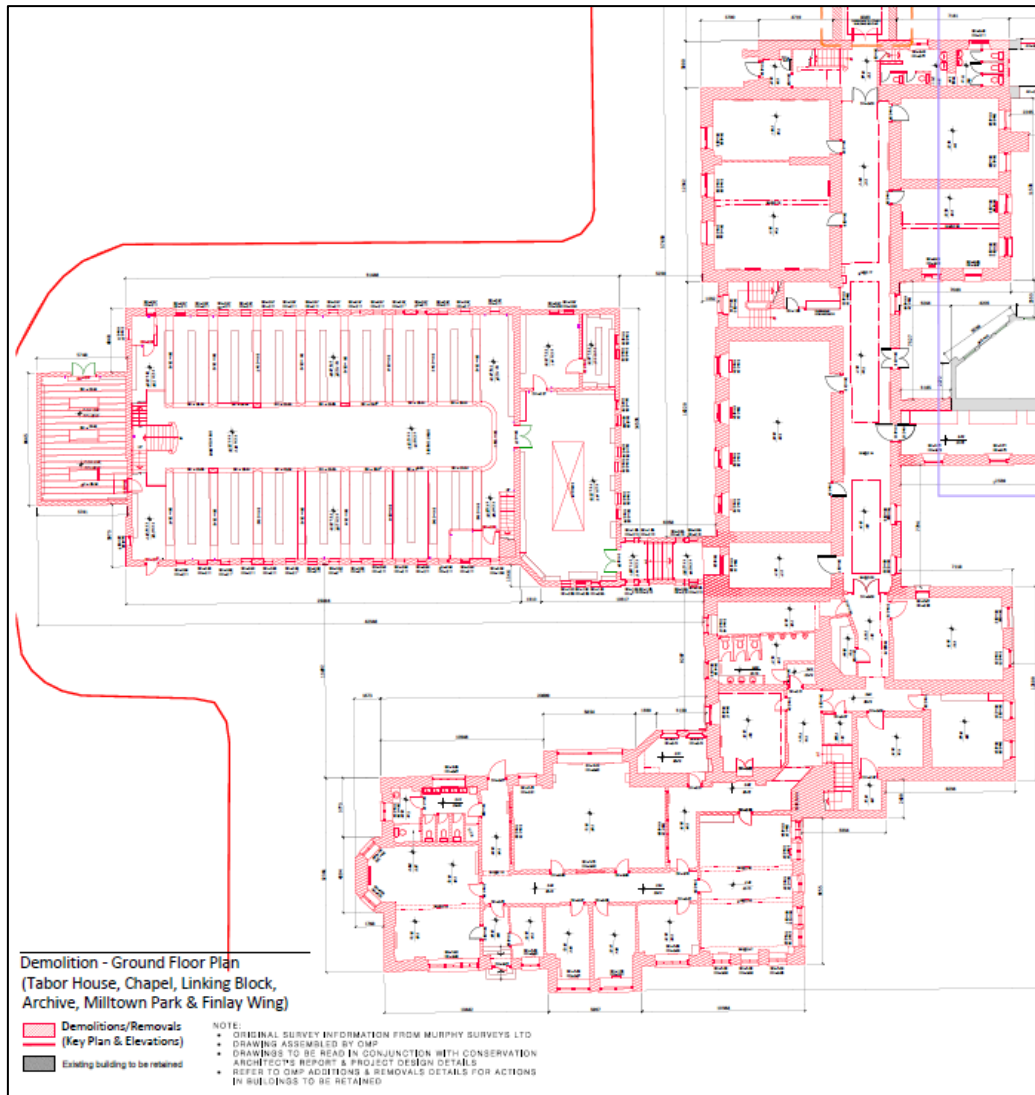


Figure 26. Existing First Floor Plan

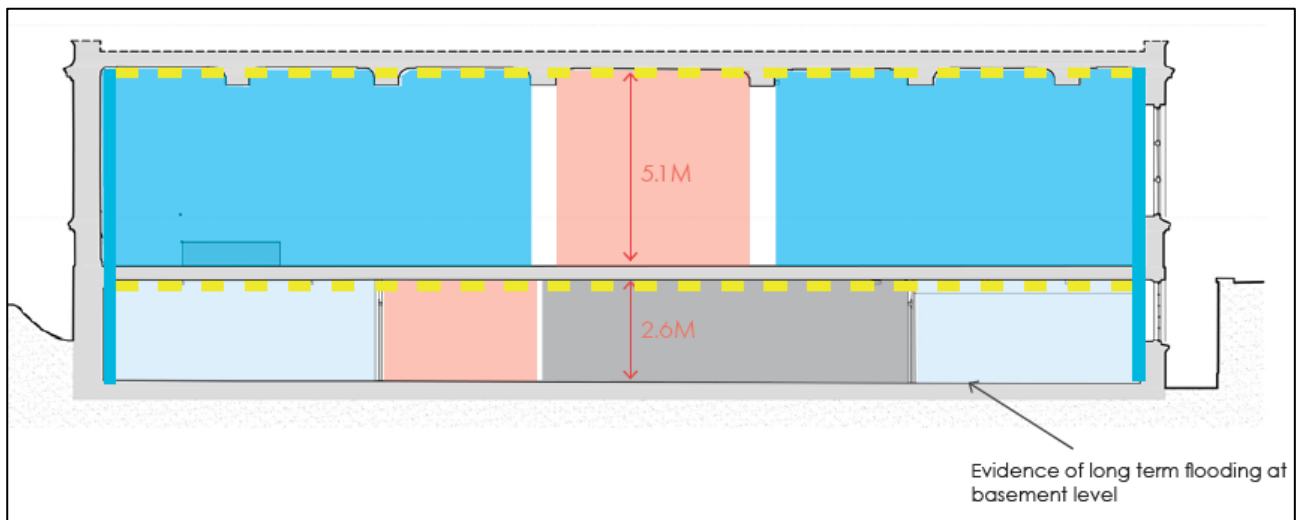


Figure 27. Example of Floor to Ceiling Height

## 10.7 M&E perspective

The existing buildings rely on a combination of older inefficient gas boilers and more recent gas units, resulting in poor energy performance, high carbon emissions and an ongoing dependence on fossil fuels. This approach is no longer aligned with current climate and sustainability objectives.

The existing buildings are also unsuitable for the integration of modern, high-efficiency air source heat pump systems. Heat pumps operate at significantly lower flow temperatures (typically 45 to 50 degrees Celsius compared with 70 to 80 degrees Celsius for gas boilers). Given the high heat-loss characteristics of the existing structures, these lower temperatures would necessitate radiators of an impractically large size to meet demand, rendering heat pumps technically and economically unviable in the current building fabric.

In contrast, the proposed development is designed to incorporate heat pump technology across all buildings, eliminating fossil fuel reliance and delivering a comfortable, low-carbon and energy-efficient heating system consistent with contemporary sustainability standards and policy objectives.

## 10.8 Carbon perspective

The proposed development (Option 2) presents a best redevelopment strategy, delivering the lowest life cycle carbon emissions per square metre, based on the full analysis of the results as per Life Cycle Assessment as per Appendix A. The proposed development in this application results in the lowest kgCO<sub>2</sub>/m<sup>2</sup>. Coupling that with the following points creates the full picture behind the decision to demolish some of the existing structure and replace it with the proposed redevelopment.

While compared to Option 1, even though the new construction carries higher embodied carbon, this is offset by substantial operational carbon savings, enabled by a highly efficient building envelope and advanced systems. With an 'A' BER rating and low energy consumption Option 2 outperforms the retrofit option, resulting in significantly lower operational costs and emissions.

The proposed development will improve the urban fabric and visual value and character of the neighbourhood raising the overall value. Replacing the dated structures, the new building introduces a contemporary, high-quality design. Through thoughtful material selection, active frontages, and enhanced public realm interfaces, the development will contribute to more attractive and coherent open spaces, improving the overall aesthetic experience for pedestrians, local residents, and visitors alike.

