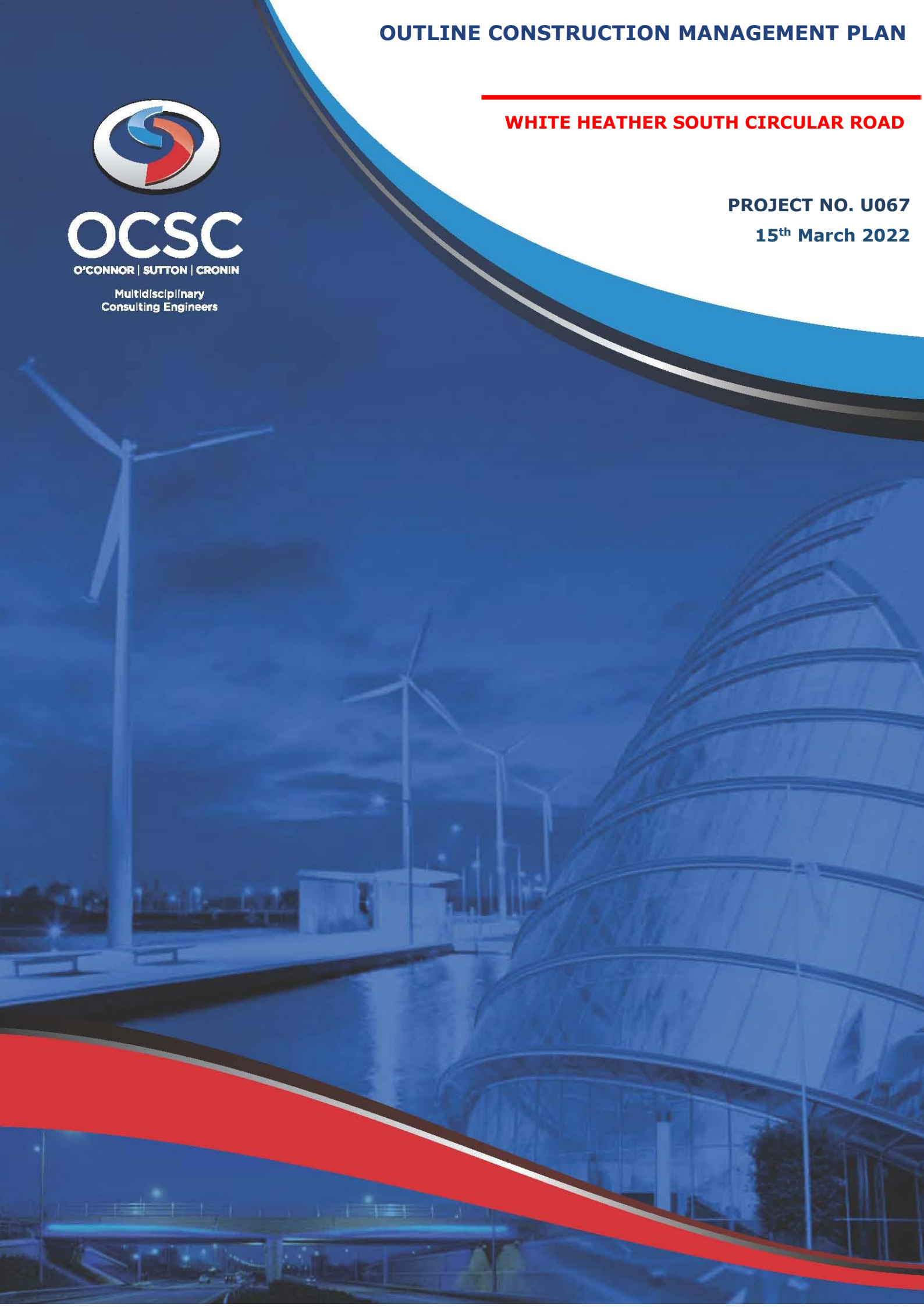
OUTLINE CONSTRUCTION MANAGEMENT PLAN

WHITE HEATHER SOUTH CIRCULAR ROAD

PROJECT NO. U067

15th March 2022

OCSC
O'CONNOR | SUTTON | CRONIN
Multidisciplinary
Consulting Engineers



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NOTICE

DOCUMENT CONTROL & HISTORY

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1 INTRODUCTION

1.1 Appointment

O'Connor Sutton Cronin (OCSC) have been appointed by our client *U and I (White Heather) Limited*, to prepare an Outline Construction Management Plan for a Strategic Housing Development at White Heather Industrial Estate, South Circular Road, Dublin 8.

1.2 Administrative Jurisdiction

The proposed development site is located within the administrative jurisdiction of Dublin City Council (DCC) whose offices are located at the Civic Offices, Wood Quay, Dublin 8.

1.3 Site Location

The subject site is located adjacent to the Grand Canal in the Dolphin's Barn area of Dublin City as shown in Figure 1 and is immediately bound by:

- Grand Canal to the south;
- Saint James's Terrace to the west
- South Circular Road to the north; and
- Priestfield Cottages to the east.

The existing site measures approximately 1.535Ha and is in use as an industrial estate. There is up to 10No. industrial warehouse units on site and ancillary office structures. Some of the occupiers of the industrial units comprise, An Post Dublin 8 Delivery Office, Building Staff Solutions Dublin and Storage World Self Storage. The internal hardstanding area of the site measures 4800m2 and is predominantly used for car parking. There is very little to no soft landscape areas on the existing site except for the Grand Canal embankment along the site southern boundary.

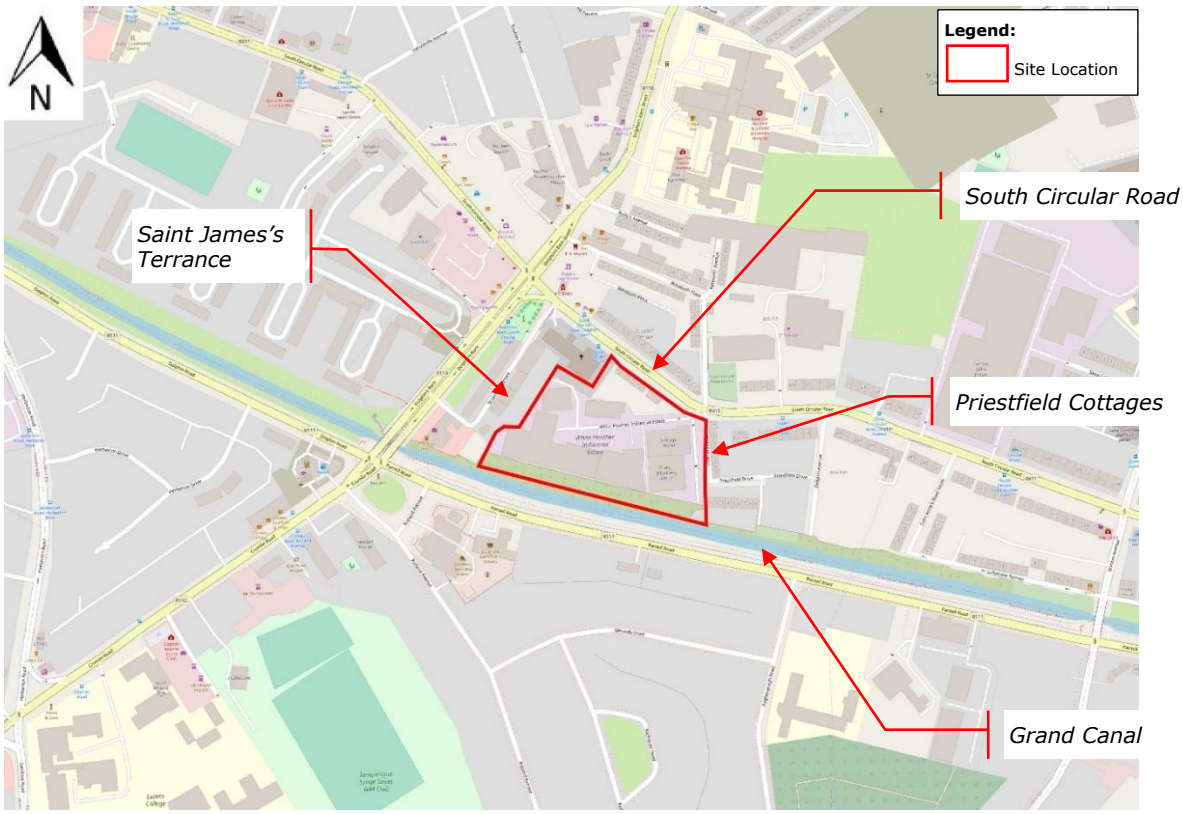

Figure 1: Site Location

Figure 2: Google Maps 3D image of existing site looking southwest

1.4 Development Overview

Permission is sought by U and I (White Heather) Limited for a Strategic Housing Development at the White Heather Industrial Estate, South Circular Road, Dolphin's Barn, Dublin 8 and No. 307/307a South Circular Road, Dublin 8 and an industrial building at 12a St James's Terrace. The 1.535ha site is bounded by the Grand Canal to the south; Our Lady of Dolours Church and residential dwellings on the South Circular Road to the north; Priestfield Cottages to the east; and residential dwellings at St James's Terrace to the west.

