

character will not compensate for the loss of authenticity, however, the proposals of TII and the Applicant cannot succeed if these wall fragments are to remain insitu.

The most intact structure from the 1916 period comprises the partial stable building at No.60A O'Connell Street Upper which framed the junction between Moore Lane and Henry Place and saw most action from the time of the battle. The removal of this building is deemed critical to emergency and servicing access from Henry Place to Moore Lane, both in terms of the safe operation of both the Dublin Central Masterplan Area and any future MetroLink Station (subject to a separate application by TII).

The loss of No.60A will present the greatest morphological change for the townscape, not least its impact for the legibility of the 1916 battlefield. However, it is intended, as part of the Site 4 development, to retain and purposefully reuse Nos.15-17 Henry Place, at the opposing western corner.

The advantage of this gesture is the proposed presentation of a detached former reading room and its enhanced presence in the street.

One or other structure is required to be removed for operational purposes, with the difficult decision taken to remove No.60A in favour of retaining the cohesive contribution of Nos.15-17 Henry Place to the wider 1916 narrative west and north of the south-eastern corner of Site 4.

A benefit of the proposed development of Site 2 for the 1916 cause is its support of the delivery of a future museum at Moore Street, in the creation of accessible lateral connectivity from O'Connell Street Upper and other improvements to encourage positive occupancy of an enhanced urban realm.

15.7.2.2 Construction Phase

Residual impacts attached to the planning application will be tempered by careful coordination and sequencing of the works, which have been devised to minimise impacts, anticipated and yet unforeseen, insofar as is reasonable for a project of this scale. Please refer to the Outline Construction & Demolition Management Plan –Site 2 (Waterman Moylan Consulting Engineers Limited) and the Dublin Central Masterplan Façade Retention Policy appended to the Masterplan Design Statement.

Conservation works, by their nature, will ensure the accurate legibility of retained fabric and its endurance in the long-term. All works, including demolitions, will be recorded and documented in accordance with Article 16 of the Venice Charter and Articles 31-32 of the Burra Charter, with as-built records and progress related photographs submitted to the Authority upon completion for archival purposes.

On this basis, construction phase residual impacts for the site's inherent and its enclosing architectural heritage are considered manageable.

15.7.3 Worst Case Impact

A worst-case scenario would be the permanent loss of architectural heritage of significance as a consequence of the development.

A further detriment for the delivery of the masterplan objectives for either Site 2 or No.61 O'Connell Street would be for the works to either not commence in the first instance; or to partially commence arising in an incomplete development, further incrementally eroding the urban character of the ACA and its architecturally significant buildings.

15.8 MONITORING

15.8.1 Dublin Central Masterplan

15.8.1.1 Operational Phase

The delivery of the masterplan as designed is dependant on its continued visual quality into the future. It is envisaged, given the strategic importance of the masterplan site, and the corresponding importance to ensure that it thrives in the long term, that a maintenance schedule will be adhered to by future operators to maintain the visual amenity of the conserved site.

15.8.1.2 Construction Phase

Multiple protection strategies are outlined in the Construction Management Plans accompanying this EIAR, all of which must be observed in order to achieve the development.

15.8.2 Proposed Development – Site 2 & No. 61 O'Connell Street Upper

15.8.2.1 Operational Phase

Monitoring at operational stage will be required to ensure that retained fabric is maintained and contributes positively to the character of the ACA and its enclosing urban environment.

15.8.2.2 Construction Phase

Exceptional care will be deployed at construction stage to monitor all works in proximity to protected structures, most notably the No.42 O'Connell Street building group and protected facades within the site and abutting its southern boundaries. The works, whilst falling outside the protection zone attached to the National Monument, will follow monitoring principles for all works adjacent to the monument, as will be examined rigorously in a forthcoming Ministerial Consent process pertaining to the development of Site 4, which will follow the ongoing statutory planning submission process.

In addition to securing the structural integrity of protected fabric, all retained fabric will require careful monitoring to ensure its safeguarding throughout the construction stage, mindful that the same fabric is generally vulnerable.

15.9 REINSTATEMENT

15.9.1 Dublin Central Masterplan

15.9.1.1 Operational Phase

At operational stage, risks of accidental loss or damage, whilst mitigated against insofar as possible at design and construction stage for architecturally sensitive buildings, are present for all building projects. On completion of the development, the completed building records will be submitted to the Architectural Archive for safekeeping. In the unlikely event of loss or damage of building fabric into the future, these records will be available for use in accurate reconstructions.

15.9.1.2 Construction Phase

Every effort has been made to ensure that worst case residual risks of inadvertent damage or loss of architecturally significant building fabric are envisaged, accounted for and mitigated against. Every building has been photographically recorded and measured, to counter any such unfortunate event. This practice will be further expanded prior to the commencement of the masterplan development and on vacation of each building to ensure that each building component, feature and space is illuminated to enable accurate recording.

In the unlikely event that unintended damage or loss of fabric occurs, building material will be labelled and safely stored to enable faithful reconstruction. At that time, the enhanced building records will serve as a solid repository to inform accurate reinstatement.

15.9.2 Proposed Development – Site 2 & No. 61 O'Connell Street Upper

15.9.2.1 Operational Phase

Reinstatement measures at operational stage are envisaged as potentially arising from inadvertent damage to retained fabric during fit out stage by future tenants. Every effort will be made to ensure that such a scenario does not arise.

Reinstatement measures to retained buildings of Nos 59 and 61 in particular at operational stage are not envisaged as having the potential to arise, as all works will be monitored closely and varied, if required, to reflect site conditions as they are known to arise. In the unlikely event of a catastrophic event, historic fabric will be carefully restored to its original condition referencing archival material. As an additional measure, historic fabric will be further recorded prior to commencement of works to inform such a reconstruction.

15.9.2.2 Construction Phase

It is intended to safeguard and protect all fabric scheduled for retention within the subject development site, with extensive protection measures envisaged within the accompanying Construction Management Plan seeking to avoid a scenario where damage occurs, requiring reinstatement.

The greatest element of risk attached to the construction stage is the potential for inadvertent damage to arise to protected fabric within or abounding the site, most notably structures of significance at Nos 42, 59, 60 and 62 O'Connell Street. Rear boundaries onto Moore Lane of the National Monument at Nos 14-17 Moore Street which address corresponding site boundaries onto the Lane will be protected, but notwithstanding will be included in the range of possible reinstatement scenarios should such an instance arise.

In the event that damage occurs, reinstatement will take place in accordance with conservation methods to the satisfaction of statutory stakeholders.

15.10 DIFFICULTIES ENCOUNTERED

Whilst much of the masterplan site is vacant (approximately 60% of floor area is under-utilised), some units are occupied, multiply or singularly, with access to carry out physical investigations and recording limited for a variety of tenancy reasons. Notwithstanding, all buildings were accessed with only a limited number of areas within same buildings inaccessible. In these rare instances, a view on the significance of a structure was taken on the basis of assessing visible elements.

18 SUMMARY OF MITIGATION MEASURES

18.1 Introduction

This Chapter of the EIAR collates and summarises the mitigation measures recommended for each of the environmental topics examined in Chapters 5 – 17 of this EIAR.

These mitigation measures and any associated monitoring comprise what would be implemented during the Demolition, Construction and Operational Phase to reduce the potential for significant adverse impact of the proposed development on the environment.

This Chapter does not expand on the reasoning or expected effectiveness of the proposed mitigation or monitoring measures. For such descriptions, we refer to each of the individual chapters of the EIAR.

A number of the recommended mitigation measures would be expected to be required as a condition of any grant of permission by Dublin City Council.

18.2 Proposed Mitigation Measures

18.2.1 Population and Human Health (Chapter 5)

The impacts on the local population in terms of residents and businesses are considered to be mainly positive in the sense of creating direct employment opportunities and indirect additional business, both during the construction and operational phases. Once operational there will be significant positive contributions to the residential, community and cultural aspects of Dublin City Centre.

Mitigation measures proposed to minimise the potential impacts on human health in terms of Climate (Air Quality and Climate Change), Climate (Daylight & Sunlight), Air (Noise and Vibration), Landscape and Visual Impact Assessment and Material Assets (Transportation) are discussed in the relevant sections of Chapters 9, 10, 11, 12 and 13 of this EIAR respectively.

Similarly, mitigation measures set out in Chapter 7: Land, Soils & Geology and Chapter 8: Water of the EIAR will ensure the risk of impacts to Human Health is low and that the residual effect on the environment is imperceptible.

18.2.1.1 Dublin Central Masterplan

Construction Stage

Prior to the commencement of construction, the appointed contractor will be required to obtain formal agreement from the Local Authority on pollution prevention measures as well the overall approach and emergency procedures for all construction stages. All demolition works are to be in accordance with the following guidelines:

- BS 6187:2000 '*Code of practice for demolition*'
- Health and Safety Executive Guidance Notes GS 29 / 1, 2, 3 & 4.
- S.I. 504 Safety, Health & Welfare at Work (Construction) regulations 2013
- Air Pollution Act 1987
- Environmental Protection Agency Act 1992
- BS 5228:2009 Part 1 '*Noise Control on Construction & Open Sites*'.

Prior to the works commencing, detailed photograph surveys (condition schedules) of adjoining walls, roads, footpaths, grass verges etc. are to be prepared. Copies of the relevant parts are to be made available to adjoining owners and Dublin City Council. This record will form the basis of assessing repairs to adjoining areas in the future should a dispute arise as to their cause.

Roadways are to be kept clean of dirt and other debris. A road sweeping truck is to be provided if necessary, to ensure that this is so.

The Contractor will be responsible for the security of the site. The Contractor will be required to: -

- Operate a site induction process for all site staff.
- Ensure all site staff shall have current 'safe pass' cards.
- Install adequate site hoarding to the site boundary.
- Maintain site security staff at all times.
- Separate pedestrian access from construction at the main site entrance off the Naas Road and provide a safe walkway for pedestrians along the main access road into the site.
- Ensure restricted access is maintained to the works.

The construction works will be hoarded off or fenced off from the public at all times. A 2.4 m minimum high plywood painted timber hoarding will be provided along the long-term boundaries at the entrance, and at other areas around the site where the perimeter fence/wall is not deemed sufficient for safety and security reasons. Heras type fencing will be used on short term site boundaries where appropriate to suit the works.

Controlled access points to the site, in the form of gates or doors/turnstiles, will be kept locked any time that these areas are not monitored (e.g., outside working hours). During working hours, a gates person will control traffic movements and deliveries at any active site access to ensure safe access and egress to and from site onto the public roads.

A Traffic Management Plan has been prepared by the contractor and will be agreed with Dublin City Council's Transportation Department and An Garda Síochána, to mitigate any impact of construction on the surrounding road network (Further details are provided in Chapter 13: Material Assets (Transportation) of this EIAR and in the Traffic Management Plan).

As detailed in Chapter 7: Land, Soil & Geology of this EIAR, there is no evidence of a significant soil hazard on site or requirement for dewatering of groundwater. Waste Acceptance Criteria (WAC) testing was carried out on soil samples. In RC-8 and W-2, the levels of sulphate, total dissolved solids, TPH and PAHs exceeded the inert waste WAC. However, all of the levels were less than the non-hazardous WAC. In BH-12, which was located on the southeast perimeter of the site TPH and mercury were detected above the inert waste WAC in the upper fill sample; however the levels of these parameters in the underlying fill and natural ground were less than the inert WAC.

Chapter 8: Water of this EIAR states that there is no potential for flooding and the proposed design incorporates attenuation measures to ensure development will not result in increased flooding off site. In order to mitigate the potential dust-related health impacts during the construction phase, a dust minimisation plan will be formulated. This plan will draw upon best practice mitigation measures from Ireland, the UK and the USA to ensure the highest level of mitigation possible. Further detail is provided in Chapter 9: Climate (Air Quality and Climate Change) of this EIAR.

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 (2009) Parts 1 and 2 will be complied with. Further details are provided in Chapter 11: Air (Noise & Vibration).

Operational Stage

In light of the fact that any of the impacts associated with the operation of the Dublin Central Masterplan on Human Health and Population are either not significant or positive, no further mitigation measures are required. Notwithstanding the lack of need for mitigation measures, Section 11.6.2 of Chapter 11: Air (Noise & Vibration) of this EIAR outlines a number of noise mitigation measures which will further reduce the likely noise impacts arising from entertainment noise and internal building façade noise.

18.2.1.2 Proposed Development – Site 2 & No. 61 O'Connell Street Upper

Construction Stage

The mitigation measures of the Proposed Development are the same as the mitigation measures of the Dublin Central Masterplan described in Section 18.2.1.1.

Operational Stage

The mitigation measures of the Proposed Development are the same as the mitigation measures of the Dublin Central Masterplan described in Section 18.2.1.1.

