



Environmental Impact Assessment Report

Volume 2: Appendices

Mixed-Used Development at Dublin Central

For Dublin Central GP Limited

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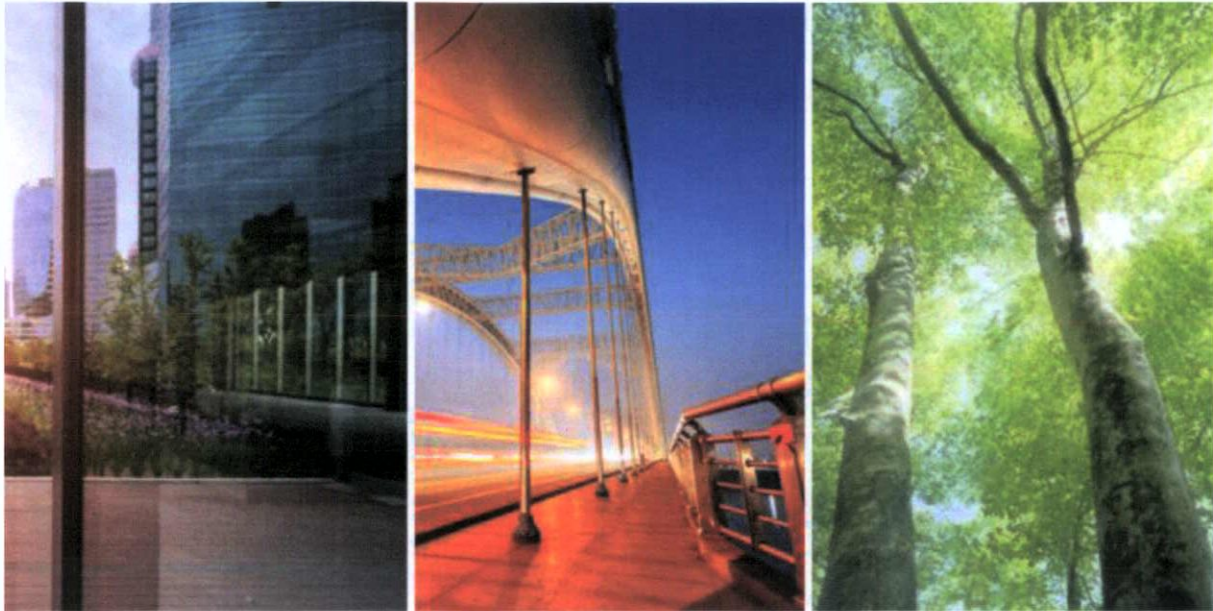
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Associates Conservation Architects, ARC Architectural Consultants, Courtney Deery Heritage Consultants

MAY 2021

APPENDIX 3.1

**OUTLINE CONSTRUCTION & DEMOLITION MANAGEMENT PLAN –
MASTERPLAN**



Dublin Central

Outline Construction & Demolition Management Plan – Master Plan

Dublin Central GP Limited

DC-WAT-XX-XX-RP-C-001010

May 2021

Waterman Moylan Consulting Engineers Limited

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This document has been prepared and checked in accordance with Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS OHSAS 18001:2007)

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Comments

FINAL ISSUE

Disclaimer

This report has been prepared by Waterman Moylan, with all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the Client.

We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report is confidential to the Client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

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Appendix A – Masterplan Programme

1. Introduction

Waterman Moylan have prepared the following Outline Construction and Demolition Management Plan for the implementation of the construction stages of the proposed Dublin Central development. It is noted that the development will be constructed in phases which are outlined in this report.

Dublin Central GP Limited are aware of the challenges that exist in delivering such a large and complex development within the city centre.

The following Outline Construction and Demolition Management Plan sets out typical arrangements and measures which may be undertaken during the demolition and construction stages of the project in order to mitigate and minimise disruption and disturbance to the area around the site. Of particular note, are the protected and retained buildings and facades within the site, and the adjoining National Monument.

This Outline Construction and Demolition Management Plan will be used to guide the Main Contractor/Contractors who will have ultimate responsibility for developing a more detailed demolition and construction management plan for formal agreement with Dublin City Council in advance of them commencing the demolition or construction works on site. This plan will provide Dublin City Council with an outline proposal of how construction will be managed to comply with Local Authority and statutory requirements and will be updated post award of planning to reflect specific planning conditions which may be applied to the development.

This plan should be read in conjunction with all other planning stage reports including the Outline Construction and Demolition Management Plan for each of the Sites.

2. Site Master Plan

2.1 Overall Site Development

A site wide cumulative masterplan encompassing an area of c2.2 Ha has been prepared by the Applicant to set out the overall development vision for the Dublin Central project. 'The Masterplan' area encompasses almost entirely three urban blocks. The area is bounded generally by O'Connell Street Upper and Henry Place to the east, Henry Street to the south, Moore Street to the west, and O'Rahilly Parade and Parnell Street to the north. Moore Lane extends south from Parnell Street through the centre of the masterplan area, as far as its junction with Henry Place.

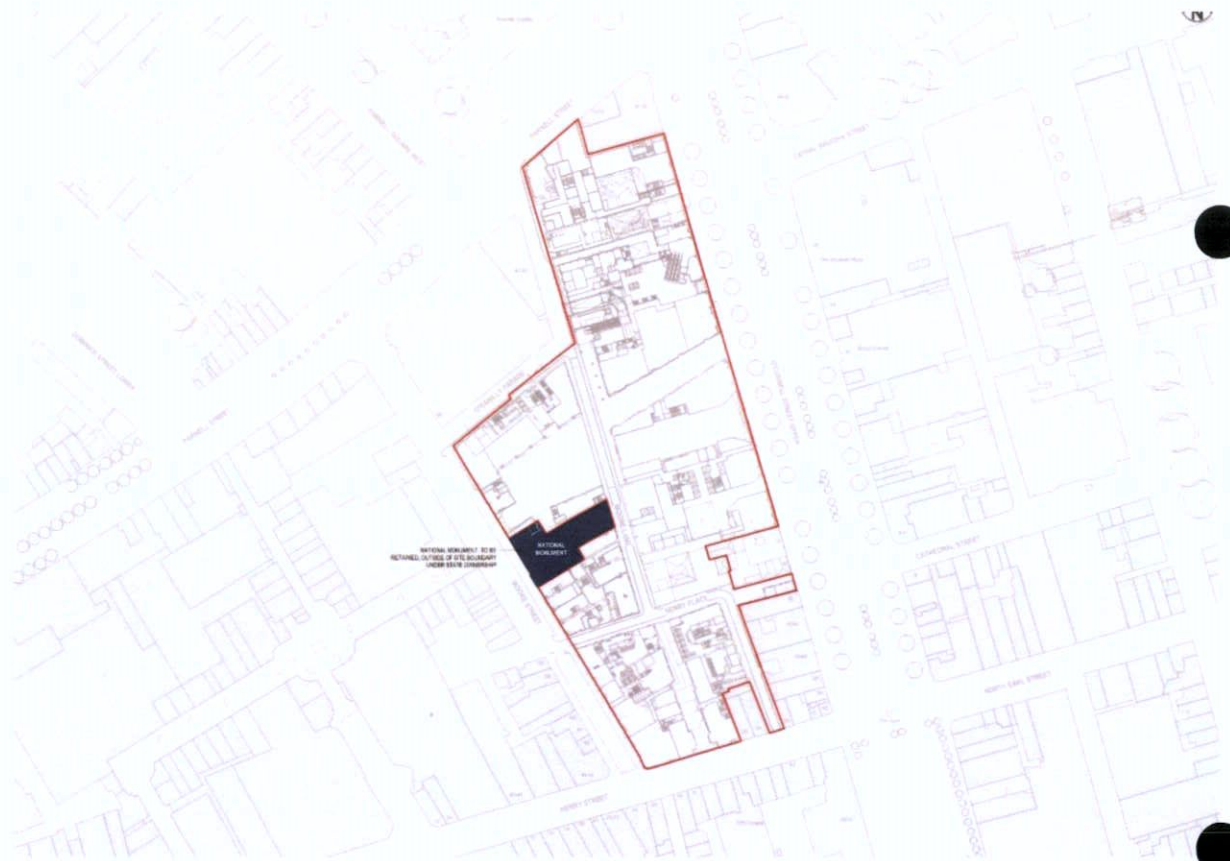


Figure 1 – Site Location Plan

The Site benefits from an existing planning permission for a new masterplan vision totalling 78,300 sqm. The planning permission runs to May 2022.

'The Masterplan' area includes structures of heritage significance that will be retained. Nos.14 -17 Moore Street are under the ownership of the Irish Government Office of Public Works and are not part of the Masterplan area. The buildings have been designated National Monument status and are subject to a preservation order.

The area will include a new Metrolink Station, to be the subject of a separate application by TII. The structure of the Metrolink Enabling Works (MEW) will be designed by the DCGP Ltd. civil/structural designer given the complex interface involved. The MEW is to be undertaken as part of the Dublin Central Development.

2.2 Metrolink Enabling Works (MEW)

The National Transport Agency (NTA) and Transport Infrastructure Ireland (TII) approached the Applicant in 2018 with a view to locating a future MetroLink Station serving O'Connell Street within the Dublin Central site, in an effort to avoid locating the Station within the central median of O'Connell Street. TII is in the process of finalizing the design of the MetroLink project. TII is expected to make an Application for a Railway Order for the MetroLink project, including the O'Connell Street Station, in Q2 / Q3 2021.

The Applicant has agreed a Memorandum of Understanding with the NTA/TII to complete the enabling works that would accommodate the future station, but which would also ensure that the Applicant's project was structurally independent of, and not prejudicial to, the MetroLink project. These enabling works comprise the provision of a structural 'box' positioned below ground, within which the MetroLink project can be positioned and above which the Applicant's project can be constructed. The provision of this structural box (sometimes referred to as the "Station Box") and its ancillary works below ground are known collectively as the Metro Enabling Works (MEW) in the context of the Applicant's overall Dublin Central project.

The provision of the MetroLink O'Connell Street Station and its associated tunnel works would be completed by the NTA/TII once ready to do so and subject to the required consents being in place. It is envisaged that the MEW works would be completed in advance of the NTA/TII tunnel boring machines reaching the area.



Figure 2 – Location of O'Connell Street Station & Tunnel Route

In addition, the Applicant's proposals for development on Dublin Central Site 2AB and Site 2C have made allowance for future integration with the TII MetroLink project. For example, there are two entrances to the MetroLink Station envisaged at Site 2C: one from O'Connell Street, one from Moore Lane. Allowances have been made for fire escapes, air intake and air extract flues and other ancillary operational requirements of a MetroLink Station, within the design of 'the Masterplan' buildings. For clarity however, TII will make an application for the use of these areas as part of the MetroLink project, in

due course. The planning drawings being submitted by 'the Applicant' (i.e., DCGP Ltd), both currently as part of 'the Masterplan' and in due course as part of planning applications for Dublin Central Site 2AB and Site 2C, will clearly highlight this point.