## 10.9 Energy perspective

From an environmental perspective, the existing building performs well below acceptable standards for energy efficiency. It suffers from poor thermal insulation, and outdated HVAC systems, leading to high energy consumption and operational carbon emissions. The current building has no on-site renewable energy provision and cannot accommodate modern low-energy systems without extensive and costly intervention that would further compromise its architectural character.

The existing buildings exhibit limited improvements to their building envelopes. The external façades consist primarily of standard masonry construction combined with a mix of single- and double-glazed window units. These glazing systems represent a major source of heat loss, with poor sealing and progressive deterioration contributing to elevated infiltration rates throughout the year.

The external walls were designed and built at a time when continuity of insulation was not a primary consideration. As a result, the structures are subject to significant infiltration and thermal bridging, leading to increased heat loss and localised draughts

Even with extensive upgrades, the building would remain incapable of achieving key benchmarks such as a BER A-rating or compliance with Nearly Zero Energy Building (NZEB) requirements under European and national regulations. As such, demolition is necessary to unlock the full potential of the site and deliver a future-ready, high-performance building aligned with market and regulatory expectations.

By contrast, the proposed redevelopment (Option 2) will incorporate passive design strategies, an efficient building envelope, which will collectively lead to a dramatic reduction in operational carbon emissions over the building's lifecycle. Improved energy performance will also contribute to increased asset value, lower running costs, and enhanced occupier comfort and wellbeing.

### **10.9.1 Strategic Redevelopment**

The proposed redevelopment fully aligns with national and local policies, which emphasise compact growth, urban regeneration, and the creation of energy efficient, low carbon buildings. This project offers a significant opportunity for the sustainable intensification of urban land, optimising land use while minimising environmental impact.