18.2.2 Biodiversity (Chapter 6)

18.2.2.1 Dublin Central Masterplan

This section presents the mitigation measures that will be implemented during construction and operation to avoid the potential impacts of the Proposed Development on KERs as outlined above. All of the mitigation measures will be implemented in full. They are in accordance with best practice, and tried and tested, effective control measures to protect the receiving environment.

Mitigation Measures for Designated Sites During Construction Stage

European Sites

As set out in the Appropriate Assessment Screening Report, in concluding that the Proposed Development is not likely to have a significant effect on any European sites, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on European sites were not required or taken into account.

National Sites

As there is no risk of the Proposed Development to affect the integrity of any nationally designated site, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on nationally designated sites were not required or taken into account.

Mitigation Measures for Birds during Construction Stage

Bird species are protected under the Wildlife Acts and it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests. There is potential for direct impacts on nesting birds and/or mortality of birds (including birds of local importance (higher value)) arising from the Proposed Development. This scenario would be most likely if works were to occur during the time of year when birds are likely to be nesting (which is from 1 March to 31 August, inclusive).

Where feasible, vegetation (e.g. scrub) will not be removed, between the 1 March and the 31 August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.

Measures to prevent herring gulls nesting on the rooftops of the buildings and pigeons within the buildings may also be undertaken well in advance of breeding bird season. This includes measures such as: -

- Kite hawks to discourage birds from the site.

- A specialist bird proof net to restrict access and prevent gulls from nesting.¹
- Blocking up any broken windows/access points into buildings.

These measures must be undertaken by a specialist, and before any birds begin to nest on or in the buildings (i.e. between October – February).

Mitigation Measures for Birds during Operational Stage

Mitigation measures are not required as operational phase impacts predicted on bird species as a result of the Proposed Development will be short-term and not significant.

18.2.2.2 Proposed Development – Site 2 & No. 61 O'Connell Street Upper

This section presents the mitigation measures that will be implemented during construction and operation to avoid the potential impacts of the Proposed Development on KERs as outlined above. All of the mitigation measures will be implemented in full. They are in accordance with best practice, and tried and tested, effective control measures to protect the receiving environment.

Mitigation Measures for Designated Sites during Construction Stage

European Sites

As set out in the Appropriate Assessment Screening Report (Scott Cawley Ltd 2022) enclosed with this application, in concluding that the Proposed Development is not likely to have a significant effect on any European sites, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on European sites were not required or taken into account.

National Sites

As there is no risk of the Proposed Development to affect the integrity of any nationally designated site, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on nationally designated sites were not required or taken into account.

Mitigation Measures for Birds during Construction Stage

Bird species are protected under the Wildlife Acts and it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests. There is potential for direct impacts on nesting birds and/or mortality of birds (including birds of local importance (higher value) arising from the Proposed Development. This scenario would be most likely if works were to occur during the time of year when birds are likely to be nesting (which is from 1 March to 31 August, inclusive).

Where feasible, vegetation (e.g. scrub) will not be removed, between the 1 March and the 31 August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.

Measures to prevent herring gulls nesting on the rooftops of the buildings, and pigeons nesting within the buildings, may also be undertaken well in advance of breeding bird season. This includes measures such as:

- Kite hawks to discourage birds from the site.

¹ Sullivan, I. & Lusby, J. (2021). Wildlife in Buildings: Linking our built and natural heritage. BirdWatch Ireland.

- A specialist bird proof net to restrict access and prevent gulls from nesting.²
- Blocking up any open/broken windows or access points into the buildings.

These measures must be undertaken by a specialist, and before any birds begin to nest on or in the buildings.

Mitigation Measures for Birds Operational Stage

Mitigation measures are not required as operational phase impacts predicted on bird species as a result of the Proposed Development, will be **short-term** and **not significant**.

18.2.3 Land, Soils and Geology (Chapter 7)

18.2.3.1 Dublin Central Masterplan

Construction Stage

General Measures

The construction of the proposed underground Metro box (future Metrolink station) will require significant volumes of soil to be removed from the site. It is estimated that the volume of material to be exported off site for the Metro box will be 108,323m³.

A further approximately 25,242m³ of material will be required to be excavated and removed from the site for the Site 2 basement, foundations, and utilities, with a further approximately 29,925m³ for the basement, foundations, and utilities at other sites in the development. Thus, the cumulative volume of material to be exported off site for the overall Dublin Central Masterplan, including the Metro Enabling Works, is estimated to be 163,490m³.

A detailed Construction Traffic Management Plan will be prepared in conjunction with the roads and traffic departments at Dublin City Council. In this regard a preliminary Construction Traffic Management Plan has been prepared in consultation with Dublin City Council for the overall Masterplan and this will be used by the appointed contractor as a guide to acceptable traffic routes for construction traffic. All excavated material from the site which is to be removed shall be disposed of in an approved licensed land fill. The nearest approved licensed land fill which has capacity (at the time of writing) to receive the excavated material from this site is located at Balrath, Co Meath.

Where contaminated soils are encountered during the works, they will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1998-2006, and associated regulations and guidance provided in Guidelines for the Management of Waste from National Road Construction Projects published by the National Roads Authority in 2008.

The provision of wheel wash facilities at the construction entrances to the development will minimise the amount of soils deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis, as required, to prevent the build-up of soils from the development site on the existing public roads.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to provide protection from accidental spills. Refuelling will be restricted to these allocated re-fuelling areas. This area is to be an impermeable bunded area designed to contain 110% of the volume of fuel stored.

During excavation works, temporary sumps will be used to collect any surface water run-off thereby avoiding of standing water within the basement and other excavations.

² Sullivan, I. & Lusby, J. (2021). Wildlife in Buildings: Linking our built and natural heritage. BirdWatch Ireland

Silt traps, silt fences and tailing ponds will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction stage. Surface water runoff will be discharged via a silt trap / settlement pond to the existing combined drainage system which discharges to the Dublin Wastewater Treatment Plant at Ringsend.

During construction it is proposed that de-watering of the excavations (including the Metro Box) will be discharged back to ground. A series of well will be drilled around the outside perimeter of the Metro Box excavation and water pumped from the excavation will be discharged back to these wells. In advance of discharge to the wells the pumped water will be passed through a settlement tank to avoid silts/pollutants being pumped into the ground water aquifer. Water discharged back to ground will be regularly monitored and tested to ensure that the quality of the water is satisfactory for discharge back to ground.

Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

In advance of carrying out any excavation works in public road or in any location where there is likely to be underground services, the appointed contractor shall in the first instance obtain all record drawings from the statutory providers for the existing services. A CAT scan shall be undertaken to identify the location of the services and where deemed necessary slit trenches shall be carefully excavated to locate the exact position of the existing underground services.

After implementation of the above measures, the proposed development will not give rise to any significant long term adverse impact. Moderate negative impacts during the construction stage will be short term only in duration.

A Construction Management Plan, Traffic Management Plan and Waste Management Plan will be implemented by the contractor during the construction stage to control the above remedial measures.

Metro Enabling Works

The final construction sequence for the Metro Enabling Works (MEW) will be based on the contractor's preferred method. However, the typical construction sequence will involve the construction of a shallow guide wall to maintain the setting out and verticality of the main wall. Panels of the diaphragm wall will then be excavated using cutting or grabbing machinery. Based on the depth to the Calp Limestone formation, and the proposed levels of the station box, it is assumed a proportion of the excavation will be within the rock, and therefore a hydraulic cutting machine is likely to be used.

In order to support the sides of the excavation prior to concreting, Bentonite will be pumped into the excavation, which will exert a hydraulic pressure against the trench walls and prevent collapse of the side. The bentonite fluid will be mixed and stored on site and re-used across multiple excavations.

Reinforcement is to be prefabricated on site and then positioned in the bentonite-filled trench. The connection points for the curved base slab, and the slabs at the mezzanine, concourse, and capping slab levels can be blocked out within the reinforcement cage to allow for connection at the relevant point of the construction sequence. Concrete will then be poured into the trench, typically through tremie pipes that extend to the bottom of the trench and fill from the bottom up. The support fluid will be displaced as the concrete is pumped into the trench and can be re-used in other excavations for the wall.

The MEW construction has been considered as a bottom-up construction, where the excavation will be advanced down to the lowest level, with the structure then being constructed from this bottom level. In the permanent condition, the reinforced concrete slabs will act as permanent props between the diaphragm walls to resist lateral pressures. In the temporary condition, horizontal props will be installed successively as excavation progresses downwards.

Once bottomed out, the new lowest-level slab can be cast, and work will proceed upwards, with the temporary props being removed once the concrete slabs have reached the desired strength at each level. This will continue until the basement MEW works are complete.

To the east and west of the MEW, a piled wall is to be installed to support the transfer structures bridging over the station box, which in turn will support the proposed Block 2AB and Block 2C superstructures above.

It is critical that the permanent and temporary works designs are carried out in a coordinated manner between performance specified elements and substructure contractors, to ensure that such design elements are in alignment with the assumptions and findings of the Ground Movement Assessment and overall design intent.

Operational Stage

No mitigation measures for soils or geology will required during the operational stage.

18.2.3.2 Proposed Development – Site 2 & No. 61 O'Connell Street Upper

Mitigation measures will be implemented on a site-by-site basis in line with best practice standards. The relevant mitigation measures for Site 2AB, Site 2C and No. 61 O'Connell Street Upper are set out in Section 18.2.4 below. The same standards will be implemented as part of the development of the other sites within the Dublin Central Masterplan area.

18.2.4 Water (Chapter 8)

18.2.4.1 Dublin Central Masterplan

Mitigation measures will be implemented on a site by site basis in line with best practice standards. The relevant mitigation measures for Site 2AB, Site 2C and 61 O'Connell Street Upper are set out in Section 18.2.4.2 below. The same standards will be implemented as part of the development of the other sites within the Dublin Central Masterplan area.

18.2.4.2 Proposed Development – Site 2 & No. 61 O'Connell Street Upper

Water Supply

Construction Stage

A method statement setting out in detail the procedures to be used when working in the vicinity of existing watermains will be produced by the contractor for any construction works within the vicinity of watermains and for roads or services crossing watermains.

All watermains will be cleaned and tested in accordance with Irish Water guidelines prior to connection to the public watermain.

All connections to the public watermain will be carried out by, or under the supervision of, Irish Water.

Potential negative impacts during construction stage will be short term only.

Operational Stage

Water meters will be installed at connection points, with locations to be agreed and approved by Irish Water, and these meters will be linked to Irish Water's monitoring system by telemetry. These meters will facilitate the early detection of unusual water usage in the network and identify potential leaks in the system.

All plumbing fixtures and fittings and sanitary wear to be installed within the development should be to the current best practice for water consumption to minimise future water usage.

It is not envisaged that any further remedial or reductive measures will be necessary on completion.

Foul Water Drainage

Construction Stage

In order to reduce the risk of defective or leaking foul sewers, the following remedial measures will be implemented: -

- All new foul sewers will be tested by means of an approved air test during the construction stage in accordance with Irish Waters Code of Practice and Standard Details.
- All private drainage will be inspected and signed off by the design Engineer in accordance with the Building Regulations Part H and BCAR requirements.
- Foul sewers will be surveyed by CCTV to identify possible physical defects.
- The connection of the new foul sewers to the public sewer will be carried out under the supervision of Irish Water and will be checked prior to commissioning.
- Prior to commencement of excavations in public areas, all utilities and public services will be identified and checked, to ensure that adequate protection measures are implemented during the construction stage.

Operational Stage

All foul drains will be tested and surveyed prior to connection to the public sewers to minimise the risk of uncontrolled ground water penetration or leakage of the foul water to ground water on the site.

Otherwise, no remedial or reductive measures are deemed to be necessary after completion of the development of the Dublin Central Masterplan, other than normal maintenance of the foul sewer system.

Surface Water Drainage

Construction Stage

The contractor will prepare and implement a Construction Management Plan which will outline the requirements for the storage and handling of fuel, including the refuelling of vehicles in designated refuelling zones to minimise the risk of spillages, and the impact of spillages should they occur.

The Construction Management Plan will also utilise sedimentation controls, including silt traps, tailings ponds and silt fences during the construction period.

All private drainage will be inspected and signed off by the design Engineer in accordance with the Building Regulations Part H and Building Control (Amendment) Regulations (BCAR) requirements. This will reduce the possibility of any cross connections being constructed.

Operational Stage

Surface water will be attenuated privately within each site of the Dublin Central Masterplan, and will discharge to the public network at a controlled rate limited to 2l/s from each site.

In addition, the SuDS devices outlined in Section 8.4.1.3 will reduce and slow down the rate of surface water runoff from each site within the Dublin Central Masterplan. This will minimise peak flows in the downstream system during major storm events. Gullies and the flow control devices shall be regularly maintained to avoid blockages.

The SuDS treatment train will also treat the surface water discharging to the public network, removing pollutants from the surface water runoff. Maintenance of these SuDS devices will be required to ensure that they continue to treat the surface water as designed.