A new residential neighbourhood development of 335 no. units is proposed to make efficient use of this residentially zoned site, which benefits from high-quality amenity space along the Grand Canal and access to high-quality transport links. The site benefits from the opportunity to access

the existing Dolphins Barn neighbourhood facilities, as well as enhancing the connectivity of the area for the Dublin 8 community as a whole. A core principle of the proposed residential scheme is to put residential amenity and recreation to the fore, opening up the site and the local area to

the Grand Canal.

The proposed development is intended to provide for a vibrant and diverse community, while delivering a connected residential neighbourhood which knits in to both the established and the emerging residential developments in the area. High-quality landscaping and public realm, with a

focus on the creation of distinctive character areas is proposed. A new street will run east-west across the north of the site and the creation of a new public space at the heart of the proposed scheme will connect to a publicly accessible linear park along the canal to the south. Permeability is a key feature of the proposed pedestrian realm, including a mix of dedicated and shared surface areas through the site with a c. 190 m continuous amenity strip along the Grand Canal Linear Park.

The entrance to the scheme will be from the existing junction at the South Circular Road, which will be reconfigured and upgraded. The existing access road at St James's Terrace will provide pedestrian access only to the development. Car parking is proposed at undercroft and at surface levels, with a number of dedicated car sharing spaces in convenient locations. Covered and secure bicycle storage facilities are located at undercroft and at surface level, adjacent to block

entrances. A sustainable travel approach has been adopted, particularly with regards to access to Dublin City Centre, with the Luas (850m) and Dublin Bus stops adjacent to the development site. The City Centre area is also accessible by bicycle and walking, at approximately 10 and 30 minutes respectively.

The proposed residential mix includes a combination of studio units, 1-bedroom apartments, 2-bedroom apartments units within 7 no. blocks and a terrace of 3 bedroom townhouse units. A change of use of an existing residential building at 307/307a South Circular Road to be used as a shared workspace. The proposed Part V social housing requirement is provided at 10% in 2 no. discrete blocks within the proposed scheme. This high-quality Build to Rent scheme will also include 2 no. cafés and a 2-storey creche unit, while the residents will also have access to residential amenity areas at ground floor level and at fifth floor level with access to a roof terrace area overlooking the canal. A landscaped square will be accessible to the public, with private open space and amenity areas for the residents also provided including children's play areas and roof level terraces. Building heights range from 2 no. to 10 no. storeys, with finger blocks arranged in a north-south direction and height tapering down from the centre of the site to the boundary.

Figure 3: Proposed development architectural ground floor plan with building references (OMP)

2 SCOPE OF REPORT

This report sets out the Outline Construction Management Plan (OCMP) for the proposed development as described in section 1 of this report. This OCMP, is a preliminary plan written by OCSC multidisciplinary design engineers and will be subject to detailed development by the main contractor on appointment.

It sets out likely and anticipated construction methodology and phasing which will be developed by a main contractor prior to commencement of construction on site. The main contractor will then develop their own fully detailed construction management plan prior to commencement of works on site.

3 CORONAVIRUS (COVID-19) OPERATING PROCEDURE

At the time of writing this report the Coronavirus (Covid-19) pandemic has impacted the Irish construction sector. All operational construction sites are following Covid-19 protocols in accordance with Government and Health Service Executive (HSE) recommendations and guidelines. In addition, a number of laws and legislation has been passed by the Government to implement and enforce Covid-19 restrictions across the country.

It is expected that these restrictions may be eased further by the time the proposed White Heather development reaches construction phase. However, the contractor is to follow and adhere to all Government and HSE recommendations and guidelines at the time of construction. The contractor is to follow the latest edition of the ***Construction Sector C-19 Pandemic – Standard Operating Procedures***.

All items addressed in this report are to be read in conjunction with the latest Covid-19 Standard Operating Procedure and government guidelines which are to be developed further by the contractor as part of the final Construction Management Plan for the development.

4 CONSTRUCTION PROGRAMME & PHASING

4.1 Key Activities

It is intended, that subject to a successful grant of planning permission and vacant possession, the proposed construction works could commence in Q1 2023. The proposed development will be completed over two phases.

It is intended that the proposed development will be constructed in the following sequence highlighting key activities;

- Secure site and set up boundary hoarding
- Clear site.
- Disconnect/divert services
- Demolition of existing industrial buildings and ancillary structures
- Foundation sub-structure works & bulk excavation
- Under-croft construction including podium slab
- Construction of building frame of each block of varying heights
- Façade envelope construction
- Interior fit out and building services construction
- Main service connection works i.e. water, ESB, etc
- External landscape works

4.2 Phasing & Programme

It is expected that the proposed SHD development will be constructed in 2 no. phases (Figure 4). Phasing overlaps are anticipated which will be reviewed in further detail as the design progresses and a contractor appointed.

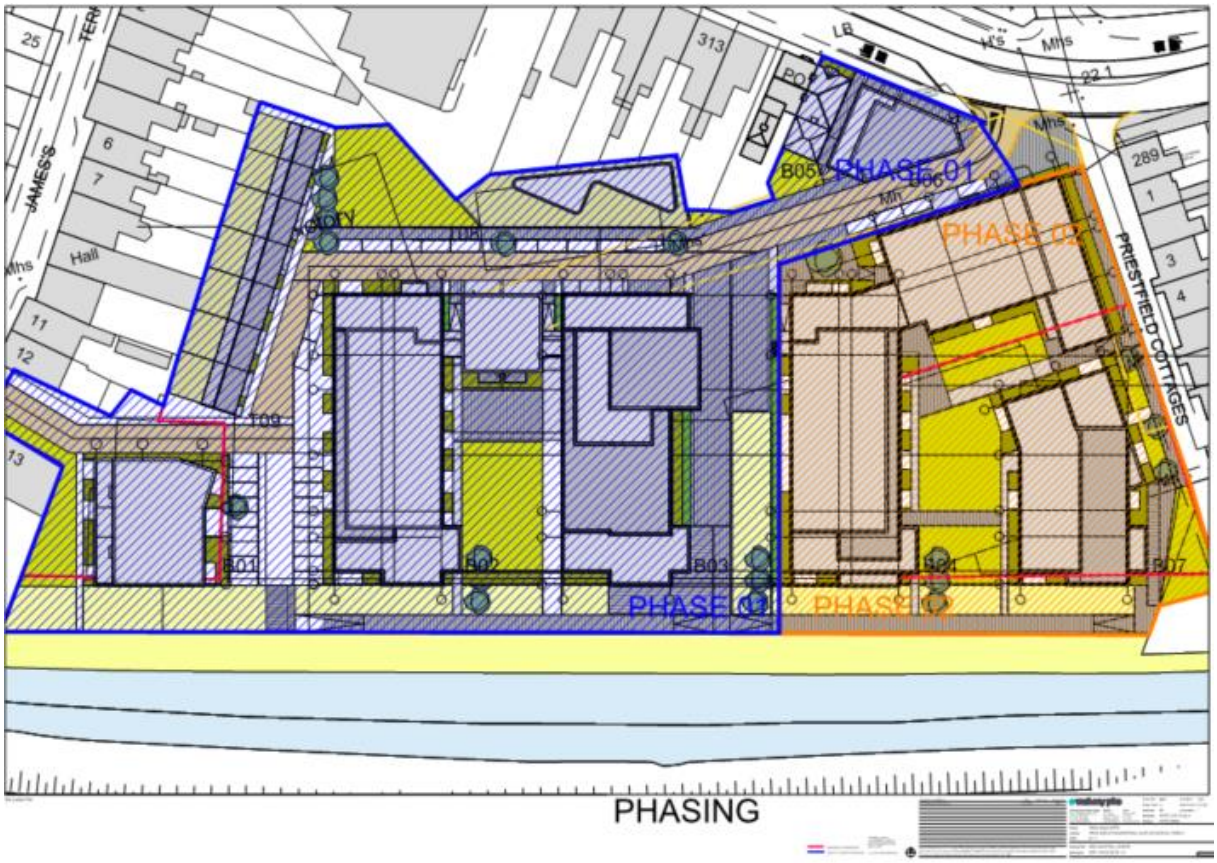

Figure 4: Indicative Site Phasing Drawing

Phase 1 will comprise of the demolition of the existing structures on the site which includes 10No. industrial warehouse units and ancillary office structures. The existing services and utilities will be decommissioned and removed as part of this phase. Temporary feeds will remain to serve as temporary connections as part of the development construction phase which are subject to local utility and authority approval which will be sought by the contractor. Existing services on site include, but are not limited to, existing foul and surface drainage, water mains, low pressure gas pipework and underground and overhead electrical ESB cables. Refer to Figure 5, Figure 6 and Figure 7.