The current NTA/TII proposals for the future MetroLink subterranean station at O'Connell Street Upper is located under Site 2AB and Site 2C of the Dublin Central Masterplan (Figure 3). Both planning applications for these developments will include the MEW.

The developments proposed at Sites 3, 4 and 5 are not affected by the emerging TII proposals for MetroLink.

For avoidance of doubt however, any references to 'MEW' in the plans and particulars that form part of the Site 3, Site 4, or Site 5 planning applications, will be understood to refer to the future Metro Enabling Works envisaged or planned at Site 2AB and Site 2C as part of the Dublin Central Masterplan.



Figure 3 – The 'Masterplan' Area (March 2020)

2.3 Development Phasing Strategy

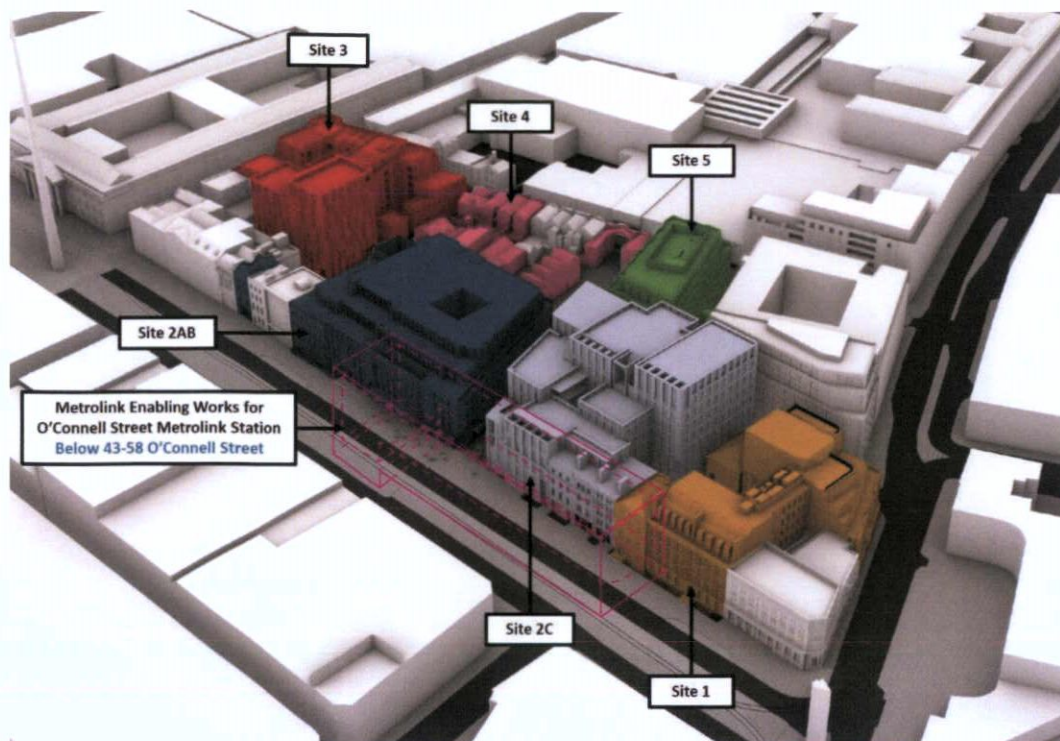


Figure 4 – Phasing Strategy

The development is split over five separate Sites, broadly outlined as follows:

Site 1 – Located in the north east of 'the Masterplan' area. Site 1 is bounded generally by O'Connell Street Upper to the east, Parnell Street to the north, Moore Lane to the west and 'Site 2' to the south. It includes Nos. 40 – 42 O'Connell Street Upper (including O'Connell Hall) and No. 70 – 71 Parnell Street (including Conway's pub).

No. 42 O'Connell Street, O'Connell Hall and No. 70 Parnell Street are protected structures, and Site 1 lies within the O'Connell Street ACA. 'The Masterplan' (March 2020) envisages a mixed-use scheme accommodating a hotel, office, cultural, retail and café / restaurant uses ranging in height from 4 – 8 storeys over new single storey basement.

Site 2 – Located in the east of 'the Masterplan' area. Site 2 is bounded generally by O'Connell Street Upper to the east, the front portion of No. 59 & 60 O'Connell Street, No. 61 O'Connell Street and Henry Place to the south, Moore Lane to the west and Site 1 to the north. It includes Nos. 43 – 59 O'Connell Street Upper (including the Carlton Cinema site), the rear of No. 59 & 60 O'Connell Street and No. 61 O'Connell Street. The planned MetroLink, to be delivered independently by Transport Infrastructure Ireland (TII), will have a future station under Site 2.

Site 2 contains the following protected structures (only upper facades protected): Nos. 43-44, 52-54, 57 58, the rear of 59-60 and 61 O'Connell Street Upper, and lies within the O'Connell Street ACA. 'The Masterplan' (March 2021) envisages the follow development for this area:

Site 2AB – Mixed-use scheme accommodating office, retail and café / restaurant uses in 1no. block ranging in height from 2 to 7 storeys over new single storey combined basement with Phase 2C. Provision of new street connecting O'Connell Street and Moore Lane, an arcade at ground floor under No. 61 O'Connell Street and a new pocket square. The entire basement under 2AB and 2C and associated site development works will also be provided to enable delivery of the Metro Enabling Works (MEW).

Site 2C – Mixed-use scheme accommodating office, retail and café / restaurant uses in a single block ranging in height from 5 to 8 storeys over new single storey combined basement with Phase 2AB. Provision of new street connecting O'Connell Street and Moore Lane. The entire basement under 2C and 2AB and associated site development works will also be provided to enable delivery of the Metro Enabling Works (MEW).

Site 3 – Located in the south west corner of 'the Masterplan' area, Site 3 is bounded by Henry Street to the south, Moore Street to the west and Henry Place to the north and east. Site 3 includes Nos. 36 – 41 Henry Street, Nos. 1 – 9 Moore Street and Nos. 3 – 13 Henry Place. Site 3 lies within the O'Connell Street ACA. The proposed development generally comprises a mixed-use scheme accommodating a hotel, residential units and associated amenities, cultural, retail and café / restaurant uses in 2no. blocks ranging in height from 1 – 9 storeys over existing and new single storey basements. Provision of a new street/laneway linking Henry Street with Henry Place/Moore Lane.

See planning notice for broader summary description of development.

Site 4 – Located in the west of 'the Masterplan' area, Site 4 is bounded by Moore Street to the west, Moore Lane to the east, Henry Place to the south and Site 5 to the north. Site 4 includes Nos. 10 – 13 and Nos. 18 – 21 Moore Street, Nos. 5 – 8 and Nos. 10 – 12 Moore Lane. Site 4 excludes the site of the National Monument and its protection zone at 14-17 Moore Street (protected structures) and the open area to the rear at Nos. 8 & 9 Moore Lane. The proposed development generally comprises a mixed-use scheme accommodating residential units and associated amenities, retail and café / restaurant uses, in two parts located north and south of the Nos. 14 – 17 Moore Street (National Monument / Protected Structures). Building height ranges from 1 – 3 storeys, including retained independent single storey basements. Provision of part of the proposed new public plaza and an archway onto new public square.

See planning notice for broader summary description of development.

Site 5 – Located in the west of 'the Masterplan' area, Site 5 is bounded by Moore Street to the west, Moore Lane to the east, O'Rahilly Parade to the north and Site 4 to the south. Site 5 includes Nos. 22 – 25 Moore Street, Nos. 1 – 8 O'Rahilly Parade and Nos. 13 – 15 Moore Lane. The proposed development generally comprises a mixed-use scheme accommodating office and café / restaurant uses in a single building ranging in height from 2 – 6 storeys (top floor set back) over new single storey localised basement. Provision of a part of the new public plaza.

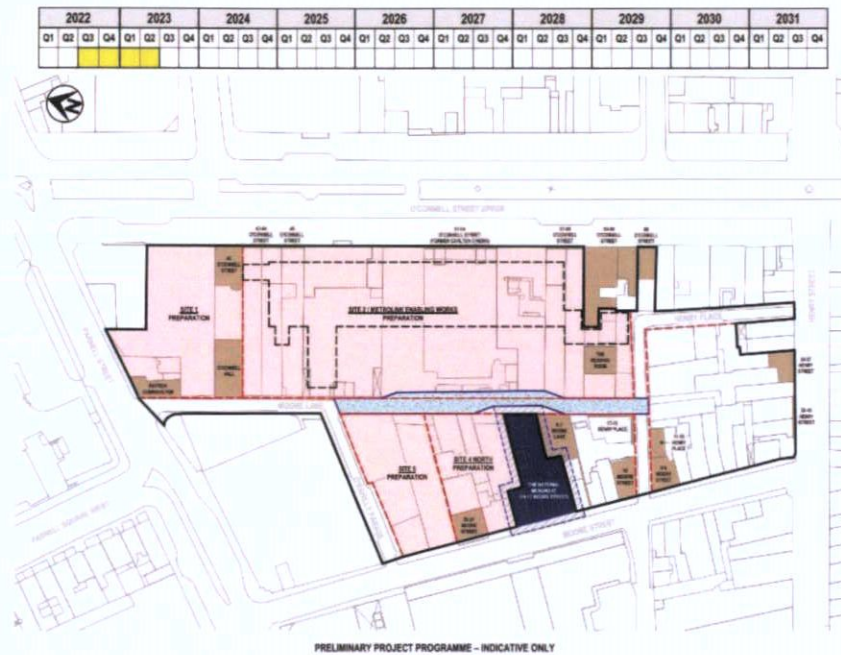
See planning notice for broader summary description of development.

2.4 Construction Stage Sequencing

The following preliminary construction sequencing for each of the sites will be developed by the Main Contractor/Contractors and will be subject to Planning Conditions. The Masterplan Programme and Phasing Strategy with key milestone dates, is shown in Appendix A. The Masterplan Programme broadly follows the following phasing strategy:

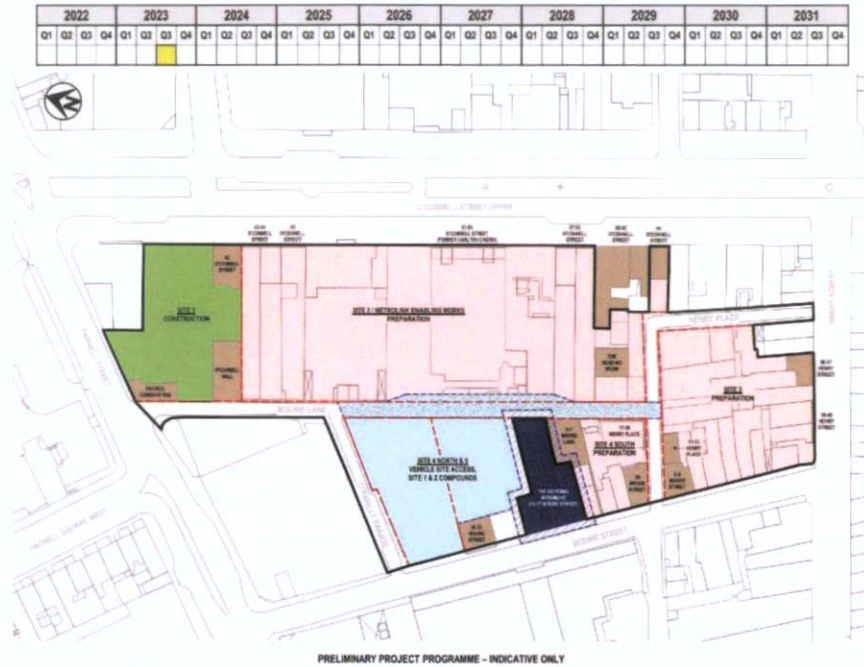
Stage 1 – Site Preparation

- Stage 1 will comprise the site preparation of Site 1, Site 2AB, Site 2C, Site 4 (North) and Site 5.
- A temporary exclusion zone will be implemented around No.14-17 Moore Street (National Monument).