Groundwater

Construction Stage

The Metro Enabling Works (MEW) construction has been considered as a bottom-up construction, where the excavation will be advanced down to the lowest level, with the structure then being constructed from this bottom level. In the permanent condition, the reinforced concrete slabs will act as permanent props between the diaphragm walls to resist lateral pressures. In the temporary condition, horizontal props will be installed successively as excavation progresses downwards.

A number of wells will be installed along the box perimeter and will maintain a groundwater table to a level of 1-2m beneath the box formation level.

The short-term dewatering assessment indicates that dewatering pumping rates in the order of 100m³/h will be required for the entire box. It is anticipated that the groundwater extracted via the wells will be pumped back into the deep aquifer using additional recharge wells. Due to the relatively significant anticipated volumes of water, some form of grouting below the base of the excavation may be considered by the design and build contractor, in order to form a lower permeability "plug" and limit the dewatering volumes. It is worth considering that the grouted "plug" would have to extend to a sufficient depth, to prevent uplift stability mechanisms.

Proposed short term dewatering during the construction stage will mitigate the risk of groundwater flooding during excavations and will limit the impact on the groundwater table.

Water pumped during the de-watering shall be discharged to a settlement tank in advance of being discharged back to ground.

Please also refer to the accompanying Subterranean Construction Method Statement, which is included in Appendix 8.3. The Subterranean Construction Method Statement provides further details on the mitigation measures proposed to manage the potential impacts on groundwater during construction.

Operational Stage

The buildings' design will incorporate suitable damp proof membranes to protect against damp and water ingress from below ground level. To mitigate the risks of groundwater entering the basements they must be adequately waterproofed. Any penetrations through the basement wall or slab must also be appropriately sealed to prevent ingress of groundwater.

It is proposed to install a granular blanket surrounding the basement structures, which will allow groundwater to seep around the basement, maintaining any long-term sub-surface perched water movement. This will minimise the effect that the proposed basement will have on the local water table, mitigating the risk to surrounding areas including other basements in the vicinity of the site.

A Basement Impact Assessment has been undertaken as part of this proposed development. The Basement Impact Assessment provides further details on the groundwater modelling carried out, and on the mitigation measures proposed to mitigate the impact of the basement and MEW on the groundwater in the vicinity of the site. Please refer to the Basement Impact Assessment which is included in Appendix 8.2 for further details.

18.2.5 Climate (Air Quality and Climate Change) (Chapter 9)

18.2.5.1 Dublin Central Masterplan

Construction Stage

A detailed dust minimisation plan associated with a high level risk of dust impacts is outlined in Appendix 9.2. This plan draws on best practice mitigation measures from Ireland, the UK and the USA in order to ensure the highest level of mitigation possible. Care has specifically been paid to the requirements and recommendations within the Dublin City Council's guidance entitled "*Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition*".

In summary some of the measures which will be implemented will include: -

- Prior to demolition blocks should be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- During the demolition process, water suppression should be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment should be minimised, if necessary fine water sprays should be employed.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.
- Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates.
- Public roads and footpaths outside the site will be regularly inspected for cleanliness and cleaned as necessary. If sweeping using a road sweeper is not possible due to the nature of the surrounding area then a suitable smaller scale street cleaning vacuum will be used.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.
- Hoarding or screens shall be erected around works areas to reduce visual impact. This will also have an added benefit of preventing larger particles of dust from travelling off-site and impacting receptors.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

Operational Stage

The impact of the Proposed Development on air quality and climate is predicted to be imperceptible with respect to the operational phase in the long term. Therefore, no additional site specific mitigation measures are required beyond the incorporated design mitigation as described in Section 9.5.1.2.2 and 9.5.2.2.2 in Chapter 9 of this EIAR.

18.2.5.2 Proposed Development – Site 2 & No. 61 O'Connell Street Upper

Construction Stage

The mitigation measures outlined in Section 9.6.1.1 and Appendix 9.2 of Chapter 9 of this EIAR will be applied across the site for each phase of the development.

Operational Stage

No mitigation is required for the operational phase of the development as no significant impacts to air quality or climate are predicted.

18.2.6 Climate (Sunlight & Daylight) (Chapter 10)

No mitigation measures are proposed as the impact of Sunlight and Daylight is relatively insignificant and considered consistent with development within a city centre environment.

18.2.7 Air, Noise and Vibration (Chapter 11)

18.2.7.1 Dublin Central Masterplan

Construction Stage

Mitigation measures for the construction phase are set out below in order to reduce potential impacts as far as practicable to within the adopted design goals for noise and vibration. These mitigation measures should be read in tandem with the specific noise mitigation measures in line with the DCC GPG for high risk sites, as presented in Appendix 11.2.

Noise Mitigation Measures

The contract documents will clearly specify the construction noise criteria included in this chapter which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of *BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise* and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001. These measures will ensure that: -

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise.
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- Any plant, such as generators or pumps that is required to operate outside of normal permitted working hours will be surrounded by an acoustic enclosure or portable screen.

BS 5228 -1:2009+A1 2014 includes guidance on several aspects of construction site practices, which include, but are not limited to: -

- Selection of quiet plant.
- Control of noise sources.
- Screening.
- Hours of work.
- Liaison with the public.

Further comment is offered on these items in the following paragraphs.

Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring. The contractor will be required to conduct construction noise predictions prior to works taking place and put in place the most appropriate noise control measures depending on the level of noise reduction required at any one location.

Selection of Quiet Plant

The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether or not said item can be replaced with a quieter alternative.

For static plant such as compressors and generators used at work areas such as construction compounds etc., the units will be supplied with manufacturers' proprietary acoustic enclosures where possible.

General Comments on Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant, or the application of improved sound reduction methods in consultation with the supplier or the best practice use of equipment and materials handling to reduce noise.

In practice, a balance may need to be struck between the use of all available techniques and the resulting costs of doing so. It is therefore proposed to adopt the concept of "Best Available Techniques" as defined in EC Directive 96/61. In this context "best" means "the most effective in achieving a high general level of protection of the environment as a whole".

Proposed techniques will also be evaluated in light of their potential effect on occupational health and safety. The following outline guidance relates to practical noise control at source techniques which relate to specific site considerations: -

- For mobile plant items such as cranes, dump trucks, excavators and loaders, the installation of an acoustic exhaust and/or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB. Mobile plant will be switched off when not in use and not left idling.
- For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it is possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.
- For all materials handling, the contractor will ensure that best practice site noise control measures are implemented including ensuring that materials are not dropped from excessive heights and drop chutes/dump trucks are lined with resilient materials, where relevant.
- Where compressors, generators and pumps are located in areas in close proximity to noise sensitive properties/ areas and have potential to exceed noise criterion, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- Resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can be controlled by fixing resilient materials in between the surfaces in contact.
- Demountable enclosures can also be used to screen operatives using hand tools and may be moved around site as necessary.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

Screening

Typically screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver.

The length of the screen should in practice be at least five times the height, however, if shorter sections are necessary then the ends of the screen will be wrapped around the source. BS 5228 - 1:2009+A1 states that on level sites the screen should be placed as close as possible to either the source or the receiver. The construction of the barrier will be such that there are no gaps or openings at joints in the screen material. In most practical situations the effectiveness of the screen is limited by the sound transmission over the top of the barrier rather than the transmission through the barrier itself. In practice, screens constructed of materials with a mass per unit of surface area greater than 10kg/m^2 will give adequate sound insulation performance.

Construction noise calculations have assumed a partial line of sight (-5dB) is achieved using a solid 2.4m high standard construction site hoarding. It will be a requirement for works occurring immediately in proximity to the closest noise sensitive locations along the site boundary, that the line of sight is further blocked such that a reduction of at least 10dB is achieved between the noise sensitive façade and construction activities. A reduction of this order can be achieved using a higher perimeter screen or using localised screening around specific items of plant.

Annex B of BS 5228-1:2009+A1:2014 (Figures B1, B2 and B3) provide typical details for temporary and mobile acoustic screens, sheds and enclosures that can be constructed on site from standard materials.

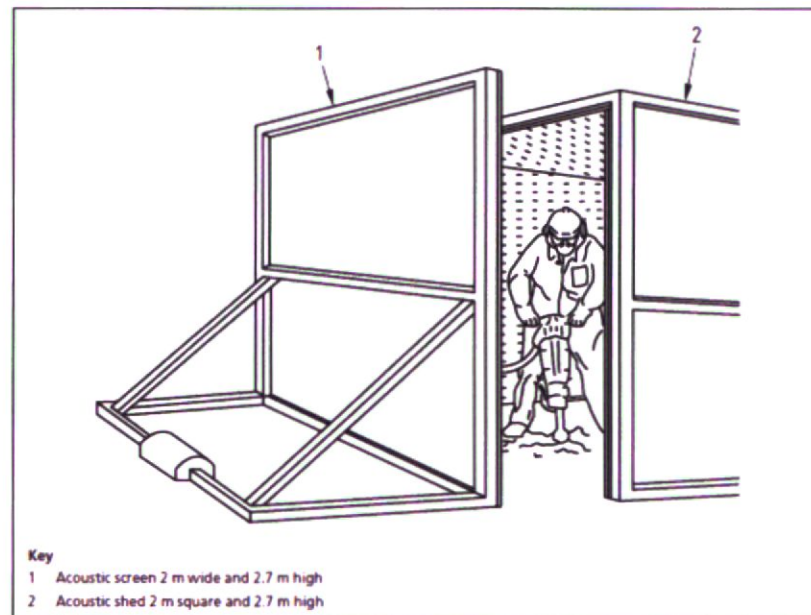


Table B.4 Measured sound reduction given by types of partial enclosure

Type of enclosure (see Figure B.3)	Reduction dB(A)		
	Facing the opening(s)	Sideways	Facing rear of shed
Open-sided shed lined with absorbent material: no screen	1	9	14
Open-sided shed lined with absorbent material: with reflecting screen in front	10	6	8
Open-sided shed lined with absorbent material: with absorbent screen in front	10	10	10

Figure 18:1: Typical Acoustic Screen / Shed Detail.

In addition, careful planning of the site layout will also be considered. The placement of temporary site buildings such as offices and stores between the site and sensitive locations can provide a good level of noise screening during the phasing of works.

Hours of Work

Construction activity will mostly take place during daytime hours Monday to Friday and a half day on Saturdays. In the event of it being deemed necessary to undertake works outside these, it will be necessary to obtain prior written approval from Dublin City Council. Such approval would typically only be granted on submission of details of the activity accompanied by an assessment of potential noise impact.

Consideration should be given to the scheduling of activities in a manner that reflects the location of the site and the nature of neighbouring properties. Each potentially noisy event/activity should be considered on its individual merits and scheduled according to its noise level, proximity to sensitive locations and possible options for noise control.

Depending on the noise emission levels experienced and associated noise impact, the contractor should be flexible and able to conduct certain works at hours which reflect periods when the neighbouring properties have lower sensitivities to noise.

Liaison with the Public

Clear forms of communication will be established between the contractor and noise sensitive areas in proximity so that residents or building occupants are aware of the likely duration of activities likely to generate higher noise or vibration.

The duration of piling, excavation and other high noise or vibration activities works is usually short in relation to the length of construction work as a whole, and the amount of time spent working near to sensitive areas can represent only a part of the overall period. Subjective impacts during these phases can be significantly reduced if timelines and potential impacts are known in advance.

Noise Control Audits

It is recommended that noise control audits be conducted at regular intervals throughout the demolition/construction programme. In the first instance, it is recommended that such audits take place on a monthly basis. This is subject to review, however, and the frequency of audits may be increased if deemed necessary.

The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration should be given to issues such as the following (note that this list is not intended to be exhaustive): -

- Hours of operation being correctly observed.
- Opportunities for noise control "at source".
- Optimum siting of plant items.
- Plant items being left to run unnecessarily.
- Correct use of proprietary noise control measures.
- Materials handling.
- Poor maintenance.
- Correct use of screening provided and opportunities for provision of additional screening.

Piling

Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs.

Piling programmes should be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme should be phased so as to prevent unacceptable disturbance at any time.

During consultation the planner, developer, architect and engineer, as well as the local authority, should be made aware of the proposed method of working of the piling contractor. The piling contractor should in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results.

It should be remembered that a decision regarding the type of pile to be used on a site will normally be governed by such criteria as loads to be carried, strata to be penetrated and the economics of the system, for example the time it will take to complete the installation and other associated operations such as soil removal. It may not be possible for technical reasons to replace a noisy process by one of the 'quieter piling' alternatives. Even if it is possible, the adoption of a quieter method may prolong the piling operation; the net result being that the overall disturbance to the community will not necessarily be reduced.

On typical piling sites the major sources of noise are essentially mobile and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is usually short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period.

Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.

Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.

Contributions to the total site noise can also be anticipated from mobile ancillary equipment, such as handling cranes, dumpers, front end loaders etc. These machines may only have to work intermittently, and when safety permits, their engines should be switched off (or during short breaks from duty reduced to idling speed) when not in use.