The proposed development will deliver high quality, adaptable, and future proofed residential spaces designed to promote well-being and support evolving tenant needs, the project will enhance the area's economic and innovation potential, while contributing to national carbon reduction targets and local development objectives.

Importantly, the redevelopment will unlock the site's full potential, introducing publicly accessible spaces that were previously restricted due to the private nature of existing buildings. By activating these spaces, the project will enhance community engagement, improve urban connectivity, and contribute to the creation of sustainable, livable neighborhoods.

Overall, the redevelopment represents a strategically aligned, environmentally responsible, and socially beneficial intervention, delivering high-quality urban residential infrastructure while supporting broader national and local planning priorities.

# 11 LOW - CARBON DEMOLITION STRATEGY FOR OPTION 2

In ensuring the most low carbon demolition strategy possible, this section will set out the proposed methodology for the demolition of the existing buildings. This demolition is the first phase of a major redevelopment project that aims to deliver a highly sustainable, energy-efficient, and future-proofed facility that will significantly enhance the urban fabric, infrastructure and support local economic growth.

The demolition contractor when appointed will set up a demolition management plan of their own which will echo the principles and methods that are being set out in this section to ensure the lowest possible carbon impact from demolition. This planning process will put focus on the following:

- A description of all material types on site, their estimated quantities, and possible waste management routes.
- How and where materials will be stored during demolition, segregation strategy (by waste streams) where space and logistics permit.
- Final destination for each material stream (reuse on site, reuse off site, recycling, recovery, disposal).
- Planning for any off-site contractors or facilities (licensed, audited) to be used when on-site processing is not feasible.
- Methodologies to track and move materials (tickets, manifests, chain of custody) and a Reporting schedule (fortnightly summaries).

In advance of demolition, the contractor will also be required to engage proactively with the supply chain and local reuse networks to maximise opportunities for material recovery and circularity. Through this rigorous and approach, the proposed development (Option 2) will not only achieve a low carbon demolition process but ensure that environmental responsibility is embedded from the very start of the project.

## 11.1 Demolition Methodology

This demolition methodology outlines the proposed approach for the safe, efficient, and environmentally responsible deconstruction of the existing buildings. The methodology forms a key part of the overall project strategy and integrates closely with the site's waste management, sustainability, and circular economy objectives.

The approach has been designed to:

- Ensure full regulatory compliance with Irish health, safety, environmental, and waste legislation.
- Support sustainable procurement practices and the reuse or recycling of materials in accordance with the waste hierarchy.
- Follow circular economy principles through material recovery, tracking, and end-use planning.
- Facilitate transparent documentation and traceability of all materials moved off-site.
- Minimise environmental impact and disruption to the surrounding urban area.

### 11.1.1 Pre-Demolition Preparation and Phases

Prior to the commencement of demolition works, a comprehensive series of preparatory actions will be undertaken to ensure that the process is safe, compliant, and aligned with sustainability objectives. A full survey of the buildings will be conducted to identify the presence of any hazardous materials such as asbestos, lead-based paint, or other contaminants. This will be managed in accordance with Irish health and safety regulations, with any hazardous materials removed by licensed contractors under controlled conditions.

In parallel, a detailed review of all existing structures, including those scheduled for retention and alteration, will be carried out to identify materials of heritage interest with potential for reuse, recycling, or recovery. This assessment will inform the separation and handling strategy during demolition. Items such as historic masonry, historic roof linings, structural steel, timber, glazing, historic joinery, chimney pieces, tiling (where practical to remove intact), mechanical and electrical components, and architectural features of heritage interest will be documented as part of a pre-demolition inventory. Where appropriate, materials will be earmarked for reuse on-site, donation to reuse networks, or recycling through certified facilities.

This preparatory phase ensures that the project aligns with the principles of the waste hierarchy and circular economy, setting a foundation for material recovery and waste minimisation during the main demolition works.

### 11.1.2 Demolition Phases

The demolition will be carried out in clearly defined phases, beginning with non-structural elements and progressing to the controlled removal of the building's core structure. The phases are as follows:

- Soft strip of non-structural elements
- Selective deconstruction of façade elements for reuse
- Mechanical demolition of structural components
- Dust, noise, and vibration control as per EPA and local authority standards.
- Transport and off-site processing.
- Post demolition Audit/ reporting.
- Redevelopment

## 11.2 Material Management Strategy (Demolition Phase)

This section forms part of the demolition Method Statement and outlines the proposed approach to managing materials arising from demolition works, including waste management routes, storage, intended use, and tracking.

At this stage of the project, detailed quantities of materials have not yet been established. However, based on the building's age, construction type, and typical building practices, it is expected that the structure contains a range of common construction materials, each with specific waste management potential.