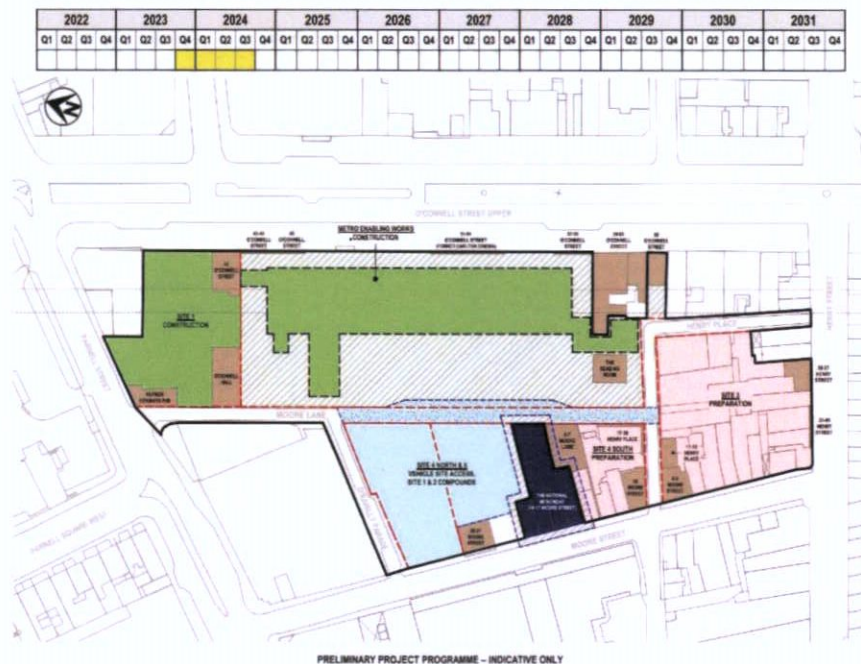
Stage 2 – Site 1 Construction Commences

- Stage 2 will comprise the preparation of Site 2AB, Site 2C, Site 3 and Site 4 (South).
- Site 5 and Site 4 (North) will be used temporarily for vehicle access and compounds.



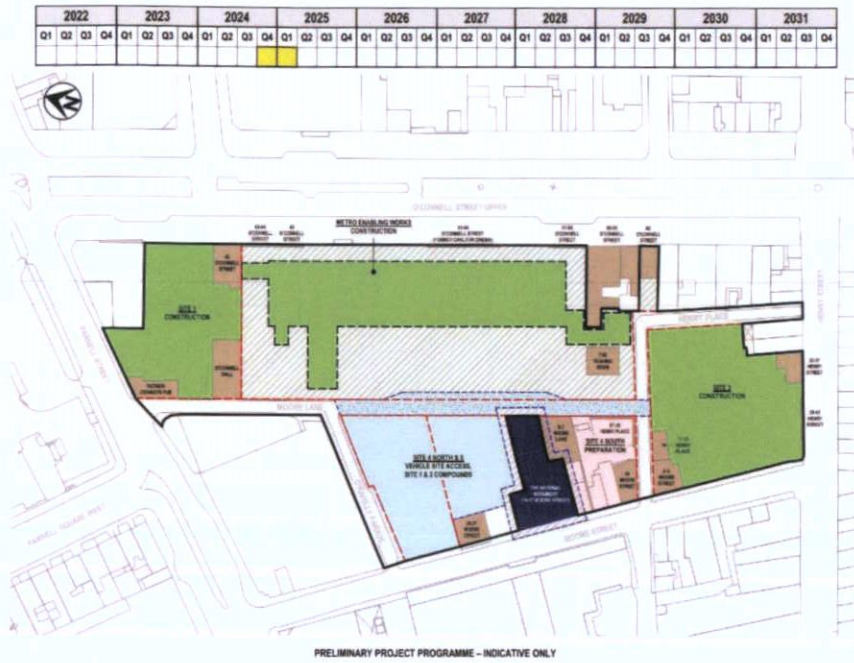
Stage 3 – Construction of MEW

- Construction of MEW commences with the continued construction of Site 1.
- Continued site preparation of Site 3 and Site 4 (South)



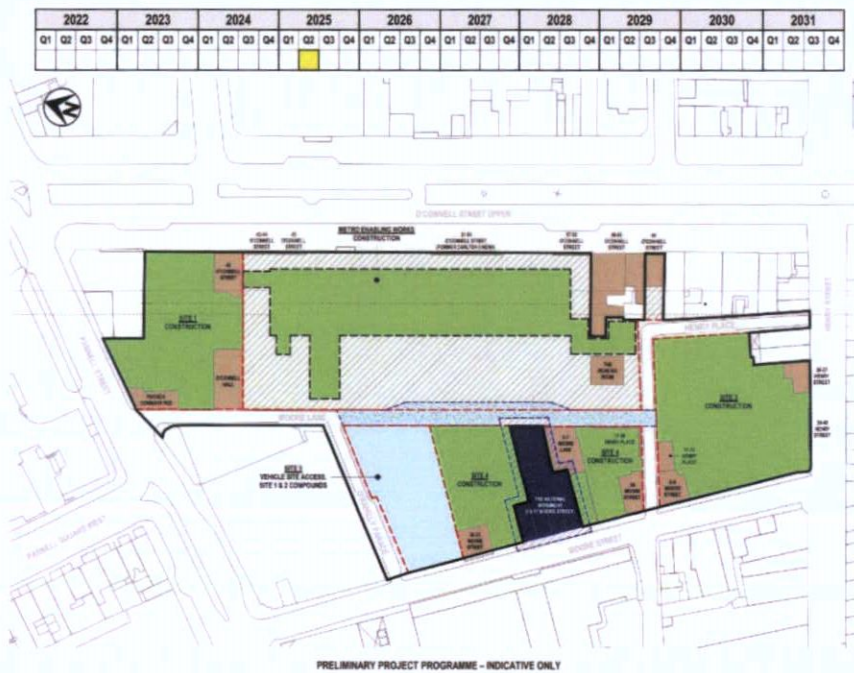
Stage 4 – Construction of Site 3

- Construction of the Site 3 commences with the continued construction of Site 1 and the MEW.
- Site preparation of Site 4 (South) continues.



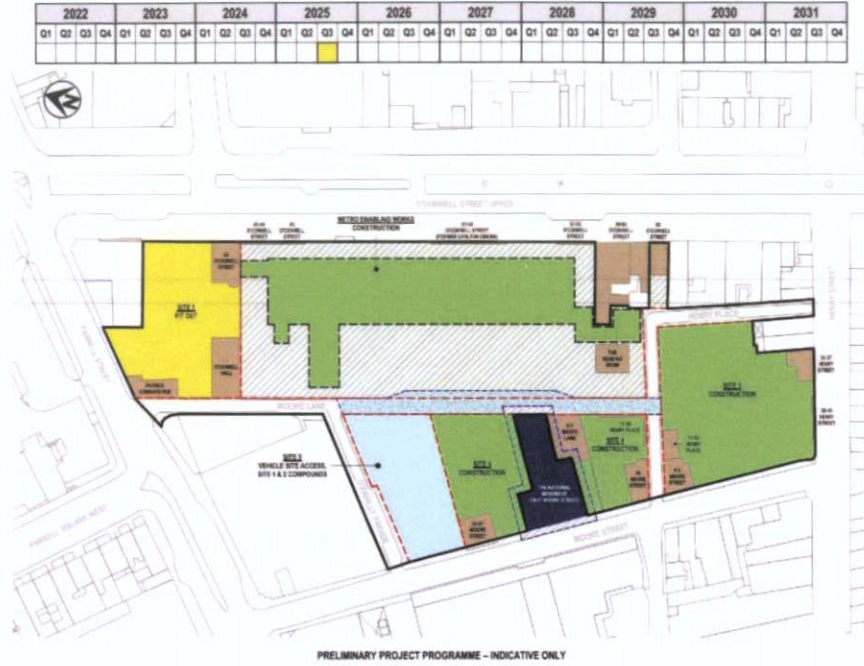
Stage 5 – Construction of Site 4 Commences

- Construction of Site 4 commences with the continued construction of Site 1, the MEW and Site 3.



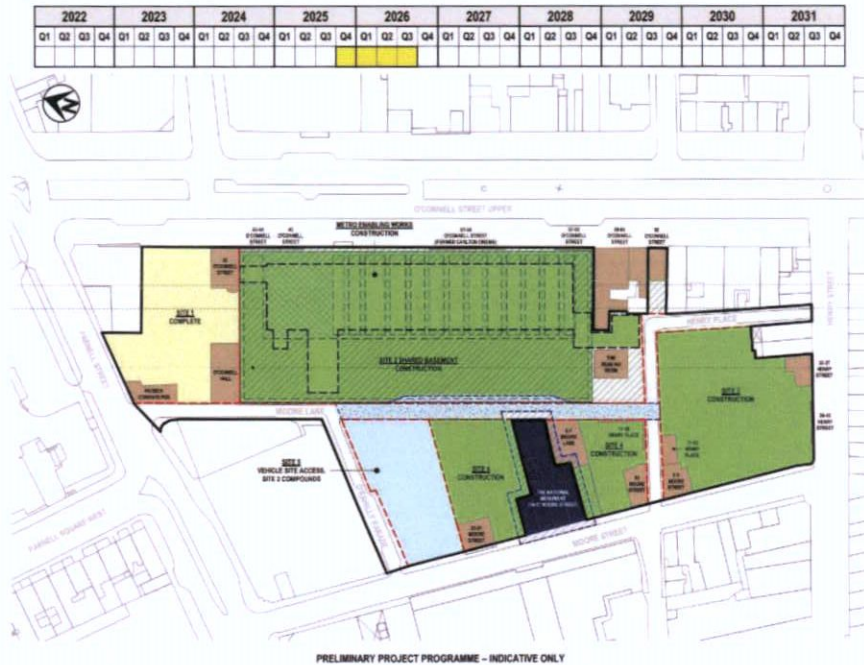
Stage 6 – Fit-Out of Site 1

- Fit-out of Site 1 commences with the continued construction of the MEW, Site 3 and Site 4.