All mechanical plant should be well maintained throughout the duration of the piling works. When a site is in a residential environment, lorries should not arrive at or depart from the site at times incontinent to residents.

Metro Enabling Works

As discussed in previous sections, a 4m tall hoarding will be required at the north west site boundary in the vicinity of O'Rahilly Parade and the Jury's Inn hotel. Localised screening is required around breakers and static plant items.

Vibration

On review of the likely vibration levels associated with construction activities, it may be concluded that the construction of the Proposed Development is not expected to give rise to vibration that is either significantly intrusive or capable of giving rise to structural or cosmetic damage to adjacent buildings.

In the case of vibration levels giving rise to human discomfort, in order to minimise such impacts, the following measures shall be implemented during the construction period: -

- A clear communication programme will be established to inform adjacent building occupants in advance of any potential intrusive works which may give rise to vibration levels likely to exceed perceptible levels. The nature and duration of the works will be clearly set out in all communication circulars.
- Appropriate vibration isolation shall be applied to plant, where feasible.
- Monitoring will be undertaken at identified sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values.

Operational Stage

Mitigation measures for the operational phase are set out to ensure that operational noise sources associated with the Dublin Central Masterplan will operate within the relevant noise criteria so that there is no resultant negative impact on nearby noise sensitive receivers.

Noise Mitigation Measures

Mechanical Plant Noise

During the detailed design of the development, the selection and location of mechanical and electrical plant will be undertaken in order to ensure the noise emission limits set out above are not exceeded. In addition to selecting plant with suitable noise levels, the following best practice measures are recommended for all plant items in order to minimise potential noise disturbance for adjacent buildings: -

- Where ventilation is required for plant rooms, consideration will be given to acoustic louvers or attenuated acoustic vents, where required to reduce noise breakout.
- Ventilation plant serving plant rooms and car parks will be fitted with effective acoustic attenuators to reduce noise emissions to the external environment.
- The use of perimeter plant screens will be used, where required, for roof top plant areas to screen noise sources.
- The use of attenuators or silencers will be installed on external air handling plant.
- All mechanical plant items e.g. fans, pumps etc. shall be regularly maintained to ensure that excessive noise generated any worn or rattling components is minimised.
- Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document.
- Installed plant will have no tonal or impulsive characteristics when in operation.

Inward Noise Impact

Inward noise impacts across the development are assessed and appropriate mitigation specified across the Dublin Central Masterplan to ensure that, when window are closed that the internal noise level targets are achieved.

Assessment of Site 1 will follow the methodology set out in this document once the design is finalised. Measured noise levels across the development will be used to assess the levels of noise intrusion and to ascertain the need for appropriate mitigation.

18.2.7.2 Proposed Development – Site 2

Construction Stage

The mitigation measures outlined in Section **Error! Reference source not found.** for general, above-ground construction works associated with the Masterplan construction stage are also applicable for the Proposed Development. These mitigation measures should be read in tandem with the specific noise mitigation measures in line with the DCC GPG for high risk sites, as presented in Appendix 11.2.

Regarding below-ground construction associated with Site 2 and the MEW, the assessment has concluded that the following should be implemented:

- 4m site hoarding in the north west sector of the Proposed Development site.
- Localised screening around breakers and static plant.

Operational Stage

Mechanical Plant Noise

The mitigation measures outlined in Section 12.6.1.2 are also applicable to the Proposed Development.

Inward Noise Impact

In the context of the Proposed Development, the facades highlighted in Figure 18:2 and Figure 18:3 will be provided with glazing that achieves the minimum sound insulation performance as set out in Table 11.34.

The specification applies only to office spaces on the facades indicated. Retail and food & beverage units along these facades do not have a sound insulation requirement. Other facades in the development have no minimum requirement for sound insulation.

The overall R_w values outlined in this section are provided for information purposes only. The overriding requirement is the Octave Band sound insulation performance values which may also be achieved using alternative glazing configurations. Any selected system will be required to provide the same level of sound insulation performance set out in Table 18.1.

Site	Façade	Glazing Octave Band Centre Frequency (Hz)						
		125	250	500	1000	2000	4000	R_w
Site 2	RED	19	27	34	39	35	40	35
	ORANGE	20	22	27	32	32	37	30

Table 18.1: Glazing Specification

Façade specifications are marked up in Figure 18:2 and Figure 18:3 below.

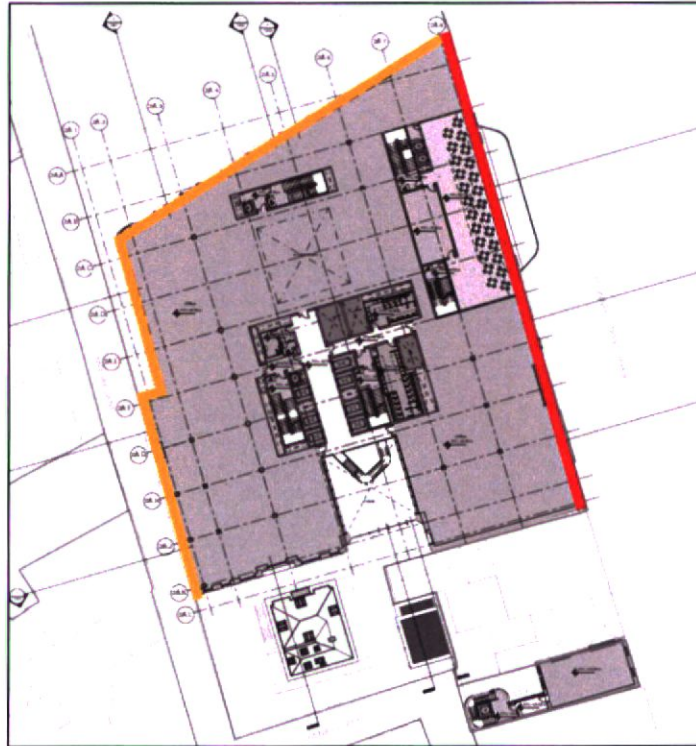


Figure 18:2: Glazing Requirement – Site 2AB

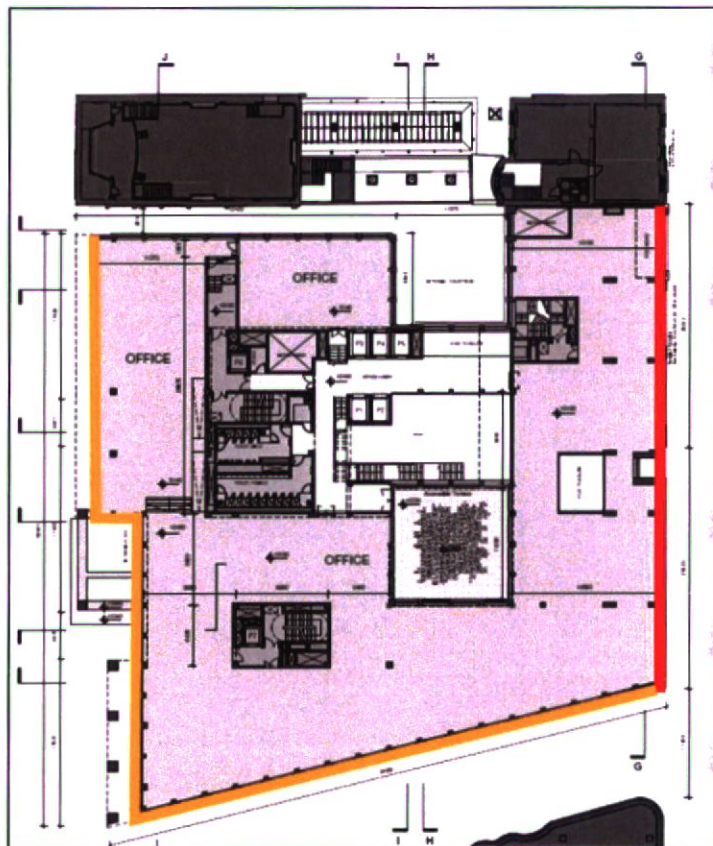


Figure 18:3: Glazing Requirement – Site 2C

18.2.7.3 Proposed Development – No. 61 O'Connell Street Upper

Construction Stage

The mitigation measures outlined in Section **Error! Reference source not found.** in Chapter 11 for the construction stage are also applicable for the Proposed Development. These mitigation measures should be read in tandem with the specific noise mitigation measures in line with the DCC GPG for high risk sites, as presented in Appendix 11.2.

Operational Stage

Mechanical Plant Noise

The mitigation measures outlined in Section 11.6.1.2 are also applicable to the Proposed Development.

Inward Noise Impact

Facades marked up in Figure 18:4 will be provided with glazing and ventilators that achieves the minimum sound insulation performance as set out in Table 18.2.

Site	Façade	Glazing Octave Band Centre Frequency (Hz)						Ventilator	
		125	250	500	1000	2000	4000	R _w	D _{n,e,w}
61 O'Connell Street	RED	21	29	36	41	37	42	38	39

Table 18.2: Glazing Specification

The overall R_w and D_{n,e,w} outlined in this section are provided for information purposes only. The overriding requirement is the Octave Band sound insulation performance values which may also be achieved using alternative glazing and ventilation configurations. Any selected system will be required to provide the same level of sound insulation performance set out in Table 18.2.

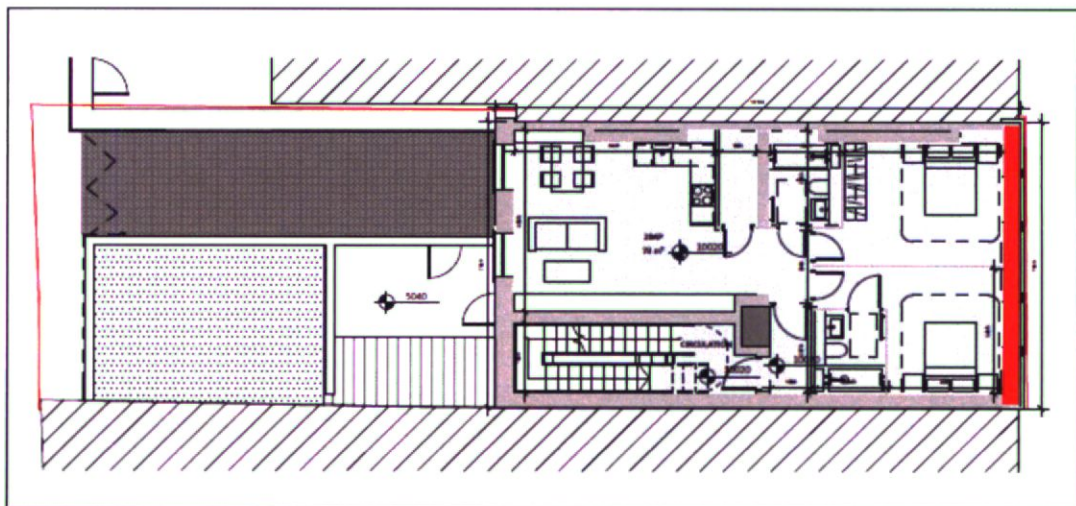


Figure 18:4: Glazing Requirement – 61 O'Connell Street

18.2.8 Landscape and Visual Impact (Chapter 12)

18.2.8.1 Dublin Central Masterplan

Not applicable as the masterplan is still being refined and discussions with the Planning Authority are on-going. Notwithstanding this, as the masterplan presents an integrated design for a new city quarter, no remedial or reductive measures are likely to be applicable.

18.2.8.2 Proposed Development – Site 2 & No. 61 O'Connell Street Upper

Construction Stage

No mitigation measures have been proposed with respect to effects from the construction of the Proposed Development.

Operational Stage

Since the Proposed Development is an integrated design for a new city quarter, no remedial or reductive measures are applicable. In these circumstances, during the construction or operational phases scope for mitigation measures, which would preserve a sustainable level of density, is limited. However, developments already planned, approved or under construction near the site or elsewhere in the city will reduce the potential visibility of the Proposed Development, and thereby mitigate the extent of its visual impact.

18.2.9 Material Assets (Transport) (Chapter 13)

18.2.9.1 Proposed Development – Site 2 & No. 61 O'Connell Street Upper

Construction Stage

The primary mitigation measure during the Construction Stage will be the implementation of the Construction Traffic Management Plan and the Construction Management & Waste Management Plan.

This will require all deliveries to and collection from the subject site to comply with the DCC requirements for HGV movements including the use of the Designated HGV Routes illustrated in Figure 13.20.

Two construction routes to the site have been identified both to Parnell Street. One will be from Dorset Street via Dominick Street and one from Summerhill via Parnell Street.

Proposal for local traffic management during the various stages of construction have also been prepared and will be incorporated in the detailed *Construction Traffic Management Plan* to be prepared by the appointed Contractor in conjunction with Dublin City Council for approval.

Traffic and other movements on the road network during the Construction Stage will be managed by carrying out the works in a number of stages to a sequence to be prepared in conjunction with Dublin City Council and implemented by the main Contractor.