### 11.2.1 Waste management

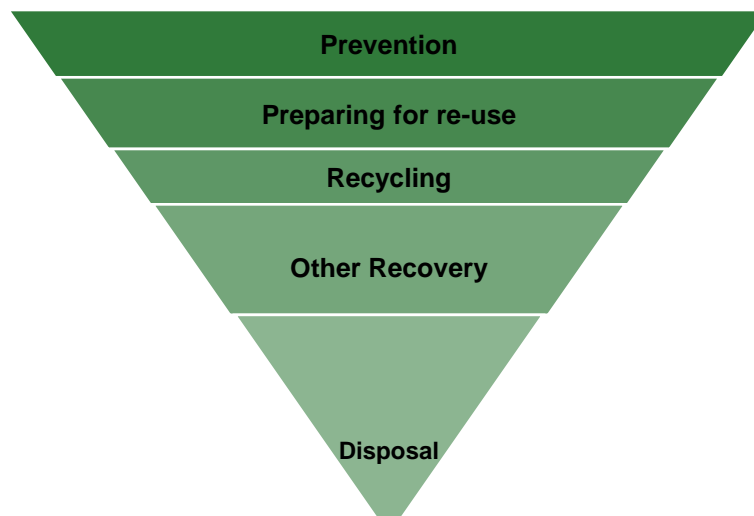
Waste management decisions for each material stream (e.g., concrete, metals, timber, plasterboard, plastics) will be thoroughly assessed during the pre-demolition audit to determine the most sustainable and efficient end-of-life route. This process will follow the established waste hierarchy, which prioritizes actions that deliver the best environmental outcomes, moving from the most to least preferred options. Each material will be evaluated individually within the waste management plan to identify its appropriate destination within this hierarchy:

The waste hierarchy is as follows: (Figure 28: Waste hierarchy pathway.)

- **Reuse (Most preferred):** Wherever feasible, materials and components will be identified for direct reuse on-site or off-site without reprocessing. This includes salvaging items such as historic masonry, roof linings, structural steel, timber, glazing, historic joinery, chimney pieces, tiling (where practical to remove intact), mechanical and electrical components, and architectural features of heritage interest etc. Direct reinstatement of salvaged items within the retained structures will be possible, following a review of supplementation need and quantum of salvaged material. Where not possible to reuse on the site, such material of interest will be given to a salvage yard for reuse elsewhere. Such distinction will be justified by the design team conservation architect. Reuse avoids the environmental impacts of both waste processing and manufacturing new materials, making it the most favourable outcome. Opportunities for reuse will be

maximized through early contractor engagement and coordination with reclamation networks or reuse marketplaces.

- **Recycling:** If and when Reuse is identified as not feasible, the next step is to check for recyclability of the materials. Recycling options that are available in the industry fall under 2 main categories, namely:
  - **Closed-loop recycling:** Where Materials are reprocessed into the same product or material type. For example, concrete crushed and reused as aggregate in new concrete, or scrap metal melted and reformed into new structural steel. This option retains the most material integrity and reduces demand for virgin resources and contributes to circular economy principles most efficiently.
  - **Open-loop recycling:** Where materials are reprocessed into different products of lower quality or different applications. For example, plasterboard being used as agricultural soil conditioner, etc. While preferable to recovery or disposal, open-loop recycling may involve some loss of material quality or function, still keeping the material within the loop.
- **Recovery:** This refers to processes that recover some value from waste without returning the material to its original state. Examples include composting organic construction waste like untreated timber or mechanical separation of mixed waste to isolate recyclable fractions reducing the volume of waste sent to landfill but offer lower sustainability benefits compared to reuse or recycling.
- **Energy recovery:** Where materials are unsuitable for reuse or recycling, they may be directed to energy recovery facilities, where waste is combusted to generate electricity or heat. This pathway is typically applied to contaminated or composite materials (e.g., certain plastics or insulation materials) that cannot be practically separated or recycled. While this prevents landfill disposal and offsets fossil fuel use, it also results in permanent loss of material value and is thus a lower priority.
- **Disposal:** Any remaining waste that cannot be reused, recycled, or recovered will be sent to landfill. This includes contaminated materials or mixed waste streams with no viable recovery route. Disposal is the least sustainable option due to its long-term environmental impacts and should be minimized wherever possible.



*Figure 28: Waste hierarchy pathway.*

Table 4 details all the anticipated material streams for the existing buildings and the intended pathways towards best practice. The demolition contractor will be carrying out material removal with care to ensure each stream reaches its appropriate destination through the listed facilities. The listed facilities will be provided as recommendation to the appointed demolition contractor along with guidelines for best practise that has been described here to be included within their plan.