Stage 7 – Site 1 Complete

- Site 1 complete with the continued construction of the MEW, Site 3 and Site 4.



Stage 8 – Site 2AB Commences

- Site 2AB commences with the continued construction of the MEW, Site 3 and Site 4.



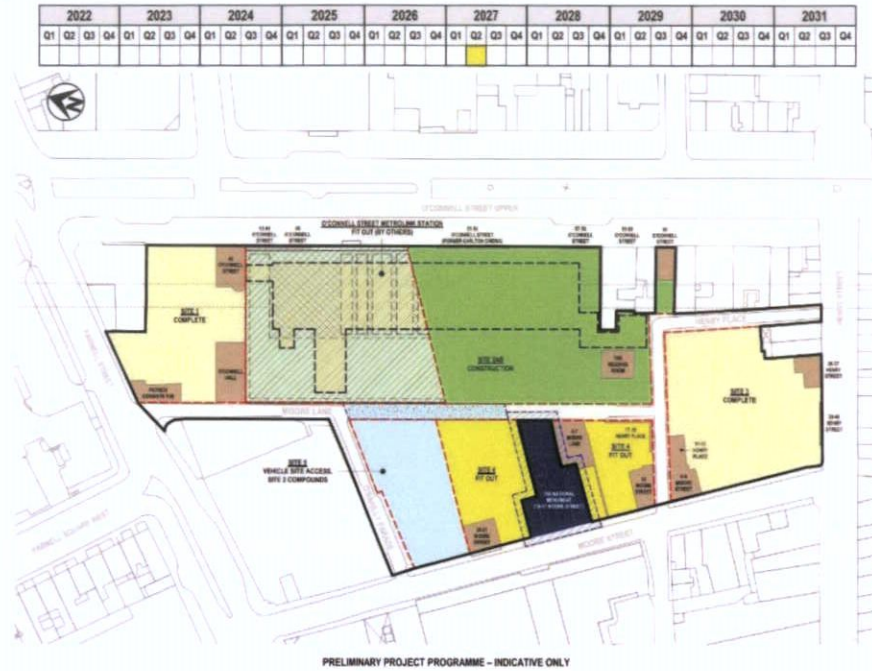
Stage 9 – Site 3 Fit-Out

- Fit-out works commence on Site 3 with the continued construction of the MEW, Site 2AB and Site 4.
- Fit-out of the O'Connell Street Station commences (by others).



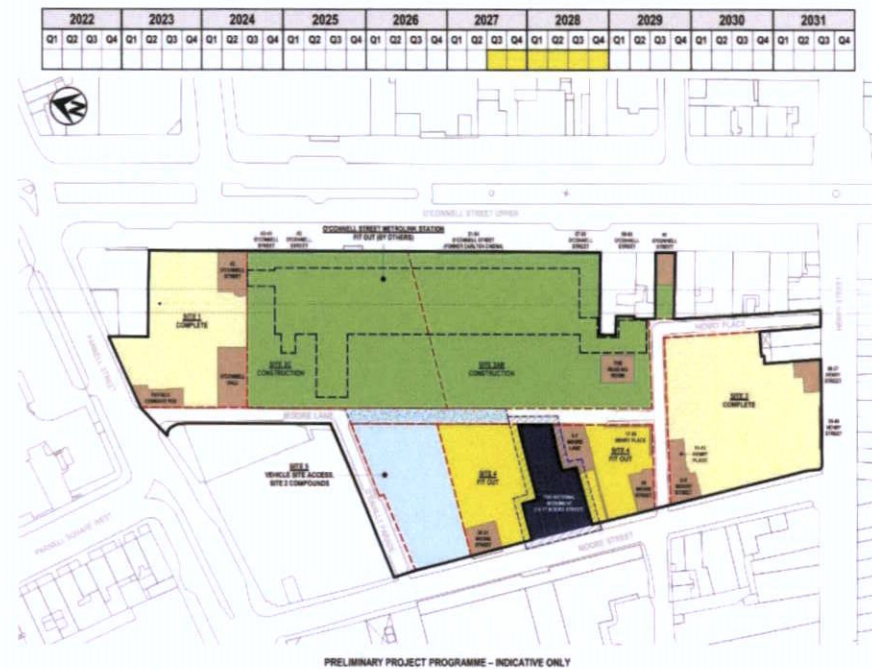
Stage 10 – Site 3 Complete

- Site 3 is completed with the continued construction of Site 2AB and the commencement of fit-out works to Site 4.



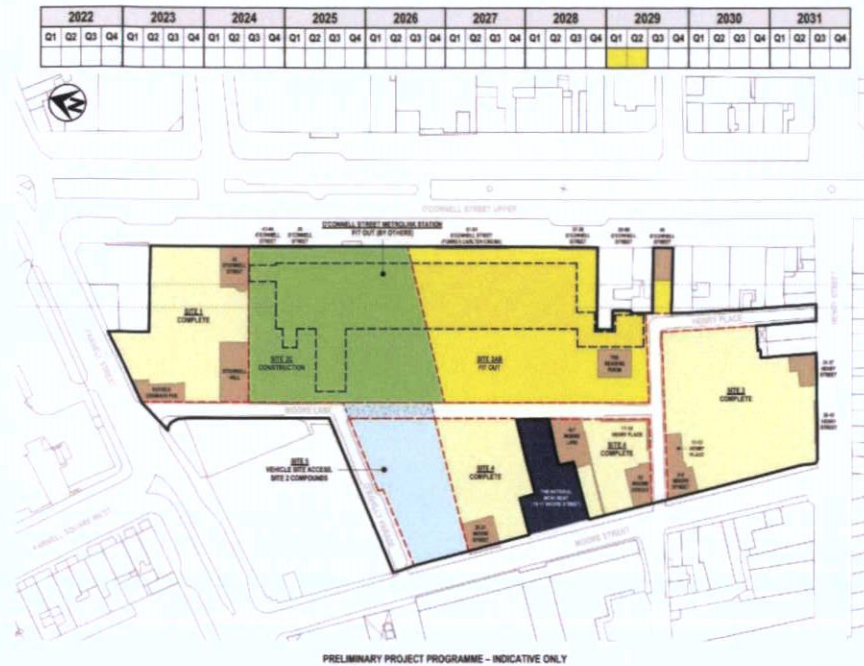
Stage 11 – Site 2C Commences

- Construction of Site 2C commences with the continued construction of Site 2AB and the delivery of fit-out to Site 4.



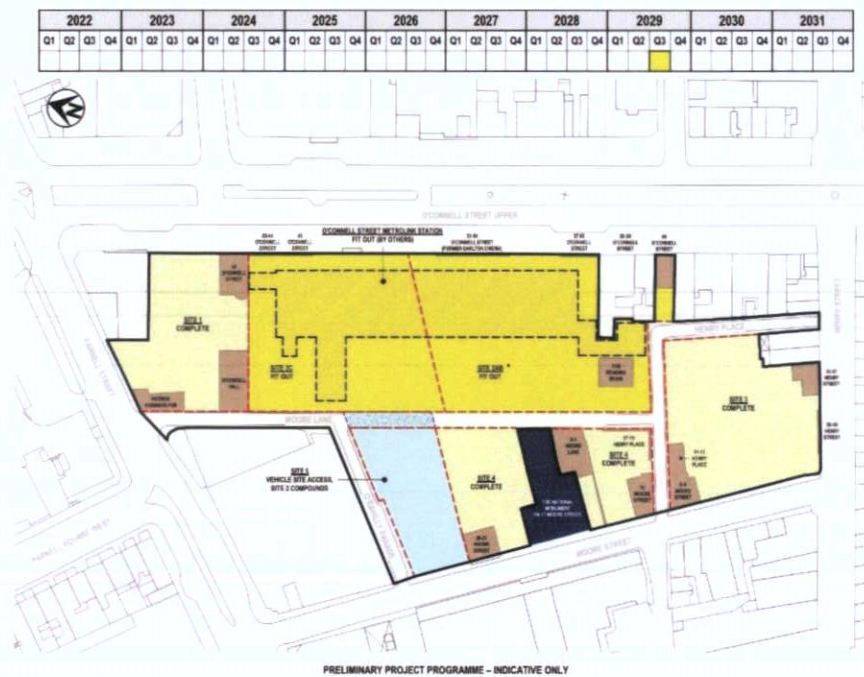
Stage 12 – Site 4 Complete

- Completion of Site 4 with the commencement of fit-out works to Site 2AB.



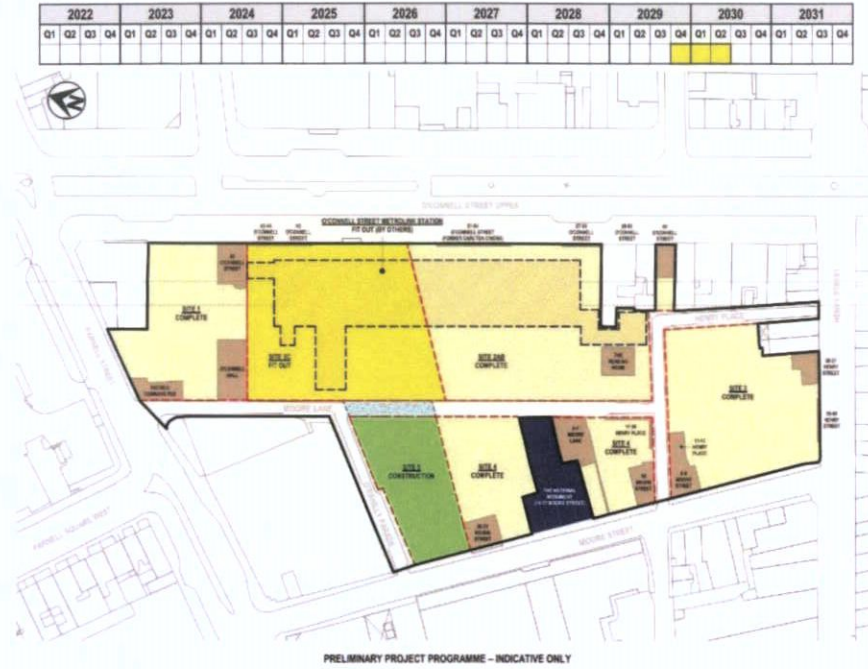
Stage 13 – Fit-out Works to Site 2C

- Fit-out works to Site 2C commences.