During the Construction Stage, the appointed Contractor will be required to maintain access along Moore Lane and Henry Place to existing properties at the times currently permitted by Dublin City Council or as may otherwise be agreed with the property owners and DCC.

Operational Stage

The primary mitigation measure during the Operational Stage will be the implementation of the Travel Plan for Dublin Central and in particular the Action Plan section of the Travel Plan which will implement the management of travel demand.

Mitigation measures to limit the impact of the future intensification of public transport services through Bus Connects and Metrolink, are outside the control of the Dublin Central project.

18.2.9.2 Cumulative Development

Construction Stage

The Mitigation Measures for the Cumulative Development arising from the Construction Stage will be the same as the Mitigation Measures for the Proposed Development described in Section 18.2.9.1

Operational Stage

The Mitigation Measures for the Cumulative Development arising from the Construction Stage will be the same as the Mitigation Measures for the Proposed Development described in Section 18.2.9.1

18.2.10 Material Assets (Waste) (Chapter 14)

18.2.10.1 Dublin Central Masterplan

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

Construction Stage

requirements of The EPA, Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and the Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG, 2006) and is included as Appendix 14.1 enclosed with this EIAR. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 14.1 enclosed with this EIAR) in agreement with DCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DCC, detailing specific measures to minimise waste generation and resource consumption, design for maintenance and replacement and provide details of the proposed waste contractors and destinations of each waste stream.

The Contractor will be required to fully implement and update the RWMP throughout the duration of the proposed construction and demolition phases.

A quantity of soil, stone, silt, sand and clay which will need to be excavated to facilitate the Proposed Development. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented: -

- Building materials will be chosen with an aim to 'design out waste'.
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated: -
 - Concrete rubble (including ceramics, tiles and bricks).
 - Plasterboard.
 - Metals.

- Glass.
- Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible.
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition, excavation and construction works.
- All construction staff will be provided with training regarding the waste management procedures.
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal.
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, and the EMR Waste Management Plan 2015 – 2021, the draft NWMPCE (2023).. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

Operational Stage

As previously stated, a project specific OWMP has been prepared and is included as Appendix 14.2 in this EIAR.

- The Operator / Facilities Manager of the masterplan during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery.

In addition, the following mitigation measures will be implemented: -

- The Operator / Facilities Manager will ensure on-Site segregation of all waste materials into appropriate categories, including (but not limited to): -
 - Organic waste.
 - Dry Mixed Recyclables.
 - Mixed Non-Recyclable Waste.
 - Glass.
 - Waste electrical and electronic equipment (WEEE).
 - Batteries (non-hazardous and hazardous).

- Cooking oil.
- Light bulbs.
- Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.).
- Furniture (and from time to time other bulky waste).
- Abandoned bicycles.
- The Operator / Facilities Manager will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.
- The Operator / Facilities Manager will ensure that all waste collected from the Site of the Proposed Development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available.
- The Operator / Facilities Manager will ensure that all waste leaving the Site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the Proposed Development during the operational phase is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997, the EMR Waste Management Plan 2015 – 2021 and the DCC Waste Management (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws 2018 and the draft NWWMPCE (2023).. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

18.2.10.2 Proposed Development – Site 2

Construction Stage

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of The EPA, Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and the Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG, 2006) and is included as Appendix 14.1 included in this EIAR. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 14.1) in agreement with DCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DCC, detailing specific measures to minimise waste generation and resource consumption, design for maintenance and replacement and provide details of the proposed waste contractors and destinations of each waste stream.

The Contractor will be required to fully implement and update the RWMP throughout the duration of the proposed construction and demolition phases.

A quantity of soil, stone, silt, sand and clay which will need to be excavated to facilitate the Proposed Development. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented: -

- Building materials will be chosen with an aim to 'design out waste'.
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated: -

- Concrete rubble (including ceramics, tiles and bricks).
- Plasterboard.
- Metals.
- Glass.
- Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible.
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition, excavation and construction works.
- All construction staff will be provided with training regarding the waste management procedures.
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal.
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, and the EMR Waste Management Plan 2015 – 2021 and the draft NWMPCE (2023). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

Operational Stage

As previously stated, a project specific OWMP has been prepared and is included as Appendix 14.2.

- The Operator / Facilities Manager of the Site 2 during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery.

In addition, the following mitigation measures will be implemented: -

- The Operator / Facilities Manager will ensure on-Site segregation of all waste materials into appropriate categories, including (but not limited to): -
 - Organic waste.
 - Dry Mixed Recyclables.
 - Mixed Non-Recyclable Waste.

- Glass.
- Waste electrical and electronic equipment (WEEE).
- Batteries (non-hazardous and hazardous).
- Cooking oil.
- Light bulbs.
- Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.).
- Furniture (and from time to time other bulky waste).
- Abandoned bicycles.
- The Operator / Facilities Manager will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
- The Operator / Facilities Manager will ensure that all waste collected from the Site of the Proposed Development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and
- The Operator / Facilities Manager will ensure that all waste leaving the Site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the Proposed Development during the operational phase is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997, the EMR Waste Management Plan 2015 – 2021 and the DCC Waste Management (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws 2018 and the draft NWMPCE (2023). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

18.2.10.3 Proposed Development – No. 61 O'Connell Street Upper

Construction Stage

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of The EPA, Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and the Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG, 2006) and is included as Appendix 14.1 included in this EIAR. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 14.1) in agreement with DCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DCC, detailing specific measures to minimise waste generation and resource consumption, design for maintenance and replacement and provide details of the proposed waste contractors and destinations of each waste stream.

The Contractor will be required to fully implement and update the RWMP throughout the duration of the proposed construction and demolition phases.

A quantity of soil, stone, silt, sand and clay which will need to be excavated to facilitate the Proposed Development. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented: -

- Building materials will be chosen with an aim to 'design out waste'.
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated: -
 - Concrete rubble (including ceramics, tiles and bricks).
 - Plasterboard.
 - Metals.
 - Glass.
 - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible.
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition, excavation and construction works.
- All construction staff will be provided with training regarding the waste management procedures.
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal.
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, and the EMR Waste Management Plan 2015 – 2021 and the draft NWMPCE (2023). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

Operational Stage

As previously stated, a project specific OWMP has been prepared and is included as Appendix 14.2.

- The Operator / Facilities Manager of 61 O'Connell Street Upper during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery.

In addition, the following mitigation measures will be implemented: -

- The Operator / Facilities Manager will ensure on-Site segregation of all waste materials into appropriate categories, including (but not limited to): -

- Organic waste.
 - Dry Mixed Recyclables.
 - Mixed Non-Recyclable Waste.
 - Glass.
 - Waste electrical and electronic equipment (WEEE).
 - Batteries (non-hazardous and hazardous).
 - Cooking oil.
 - Light bulbs.
 - Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.).
 - Furniture (and from time to time other bulky waste).
 - Abandoned bicycles.
- The Operator / Facilities Manager will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
 - The Operator / Facilities Manager will ensure that all waste collected from the Site of the Proposed Development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and
 - The Operator / Facilities Manager will ensure that all waste leaving the Site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the Proposed Development during the operational phase is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997, the EMR Waste Management Plan 2015 – 2021 and the DCC Waste Management (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws 2018 and the draft NWMPCE (2023). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

18.2.11 Cultural Heritage (Architectural) (Chapter 15)

18.2.11.1 Dublin Central Masterplan

Operational Phase

Construction stage impacts are envisaged as being short term, and whilst disruptive, will, on completion provide an enhanced urban environment in which all structures and spaces of architectural and cultural heritage interest can collectively thrive.

Construction Phase

Potential impacts are envisaged as arising at demolition, excavation and construction stages where the development sequence for multiple masterplan plan sites occur in tandem. It is envisaged over a prolonged period, that construction will be active to one or more development sites, with common road networks and site compound areas outside designated 'Sites' in correspondingly active use. As all works occur within or in the vicinity of the ACA and neighbouring protected and historic fabric, the impact of the proposed development is likely to be experienced by this built architectural heritage.

18.2.11.2 Proposed Development – Site 2 & No. 61 O'Connell Street Upper

Operational Phase

Anticipated impacts for the urban character of O'Connell Street and the enclosing ACA streetscape

Please read in conjunction with Table 15.7.1 Summary of impacts for the enclosing environs (including the ACA) as described in Landscape and Visual Effects of Chapter 12 of the EIAR.

The streetscapes which enclose Site 2 have distinctive characters, dictating a specific response to each varying condition in an appropriately sensitive manner. Impacts of the proposed development on the setting of the ACA are described on a street-by-street basis as follows;

Summary Character Appraisal

The present O'Connell Street is an amalgamation of multiple eras, architectural styles and typologies.

The construction of the Carlisle Bridge and the widening of Drogheda Street by the Wide Street Commissioners in the eighteenth century established Sackville Street, now O'Connell Street, as one of the primary thoroughfares in the city. Over the course of the 19th century, many buildings were amalgamated, refashioned and adapted to reflect the increased commerciality of the street as it continued to prosper.

Historic events that led to the formation of the state, namely the Easter Rising in 1916 and the Civil War in 1922 had a lasting impact on the character of the street. The latter in particular, directly resulted in the loss of multiple 18th century structures. The reconstruction in the early 20th century, which was carefully controlled by state authorities, is an insight into urban design concerns of the day. The focus was on the retention of 18th century urban character to a greater extent than retaining actual 18th century fabric, by reconstructing buildings which conformed to the heights and massing the earlier buildings. Materiality was also dictated by earlier Georgian ideals, with granite shopfronts and upper floors of brick or ashlar a prerequisite for approval. The adoption of Neo-Georgian architecture in the late 19th and early 20th century for public buildings was commonplace internationally, and it is not surprising that this was the preferred style for what was then, and is now, the primary civic street in the capital.

The late 20th century frontages at Nos. 46-49 and No. 59 upheld the 18th century scale of the street, although the materiality of glass and concrete does somewhat interrupt the solidity of what is primarily a masonry terrace. In embracing irregularity, it is this assortment of eras and styles, whilst contrary to the rigorous uniformity of the original Mall design, in its reimagined early 20th century form collectively establishes the present architectural character of O'Connell Street.

Addressing ACA Vulnerability

Despite recent investment in the upgrading of street surfaces, post the introduction of the LUAS line, the building fabric and streetscape have continued to decline. Underutilised sites and vacant plots from unrealised developments are not only visually disfiguring but have wider social and economic impacts which negatively afflict the wider area.

The proposed development which encompasses the majority of the west side of Upper O'Connell Street will have a transformative impact on the character of the street. There is an opportunity to re-establish O'Connell Street as a place of central civic importance, whilst retaining its historic architectural street character. The terrace of protected façades, which have been subject to continual evolution, will be purposefully integrated into the proposed development.

Adherence with ACA Policies

As illustrated in the accompanying Shopfront Design and Signage Strategy, (Appendix 4 of the Dublin Central Masterplan Design Statement), the policies of the ACA will be adhered to in the protection of historic shopfronts on O'Connell Street Upper. Existing masonry fascia panels and pilasters framing

the shopfronts will be retained and restored. Good contemporary shopfronts using durable, high-quality materials with simple lettering will be introduced on new buildings or to replace later inappropriate interventions.

The introduction of a balanced range of uses will have a beneficial impact on the immediate streetscape but also on the wider ACA environs. Few of the present uses on the street actively contribute to the streetscape. The casinos, which are the predominant use are, by their nature, introverted spaces and do not engage with the public realm. The high levels of long-term vacancy are apparent in the blank shopfronts present a poor visual backdrop to what was once a fine civic space. The reoccupation of these plots, which have remained dormant or inactive for too long, will have a positive impact on the ACA.

Principles of lateral urban connectivity established in the previous planning consent have been reciprocated and improved upon in the subject application. The proposed introduction of a new pedestrian street in a sensitive architectural setting is acknowledged. It is contended that the scale of O'Connell Street as a whole is sufficiently large to endure and that the sense of containment established by the enclosing structures is not undermined by the introduction of a new street.

Design Precedents as a Measure of Impacts

Simulations of anticipated pedestrian movement patterns were used to establish the optimum width for comfortable pedestrian movement and to facilitate outdoor dining to animate the street. The scale of the street is intentionally subordinate to O'Connell Street, in conformity with an established hierarchical street system. The new street meets O'Connell Street at a slight angle and this deviation from the typical Georgian grid pattern serves to distinguish it from the grid patterns of Henry Street and North Earl Street thus retaining the prominence of historic town planning.

The architectural treatment of the new buildings has made efforts to respect the existing historic context. The scheme has benefited from the engagement of multiple architectural teams to collectively create a high-quality and contemporary architectural scheme, in which the quality of both the individual buildings and the collective result on the urban realm could be rigorously examined.