**Table 4: Waste management strategy for different material streams**

Product type (generic)	Specific Materials	Reuse / On-site Use	Recycling/ Off-site	Recovery / Energy	Disposal / Other
Concrete / masonry / aggregate	Ready-mix concrete, normal-strength, generic	Crush on site and reuse as sub-base, fill, new concrete	Off-site crushing into secondary aggregate	—	Residual inert disposal
	Reinforcement steel (rebar), generic				
	Ready-mix concrete, generic				
	Self-levelling screed				
	Paving products				
	Natural stone, Finnish average				
Bricks & blocks	Clay brick	Salvage, clean, reuse in façades or landscaping	Crushing for aggregate	—	Only irreparable pieces to waste stream
	Cement mortar				
	Fiberglass reinforcing mesh				
	Frameless glass balustrade system				
	Double-glazed aluminium frame window				
Steel / metals	Structural steel profiles, generic	Clean, segregate and reuse where structural reuse is viable	Melt and reprocess into new steel	—	Minimal disposal
	Stainless steel handrail				
	Steel spiral staircase				
	Suspended metal ceiling system				
	Multifunctional steel door				
Plastics & vinyl	Vinyl composite flooring	Where reuse is possible, e.g. extrusions	Recycle via specialist recyclers	Energy recovery	Disposal of non-recyclables
	Tufted carpet tile				
Timber / wood	Wooden flooring boards with solid oak top and birch plywood base	Reuse beams, doors, joinery	Chip into panels, biomass fuel	Energy recovery from unusable wood	Avoid landfill wherever possible
	Wooden and engineered wood interior doors				
Tiles & ceramics	Ceramic tiles	Reuse architectural tiles, decorative uses	Crush to aggregate, use in sub-base or hardscape	—	Some may be landfilled if highly contaminated / brittle
Gypsum / plasterboard	Suspended ceiling systems	Limited reuse potential	Recycling into new plasterboard (if local facility exists)	—	Disposal of contaminated or mixed boards
	Gypsum board partitioning wall system				
	Electricity distribution system	Limited reuse potential			

M&E / Cabling / Pipes	Sewage water drainage piping	Direct reinstatement	Recycle via specialist recyclers	Energy recovery	Disposal of non-recyclables
	District heat distribution center				
	Heat distribution piping				
	Water circulation radiator				
	Drinking water supply piping network				
	Galvanized steel ventilation duct				
Architectural features of heritage interest	Historic masonry		Salvage yard	—	—
	Historic roof linings				
	Historic joiner				
	Chimney pieces				

The demolition contractor will be required to keep track of all materials that will be removed from the site. The records will be maintained through dockets, receipts and logs. The information will then be analysed to ensure that the targeted process was followed, and minimum impacts were incurred. A reporting schedule will be maintained through a plausible data sharing platform to ensure that all data is consolidated and visible for review. The future contractor engaged to execute the works will also be consulted on storage and protection options for items of heritage interest, ranging from masonry to joinery, until they can be reused. A designated external store, away from concentrated works areas, will be enclosed for salvaged items that can be stored outside, with a dry/ventilated area identified for internal features that require protection.

In addition to the licensed facilities that will collect and manage the waste streams, other avenues like paid specialised services for particular material streams like carpets, where materials will be removed from site by experts and reused or recycled with closed loop for maximum value beyond the initial expected lifecycle.

### **11.3 Implementation Strategy & Circular Economy Tactics**

#### **11.3.1 Partnering with Recyclers & Reuse Networks in Ireland**

As part of the circular economy strategy, the project team will establish pre-arranged agreements with audited, licensed waste contractors, material recyclers, and reuse organisations across Ireland. Partnerships will be prioritised with operators that demonstrate consistent performance in landfill diversion, material recovery, and compliance with environmental standards.

All partners must provide full documentation for material handling, including waste transfer tickets, recovery certificates, and chain of custody records, to ensure full traceability and regulatory compliance.

#### **11.3.2 Design & Procurement for Circularity**

The project will adopt circular design and procurement principles to minimise embodied carbon, support local economies, and extend material lifecycles. Wherever feasible, materials specified for the new development will incorporate recycled or reclaimed content, including recycled aggregates, recycled steel, and low-carbon or reused glazing systems. All steps will be taken to ensure that the new development will directly support the Government of Ireland's Circular Economy Strategy 2022–2023, National Waste Policy 2020–2025, and the EU Circular Economy Action Plan.

Environmental Product Declarations (EPDs) will be prioritised in product selection, and low-VOC materials will be specified to ensure a healthy internal environment. In support of future disassembly and reuse, the building will favour modular, demountable construction systems and standardised component dimensions.

Procurement will also focus on local sourcing, reducing transport emissions and strengthening circular supply chains within Ireland. As part of a forward-looking asset strategy, material passports will be developed to document the origin, composition, and reuse potential of key building elements, creating a long-term material inventory for future adaptability or deconstruction.

### 11.3.3 Monitoring, Reporting & Continuous Improvement

A robust material tracking and performance monitoring system will be implemented throughout the demolition and reconstruction phases. All materials will be recorded by type, destination, and intended use, with data collected on tonnage, diversion rates, and carbon impact where applicable.