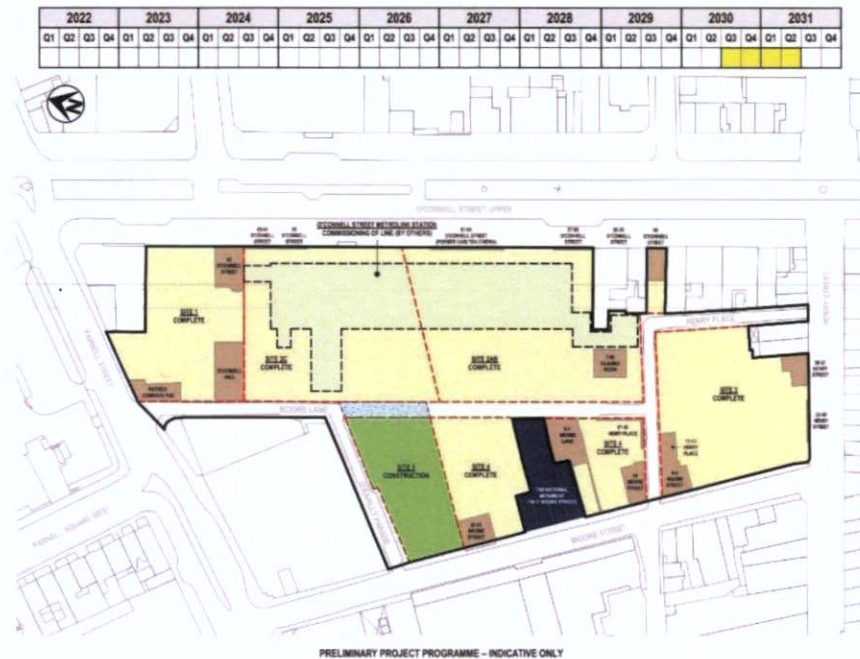
Stage 14 – Completion of Site 2AB

- Completion of Site 2AB and commencement of construction to Site 5 with the continued delivery of fit-out works to Site 2C.



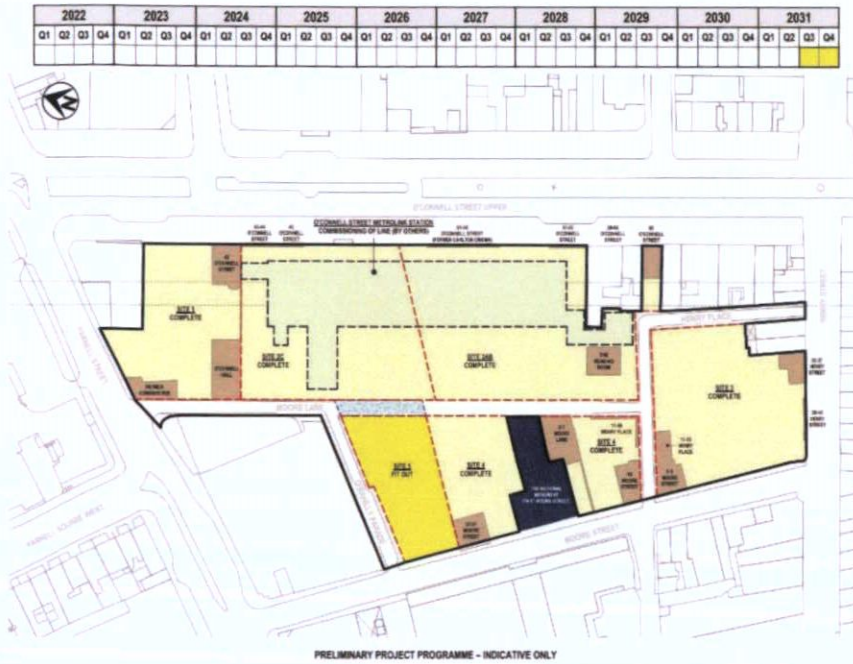
Stage 15 – Completion of Site 2C

- Site 2C completed with continued construction of Site 5.



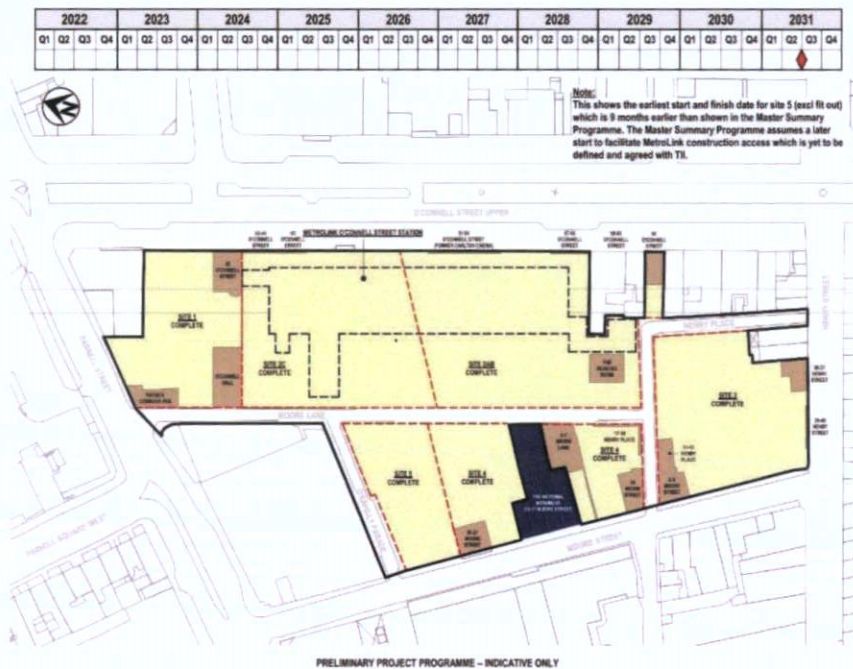
Stage 16 – Fit-out Site 5

- Commencement of fit-out works to Site 5.



Stage 17 – Completion of Site 5

- Completion of works on Site 5



2.5 Key Milestones

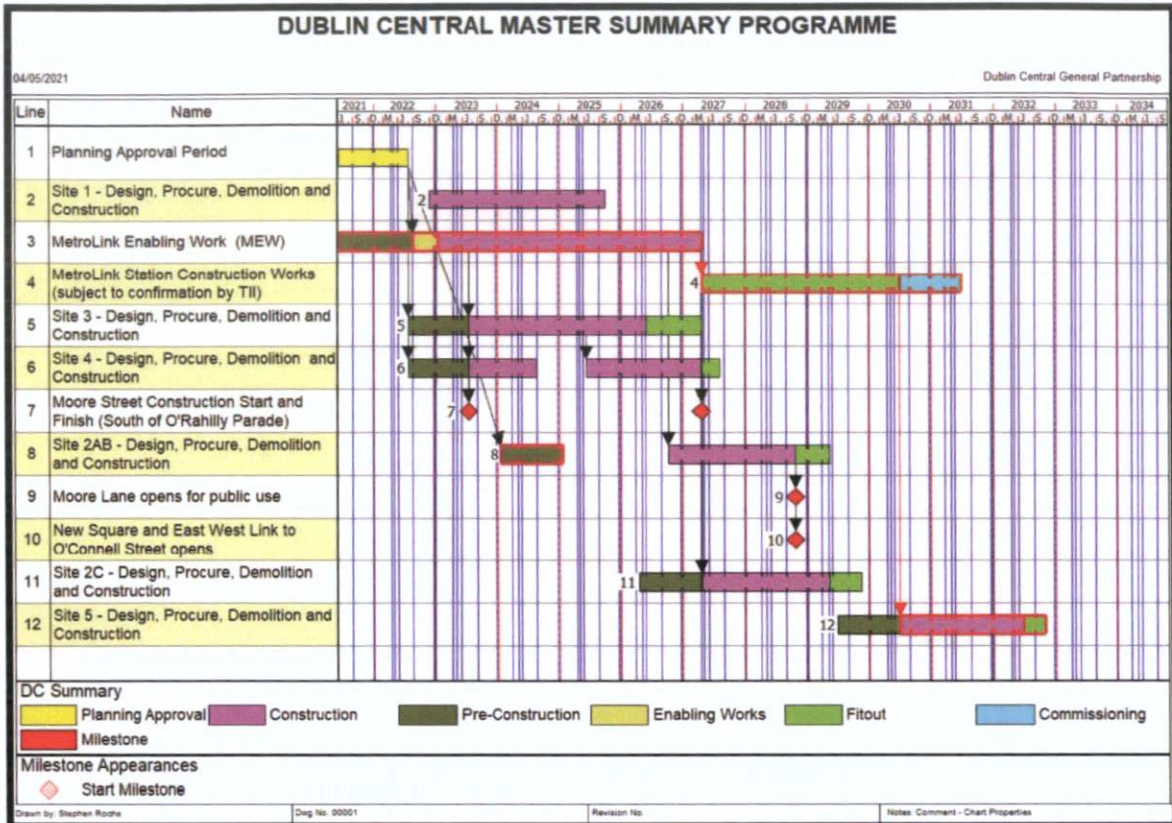


Table 1 – Masterplan Programme

3. Pre-Commencement Measures

The Main Contractor/Contractors will undertake a schedule of pre-commencement measure ahead of the works commencing on site or development phase, these include but are not limited to:

- Submission of all relevant Dublin City Council and Health and Safety Authority pre-commencement notices (including the AF1 and AF2 forms)
- Submission of all relevant agreements, approvals and all pre-commencement requirements outlined in the planning conditions or Third-Parties relevant to the Main Contractor/Contractors (including Hording Licenses, detailed Traffic Management Plans, Irish Water temporary connections, ESB connection agreements, etc).
- Dilapidation surveys to the neighbouring and adjoining properties within the area of the site.
- Condition surveys of the roads and infrastructure adjacent to the development.
- Liaise with adjoining property and business owners regarding the works
- Condition and locations surveys of all existing services within and adjacent to the site including pavements.
- Installation of monitoring regimes to all protected and/or retained structures within the site and adjoining buildings of historical importance. This will include the establishment of base-line readings.

4. General Site Setup

Detailed site setup, logistic, site compound arrangement and hoarding plans are shown in the Outline Construction and Demolition Management Plan relevant to each Site and submitted as separate documents as part of this planning application.

4.1 Site Boundary

Hoarding will be required to each of the Sites and will broadly follow the following parameters.

4.1.1 Site Hoarding

The hoarding will be designed at a later date by the Main Contractor/Contractor and will be designed to minimise impact to the footpaths along Henry Street, Moore Street, Moore Lane, O'Rahilly Parade and O'Connell Street Upper. Where necessary, the hoarding may be designed to incorporate covered walkways and elements of temporary works as part of the façade retention systems, to the agreement and approval of Dublin City Council.

The hoarding line will be maintained at all times during demolition and construction. In the event of the hoarding having to move outwards to facilitate construction activities, this will be done with the agreement of Dublin City Council including obtaining new hoarding licenses as required. If this encroaches on minimum footpath widths, the Main Contractor/Contractor will erect diversions to opposite footpaths to the agreement of Dublin City Council.