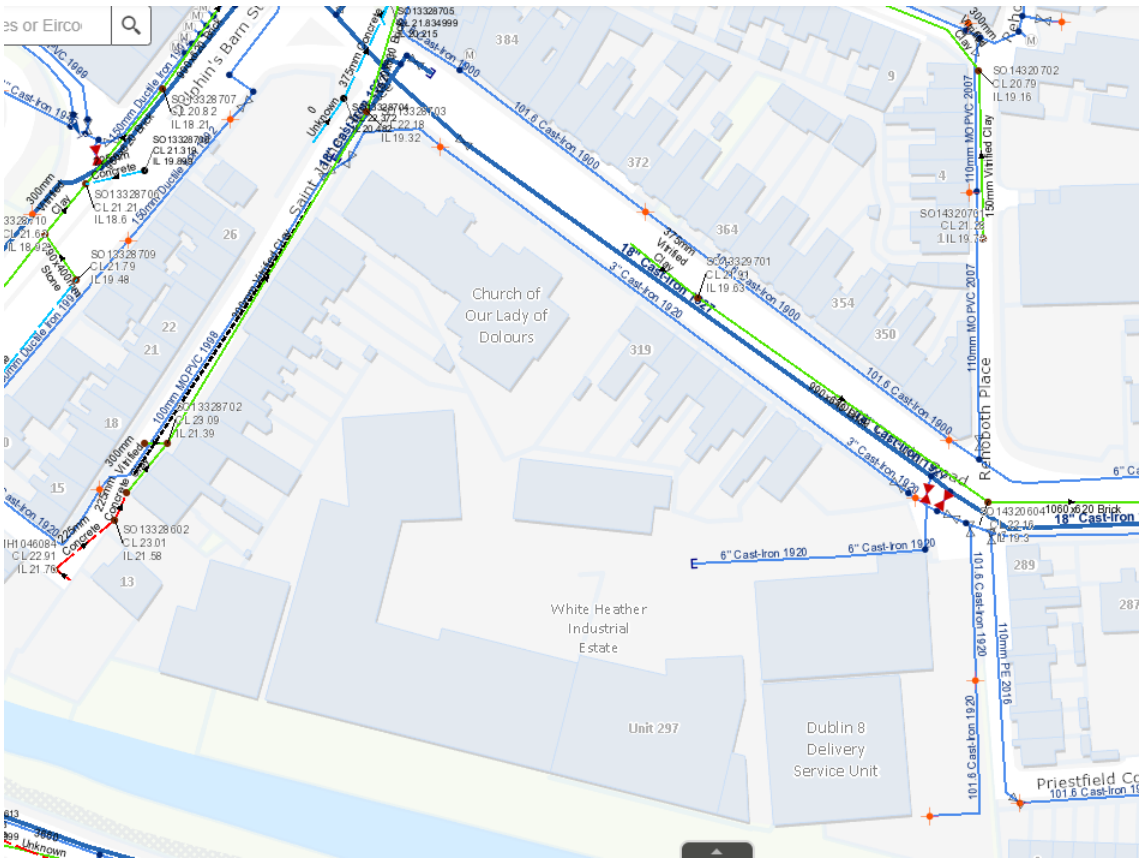

Figure 5: Existing Irish Water record map of site

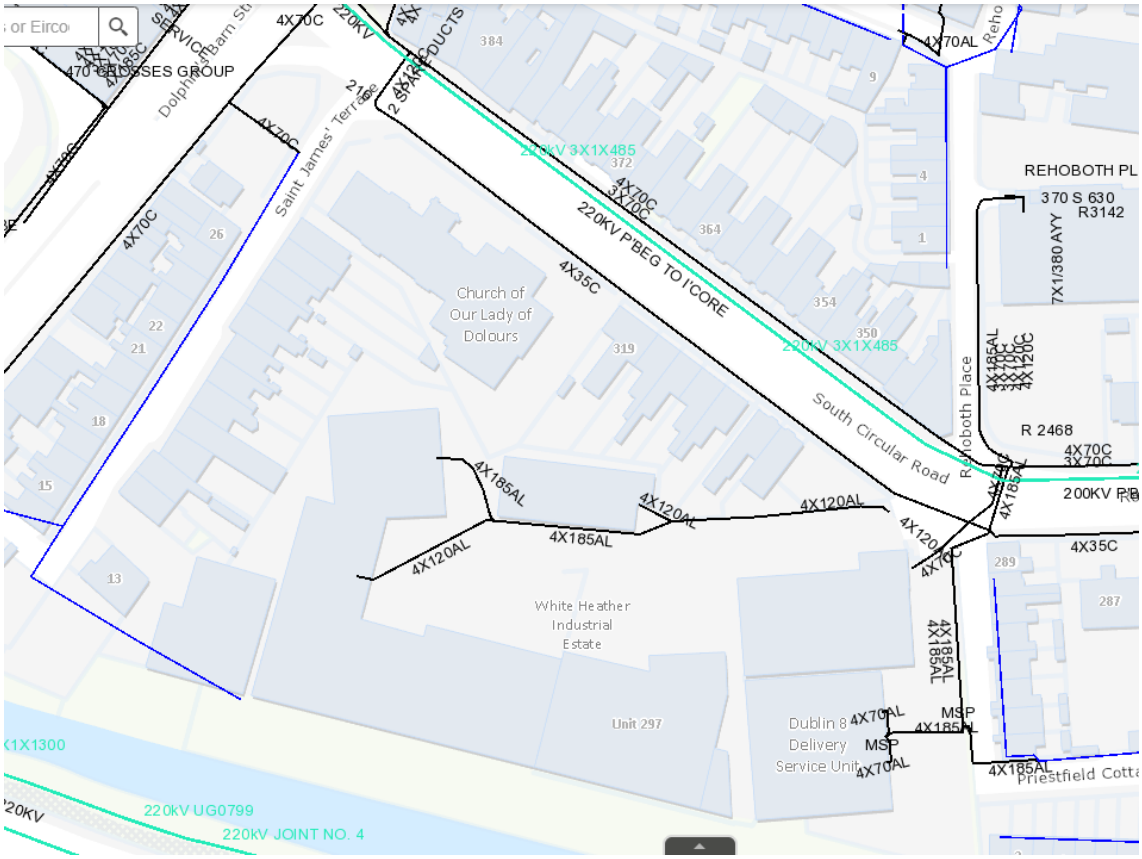

Figure 6: Existing ESB Networks record map of site

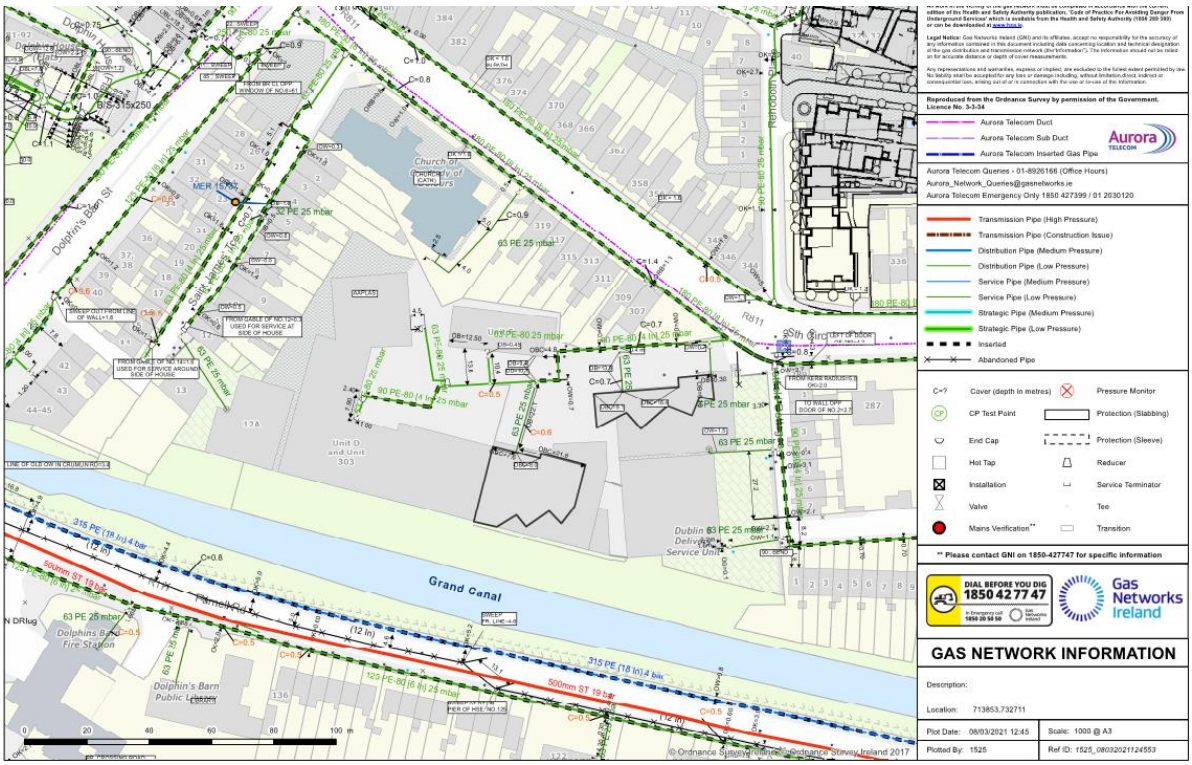

Figure 7: Existing Gas Networks Ireland record map of site

Following the demolition and site clearance, Phase 1 of the development will comprise the construction of Blocks 01, 02, 03 & 05, the townhouses (T09), low rise creche (T08) and the refurbishment and change of use of the existing 307a South Circular Road building. All associated landscaping, roads and paths will be constructed as part of the Phase 1 works in the area highlighted in Figure 4. Phase 1 will also include the construction and bulk excavation for the under-croft area located under Blocks 02 & 03.

Following on from Phase 1, Phase 2 will comprise the construction of Block 04, 06 & 07.