Regular performance reports will be prepared to assess progress against project targets. These reports will be used to identify areas for improvement such as contamination risks, missed reuse opportunities, or inefficient handling practices and to adjust site protocols accordingly.

At the end of each project phase, a comprehensive review of the Waste Management Plan (WMP) will be carried out, incorporating lessons learned, new technologies, and feedback from supply chain partners. This continuous improvement loop will support innovation, strengthen environmental performance, and inform future project delivery.

### 11.3.4 Design & Material Efficiency Principles

The design of the new building will embrace efficiency and flexibility as core sustainability principles, reducing the likelihood of future demolition or high-impact alterations. Spaces will be designed for multi-functionality and adaptability, reducing the need for structural rework over the building's lifecycle.

To avoid material waste and over-specification, structural and architectural elements will be rationalised and standardised. Materials will be chosen not only for durability and performance but also for their environmental credentials, with a focus on those containing high recycled content and those that are biobased or biodegradable, as much as feasible within the Irish supply chain.

In addition, standardised specification, the team will also be utilising services like the Construction Materials Exchange programme by Irish Green building Council. This involves using Construction Materials Exchange (CMEx) digital platform which connects different organisations to facilitate exchange or trade of any excess materials from projects ensuring little to no wastage where possible.

Wherever possible, the building will be designed to accommodate change, with features such as easily removable partitions, raised access floors, and service layouts that allow for reconfiguration without disruption. This approach supports long-term resource efficiency, reduces embodied carbon, and ensures the building remains resilient to evolving user needs.

## 11.4 Sustainable Procurement & Reuse Integration

This project's sustainability strategy extends beyond demolition, embedding circular economy principles directly into the procurement process for the new development. The aim is to close material loops by reintroducing recovered resources into the new construction and supporting a low-carbon, circular supply chain within Ireland.

Where technically and structurally appropriate, materials recovered during demolition will be reintegrated into the new build. For example, crushed concrete from the existing structure may be reused as engineered fill or sub-base material, while reclaimed timber may be repurposed for architectural cladding, feature joinery, or internal finishes. These interventions help reduce the embodied carbon of the new development and preserve material value across the lifecycle.

Through these measures, the project reinforces its commitment to a sustainable, resource-efficient construction model that aligns with Ireland's Circular Economy Strategy, the Climate Action Plan, and best practices for low-impact urban development.

## 12 CONCLUSION

The existing buildings are not Protected Structures and are not located within an Architectural Conservation Area and do not make a positive contribution to the visual amenity or character of the area.

The comparative Life Cycle Assessment indicates that, over a 50-year period, the proposed development achieves an estimated 41% reduction in embodied and operational emissions (kgCO<sub>2</sub>e/m<sup>2</sup>) relative to the retention of the existing structures. This outcome confirms that the proposed redevelopment offers a more carbon efficient and future-proof solution, consistent with national and local policy objectives.

The buildings present significant challenges to reuse, retrofitting the existing structures would require substantial building fabric upgrades, and complete replacement of mechanical, electrical, and plumbing systems in order to meet current standards. Given the outdated condition of the building and the general level of deterioration, these interventions would be highly carbon intensive, technically complex, and economically inefficient.

Crucially, the redevelopment will unlock the site's full potential by introducing publicly accessible spaces that were previously restricted due to the private nature of the existing buildings. The activation of these areas will foster stronger community engagement, enhance urban connectivity, and support the creation of sustainable, vibrant, and liveable neighbourhoods.

The design of the new development has been carefully considered to minimise visual impact, enhance the surrounding streetscape, and integrate environmental measures such as green roofs, tree retention and improved public realm spaces. It will also benefit from strong public transport connections, encouraging sustainable modes of travel.

Collectively, the poor environmental conditions, compromised internal layouts, inadequate structural configuration, and lack of architectural or heritage value demonstrate that the buildings cannot be feasibly refurbished to meet modern standards.

For these reasons, the demolition of the existing building is justified and appropriate subject to full archival recording and salvage of decorative elements.

Demolition provides the most effective means of realising the site's full potential and will deliver a contemporary, energy efficient, and sustainable residential-led mixed-use development that supports the National Planning Framework objectives for compact growth, liveability, and the creation of strong, sustainable communities.

The demolition and construction processes will be undertaken in accordance with circular economy principles, giving priority to the reuse and recycling of materials wherever feasible in order to reduce embodied carbon and promote the responsible use of resources.