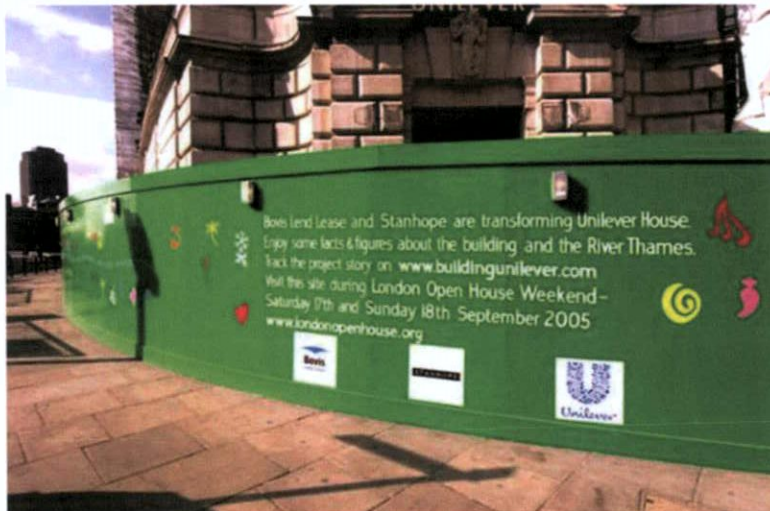


Figure 5 – Typical pavement hoarding with street lighting

Where there are ESB/telecommunication kiosks, light poles and traffic signage on the footpaths these will be maintained by the Main Contractor/Contractor where practical. The hoarding will be constructed around traffic lights and the kiosks to maintain visibility and access to the agreement of Dublin City Council.

4.1.2 Site Compounds

The site compounds will consist of:

- Offices
- Meeting Rooms
- Toilet / Shower Rooms
- Drying Rooms
- Canteens
- Storage Containers

All cabins will be steel securi-type with steel lockable shutters to windows and steel lockable door. All cabins will come to site in good condition and will be maintained in good order throughout the project. Double / triple stacking of cabins may be required with safe stairs and walkways provided to the upper levels of offices.

4.1.3 Site Access & Egress

Safety and ease of access to the site are to be provided for by the Main Contractor/Contractor when planning the works. Separation of vehicular and heavy plant traffic from pedestrians and operatives will be implemented as far as is practical when considering the layout of the site infrastructure and access points.

Where a site access crossing is required on a pavement this will require a dedicated pedestrian management setup to ensure there are no incidents of crossovers between pedestrians and site vehicles. This may require a turtlegate barrier in addition to with semi-permanent barriers along the kerb edge, flagmen to control barriers and flagmen to watch truck movement and pedestrians.

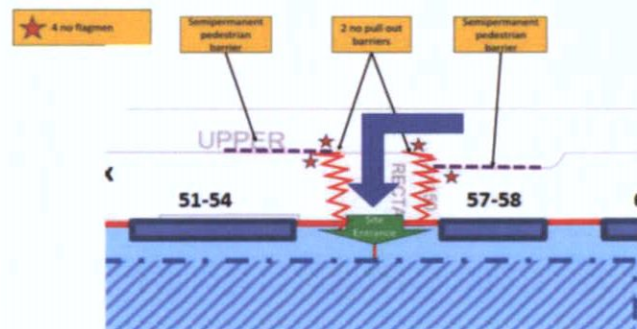


Figure 6 – Typical Pavement Crossover System

4.1.4 Site Logistics

Each development Site will require dedicated tower cranes to service the construction activities. This will include all stages of construction including the building envelope and fit-out lifting requirements. These may be complemented with teleporters, mobiles cranes, hoists and mobile concrete pumps as required.

The construction traffic and pedestrian routes are outlined in the Construction Traffic Management Plan. In general, trucks will be off loaded from the designated laydown areas. Deliveries will typically be on a just in time basis and this system will be strictly controlled by Main Contractor/Contractors who will organise the deliveries. The Main Contractor/Contractors will advise their suppliers on the delivery routes, ensuring the drivers are made aware of the site

location and the correct route to site in accordance with the Dublin City Council heavy goods vehicles cordon restrictions.

If any plant setups are required outside the site, a road lane closure may be required. The road closure license will be obtained from Dublin City Council and an agreed traffic management plan will be implemented as required. Any traffic management measures will be designed by qualified personnel in accordance with Chapter 8 of the Traffic Signs Manual and implemented by Signing, Lighting & Guarding (SLG) trained operatives.

The logistics plan will be presented to workers during the site induction. Refresher training in the logistics plan will be presented in toolbox talks.

4.1.5 Proposed Craneage Strategy

Tower cranes will be required during each of the construction phase of the development. The Main Contractor/Contractors will nominate the location(s) of these once appointed. Mobile cranes may also be utilised on a short-term basis throughout the construction period.

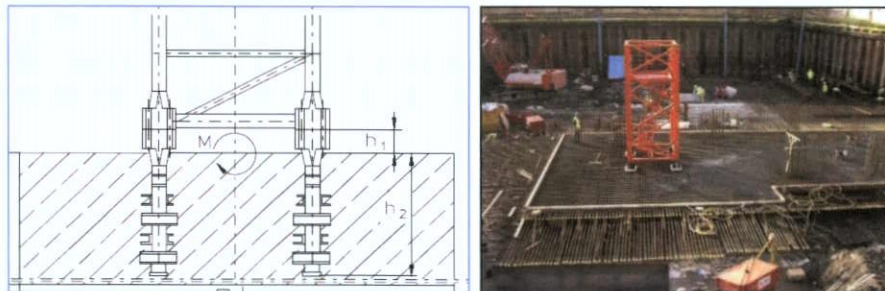


Figure 7 – Typical Tower Crane Anchors

The tower crane bases can be erected on foundation anchors and may be formed as part of the new building foundations.

4.1.6 Site Power, Waste & Drainage

A power supply from ESB Networks to power both the compound and the construction site will be applied for by the Main Contractor/Contractors. The size of supply will be calculated to ensure it is sufficient to power both the site compounds and construction site activities. A dedicated power supply will be provided for the tower cranes, task lighting, power tools and charging stations for plant such as electric hoists.

In the event of any delays securing the required power supply to power offices and cranes, generators may be required. Diesel generators will have sound enclosures and will be regularly serviced to prevent noise and odour pollution and setup in a spill tray to prevent any spillage contaminating the ground. Temporary site lighting will be installed to provide safe and well-lighted walkways around the site compounds and task lighting to the construction sites.

Water and drainage will be required to service the site toilets and canteen facilities. The Main Contractor/Contractors will carry out a site survey to identify the locations of the water and foul drainage connections to each of the sites. It will be the Main Contractor/Contractors responsibility to apply to Irish Water for connections to the water main and foul drain, ideally utilising existing connections.

4.1.7 Working Hours

The working hours will be dictated by the planning conditions and are expected to be as follows:

Days	Start Time	Finish Time
Monday-Friday	8:00	18:00
Saturday	8:00	14:00
Sunday	No work permitted	No work permitted
Bank or Public Holiday	No work permitted	No work permitted

Working times will be within the hours permitted by the Planning Decision for the development. It may be necessary to work outside these hours at times, for example for early morning concrete pours and late evening concrete finishing. The Contractor will consult Dublin City Council regarding out of hours working and local residents and businesses will be informed of any out of hours works required. A planning derogation will be applied for to Dublin City Council when out of hours working is required. The terms and conditions of the planning derogation will be strictly adhered to at all times.

4.1.8 Security

In addition to the hoard to the site perimeter the following measures will be adopted by the Main Contractor/Contractors:

- A dedicated site security team with 24hr access to the site and direct contact with the local An Garda Siochana station.
- Each person on site will have been inducted and fingerprint access control will be used for site entry and exit. The Contractor will know who is on site at all times.
- There will be a site CCTV system which may be extended to cover the footpaths and roads around the site (depending on the GDPR regulations).
- Hoarding lighting will be incorporated to increase the general illumination levels around the site.
- Siting the cabins behind the hoarding with windows overlooking the streets will provide a greater degree of natural surveillance to the area to ward against anti-social behaviour.



Figure 8 – Typical Site Security Measures

5. Construction Traffic Management Plan

A detailed site specific Preliminary Construction Traffic Management Plan has been prepared and submitted as a separate document for planning.

During the construction period, there will be a number of high activity phases where construction related traffic will be significant.

The most intensive of these phases are likely to be:

1. Demolition of existing buildings and removal of demolition waste off site.
2. Excavation of Metro box and disposal of the excavated spoil.
3. Pouring of the concrete box and frame for the station.

The nature of the construction process is such that the traffic generated will comprise short periods of intense activity interspersed with longer periods with relatively low level of truck movements into and out of the site. In addition, the various activities will occur at multiple locations around the site giving rise to a need for access for construction traffic from the street.

5.1 Site Measures to Minimise Impact from Construction Traffic

The measures, which are proposed to be operational at this site will include:

- Use of properly designed access and egress points to minimise impact on both external traffic and local amenity.
- Check on each arriving and departing vehicle at the site entrance from the public street.
- Use of banksman and/or traffic lights to control exit of construction vehicles onto public road.
- Controlled off-site HGV holding area where deliveries are called up as required. No HGV's waiting outside site.
- Issue of instructions and maps on getting to site to each sub-contractor to avoid 'lost' HGV's disrupting traffic.
- Establishment and maintenance of HGV holding areas within the site.
- Ongoing assessment of the most appropriate routes for construction traffic to and from the site.
- Interface with operation of HGV traffic from port terminals and suppliers.
- Restriction of work hours to industry standard working hours.

5.2 Site Control Measures

The designated and operational on-site control measures, which will be established and maintained at this site, will include:

- Designated hard routes through site.
- Each departing vehicle to be checked by banksman.
- Wheel wash facility at egress point.
- Provision and facilities to cover lorry contents, as necessary.
- Controlled loading of excavated material to minimise risk of spillage of contents.
- Spraying/damping down of excavated material on site by dedicated crews.
- Use of known routes for lorries to monitor impact on local area.
- Facility to clean local roads if mud or spillage occurs.

5.3 Car Parking

In general, there will not be car parking for operatives on site. Personnel will be encouraged and informed of the numerous public transport options available to access the works.

5.4 Wheel Washing Facility Requirement

The Main Contractor/Contractors will ensure that the enabling works packages will include provisions for a wheel washing facility with water collection and filtering before any discharge to the public surface water drainage system. Trucks discharging concrete should have a wash out area to clean the chute prior to entering the wheel wash.



Figure 9 – Typical Wheel Washing Facility

6. Construction and Demolition Waste Management

AWN Consulting Ltd. has prepared a Site-specific Construction & Demolition Waste Management Plan (C&D WMP) on behalf of Dublin Central GP Limited and is submitted as part of this planning application [document reference CB/20/11784WMR01].

The C&D WMP provides information necessary to ensure that the management of C&D waste at the site is undertaken in accordance with the current legal and industry standards including the Waste Management Acts 1996 - 2011 and associated Regulations, Protection of the Environment Act 2003 as amended, Litter Pollution Act 1997 as amended and the Eastern-Midlands Region Waste Management Plan 2015 – 2021.

In particular, the C&D WMP aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also seeks to provide guidance on the appropriate collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

The C&D WMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of waste to be generated by the proposed development and makes recommendations for management of different waste streams.

6.1 Non-Hazardous Construction Waste

There will be waste materials generated from the demolition and renovation of the existing buildings, hardstanding areas on site, as well as from the further excavation of the building foundations. The volume of waste generated from demolition will be more difficult to segregate than waste generated from the construction phase, as many of the building materials will be bonded together or integrated i.e. plasterboard on timber ceiling joists, steel embedded in concrete etc.