5 SITE ESTABLISHMENT

5.1 Site Offices and Compound

Site offices and welfare compounds are to be provided on site for construction and management personnel. The main contractor will have to consider phased locations, but it is anticipated that the main site compound area will be located on the boundary, or within, the Phase 2 area for the Phase 1 construction works

(Figure 8). It is likely that the existing An Post building located within the Phase 2 site area, will still be occupied during the initial stages of the Phase 1 works. However subject to vacant possession agreement with existing tenants, this building may be converted for Phase 1 temporary construction compound and/or site offices.

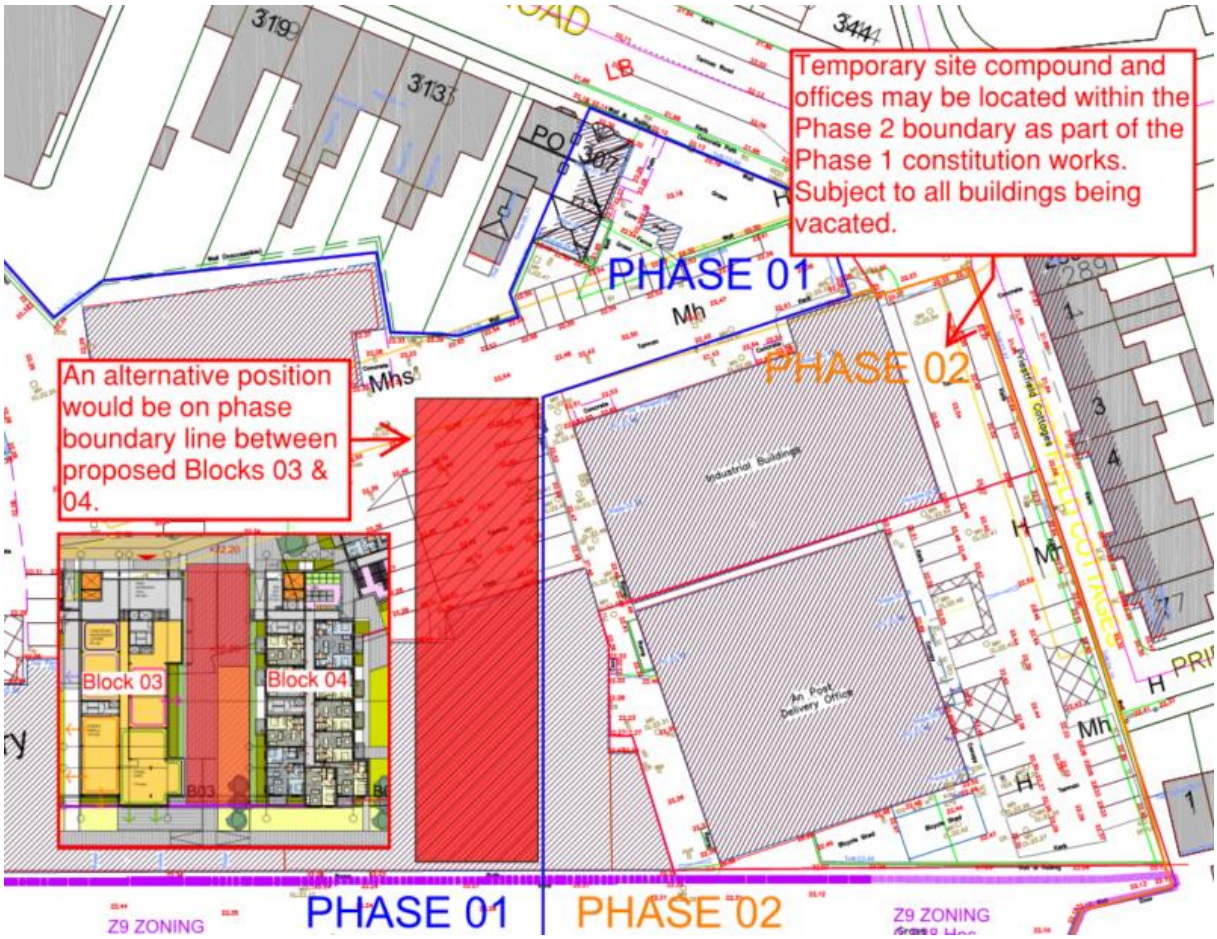

Figure 8: Possible Phase 1 site compound areas

The final compound location on completion of the Phase 1 works will have to be re-positioned for the Phase 2 construction works and a possible location would be the courtyard between Blocks 04, 06 & 07. This would allow the entire Phase 2 works to be hoarded off from the remainder of the development and allow the pedestrian access through to the Canal between Blocks 03 & 04 to be open. Access to the internal courtyard area will be challenging given the nature of the proposed buildings but there will be access between Blocks 06 &

07 along the Priestfield Cottages boundary and there is the potential to include a temporary segregated construction link between Blocks 03 & 04 (Figure 9).

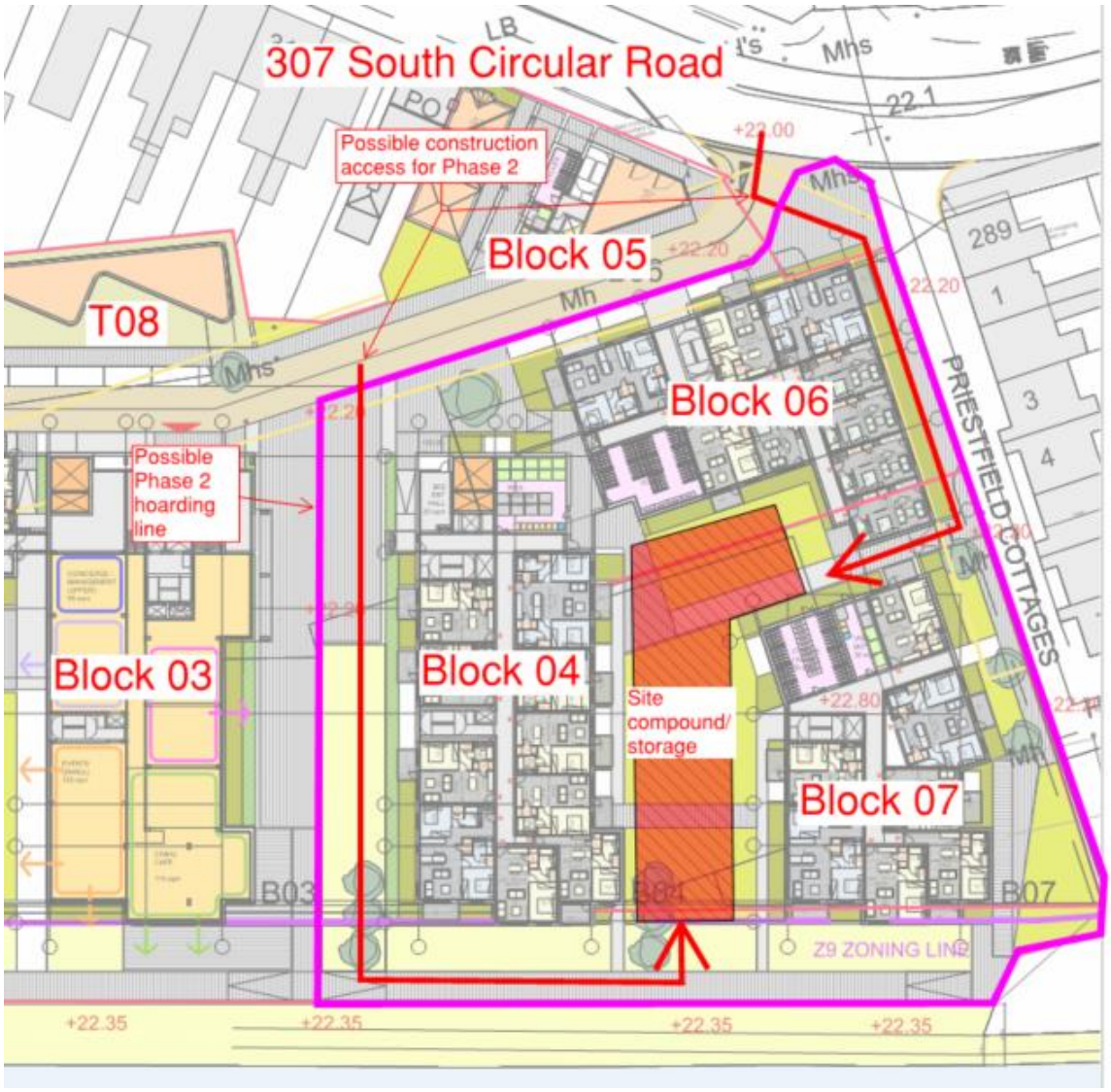

Figure 9: Potential Phase 2 site compound area and construction access

Alternative arrangements will be reviewed by the contractor to ensure that at all times construction activity and deliveries are fully facilitated within the development site during construction works. This is paramount in order to minimise impacts to South Circular Road. As part of the contractor's final construction management plan, alternative arrangements, or a combination of arrangements, could be reviewed in tandem with that indicated in Figure 9. The contractor may review overlapping construction compound areas within the Phase 1 development area or explore potential vacant sites in the

surrounding area that may house the main site office and welfare facilities throughout both phases of the construction therefore freeing up space for construction deliveries and storage. All options will be explored, and the final proposal will ensure it minimises the construction activity impact on South Circular Road.