## 13 VERIFICATION

This report was compiled and verified by:

*Karla Reyes*

*M.Sc. Renewable Energy Systems, B. Hons. Environmental Engineering*

*Energy Engineer*

*O'Connor Sutton Cronin & Associates*



# Appendix A LIFE CYCLE ASSESSMENT

## WHAT IS A LIFE CYCLE ASSESSMENT?

Life Cycle Assessment, or LCA is a science-based methodology for measuring environmental performance. It is based on international standards and rigorously defined public methodologies for quantifying environmental impacts, expressed in form of potential harm caused by activities to the biosphere, including atmosphere, soil, and water bodies. Those impacts are expressed as “equivalent to” normalised unit, for example, one kilogram of carbon dioxide in case of global warming potential.

A life cycle assessment, or LCA, identifies opportunities for improvement by quantifying the impacts that a product/material has on the environment throughout its full life cycle – from production and manufacturing to the disposal phase. A whole LCA is also known as a “Cradle to Grave” sustainability assessment.

LCA's carefully assess each step of a products life, from the raw materials used during production to what happens after the product is disposed of. By doing this, we can gain a better grasp of exactly how beneficial each process is to the environment, while capturing the cost savings of greener efforts. LCAs are a proactive approach to a sustainable future.

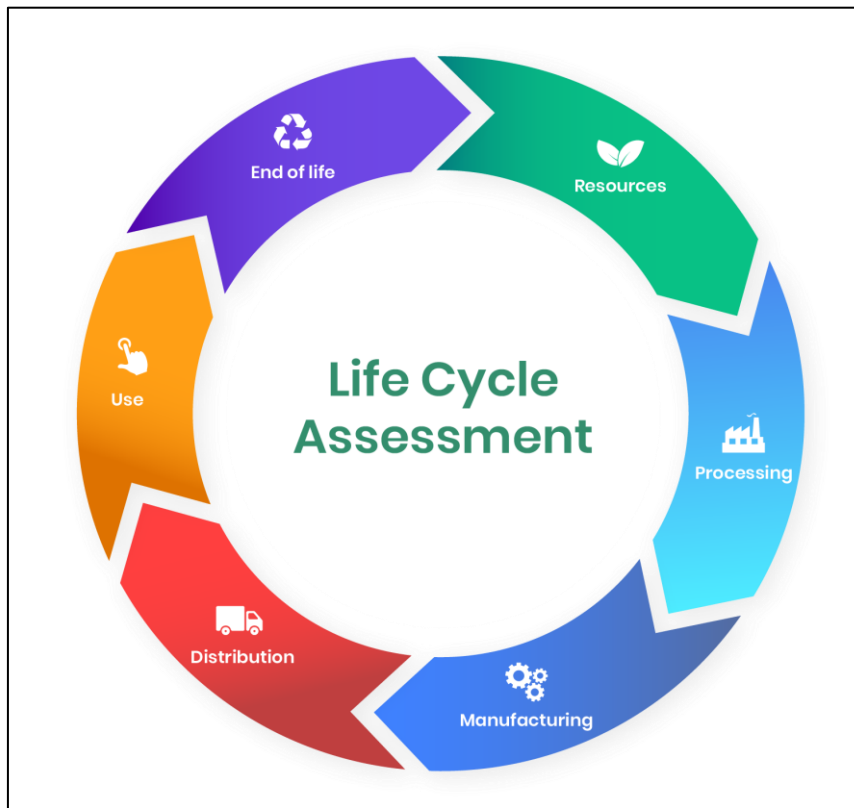


Figure 29: Life Cycle Assessment (Source: One Click LCA)

# LIFE CYCLE ASSESSMENT METHODOLOGY

This assessment is based on Level(s) Life Cycle Assessment, Level(s) is a European approach to assess and report on the sustainability performance of buildings, throughout the full life cycle of buildings. The Level(s) tool is in compliance with EN 15978 and EU Taxonomy.

The system boundary is according to the International Standard ISO 21930 and European Standard EN 15804 as these set out a common life-cycle model for building and construction works. The life-cycle model includes modular definitions for the life-cycle stages, allowing each stage to be compared in isolation with other projects.

The product stage information (A1-A3) is always represented combined for building level assessments, as are end of life stages (C1-C4) in most cases. Depending on the purpose of the LCA, other stages may be omitted or be replaced with a scenario in absence of detailed information.