Presently these buildings, by virtue of their function and the nature of the long linear plots, disconnect the inner network of streets from the wider urban surrounding and isolate them from more vibrant surroundings. The lack of positive activity within the central areas of the block has contributed to pervasive anti-social behaviour which further compounds a sense of dereliction. The perceived lack of security discourages casual pedestrian movement through the site and further marginalises the positive use of inner streets, with consequential negative impact on the built environment. The cycle of decline will continue without intervention. Improved permeability and increased footfall will facilitate the successful occupation of Moore Lane and support a well-designed network of quality urban spaces within the Masterplan Site, as advocated in a report entitled, 'Urban Baseline Study- Pedestrian impact assessment- Pedestrian movement forecast', Dublin Central by Space Syntax and attached with this application.

The redevelopment will also benefit surrounding urban areas. There is a potential to link adjacent areas of heritage interest, such as the new cultural quarter at Parnell Square to the north and St. Mary's Victorian fruit markets to the west.

The proposal is intended to protect and enhance O'Connell Street's distinctive identity by retaining historic street frontages interwoven with high-quality contemporary architecture to re-establish it as a fitting focal point for national gatherings and celebrations of civic importance.

Anticipated Impact for the Urban Character of Moore Lane

The character of Moore Lane has continuously evolved in correlation with its changing building uses. Rocque's Map of 1756 (Fig 4.3) identifies 'Old Brick field Lane,' as it was then known, as a narrow straight lane running in a north-south direction. This earlier name is a reference to the Old Brick fields, depicted on the map as an undeveloped plot to the west of the lane. It was the site of brick manufacturing, likely supplying material for the construction of the earlier developments in the area.

A neat terrace of regular buildings are shown along the eastern side of the lane, a typical stable lane of its era of origin, likely consisting of carriage houses and servants quarters pertaining to the residences on what was then Sackville Street, later O'Connell Street.

The commercialisation of O'Connell Street in the 19th century simultaneously altered the character of Moore Lane. Goad's 1893 map illustrates the diverse range of enterprises that were operating on the street at the turn of the 20th century. Moore Lane would have been heavily trafficked with regular deliveries to each premises, some occupying differing uses serving substantial enterprises with public frontages facing onto O'Connell Street.

Active street fronts on Moore Lane have lessened over time. The former Carlton Cinema, on account of the specific building typology, presents a blank gable onto Moore Lane. Similarly, the 1970's office building at Nos.46-49 O'Connell Street Upper focused exclusively on the public interface with O'Connell Street to the detriment of Moore Lane. Unlike their earlier counterparts, these buildings do not directly engage with the street, with its character informed instead by defensive blank walls. The prolific detachment of active buildings from their urban context has had a lasting negative impact on the quality of the Moore Lane streetscape.

This condition, coupled with the long-term vacancy has created an often hostile environment, frequently the site of anti-social activity and intentionally bypassed by pedestrians. The few remaining plots that do have façades addressing the laneway are either unoccupied or concealed behind security shutters with interactions to the street limited to occasional car access.

Notwithstanding, the ad-hoc nature of the present streetscape, there is a certain charm to the present materiality of the extant outbuilding and boundary walls. It has a raw, industrial character which has evolved incrementally and inadvertently. The fragmented remnants of brick piers and calp limestone are a testament to the former uses and activity along the street.

It is necessary to demolish all structures in Site 2 facing onto Moore Lane, with the exception of the former reading room at the rear of No. 59, to facilitate the proposed development. A core brief requirement was the retention of its distinctive character in that manufactured architectural context.

To recreate this particular character, the new proposal will use similar materials, albeit in a contemporary manner. The multi-layered tapestry that has evolved over time will be reflected in the proposed cladding of the new buildings.

The lane will retain the existing hierarchical relationship between interconnecting streets. Its width will be kept as close to the original as possible and marginally increased where necessary to facilitate anticipated increase in pedestrian flow, to accommodate accessible entrances to cafés and restaurants and to facilitate vehicular access and maintenance vehicles.

The buildings to the west site of the street, which fall within Site 4 of the Dublin Central Masterplan Area, are comparatively of greater architectural and historic significance and will be more comprehensively retained and adapted for reuse in the proposed scheme. The introduction of new uses and active street fronts will support these adapted buildings that share the lane and other retained buildings within the wider Dublin Central Masterplan Area.

Historic setts are exposed on the surface where later concrete and black-top linings have failed. A ground penetration radar survey (Fig.7.1 above) confirms the extent of the original setts and granite kerbstones surviving beneath the later blacktop surface, but condition has yet to be confirmed when applied surfaces are removed. Historic street surfaces and alignment of pavements, will be carefully re-laid to preserve the legibility of the original street pattern.

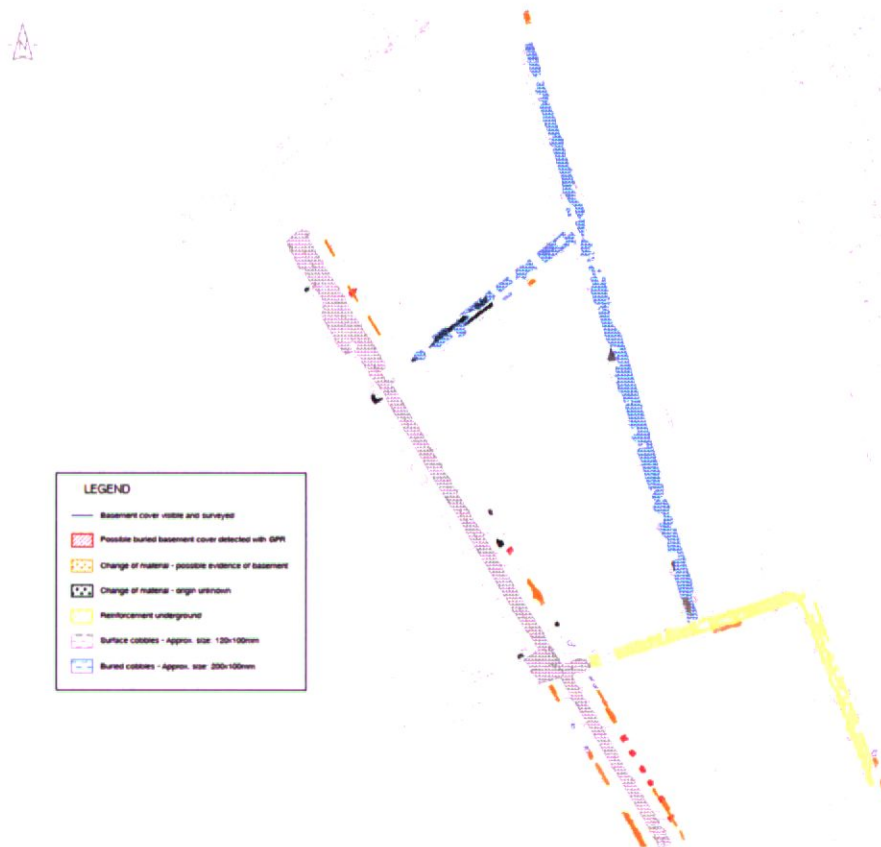


Figure 15.6.1. The GPR survey of the internal street network, indicating existence of setts below tarmac surfaces. Please Note, due to their concealed presence, it is not possible to confirm the extent of disturbance to accommodate extensive ground works in the past. Source: Murphy Geospatial

The events of 1916 give additional historic and social significance to the historic fabric. The reoccupation of Moore Lane as intended will support the National Monument in its potential future role as a commemorative centre, under the ownership of the Dept of Housing, Local Government & Heritage and stewardship of the Office of Public Works.

The character of Moore Lane will be greatly altered by the proposed development, but it is considered that intervention is required if the Dublin Central Masterplan is to succeed as a new vibrant quarter. The reintroduction of an active street front is essential to this objective, with the existing character of the street reflected in the proposed materiality and scale.

Anticipated Impact for the Urban Character of Henry Place

Henry Place has a similar character to Moore Lane. It has a similar scale and materiality and shares a common history.

As previously stated, No.60A, the corner-sited building at the rear of No.60 O'Connell Street Upper will be demolished to facilitate access for maintenance and emergency vehicles. Presently larger vehicles are forced to mount the kerb to negotiate turning the corners in this area and for practical and safety reasons that it is proposed to remove this structure and create a pocket square at this location.

As a consequence of these interventions, the sense of enclosure and the context of the battlefield site will be altered. It is proposed to mitigate against this loss by reinforcing the legibility of the historic street surfaces, as described in Dublin Central Site 2 Landscape Planning Report (Gross Max Landscape Architects)-Document Number: DC-GM-2X-XX-RP-L-10-0001.

The introduction of a pocket square will benefit the refurbished reading room by supporting it in its adapted role as a café / restaurant. As a presently wholly concealed building, the proposed square will give it a generated setting in its renewed capacity as a detached structure.

As with proposed definition of historic setts and kerbs described above for Moore Lane, the proposed reinstatement and supplementation of historic surfaces will be anticipated as enhancing the architectural character of Henry Place.

Anticipated Impact of New Pedestrian Links

Section 1, 13.12 SDRA 10 – North East Inner City of the Dublin City Development Plan 2022-2028, citing Guiding Principles for Key Opportunity Sites O'Connell Street/Moore Street Civic/Cultural Hub and pertaining to O'Connell Street to Moore Lane incorporating Carlton Site, recommends that: *'Scheme design should be based on a comprehensive masterplan that incorporates a convenient access route to the planned MetroLink stop, quality connections across the site, and a cultural interpretative element. Any final proposal must incorporate at least one new east-west pedestrian route interlinking to at least two new civic spaces within the block, utilising the existing lane structure for cross connections'*.

It continues to state that *'Masterplan proposals should hence incorporate....new pedestrian connections linking both O'Connell St. to Moore St. via a new public square, and also Henry Street to Henry Place/Moore Lane.'* Connection through the vacant plot of No.47 O'Connell Street to link with Moore Street, via a proposed civic square is a major element of the architectural and urban design proposal. A similar benefit is introduced in the arched entrance under No.61 O'Connell Street, connecting with a presently unwelcoming knuckle at the bend of Henry Place. Increased permeability through the site addressing the unbroken length of the O'Connell Street terrace which on account of its impermeability compounds the street's present inanimate character, will generate greater connections across the ACA from street networks to the west of O'Connell Street, correlating, and essentially emulating a Talbot/ Henry Street precedent.

ACA policy, dating from 2001, in anticipation of the same objective also states that, *'It is an objective to facilitate the development of a new pedestrian route on an east/west axis, linking O'Connell Street and Moore Street as part of the redevelopment of the Carlton Cinema site, exploiting the presence of the Moore Street Market, opening up the ILAC on its eastern flank, and generating a strong new economic focus in North O'Connell Street'*.

In review of statutory policies directing the provision of pedestrian linkages within the development site, the proposal wholly fulfils this important requirement in addition to purposefully redeveloping a presently vacant plot which succeeds in its existing capacity only at eroding urban unity.

Anticipated Impacts for the Urban Character of the Wider Townscape

Anticipated Impact for the Urban Character of Henry Street

The development of Site 2 does not directly impact Henry Street, however, the taller buildings will be visible above its terrace, due north and from its junction with Henry Place.

A proposed development at Site 3, whilst subject to an ongoing An Bord Pleanála review, will alter the character of the same aspect due north, from Henry Street. In the event that Site 3 is delivered, its merger with Site 2 will reduce adverse impacts associated with the morphological change of the latter. Whilst on its own merits the scheme deviates in density from the existing given template, in fusing with larger building typologies on Henry Street (GPO, Arnott's, ILAC Centre etc), a new interactive category is generated.

As previously stated, the scale and orientation of the new pedestrian street has been designed to avoid displacing the prominence of Henry Street as the most significant secondary street interconnecting with O'Connell Street. Henry Street is the primary shopping street on the north side of the city and the proposal seeks to support the street in this central role. The new access route

proposed as part of the Site 2 development will create a 'loop' likely enhancing the commercial success of the ACA and Henry Street.

Anticipated impact for the urban character of Moore Street and its Historic Market

As cited in Section 13.12 SDRA 10 – North East Inner City, Table 7.1 above, the proposed development provides a new pedestrian street linking O'Connell Street to a proposed new civic space within Site 4 of the Masterplan scheme. Proposed east-west connections with Moore Lane from O'Connell Street Upper, together with the introduction of the MetroLink Station are intended to increase access to and in turn the prominence of the Moore Street Market, creating new possibilities for the restoration of the market as a thriving cultural and commercial destination.

Anticipated Impact for the Urban Character of Cavendish Row

Site 2 will be visible from Cavendish Row, with the gable of Site 2C culminating the existing No.43 O'Connell Street acquiring particular prominence from this position.

Its prominence is exaggerated, albeit not eliminated, on account of the presently injurious fracture in the once homogenous terrace, caused by the absence of terraced buildings at Nos.40 and 41 O'Connell Street. The consequentially incongruous gable condition of No.42, divorced from its original mid-terraced form, draws attention from the classically composed corner of the AIB Bank at Nos 37-38 O'Connell Street and highlights an urgent requirement to restore the terrace and compositional integrity of this important junction, a central objective of Site 1 of the Dublin Central Masterplan. The temporary condition of undeveloped vacant plots at Nos 40 and 41 inevitably does little to shield Site 2. It is likely that a development at Site 1 at operational stage will screen Site 2C to an extent where it becomes imperceptible within the roofscape provided by the remainder of Site 2 to the south.