The contractor is to place site compound and storage areas as far as reasonably possible away from the canal corridor to minimise interaction and mitigate the risk of any potential pollutants entering the canal.

Appropriate segregation will be employed on site to separate welfare facilities from construction works. Fenced off pedestrian walkways within the construction site are to be provided along routes to the site offices.

A temporary electrical supply will be provided to the site from the existing local electrical supply network. The main contractor will make this application as part of the proposed works. Similarly, the contractor will make and application to Irish Water for a temporary water supply connection and discharge of foul drainage from the site welfare facilities. It is proposed that the contractor use one of the existing connections on site for these temporary works (Figure 5, Figure 6 and Figure 7).

5.2 Site Hoarding and Security

The entire site will require hoarding around the perimeter. This will prevent unauthorised access to the construction site and protect the public. Controlled access points (gates and/or turnstiles) will be provided with authorised access only and will be locked out of working hours. Additional internal hoarding will be required within the site and will be installed by the contractor to separate phased building works from the public (Figure 9 for example). This internal hoarding will be updated on a continuous basis by the contractor as each building and works phase is completed.

It is proposed that the main contractor employ a security company to monitor the site out of working hours through regular inspections and/or remote

camera monitoring. During working hours, the main contractor is to have a gates man permanently employed keeping record of all work personnel on site (holding valid SafePass accreditation), and visitors, entering and leaving the site.

Figure 10: Typical site hoarding internal construction site side

Figure 11: Typical site hoarding external public side

5.3 Construction Personnel Numbers

Based on the size of the development and a 156-week construction period (both phases), it is estimated that 15,600 – 31,200 man weeks of onsite labour will be required for the project.

It is likely that an average of 100-200 construction personnel will be on site daily. However, this figure may approach 300-400 during periods of peak activity such as the under-croft excavation works or overlaps in phasing.

5.4 Site Access

Prior to the commencement of the works on site the contractor is to prepare a detailed construction Traffic Management Plan which is to be agreed with the Local Planning Authority. Reference should also be made to Systra's ***Construction Traffic Management Plan*** which has been submitted as part of the planning application.

The site is currently accessed off South Circular Road and it is the intention that this forms the main entrance and exit to the proposed development for both vehicles and pedestrians. No other access entrances or exit points are proposed to serve the development during construction. Figure 12 indicates how construction access from south Circular Road will enter and access the main internal areas of the site.

Figure 12: Main site construction access off South Circular Road (red) (Reference: OMP Ground Floor Plan Drawing)

The main site entrance off South Circular Road is to be improved as part of the proposed development and is designed by Systra. The access junction will be improved to provide a segregated bellmouth to the site and Priestfield Cottages (Figure 13). The proposed reconfiguration will improve access for both pedestrians and cyclist while also retaining the bus lanes on South Circular Road. The contractor would be encouraged to incorporate this junction work in the initial construction activity stages as set out in their final construction management plan to improve access to the site and more importantly mitigate potential conflict with the Priestfield Cottages junction.

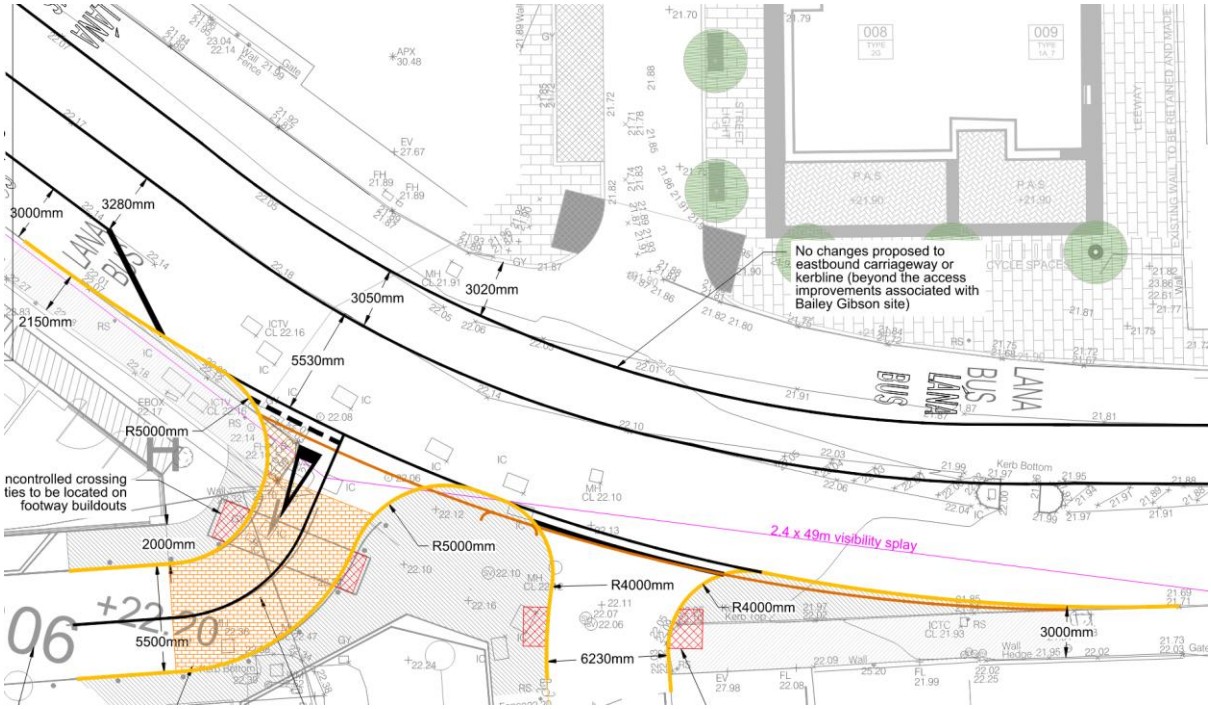

Figure 13: Proposed site entrance improvement works off South Circular Road (Reference: Systra)

4.4.1 Pedestrian Access

The main site pedestrian access will be strictly controlled via a manned turnstile system or similar. The main pedestrian entrance is to be segregated from the vehicle entrance and be located at a safe location on the site.

We anticipate that the contractor will stipulate that only *Safepass* accredited *or equal and approved* personnel will be permitted on site. A record of all personnel on site, including visitors, with the time of entry and exit is to be kept on site by the main contractor.

4.4.2 Vehicle Access

Vehicular access to the site will be via South Circular Road. All vehicular access will be controlled at the gate where all access and egress movements will be recorded. All site personnel and delivery drivers will have to undergo site induction prior to entering the site.

The construction period will be temporary in nature and is expected to consist of;

- Vehicles owned and driven by site construction staff and by full time site supervisory staff and occasional professional supervisory staff i.e. design team members and supervisory staff from utility companies;
- Materials delivery and removal vehicles.

5.5 Construction Vehicle Numbers

It is difficult to assess the exact quantum of traffic that will be generated during the construction period until a full detailed construction programme for the development is produced. However, a number of preliminary estimates have been made based on the type of development and estimated phasing. Peak numbers of construction vehicles are expected during the excavation for the foundations and ground floor however given the site topography this has been limited.

Construction vehicles travelling to and from the site will be spread across the course of the working day meaning the number of HGV's travelling during the peak hours will be relatively low. Given typical construction working hours, staff travelling in private vehicles will arrive and depart the site outside of the peak traffic hours. As a result it is not anticipated to significantly impact on the surrounding road network.

Please refer to Systra's ***Construction Traffic Management Plan*** for an analysis of vehicle movements. It has been assessed in this report that the site could generate approximately 22 two-way construction trips daily. The surrounding road network has been reviewed and it has been considered that the traffic generated by the construction work will be absorbed into the highway network with no noticeable impact on highway capacity.

Heavy Goods Vehicle (HGV) transit permits will be required for all construction vehicles of this type accessing the site in accordance with DCC's HGV

Management Policy. The contractor is to ensure all relevant permits are in place prior to these vehicles accessing the site.

5.6 Onsite Construction Parking

An appropriate amount of on-site parking will be provided to encourage staff to car share and to travel by the numerous public transport options serving the locality. The provision should be made available to prevent overspill parking in the local area.

However, the contractor as part of their final Construction Management Plan should reference the latest guidance and recommendations relating to Covid-19, (refer to Section 3 of this report). As such carpooling to the site may not be possible and alternative means is to be studied.

5.7 Site Cranage

The site is approximately 190 x 90m in plan with 7 No. individual apartment block buildings of varying height to be constructed. In addition, there is a row of townhouses, a low rise creche, 307a South Circular Road and all associated landscape works including works along the canal frontage, that are part of the proposed development site scheme. It is evident that a number of tower cranes will be required to provide sufficient site coverage. The exact number will be dictated by the programme, phasing, contractor and the specific construction requirements. However, it is estimated that minimum three tower cranes will be required based on a 40-50m jib length for the Phase 1 works (Figure 14). There may be potential for an additional crane to facilitate the block 5 construction during Phase 1. As part of the Phase 2 works it is anticipated that two tower cranes will be required as a minimum and that these would be optimally positioned within the internal courtyard within the Phase 2 boundary. Luffing jib cranes will be reviewed if required in the event that over sailing restrictions apply such as that over existing properties along South Circular Road including Our Lady of Dolour's Church, St James's Terrace or Priestfield Cottages.