There will be soil, stones, clay and made ground excavated to facilitate construction of new foundations, underground services, and the installation of the proposed basements. The preliminary estimated 163,490m³ of material will need to be excavated to do so. There is limited chance for reuse of material onsite and it is envisaged that all material, will need to be removed offsite due to the limited opportunities for reuse on site. This will be taken for appropriate offsite reuse, recovery, recycling and/or disposal.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and supply of materials will also be generated. The contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

Waste will also be generated from construction workers e.g. organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided on site during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

6.2 Potential Hazardous Wastes Arising

6.2.1 Contaminated Soil

In 2008 an initial joint geotechnical and environmental site investigation was undertaken (by O' Callaghan Moran & Associates) comprising the excavation of trial pits, the installation of boreholes in the subsoils and bedrock and the collection and testing of soil and groundwater samples. The intrusive investigations were confined to open areas in the middle of the site and around the site parameter. It is envisaged that further site investigations and environmental soil analysis will be undertaken post demolition and prior to any excavated material being removed from site.

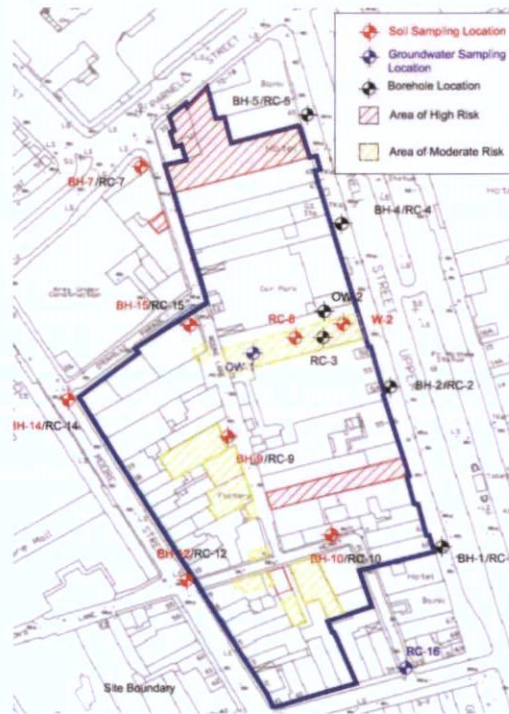


Figure 10 – Areas of Potential Contaminated Material

Three (3) samples of the fill material from BH-7, 9 and 10 were analysed for Total Petroleum Hydrocarbons (TPH), BETX (benzene, toluene, ethylbenzene and xylene), PAH (polycyclic aromatic hydrocarbons) and metals (arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, tin, selenium and zinc).

Nineteen (19) samples, of the fill and natural ground from, BH-7, 9, 10, 12, 14, 15, RC-8 and W-2, were tested for the WAC, which included Total Organic Carbon (TOC), BETX, PCBs (polychlorinated biphenyls, 7 congeners), Mineral Oil (C10 to C40) and PAH sum of 17. They were also subjected to leach testing at a liquid to solid ratio of 10:1 and the leachate analysed for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, tin, selenium, zinc, chloride, fluoride, sulphate, phenols, dissolved organic carbon and total dissolved solids.

If any potentially contaminated material is encountered, it will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' using the HazWasteOnline application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the EC Council Decision 2003/33/EC, which establishes the criteria for the acceptance of waste at landfills.

In the event that Asbestos containing materials (ACMs) are found, the removal will only be carried out by a suitably permitted waste contractor, in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010. All asbestos will be taken to a suitably licensed or permitted facility.

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the contractor will notify DCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s).

6.2.2 Fuel/Oils

Fuels and oils are classed as hazardous materials; any on-site storage of fuel/oil, and all storage tanks and all draw-off points will be bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and the site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil waste generated at the site.

6.2.3 Invasive Plant Species

An ecological site survey was undertaken by Scott Cawley Ecology in June 2020. This included a site walkover survey of the entire site, and around part of the outside perimeter to search for any schedule 3 invasive species. Japanese Knotweed *Fallopia japonica*, which is listed on the Third Schedule of the Birds and Habitats Regulations, was not recorded on the site.

Japanese Knotweed (*Fallopia japonica*) is an alien invasive species listed under schedule 3 of Regulations SI No. 355/2015. SCE's report concludes that it is not present on this site and there was no indication that it is growing in the immediate vicinity.

6.2.4 Asbestos

Multiple asbestos refurbishment/demolition survey were undertaken by About Safety Ltd in September and October 2020. The scope of the survey's were confined to all accessible areas of the existing buildings which are due for demolition and/or refurbishment in the future.

Asbestos Containing Materials (ACM) were detected in several locations within some of the buildings including but not limited to floor tiling, roof slates, roof felt, rope seals, bitumen and woven rope.

Removal of asbestos or ACMs will be carried out by a suitably qualified contractor and ACM's will only be removed from site by a suitably permitted/licenced waste contractor. in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010. All material will be taken to a suitably licensed or permitted facility.

6.2.5 Other known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, WEEE (containing hazardous components), printer toner/cartridges, batteries (Lead, Ni-Cd or Mercury) and/or fluorescent tubes and other mercury containing waste may be generated from during C&D activities or temporary site offices. These wastes, if generated, will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

6.3 Main Construction and Demolition Waste Categories

AWN Consulting Ltd. has prepared Site-specific Construction & Demolition Waste Management Plan submitted as part of this planning application [document reference CB/20/11784WMR01] and is summarized below.

The main non-hazardous and hazardous waste streams that could be generated by the demolition and construction activities at a typical site are shown in. The List of Waste (LoW) code (as effected from 1 June 2015) (also referred to as the European Waste Code or EWC) for each waste stream is also shown.

Waste Material	LoW/EWC Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

* individual waste type may contain hazardous substances

Table 2. Typical waste types generated and LoW codes (individual waste types may contain hazardous substances)

6.4 Demolition Waste Generation

The demolition stage will involve the demolition of multiple brick buildings onsite. The demolition areas are identified in the planning drawings provided with this application. The anticipated demolition waste and rates of reuse, recycling/recovery and disposal is shown in Table 3 and 4.

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	2027.9	0	0.0	85	1723.7	15	304.2
Concrete, Bricks, Tiles, Ceramics	11491.4	30	3447.4	65	7469.4	5	574.6
Plasterboard	901.3	30	270.4	60	540.8	10	90.1
Asphalts	225.3	0	0.0	25	56.3	75	169.0
Metals	3379.8	5	169.0	80	2703.9	15	507.0
Slate	1802.6	0	0.0	85	1532.2	15	270.4
Timber	2703.9	10	270.4	60	1622.3	30	811.2
Asbestos	7.0	0	0.0	0	0.0	100	7.0
Total	22539.2		4157.2		15648.6		2733.4

Table 3. Estimated off-site reuse, recycle and disposal rates for demolition waste from the Masterplan [extract AWN document ref. CB/20/11784WMMR01]

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1631.9	10	163.2	80	1305.5	10	163.2
Timber	1384.6	40	553.9	55	761.5	5	69.2
Plasterboard	494.5	30	148.4	60	296.7	10	49.5
Metals	395.6	5	19.8	90	356.0	5	19.8
Concrete	296.7	30	89.0	65	192.9	5	14.8
Other	741.8	20	148.4	60	445.1	20	148.4
Total	4945.1		1122.5		3357.7		464.8

Table 4. Estimated off-site reuse, recycle and disposal rates for construction waste from the Masterplan [extract AWN document ref. CB/20/11784WMMR01]

6.5 Appointment of C&D Waste Manager

The Main Contractor/Contractors will appoint a C&D Waste Manager. The C&D Waste Manager will have overall responsibility for the implementation of the project Waste Management Plan (WMP) during the construction phase.

Copies of the Waste Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed regarding the objectives of the Waste Management Plan and informed of the responsibilities which fall upon them as a consequence of its provisions. Where source segregation, selective demolition and material reuse techniques apply, each member of staff will be given instructions on how to comply with the Waste Management Plan.

Posters will be designed to reinforce the key messages within the Waste Management Plan and will be displayed prominently for the benefit of site staff.

6.6 C&D Record Keeping

It is the duty of the Main Contractor/Contractor's C&D Waste Manager to ensure that necessary licenses have been obtained as needed. Each consignment of C&D waste taken from the site will be subject to documentation which will conform with the table below along with Transportation Dockets to ensure full traceability of the material to its final destination.

7. Protection of Buildings during Construction

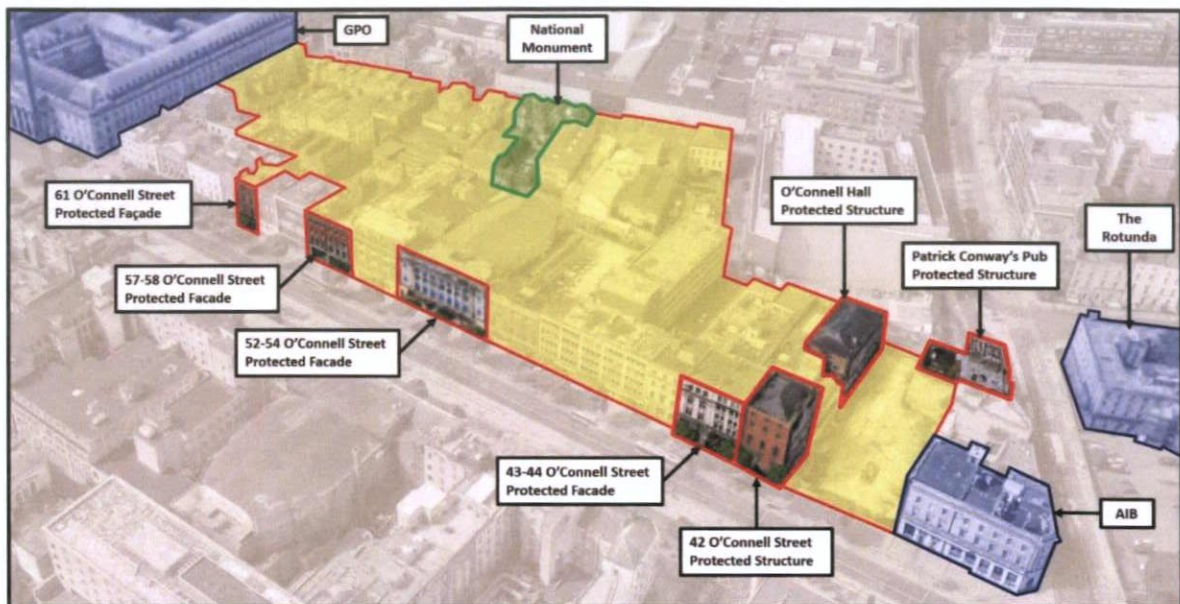


Figure 11 – Protected Heritage Assets within/adjacent to Dublin Central

Of particular importance to the development are the historical assets and protected structures both within and adjoining the overall site development, this includes the National Monument that adjoins Site 4 of the development.