In mitigation, in offering to address uppermost, visible levels of Site 2C as a mid-terraced building temporarily viewed 'in the round' from this viewpoint due south, Grafton Architects have skilfully integrated a colonnaded belvedere within the northern gable. A concept borrowed from attic storey belvederes found in prominent 18th century city-center buildings such as the Four Courts, is successfully adapted in the subject development not just to mitigate the impact of visual change, but to provide an exceptional amenity within the proposed building. The treatment of this northern elevation is thus tempered in its further adoption to the rhythm of the smooth limestone pilastered shopfront of Nos 37-38 O'Connell Street, visually connecting both with the consequence of an urban cohesion overcoming a potentially excessive impact otherwise.

A further element visible from Cavendish Row will comprise the proposed walkway and chamfered corner of Site 2B, which will likely encourage greater animation of this street and its extant amenities.

Anticipated Impact for the Urban Character of Parnell Street

As evidenced from assessment of View 1 of the LVIA (Parnell Square- North West), the proposed scheme is most visible due south from the junction of Parnell Street West with Moore Lane, and as described in Section 7.8.3.3. above, with Parnell Street East/ Cavendish Row/ O'Connell Street Upper, with the gable of Building 2C having greatest prominence.

Setting aside visual change inevitably following the taller development of Site 2 as proposed than what exists presently, the proposal will support the success of the Parnell Square Cultural Quarter's integration with the ACA in improving pedestrian connections unifying the northern portion of the ACA with the retail core of Henry Street in a manner not existing at present.

Anticipated Impact for the Urban Character of Cathal Brugha Street

It is anticipated that the introduction of a new pedestrian route through Site 2 obliquely opposing the junction of Cathal Brugha Street with O'Connell Street Upper, will encourage lateral movement of pedestrians with adjoining streets. Increased footfall towards the north end of O'Connell Street Upper

from within Site 2 is likely to enhance the relative prosperity of Cathal Brugha Street and Parnell Street East as cited in Section 7.8.2.4 above.

Anticipated Impact for the Urban Character of Cathedral Street

Cathedral Street is positioned to the east of the subject site. West facing vistas from this street terminate in the protected terrace of Nos.59-68 O'Connell Street, defined as much by its variances as its cohesive assemblage.

The proposed raising of building mass set back behind the extant terraced screen reconciles the potential dichotomy between the terrace as the dominant plinth to a lesser attic storey above. However this architectural approach, consistently applied across the entire eastern length of Site 2 is received, it is preferable to the originally permitted approach (Planning Reference Number 247/08/ABP Ref. PL29N.232347) which successfully argued for the removal of No. 59 O'Connell Street, which would have arisen in a more dramatic break of the homogeneity of the terrace as viewed from Cathedral Street than what is now proposed.

In the respectful retention of protected facades within Site 2, visual change will be limited to the new buildings that appear above and behind the parapet line, with the only new form comprising a replacement structure at Nos.55-56 O'Connell Street to the north west of this vantage point.

Anticipated Impact for the Urban Character of O'Rahilly Parade

The original character of O'Rahilly Parade has evolved somewhat negatively from vibrant laneway fusing light industrial and tenement functions. The lane was culminated by the tall façade of a brick and calp warehouse building, befitting the forms flanking the north and southern faces of the street. Present-day O'Rahilly Parade dues east from Moore Street is defined by impermeable hotel facades of its northern edge and a vacant plot at its southern edge, with the bleakness compounded by its culmination of the car park building at Nos.46-49 O'Connell Street. The replacement of this building with a carefully crafted contribution made by Site 2C will immeasurably enhance the visual amenity of O'Rahilly Parade and offer an unparalleled opportunity to engage with the ACA of O'Connell Street from its continuance through the proposed new street.

The laneway bears little resemblance to its historic character and will greatly benefit from the instatement of sympathetic historic surfaces which will also assist in its redefinition.

Anticipated impact of the detachment, conservation and adaptation of the Reading Room at No.59 O'Connell Street Upper

Please read in conjunction with Appendix 15.15

Proposed Detachment of an Introverted, Inherently 'Attached' Structure

Goad's map depicts the fully developed site at No.59, where the exterior form of the former reading room was not the primary consideration in its design, given its sandwiching between flanking garden walls shared with Nos.58 and 60 respectively.

Its origins were likely as a coach house coupled with staff kitchens, which evolved to include a myriad of increasingly grander functions over the course of the varied occupancy of No.59, as reflected in its possibly 19th century multi-pitched roof form surmounting a top lit reception space. Enclosed to the east by another top lit building, and to the west by a car port onto Moore Lane, viable daylight from its roofs was a central function of the otherwise elevationally constrained building.

The extent of its obscure composition has influenced even its external recording for the purposes of this study.

The reimagining of its introverted character as a detached structure revealed within a newly created landscaped urban setting of a proposed pocket square dramatically transports this modestly scaled building into an entirely different architectural genre, which could be viewed by sceptics as somewhat unsettling. The challenge of appropriately presenting a building never intended to be viewed 'in the round' in its new context is considered to be satisfactorily resolved by the development, with design tweaks likely to continue into the development stage as more of the building's fabric is exposed.

Proposed Adaptation

The radical transformation of its exterior wholly contrasts with the relative consistency of its internal character, which does not depart significantly from its origins, albeit with windows inserted into niches to improve visual permeability.

The internal spatial quality of the elevated upper ground level reading room, is compromised by the insertion of mid-20th century partitioning of cellular stores, whose removal is proposed as part of the subject development. Reinstatement of the original spatial configuration of the room will positively enhance its legibility and also introduce a unique recreational form in this part of the city.

The function of its former kitchen at lower ground level will be reinstated, alongside the provision of appropriate guest facilities and additional café spaces.

Proposed conservation

The proposed conservation of the building's fabric will reinstate its physical integrity and render the exercise of its change of use wholly positive.

Anticipated impact of the change of use and conservation of No.61 O'Connell Street Upper

The development of this historic townhouse as proposed will enliven a presently undiscovered historic building within the streetscape. The introduction of residential uses at upper floors will prove immeasurably beneficial for the enclosing ACA. Please read in conjunction with Appendix 15.15

Construction Phase

The process of demolition and subsequent construction of the proposed development has the potential to disturb adjacent retained buildings and historic fabric, however, every effort at anticipating worst case scenario impacts at construction stage and mitigating against same is acknowledged with acceptable levels of vibration determined on a case by case basis, depending on the materiality of what is being removed, as described in Table 5 of the Outline Construction & Demolition Management Plan –Site 2; DC-WAT-2X-XX-RP-C-001011 (Waterman Moylan Consulting Engineers Limited). In accordance with recommendations, the structures will be monitored for movement during the course of the demolition and reconstruction works.

Prior to the demolition phase an external survey control system is to be established. This will be carried out using traditional closed traverse surveying techniques and will involve the setting up of sufficient external control stations to allow monitoring of the neighbouring structures during and after demolition. The control stations are to have co-ordinates which are directly correlated to the building grids and datum levels related to those shown on the Land Survey drawings, issued by the Architect. The initial control survey is to be carried out by the Contractor and may be independently checked and verified by the appointed survey contractor.

The appointed Grade 1 Conservation Architect will be required to attend site at regular intervals to visually observe that all protection measures are succeeding to safeguard retained fabric as designed, and will swiftly react if any instance of potential damage arises.

Singular mitigation strategies will be adopted to reduce impacts in respect of each building. In the instance of retained facades, each building was physically investigated at all levels and comprehensively recorded in advance of preparation of this report. It is recommended that a copy of measured surveys and records be submitted to the Irish Architectural Archive in mitigation of removals.

Mitigation measures adopted for the removal of selected building fabric at No.59 O'Connell Street Upper will require care where abutting retained return building fabric to rear of the main building range, and fabric abutting the east and west gables of the reading room. All such fabric will be dismantled carefully and recorded as the works progress.

The public realm strategy is committed to preserving the legibility of the historic streetscape. This will be achieved by reinstating the historic street surfaces in the original location. New street and open public spaces will be finished in complementary, but clearly distinguishable materials.

Mitigation measures adopted for the physical removal of No.60A will be generated to ensure that a full recording takes place during demolition and that no damage occurs where abutting the retained Reading Room.

18.2.12 Cultural Heritage (Archaeology) (Chapter 16)

18.2.12.1 Dublin Central Masterplan

Construction Stage

Works in the Vicinity of the National Monument – Nos. 14 – 17 Moore Street

Appropriate conservation methodologies will be employed on all works carried out adjacent to the National Monument (see Chapter 15: Cultural Heritage (Architectural)).

The preservation order for Nos. 14 – 17 Moore Street provides the site with the highest level of statutory protection. The investigation, demolition, earthmoving and construction works within the previously defined assessment area for works in proximity to the National Monument (**Error! Reference source not found.**) for the development of Site 4 in the Dublin Central Masterplan area will require Ministerial Consent under Section 14 of the National Monuments Act (as amended). The consent application will be supported by detailed method statements compiled by the integrated conservation team for the Dublin Central project (comprising a conservation architect, structural conservation engineer, architect and archaeologist). This will include an archaeological strategy.

It is anticipated that the National Monument will be developed as a commemorative centre under Ministerial Consent C495. Consultation with the OPW and their conservation team has and will continue to be carried out to ensure that there is an integrated and collaborative approach for the protection and conservation of the monument and their shared/adjoining boundaries.

The archaeological mitigation in the vicinity of the National Monument will as a minimum include: -

- Archaeological monitoring of site investigation, site preparation and temporary works as required.
- Archaeological monitoring of site clearance (including the clearance of cellars/basements) and of demolition works to identify and record as appropriate, any objects, fixtures or features that can be related to the 1916 Easter Rising.
- Archaeological testing will be carried out after demolition in the areas to the rear of Nos. 18 and 19 Moore Street and in the rear yard of No. 13 Moore Street to establish the depth and nature of the infill material associated with the backfilling of the brickfield quarry.
- Archaeological excavation of archaeological soils or features that are encountered and impacted by the proposed development.
- Archaeological monitoring of earthmoving works.

The archaeological works will be carried out under Ministerial Consent. The Minister may attach further conditions in the granting of consent, including conditions requiring archaeological excavation.

Where the Minister has granted a consent under Section 14 of the Act, no other consent or licence under any provision of the National Monuments Act, including an excavation licence, is required for any archaeological work or activity, (e.g., the other works in Site 4 not bounding the National Monument will require an archaeological licence).

General Mitigation

The following archaeological mitigation measures will be carried out within the Dublin Central Masterplan area under licence to the DHLGH: -

Monitoring

A programme of archaeological monitoring will take place at the pre-construction, site preparation and enabling works / early stages of construction where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that may be present, where ground investigation and earth-moving works are taking place. This will include the survey and recording of any surviving 18th century structures that may be revealed.

Test Excavation

Given that the development is within the ZAP for Dublin (DU018-020), archaeological test excavation will be required. The testing will be carried out during the post demolition phase in areas where it is possible and safe to do so. It will be strategic and focused in areas where there are no existing basements. The testing will establish the nature and the level of disturbance across the site.

Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within the Dublin Central Masterplan area will be resolved in consultation with the relevant authorities during the course of the project.

Excavation

In the event that archaeological features or deposits exist, the mitigation for development impact will involve an excavation which will be integrated into the early phases of the site's development programme.

Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

The results will be compiled in detailed reports which will be submitted to DCC and to DHLGH and the NMI in compliance with the awarding of a licence.

Licensing

Archaeological monitoring and excavation will be carried out under licence from the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

All mitigation measures will be carried out in accordance with an approved method statement which will be agreed in advance with the DCC City Archaeologist.

General

These proposed strategies do not prejudice any further recommendations made by the Department, who may seek additional information or consider alternative strategies.

National Monuments Legislation (as amended) states that in the event of the discovery of archaeological finds or remains, the NMI should be notified immediately. Provision must be made to allow for, and fund any, archaeological work that may be needed if any remains should be noted

during ground preparation works or during construction. As described above, if features are revealed, the area will need to be investigated, allowing no further development to take place until the site is fully identified, recorded and excavated or, alternatively, avoided.

All archaeological issues shall be resolved to the satisfaction of the DHLGH and the NMI.

The Applicant is aware of the archaeological potential of the site and its implications for the development and the possibility of a significant design change. The Applicant will make provision to allow for and fund whatever archaeological work may be needed on the site in accordance with the National Monuments legislation (1930–2004).

Operational Stage

None required.

18.2.12.2 Proposed Development – Site 2

Construction Stage

National Monument –Construction Mitigation Measures

To ensure the physical protection of the National monument a 3m wide protection zone from the rear of No. 8-9 Moore Lane will be established and will be in place for the duration of the construction works.