In addition it is expected that separate mobile crane lifts will be required at localised times throughout the project for certain items such as the erection and dismantling of tower cranes. All crane lifts are to be planned by the contractor and coordinated with the onsite works. The contractor is to ensure any road closure licenses and agreements with surrounding stakeholders are in place prior to these works. Road closure licenses will be kept to a minimum. It is not envisaged at this stage of the design that any road closure licences would be required along South Circular Road.

Designated loading bays within the site are to be provided for any deliveries that are then to be craned to different locations on site.

Figure 14: Outline Tower crane positions and lift radius (40-50m jib length)

5.8 Logistics Planning

In relation to logistics planning the applicant has had regard to the subject site's location within the Dolphin's Barn area of Dublin 8. This report puts forward some outline measures to deal with the site's constraints however it is expected that more detailed measures will be developed prior to commencement of the development and a more detailed *Material Logistics Plan*

(MLP) will be prepared by the competent contractor appointed to the works. A major part of construction planning for the development will be the development of the MLP. This plan will stipulate that major deliveries of materials, plant and equipment times, will be properly coordinated by the contractor so that disturbance to adjoining sensitive receptors is kept to a minimum.

The Main Contractor will be required to prepare and adhere to a *Site Environmental Policy Plan* and all subcontractors will be required to buy into this document.

Main delivery times of materials to site are to be coordinated with adjacent stakeholders. No parking or waiting is allowed on South Circular Road unless agreed in advance with the Local Authority. The contractor is to avoid at all cost any negative impacts to the operation of South Circular Road.

6 SITE MONITORING AND MANAGEMENT

6.1 Noise Monitoring

Noise monitoring will be established on site throughout the proposed works. The monitoring will be carried out in accordance with any An Bord Pleanála (ABP) or DCC planning consent and in accordance with *Safety, Health and Welfare at Work (Construction) Regulations* 2013 *Safety, Health and Welfare at Work Act* 2005, BS 6187:2011 - *Code of Practice for Full & Partial Demolition*, BS 5228:2009+A1:2014 *Code of Practice for Noise & Vibration Control on Construction & Open Sites*, *Environmental Protection Agency Act 1992*.

Reference should be made also to Chapter 13 produced by AWN Consulting within the Environmental Impact Assessment Report (EIAR) submitted as part of the SHD application.

Measures will be implemented to minimise the impact of noise emissions at sensitive locations during the construction phase. Such measures will include the following:

- Construction contractors will be required to comply with the requirements of the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations and the Safety, Health and Welfare at Work (Control of Noise at Work) Regulations;
- All plant items used during the construction phase should comply with standards outlined in the 'Safety, Health and Welfare at Work (Control of Noise at Work) Regulations' and the 'European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations'. Reference will be made to BS 5228:2009+A1:2014 (Noise Control on Construction and Open Sites - Part 1. Code of Practice for Basic Information and Procedures for Noise Control) and will include the following mitigation measures:
    - Training of site staff in the proper use and maintenance of tools and equipment;
    - The positioning of machinery on site to reduce the emission of noise and to site personnel;
    - Sources of significant noise will be enclosed where practicable;
    - Machines that could be in intermittent use will be shut down between work periods or will be throttled down to a minimum;
    - Plant known to emit noise strongly in one direction will, when possible, be orientated so that the noise is directed away from noise sensitive areas; and
    - Plant and/or methods of work causing significant levels of vibration at sensitive premises will be replaced by other less intrusive plant and/or methods of working where practicable.
- Inherently quiet plant will be selected where appropriate;
- Screening and enclosures will be utilised in areas where construction works are continuing in one area for a long period of time or around items such as generators or high duty compressors. For maximum effectiveness, a screen will be positioned as close as possible to either the noise source or receiver. The screen will be constructed of material with a mass of >7kg/m^2 and should have no gaps or joints in the barrier material. This can be used to limit noise impact to any noise sensitive receptors;

- Operators of all mobile equipment will be instructed to avoid unnecessary revving of machinery and mobile equipment will be throttled down or switched off when not in use;
- Accordingly, where possible all construction traffic to be used on site will have effective well-maintained silencers; and
- All mobile plant will be maintained to a high standard to reduce any tonal or impulsive sounds.

6.2 Vibration Monitoring

Vibration monitoring will be carried out in accordance with BS 5228:2009+A1:2014, *Code of Practice for Noise & Vibration Control on Construction & Open Sites*. Vibration max peak particle velocity (ppv) limits on site will be limited in accordance with BRE Digest 403 and the above-mentioned industry standards.

The main contractor is to consider the proximity of the existing developments surrounding the site. The contractor is to allow for vibration and movement monitoring points to be set up at designated points. Construction works are to stop immediately if the vibration and movement limits noted above are reached.

6.3 Air Quality, Dust Control & Monitoring

Appropriate Air Quality and Dust monitoring will be carried out on a regular basis in accordance with ABP or DCC planning conditions, and records will be kept of all such monitoring for review by the Planning Authority. A dust minimisation plan has been prepared by AWN Consulting and is enclosed within the EIAR submitted as part of the SHD application.

The main activities that may give rise to dust emissions during construction include the following:

- Materials handling and storage; and
- Movement of vehicles (particularly HGV's) and mobile plant.

The following mitigation measures will be implemented on site during the construction phase, as required:

- Vehicles exiting site will use a wheel wash to ensure dust emissions are not generated from tyres. It will also prevent vehicles from carrying excess material onto public roads – see later;
- Covers will be employed on all vehicles leaving the site so as to minimise dust arising's off site;
- Site roads shall be regularly cleaned and maintained as appropriate;
- Hard surface roads shall be swept to remove mud and aggregate materials from their surface as a result of the development works;
- Any un-surfaced roads shall be restricted to essential site traffic only;
- Any road that has the potential to give rise to fugitive dust may be regularly watered, as appropriate, during extended dry and/or windy conditions;
- On-site speed limits will be stipulated to prevent unnecessary generation of fugitive dust emissions;
- Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind;
- A complaints register will be maintained on-site and any complaints relating to dust emissions will be immediately dealt with;
- In periods of dry weather when dust emissions would be greatest, a road sweeper, which would also dampen the road, will be employed in order to prevent the generation of dust;
- Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods – see later; and
- If appropriate, dust monitoring will be carried out during the construction phase of the scheme. If the level of dust is found to exceed 350mg/m^2day in the vicinity of the site, further mitigation measures will be adopted in the construction.

6.4 Pre-Commencement Condition Survey

A Visual Condition Survey (VCS) will be carried out of all surrounding streets and recorded prior to any site works commencing. The appointed Main Contractor will have to liaise with DCC Roads & Traffic Department to agree any changes to load restrictions and construction access routes for the site.

Measures will be put in place as required to facilitate construction traffic whilst simultaneously protecting the built environment.

It is to be agreed with the main contractor and adjacent property owners if an internal condition survey of the existing surrounding buildingsis to be carried out prior to construction commencing.

6.5 Site Management & Security

The site will be closely managed on a day to day basis by site management. Security and control will be provided at the main site access to record all personnel entering and leaving the site and to record and control all materials entering and leaving the site.

Appropriate manned security will be maintained at the site access gates in order to secure the site, to control vehicular access, and to monitor and record all deliveries and removals operations.

6.6 Wheel Washing Facilities, Covered Vehicles & Dust Suppression

During the under-croft excavation, a properly sized and designed wheel wash will be provided and maintained on site (or similar system). Appropriate water collection and filtering will take place prior to discharge to the public sewer system (subject to contractor gaining approval from DCC). Gate staff will be trained to inspect vehicles for cleanliness prior to egress to the public road network and any trucks that have been inadequately cleaned will be returned to site.

Cover systems will be used on all vehicles removing spoil from site so as to minimise dust arising on surrounding streets.

Trucks leaving the site will, as previously noted, pass through a wheel washing system (or similar). In addition these trucks will be watered down. This will be carried out in a dedicated wash down zone with dedicated site personnel.

The use of appropriate water based dust suppression systems will greatly reduce the amount of dust and windborne particulates as a result of the demolition and construction process. This system will be closely monitored by site management personnel particularly during extended dry periods.

7 DEMOLITION AND WASTE MANAGEMENT

7.1 Overview

In all cases the most efficient and environmentally sensitive methodologies will be used in the demolition process. The main demolition works will comprise removal of the existing industrial warehouse units and all associated ancillary structures and walls. The site will also be cleared of all organic material along with all existing hardstanding for internal paths and roads.

The industrial units are predominately single storey steel frame buildings, and it is expected that these will be demolished using plant machinery from ground level to avoid personnel working near, or within, the building during the demolition process. The contractor is to ensure that the removal of certain parts of the structure during demolition does not compromise the structural stability of the remaining structure and thus creating a health and safety hazard.

Waste materials will be grouped and segregated for removal off site to an approved licenced disposal/recycling facility. Refer to OCSC's ***Outline Resource & Waste Management Plan (RWMP)*** prepared and submitted as part of this planning application. This outline plan is to be reviewed by the contractor and developed further into the final RWMP.