Protected buildings within the site include:

- 42 O'Connell Street Upper & O'Connell Hall
- 70 Parnell Street / Conway's Pub

Protected facades (above ground only) within the site include:

- 43-44 O'Connell Street Upper
- 52-54 O'Connell Street Upper (former Carlton Cinema)
- 57-58 O'Connell Street Upper
- 61 O'Connell Street Upper

Other retained buildings of historical importance (in-part/whole) currently proposed within the site development include:

- 5 Henry Place (façade)
- 11-13 Henry Place
- 39-40 Henry Street (façade)
- 36-37 Henry Street
- 8-9 Moore Street
- 10 Moore Street
- 12-13 Moore Street (party wall only)
- 20-21 Moore Street
- 4-5 Moore Lane (to be rebuilt)
- 6-7 Moore Lane
- 10 Moore Lane
- 20-21 Moore Street
- 'The Reading Room' No.59-60 O'Connell Street Upper

7.1 Basement Impact Assessment

The Basement Impact Assessment (BIA) including a Ground Movement Analysis, is included as part of the planning document.

The Ground Movement Analysis considered each stage of the development including demolition, piling, bulk excavation and construction of the each phase of the development and relevant to each Site. Predicted ground movements resulting from the works have been analysed and are included as part of the Basement impact Assessment.

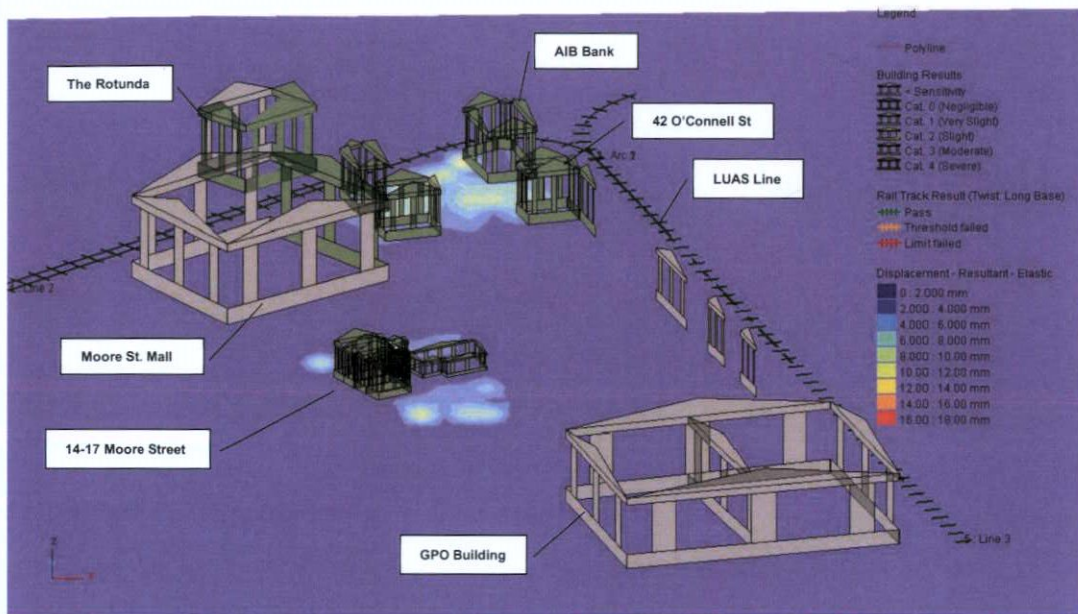


Figure 12 – Extract from BIA: Predicted Ground Movement to Protected Structures (PDisp Model)

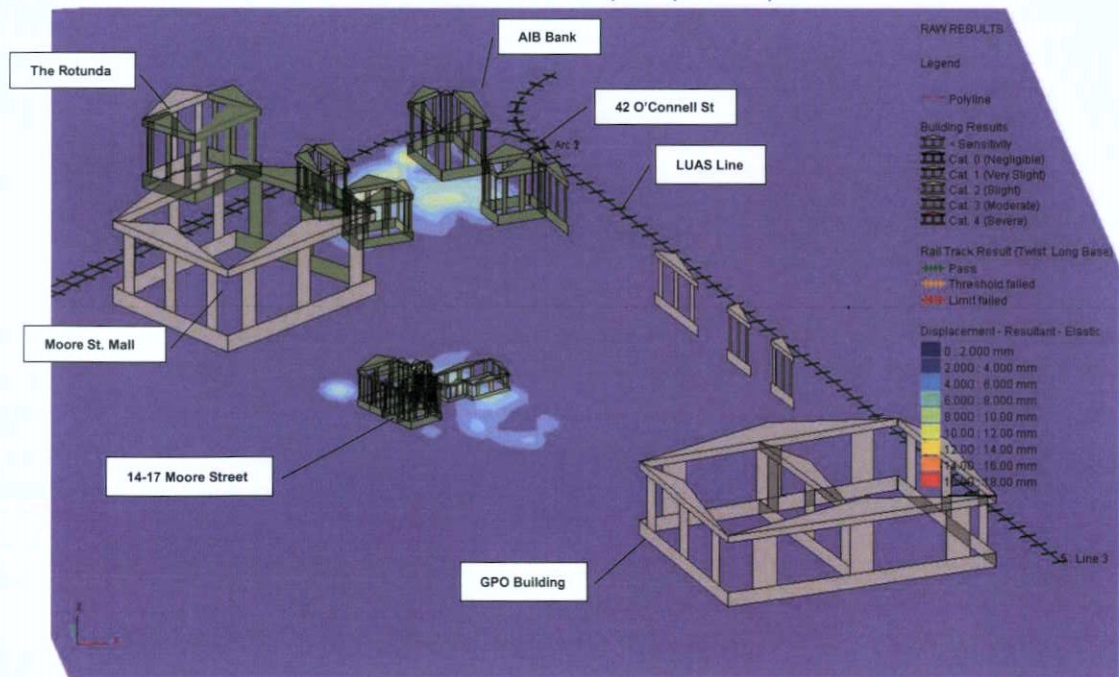


Figure 13 – Predicted Ground Movement to Protected Structures (XDisp Model)

The overall aim of the Ground Movement Analysis included the predicted potential impact of the proposed development to the adjacent buildings and retained structures within the site. A building damage assessment was used in accordance with CIRIA C760 'Criteria of building damage assessment'.

The maximum predicted results predict that the potential damage for all heritage buildings and protected facades remains at categories ranging of Category 0 'Negligible' to Category 1 'Very Slight' damage during all construction and demolition stages. A full schedule of the predicted ground movement and the associated damage category for all nearby buildings and retained façade is shown in Basement Impact Assessment included as part of planning.

According to the Subterranean Construction Method Statement [report STR15283-PR-0010-MS] and in accordance with the DCC guidance, the damage to the existing buildings should not exceed Category 2 generally and Category 1 for protected buildings.

The predicted movement results for the Luas light rail tracks do not show any onerous conditions for the assets and the calculated movements are below the limits proposed by the Code of engineering practice for works on, near or adjacent to the Luas light rail system. Therefore, the proposed works of Dublin Central development do not highlight any concerns to the day-to-day operations.

7.2 National Monument & Protected Structures

Particular consideration has been given to the protected structures within and adjacent to the site including 14-17 Moore Street, the National Monument. 14-17 Moore Street buildings have been designated National Monument status and are subject to a preservation order (PO 1/2007) and are under the ownership of the State and the Office of Public Works (OPW).

The predicted ground movement in relation to 14-17 Moore Street, the National Monument, shows that it is within the acceptable limits and does not exceed Category 1 damage. Similarly, the predicted ground movements to 42 O'Connell Street, O'Connell Hall and 70 Parnell Street (Conway's Pub) are within the acceptable limits and do not exceed Category 1 damage.

In order to further safeguard 14-17 Moore Street, it is proposed to maintain a temporary exclusion zone around the protected buildings during the development stages, subject to agreement with the Main Contractor/Contractors and their construction methodology and sequence of works. The exclusion zone sterilises the existing structure from the adjacent construction activities and further mitigates the risk from noise and vibration.

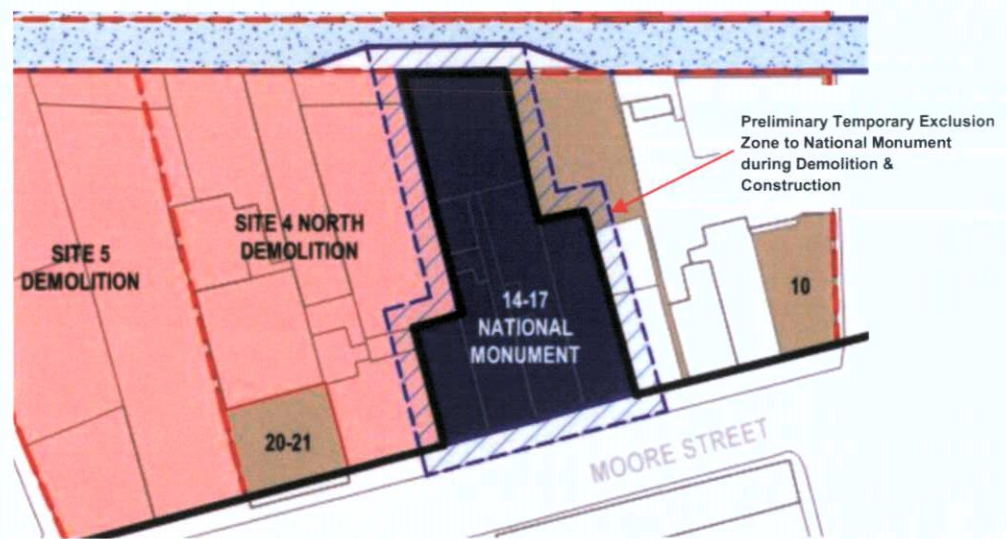


Figure 14 – Temporary Exclusion Zones to Protected Structures

7.3 Temporary Works

Particular consideration has been given to the retained and/or protected structures on or adjacent to the site. These shall be protected during demolition and construction via extensive temporary works required throughout the development that will be coordinated and incorporated into the permanent works.

Outline preliminary temporary works arrangements are specific to each Site and reference should be made to the Outline Construction and Demolition Management Plan specific to each Site – submitted as part of this planning application.

7.4 Movement Monitoring of Retained and Existing Structures

Prior to demolition of the existing building, an external survey control system is to be established around the site, including all protected structures, retained buildings, retained facades and the National Monument.

This will be carried out using either traditional closed traverse surveying techniques or continuous automated total station (AMTS) monitoring of movement, depending on the sensitivity of the existing buildings and proposed method of construction/demolition. The form of monitoring will be subject to the condition of the existing structures following site surveys. The Contractor will ensure there are sufficient external control stations to allow for the continuous monitoring of the structures during and after demolition and throughout the construction stage.

Details of the proposed monitoring regime are specific to each Site and reference should be made to the Outline Construction and Demolition Management Plan specific to each Site – and submitted as part of this planning application.