A construction access haul road is also proposed along the line of Moore Lane. It is proposed to construct a secant piled wall along the western boundary of Site 2. In the temporary condition the secant piled wall retains the soil outside the site boundary, the stiffness of the wall will be designed to reduce ground movement associated with the basement excavation works. Additionally, the secant piled wall provides protection to the construction works within Site 2 from the surcharge loading of construction traffic along the haul road. In the permanent design, the secant wall forms the basement of Site 2 (Figure 18.5 and Figure 18.6).

The secant piled wall at the boundary is part of the strategy for enabling the deeper excavation to form the MEW station box. The shallow basement required for the oversite is less significant than the deep basement excavation that are required to enable the MEW station box.

Chapter 15: Cultural Heritage (Architectural) provides the mitigation measures for all the historic structures in the vicinity of the site.

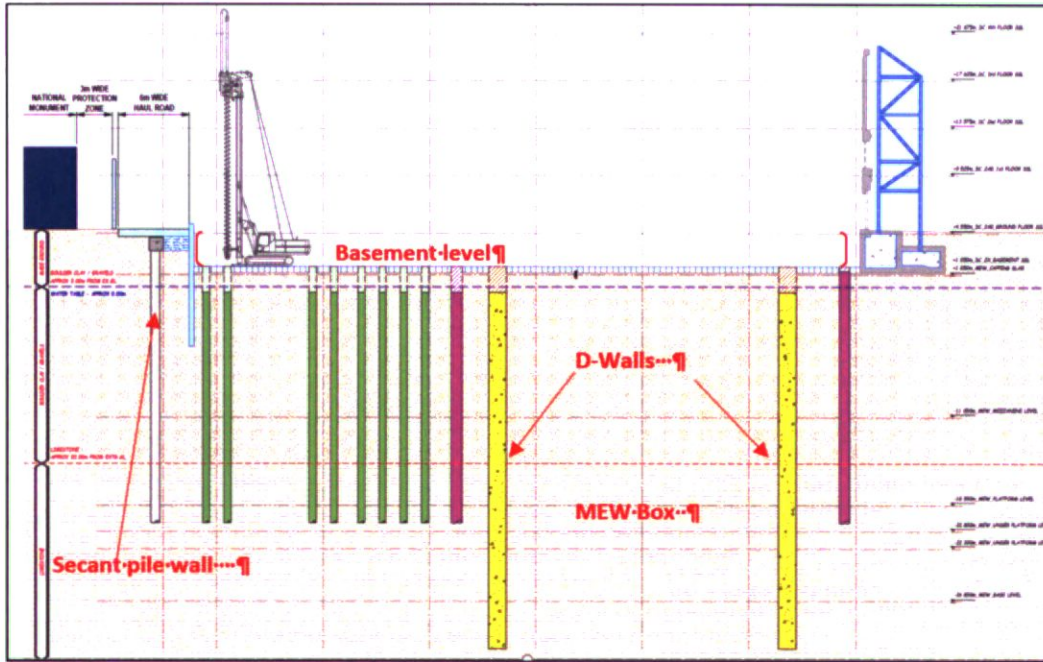


Figure 18.5: Cross section showing excavation to piling mat level before the bulk excavation of the MEW. A 3m wide protection zone will be established to the rear of the National Monument.

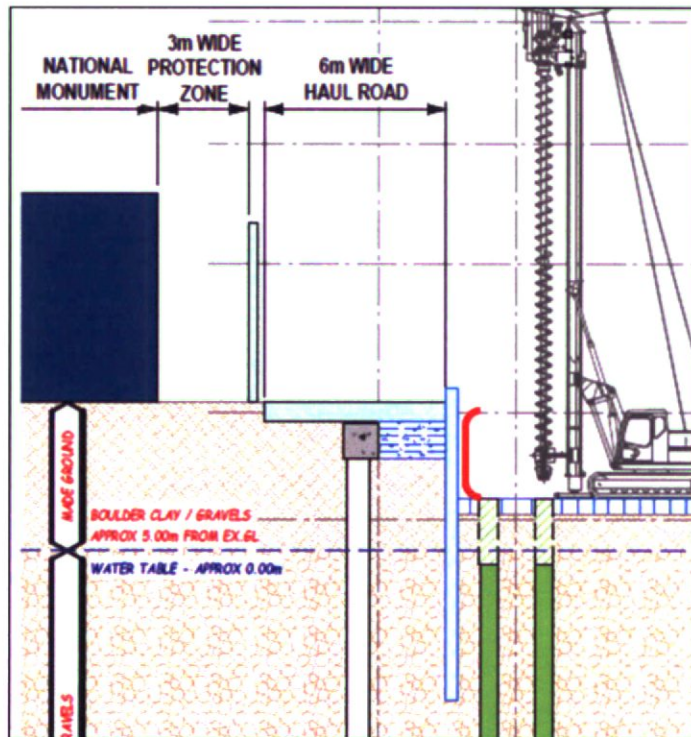


Figure 18.6: Cross section showing the National Monument (rear yard) and 3m wide protection zone and haul road

General Mitigation

Monitoring

Archaeological monitoring will take place at the pre-construction, site preparation and enabling works/ early stages of construction and where any preparatory ground reduction works are required. This will be carried out in order to establish the presence or absence, as well as the nature and extent, of any archaeological deposits, features or sites that may be present, where ground investigation and earth-moving works are taking place. The monitoring will be carried out under licence to the Department of Housing, Local Government and Housing (DHLGH) in accordance with an agreed method statement that is also approved by the Dublin City Council's City Archaeologist.

Pre-demolition investigation works which may include but are not limited to the monitoring of:

- Site investigation works. Should any permanent underpinning be required at the footings of the retained facades or along the boundaries of protected structures it will be carried out at basement level it will be monitored and recorded.
- Opening up works at basement or ground levels.
- Temporary retaining framework supports along O'Connell Street will be constructed on the footpath. Coal-cellars run along the full length of O'Connell Street that extend out under the pavement. Investigation works on O'Connell Street might be required to identify cellars to establish whether or not the cellars are infilled and structurally sound. The investigation of the cellars may require the opening of a trench along the footpath to identify the crowns of the cellars and any openings. The investigation works will be archeologically monitored. The existing cellars may also be tied into earlier structural remains i.e., those shown on Rocque.
- In association with the Architectural Conservation specialist, demolition works required of the structures along Moore Lane will be monitored in order to identify any features/ evidence of fabric damage that may be associated with the 1916 rising.
- Prior to infilling the existing vaults/ cellars/ basements (to facilitate the insertion of the piling mat) a survey will be carried out in association with the conservation contractor (as required) to record any mid- 18th century fabric that might be identified. The basements should be examined for earlier fabric or features and must be fully recorded before infilling. The monitoring of the removal of these basements will take place before bulk excavation.
- Demolition, enabling and excavation works, monitoring will be carried out during:
 - Temporary enabling works where they will require opening up works at ground level.
 - Stripping for the Haul Road
 - Strip footings associated with retention of structures and adjacent basements.
 - Post-demolition grubbing out of foundations and substructures.
 - Pile guide trenches for the perimeter wall.
 - All earthmoving works.

Following the implementation of an approved programme of mitigation, any impact on archaeological soils, finds or features identified within Site 2 during the course of the project, will be resolved through excavation (preservation by record) under consultation with the relevant authorities, if appropriate.

Excavation

In the event that archaeological features or deposits exist, the mitigation for development impact will involve an excavation which will be integrated into the early phases of the site's development programme.

Archaeological excavation will ensure that this removal is systematically and accurately recorded, drawn and photographed, to achieve a full descriptive paper and digital archive, thereby adding to the archaeological record and to the knowledge of a specified area.

The results will be compiled in detailed reports which will be submitted to DCC and to DHLGH and the NMI in compliance with the awarding of a licence.

Licensing and Codes of Practice

Archaeological monitoring and excavation will be carried out under licence from the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface.

As the Site 2 work will include the MEW works on behalf of the TII the mitigation measures will be carried out in line with the most up to date version of the *MetroLink Cultural Heritage Strategy*, which is a live iterative document, and the *Code of Practice for Archaeology* (2017) between the Minister for the Department of Housing, Local Government and Heritage and TII.

In accordance with the Code of Practice TII will appointed a Project Archaeologist to the proposed Project to oversee and manage the archaeological elements of the project. All Archaeological Consultants appointed to the proposed Project shall comply with the Code of Practice and shall liaise directly with the TII Project Archaeologist in relation to all archaeological requirements.

The Applicant is aware of the archaeological potential of the site and its implications for the development and the possibility of a significant design change. The Applicant will make provision to allow for and fund whatever archaeological work may be needed on the site in accordance with the National Monuments legislation (1930–2004).

General

National Monuments Legislation (as amended) states that in the event of the discovery of archaeological finds or remains, the NMI should be notified immediately. Provision must be made to allow for, and fund any, archaeological work that may be needed if any remains should be noted during ground preparation works or during construction. As described above, if features are revealed, the area will need to be investigated, allowing no further development to take place until the site is fully identified, recorded and excavated or, alternatively, avoided.

All archaeological issues shall be resolved to the satisfaction of the DHLGH and the NMI.

Public Realm Works – Historic Paving and Kerbing

The in-situ recording, cleaning and sequential lifting of the historic paving on Moore Lane and O'Rahilly Parade will be carried out by conservation contractors in association with the site archaeologist and conservation architect. It will be carried out in accordance with best practice as set out in the Department of Arts Heritage and Gaeltacht (now DHLGH) and Dublin City Council 2015 Advice Series '*Paving -the conservation of historic ground surfaces.*'

A thorough record will be carried out during the site preparation/ enabling works stage of construction, that is, when the streets are safely closed to the public, and the heritage consultants can carry out the careful removal of tarmac and cement to complete a record and condition survey. The results of survey will identify where and how the setts will be re-laid.

A detailed methodology of the lifting, transport soring and reinstatement of the setts will be submitted to the heritage authority for prior approval, an indicative methodology is provided as follows: -

Proposed Removal Methodology

Exposing the surface, recording, and lifting will be carried out in the enabling works phase of the project and well in advance of construction. It will precede the enabling works for Dublin Central Site 2 and thus will be well ahead of the commencement of Sites 3, 4 and 5. There will be temporary road closure to allow for the works to take place. A detailed methodology of the lifting, transport storing, and reinstatement of the setts will be submitted to the local authority for prior approval. Consultation will be needed to ensure that agreement is reached with all the relevant stakeholders, as the pavement forms part of the public realm.

The following is an outline methodology: -

- **Exemplars**

Consultation with conservation specialists will establish the most appropriate method to remove tarmacadam from the stone setts and concrete from the granite kerbs. A representative sample of tarmacadam will be removed in an area of c. 10sqm. The exemplar will be reviewed with the Local Authority and the methodology finalised.

- **In-situ recording and cleaning**

Once the tarmac is removed, a baseline drawn survey of the surviving setted pavement and kerbstones will be undertaken. The paving and kerbing will be gently cleaned in situ. Once cleaned, the heritage consultants will record the bond, showing the placement system of setts of varying size, sorting into rows, width of the joints, gutter details, edge conditions, camber of road surface, and falls of inclined borders any undulations and irregularities, including the concentration of heavily worn areas., so they can be re-laid in correct order. The judicious use of a laser/detailed topographical survey will also be considered.

A visual inspection will identify any indications of the 1916 rising battle on the setts – such as bullet scars etc., and their location recorded. A record will be taken of any particular concentration of these, as they may reveal any intensity of shots fired in a specific area which will inform the interpretation of the battle and of the reinstatement measures. The existence and location of previous alterations will also be recorded where the coherence and integrity of the original bonding pattern was lost or disturbed in earlier poorly conceived interventions

The heritage consultants will assign each item with a unique reference code numbered on a survey drawing, and the individual stones numbered with a water-soluble marking to allow for the correct reinstatement of the paving.

- **Lifting**

A trial area of paving and kerbing will be lifted in an agreed location measuring c. 10sqm. These should be lifted manually. Joints should be raked out to their full depth taking care not to damage the arrises of the setts. After reviewing the trial area and approved method statement, the paving kerbing and stone setts will be lifted logically and sequentially. Records should be filed in a systematic way for reference during reinstatement and for archival purposes. The subbase bedding and jointing materials will also be analysed. Paving elements will be cleaned of all bedding and jointing materials and any other materials adhering to them.

- **Storing**

The setts and kerbs will be stored in a clean, dry secure storage facility until reinstatement which has yet to be identified. The setts and kerbstones will be laid on pallets and evenly supported to prevent breakage.

- **Archaeology**

Despite the services running along it the lanes surrounding the site, the laneways are likely to be the least archaeologically disturbed areas of the site. Licensed archaeological monitoring of any earthmoving works below the sub baselevel of the streets within the public realm will be monitored in order to identify any former street surfaces or potential undisturbed clays.

- **Reinstatement**