The demolition will include the soft strip out and removal of any hazardous material. An Asbestos Survey Inspection and Report will be produced prior to any demolitions works and will be made available to the contractor.

7.2 Demolition Sequence

In terms of works sequence the following is proposed:

- Securing and establishing the site area (erection of site hoarding);
- Survey of existing services on site;
- Disconnecting/capping existing services;
- Removal of any hazardous materials to a licenced facility;
- Soft strip out;
- Demolition of existing industrial warehouse units and ancillary structures
- Landscaping/surfacing removal including the warehouse concrete slab and car park hard standing;
- Disposal of the arisings

7.3 Soil Waste Management

Although there have been historic Site Investigations (SI) carried out on the site there was no soil samples environmentally tested. Therefore targeted SI will be carried out post planning in order to check if historical pollution of the soil has occurred at the proposed development site and the associated impact on waste soil disposal. The samples will be collected and analysed for a suite of parameters which allows for the assessment of the soils in terms of total pollutant content for classification of materials as hazardous or non-hazardous. Any potentially contaminated material encountered, 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'13 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.

7.4 Measures to Protect Groundwater

Specific measures to protect groundwater during the construction works on site if required will be put in place under the control of the Environmental Consultant. The contractor is to agree with DCC discharge licences prior to discharging any ground water into the public sewer network.

7.5 Removal of Hazardous Materials

The demolition will include the soft strip out and removal of any hazardous material. An Asbestos Survey Inspection and Report will be produced prior to any demolitions works and will be made available to the contractor.

If asbestos is identified during the demolition, removal will be carried out by a specialist sub-contractor who will be responsible for the removal, transportation, and disposal, of all hazardous materials to an approved licenced disposal facility.

7.6 Segregation of Waste Material

Waste materials generated will be segregated on site where it is practical in accordance with the Outline RWMP. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled.

8 SUBSTRUCTURE AND SUPERSTRUCTURE CONSTRUCTION

8.1 Overview

The proposed construction sequence of the structure is to be traditional bottom-up construction. The final construction materials and build-up is still to be finalised however the following sections indicate the likely construction based on available information at the time of issuing this report.

Figure 15: Model Works CGI canal view of proposed development

8.2 Substructure Construction Methodology

A detailed targeted site investigation will be carried out for the proposed development post planning. However, there was a number of existing SI reports for the site to obtain the underlying ground conditions and likely substructure construction methodology. These reports were from IGSL dated 2010 and Ground Investigation Ireland dated 2007, respectively. In addition, historic data from the site was obtained from sources such as the Ordnance Survey of Ireland and the Geological Society of Ireland. These sources confirmed the findings in the aforementioned reports and indicated that the site was once the location for a dock from the Grand Canal (Figure 16).

Figure 16: Historic Ordnance Survey of Ireland Maps (1837-1842) indicating approximate site boundary line and previous canal docks

The existing ground investigation reports in general summarised that the underlying ground conditions comprised;

- Made ground fill

- Organic CLAY
- Gravelly CLAY
- Limestone ROCK

Ground water was found to be between 1m – 3m below existing ground level.

From the available information on the underlying ground conditions, along with site history, it is likely that the foundations for a scheme of this nature and size will be pile foundations. For the lower storey buildings, such as the townhouses, it could be possible that the Gravelly CLAY stratum could support the loading. However, this stratum is water bearing therefore it may be more economically to use a mini pile solution similar to the remainder of the scheme.

There is to be an under-croft substructure construction at Blocks 02 & 03 and the proposed construction methodology for this is to be a reinforced slab and walls. To facilitate the under-croft construction and to keep ground water out of the excavation, a cut off wall will be required around the entire perimeter which will be designed by a specialist contractor and geotechnical engineer. The final cut off wall construction is still to be detailed designed but will likely comprise a secant pile wall socketed into the underlying Limestone bedrock. A reinforced capping beam will tie the secant pile wall with the under-croft RC liner wall and will facilitate the ground floor slab connection to the wall.

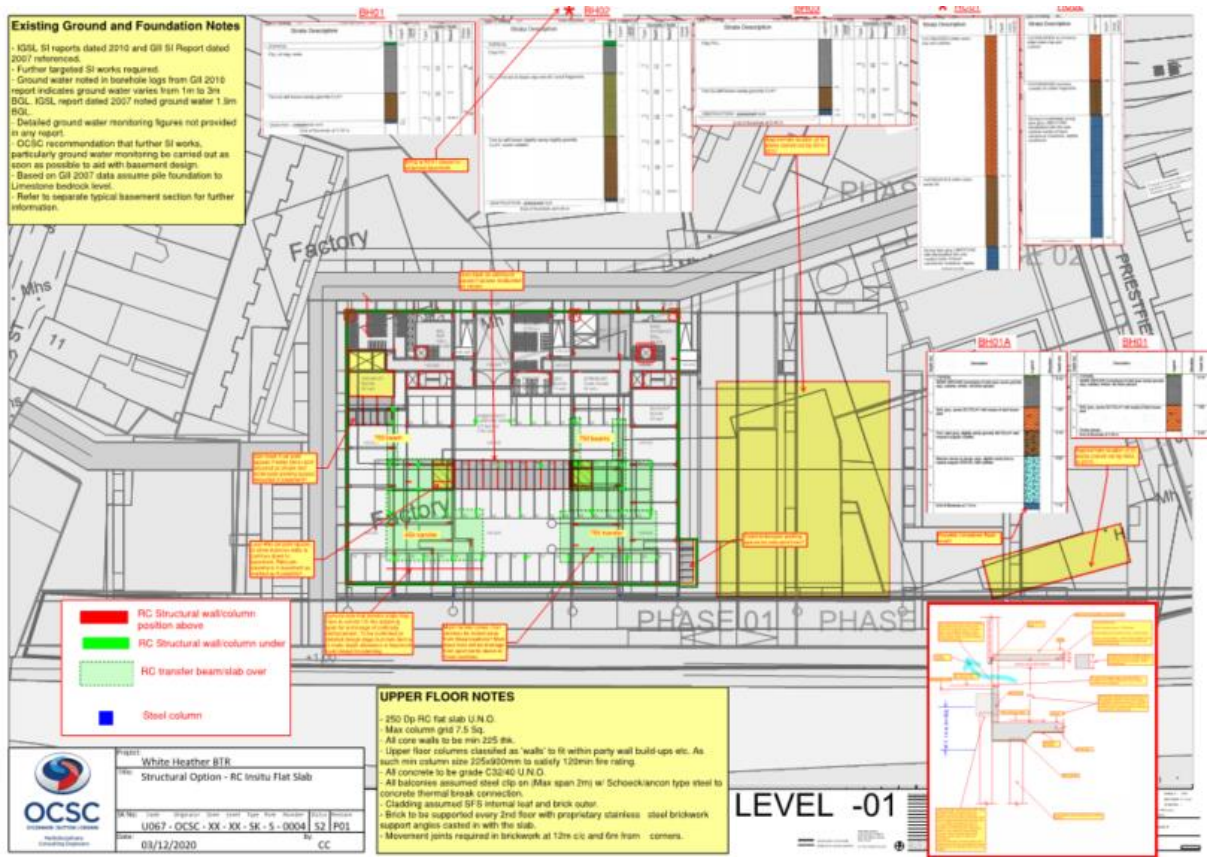

Figure 17: OCSC initial draft under-croft construction mark-ups & available SI logs (not layout is superseded but principal remains)

A pour plan will be proposed by the main contractor and agreed with the Engineer ahead of casting. This will outline the location of construction joints and the specific detailing of all water tightness installations.

Construction will be by traditional formwork and falsework methods with all temporary works being fully designed by a qualified chartered structural engineer acting as the contractor's temporary works engineer. Formwork and rebar will be handled by tower cranes and mobile plant equipment around the site.

Planning restrictions on working times will be strictly adhered to in the construction operation. In this regard it will be important for the Main Contractor to schedule sufficient time to allow for any power floating required after concrete pouring.

8.3 Superstructure Construction Methodology

The superstructure is subject to detailed design, however given the nature and the height of the buildings of varying height, it will involve conventional construction methodologies, personnel, plant, and equipment. The construction is to be phased as described previously in the report. It is to be agreed with the main contractor weather slip form cores construction techniques will be used. At this stage of the design, it is anticipated that a concrete frame solution will be utilised for the scheme which provides inherent acoustic and fire resisting properties.

Figure 18: Proposed development overview (OMP)

Once the superstructure reaches a number of storeys high, the lower levels can commence with external envelope and internal fit out works. Subject to detailed design, scaffold works will be required to construct the façade which the contractor is to coordinate with other construction works and vehicle/personnel routes within the site.

9 CONSTRUCTION HAUL ROUTES

As part of the planning process, representatives of the developer have had a number of meetings with the Planning Authority including the Roads & Traffic Department. A number of documents have been produced by Systra in relation to ***Traffic Impact Assessment, Mobility Management Planning, Construction Traffic Management Plan,*** and this document. All of these have been produced with the aim of minimising the construction and operational phase impacts of the development.

Notwithstanding the above it is evident that the construction of the development, will generate traffic movements including movements of heavy goods vehicles. These vehicles will be involved in bringing deliveries to the site and removing waste and spoil from the site during the construction phase.

It is important that the most appropriate construction routes be identified in order to bring materials to and from the site in the most efficient and environmentally sensitive manner. It is noted that specific haul routes will be agreed and licensed between the Main Contractor and DCC.