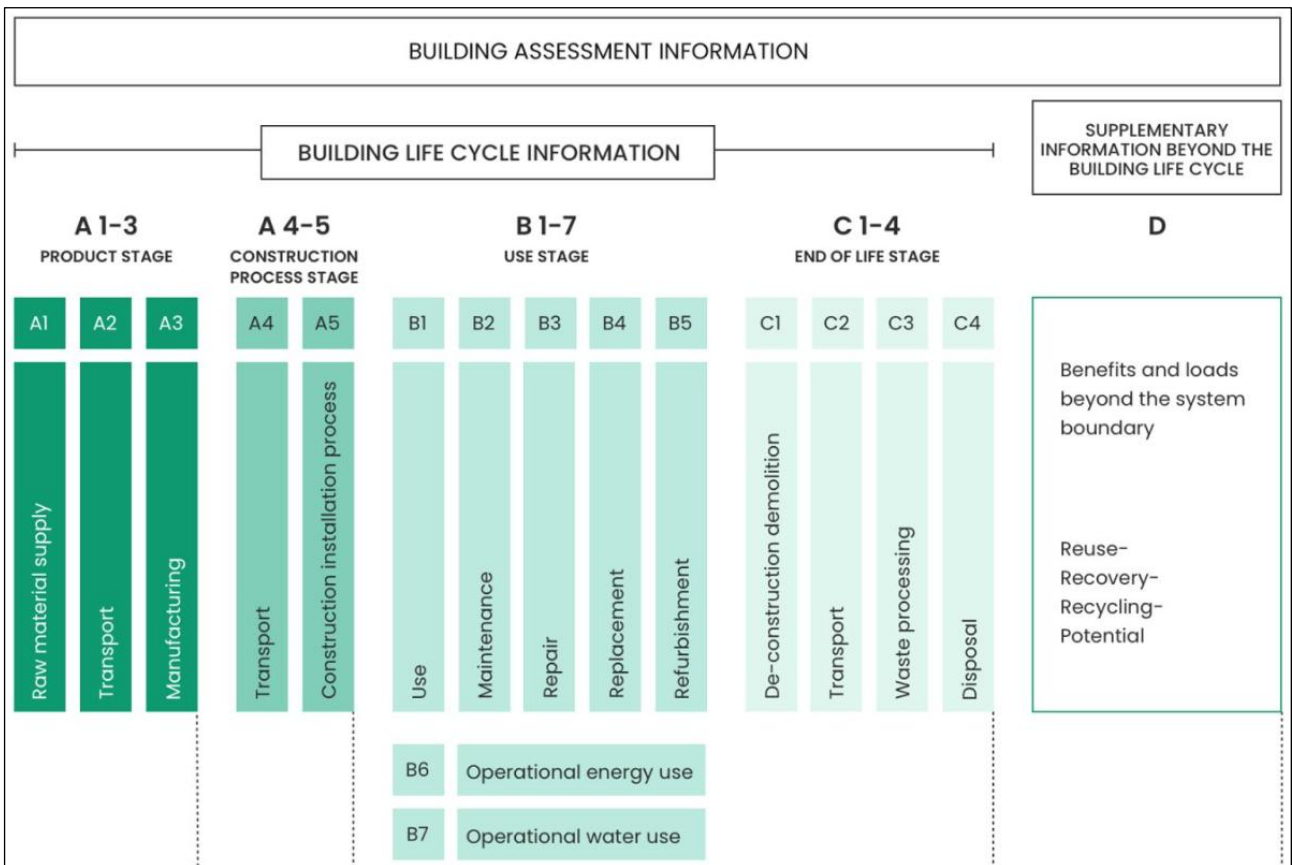


Figure 30: Building Life Cycle Stages (Source: One Click LCA)

**Table 5. Life Cycle Stages and Sources of Information**

	Proposed development
Product stage (A1-A3)	Estimated based on BoQ, and construction drawings.
Transport to construction site (A4)	One Click LCA's regional defaults distances and material-specific transport methods are applied for the assessment.
Installation/Assembly (A5)	Material wastage on the construction site is based on typical values for the material type. The impacts include production, transportation, waste treatment of the material wastage and average site impacts.
Use stage (B1-B5)	Material repair rates and replacements at the end of service life are based on typical values for the material type. Replacements are assumed to apply in their entirety. Material maintenance and repair activities have not been included in the scope.
Energy Use (B6)	Energy use is based on estimated energy performance.
Water Use (B7)	Impacts are omitted from this analysis.
End of life stage (C1-C4)	End of life impacts are based on One Click LCA's scenarios which represent the typical end of life processing for each material type as applicable in the region where the project is located.

## SOFTWARE AND DATABASE

The assessment has been carried out with One Click LCA software and it's Level(s)-specific LCA module, that automatically applies the Level(s) requirements and restrictions. A summary and guidance document of the scope can be found here: <https://oneclicklca.zendesk.com/hc/en-us/articles/360021420079-Level-s-Carbon-or-Life-Cycle-Assessment>.

The database used in this tool is controlled by One Click LCA's database management process and complies with ISO 14040/14044 standards. For summary of One Click LCA's database management processes, read this: <https://oneclicklca.com/en/resources/articles/how-we-work-with-data>

## REFERENCE STANDARDS

All Life Cycle Assessments carried out in the One Click LCA platform comply with the following International Standards:

- ISO 14040 Environmental management. Life cycle assessment. Principles and framework
- ISO 14044 Environmental management -- Life cycle assessment -- Requirements and guidelines

One Click LCA platform tools used in European context comply with following European Standards:

- EN 15978 Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method.
- EN 15804 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products.

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