9.4 Construction Route Options

It is anticipated that construction haul routes will follow the DCC designated HGV routes within the boundaries of DCC. The proposed routes are illustrated in Figure 19. The route indicated in red would be envisaged to be the main haulage route with secondary routes noted in blue and purple.

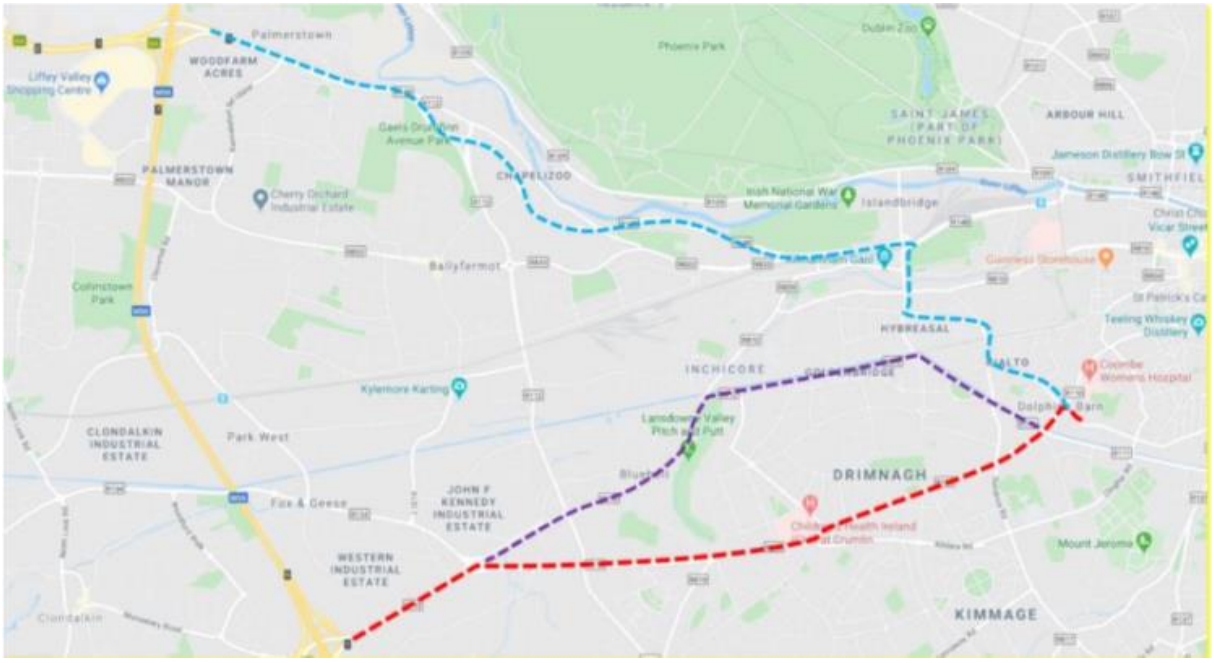

Figure 19: Construction traffic access routes (Reference: Systra's Construction Traffic Management Plan)

10 HEALTH & SAFETY

10.1 General Health, Safety and Environmental Consideration

Construction and demolition works will be carried out in such a way as to limit, as far as practicable, adverse environmental impact. Works will be carried out in accordance with the following general provisions:

- Planning approvals from the Local Authority;
- Requirements of the Local Authority.

As part of the Construction Method Statement, the process will ensure that construction techniques and materials used are a fundamental consideration of the design and intended long-term use, the aim below is achieved:

- Design for durability and low maintenance;
- Design for flexibility and adaptability;
- Use of materials from sustainable sources;
- Use of local materials where possible.

Safety, health and environmental issues on the development will be a primary consideration in the construction methods adopted. The construction team will develop detailed *Health & Safety Plans*, specific environmental, fire and accident procedures to suit the construction sequence and methodology of the development.

The design team have produced detailed Design Risk Assessments as part of our design considerations for the SHD planning scheme. These DRA's are live documents that will continuously be updated at major milestones as the project design progresses. The DRA's will be available to the contractor when producing *Health & Safety Plans* highlighting site specific hazards and risk with associated mitigation actions that may not be entirely clear to a competent contractor.

Contractors involved in the development will ensure that all non-English speaking employees are provided with relevant Health & Safety information in their national language. All contractors will be required to adopt the relevant skills certification required for that element of the works. A *Site-Specific Safety Statement* and a detailed *Construction Stage Safety & Health Plan* will be compiled by the contractor prior to any works on site and will be in accordance with the Health & Safety Authority and Local Authority guidelines.

10.2 Control of Substances Hazardous to Health

The strategy for controlling all substances and all work processes that may generate hazardous substances will be to address and have control measures put in place. Some of the control measures to be employed include the following:

- All fuel and chemicals to be stored in designated areas, with deliveries of hazardous materials supervised.
- Storage tanks and container facilities will be appropriately bunded.
- In the case of spills or discharges, remedial action will be taken as soon as possible in accordance with company procedures.

- Personal protective equipment (PPE) suitable to the pertaining conditions will be used by all site personnel.

10.3 Environmental, Emergency and Accident Procedure

Measures will be carried out to avoid environmental incidents, however if these occur then the following types must be reported to the responsible person in the construction team as per the *Site Accident & Emergency Procedure*. The overall strategy in the event of a spillage will be to '*Stop-Contain-Notify*' in the event of:

- Spills or discharge to the atmosphere , water supplies, sewage systems, rivers and other watercourses, or to the ground:
    - Any chemical products
    - Oils or fuels
    - Effluent/fumes and gases
    - Waste or contaminated materials
- Damage to existing:
    - Trees and wildlife
    - Flora and existing local habitats
- Any environmental incidents that could lead to:
    - Local Authority or regulatory enforcement
    - Public complaint

Emergency routes and procedures will be continuously adapted to suit the construction sequence and stage of the Development. An *Emergency & Evacuation Plan* will be prepared following the guidelines detailed below and updated on a regular basis during construction:

- Definition of the management organisation and responsibility for safety
- Definition of appropriate fire prevention measures, including good housekeeping of site, welfare facilities and offices.
- Adequate provision of fire extinguishers across the site.
- Use of non-flammable/fire retardant materials for protection of finished works.

- Safe use and safe storage of flammable materials of all categories, whether solid, liquid or gas.
- Appropriate waste management procedures.
- Monitoring the type and frequency of fire inspections/audits.
- Development of evacuation plans, to include escape routes, muster stations, means of sounding alarms and general emergency procedures.
- Site safety inductions and fire drills.
- The application of permit systems for Hot works, Confined Space Entry and Electrical Access Control.
- The provision of first aiders. Checking of emergency routes are available and unobstructed at all times.
- Liaison with the emergency services and occupants of the adjacent buildings.

First aid facilities will be established and at least one trained first aider will be present on-site at all times. In addition, trained Fire Wardens / Fire Marshalls will be in place on-site to address fire safety.

11 CONSTRUCTION STAGE COMMUNITY LIAISON

11.4 Overview

The appointed Main Contractor will be required to follow best practice '*Considerate Constructor*' guidelines. The Considerate Constructor experience in Ireland and the U.K. has been that early positive and proactive engagement with businesses and residents impacted by building works is the best approach.

11.5 Code of Practice

Considerate Constructors seek to improve the image of the construction industry by striving to promote and achieve best practice under the Code. The *Code of Considerate Practice* outlines the Scheme's expectations and describes those areas that are considered fundamental for registration with the Scheme. The Code is in five parts and contains a series of bullet points. Each section of the Code contains an aspirational supporting statement and four bullet points

which represent the basic expectations of registration with the Scheme. The Code of Considerate Practice applies to all registered sites, companies and suppliers regardless of size, type or location.

11.6 Respect the Community

Constructors should give utmost consideration to their impact on neighbours and the public by informing, respecting and showing courtesy to those affected by the work. This shows itself in minimising the impact of deliveries, parking and work on the public highway. It also contributes to and supports the local community and economy. Finally it works to create a positive and enduring impression, and promoting the Code.

11.7 Community Liaison Manager

A Community Liaison Officer (CLO) will be appointed by the Main Contractor to lead and manage all community related issues. The CLO will initially host and attend regular community meetings. Following the initial meetings the CLO will compile a list of stakeholders in the area. These stakeholders will be kept informed of progress and planned works on the site through the publication and distribution of a Monthly Progress Newsletter.

Follow through is a vital attribute for successful community liaison so it will be a fundamental element of the CLO's job description that they continually engage with the community, follow through on promises and deliver results.

11.8 Construction Programme

An important element of community liaison will be the provision of updates to the community on the construction programme

In this regard each edition of the Community Newsletter will feature an update to the construction programme along with details of any upcoming Exceptional Activities which may impact on traffic, short term accessibility for businesses or residents or have the potential to be disruptive. It is intended that by implementing a strong community liaison relationship that the environmental impacts of the proposed development on the community can be minimised and the social impacts, by way of local employment or business opportunities may be maximised.

12 CONCLUSION

This Outline Construction Management Plan sets out likely and anticipated construction methodology and phasing which will be developed by a main contractor prior to commencement of construction on site. The main contractor will then develop their own fully detailed construction management plan prior to commencement of works on site.

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