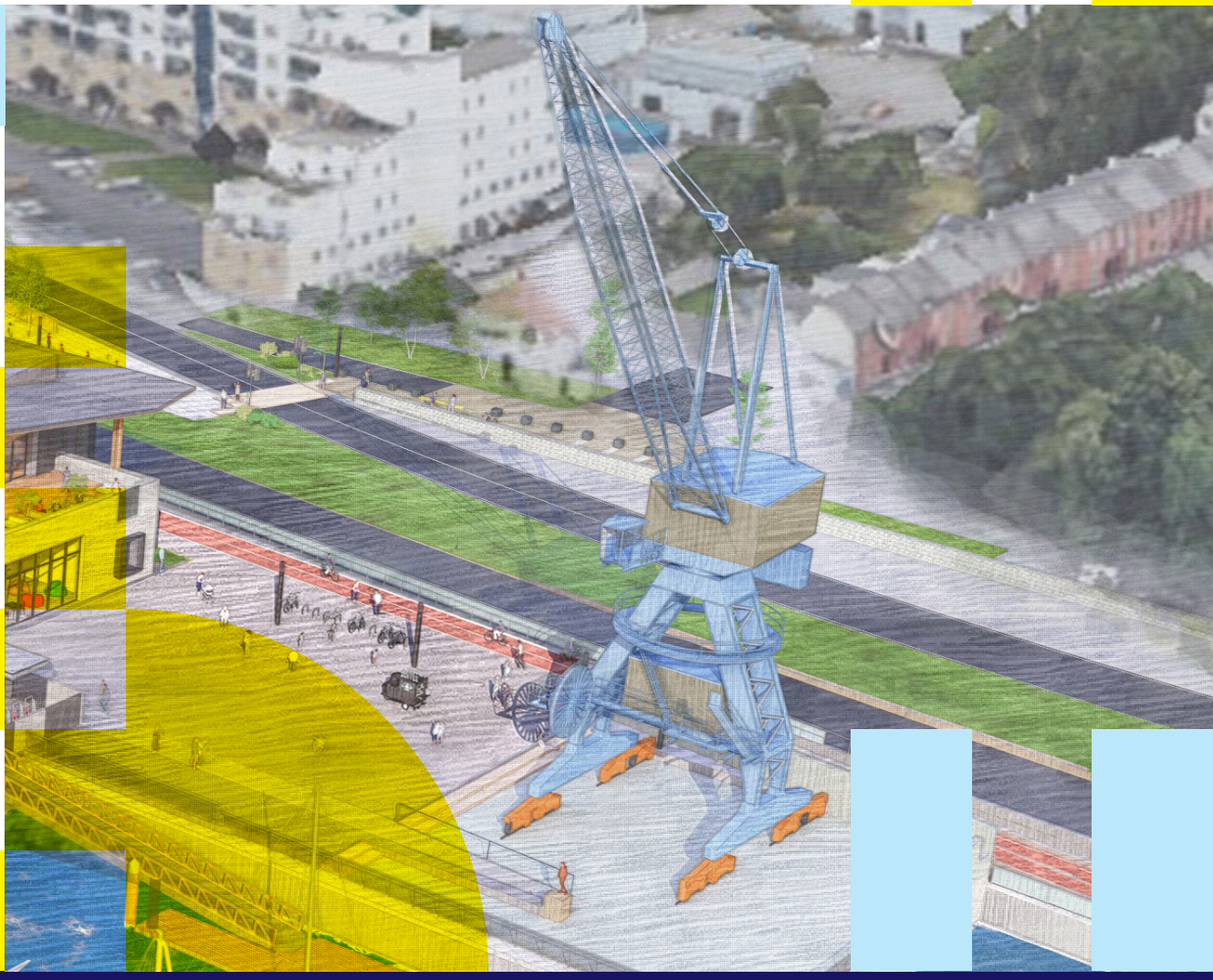
3FMProject

Bringing
Dublin Port
To 2040

Maritime Village:
Engineering Report for Planning



COMHLACHT CHALAFORT ÁTHA CLIATH
DUBLIN PORT COMPANY

ROD
ROUGHAN & O'DONOVAN

Third & Final
Masterplan
Project

3FM Project:
Maritime Village

Engineering Report for Planning

Document No: ..... CP1901_010-ROD-00-XX-RP-C-0002

Author:..... Ben Gallery (BDG)/Sean Kennedy (SK)

Checker: ..... Sean Kennedy (SK)/Anthony Mulligan (AM)

Approver:..... Anthony Mulligan (AM)

Revision	Status	Suitability	By	Checked	Approved	Date
P01	S5	Review & Acceptance	BDG/SK	AM	AM	28/06/2024

3FM Project:
Maritime Village
Engineering Report for Planning

TABLE OF CONTENTS

1 INTRODUCTION

This report has been prepared in support of an application for the 3FM Project being submitted by Dublin Port Company (DPC), focusing in particular on the proposed new Maritime Village site which forms one part of the overall development. The 3FM Project represents the concluding phase of the Masterplan initiatives essential for realizing Dublin Port's full potential by 2040. The project primarily centres on the Dublin Port Company-owned lands situated on the Poolbeg Peninsula, which constitutes one-fifth of the entire Dublin Port estate and is commonly referred to as the southern port area.

The proposed development site for the new Maritime Village is located on the western end of the Poolbeg Peninsula in Dublin 4. It is bounded by the East Link Road and Pigeon House Road to the south, the existing Dublin Port container terminal to the east, the Liffey channel to the north, and the existing Poolbeg marina to the west. The new site will cover approximately 1.8 hectares and will combine two areas: the current boat club site, home to Stella Maris Rowing Club, Poolbeg Yacht & Boat Club, and the Ringsend Registered Fishermen & Private Boat Owner's Association facilities, and part of the adjacent MTL container terminal.

The proposed Maritime Village will offer a new city destination for boating and rowing activities, building upon the established uses fostered by local clubs, which are an integral part of the Ringsend community.

The development includes several key enabling actions. These actions involve demolishing the two existing clubhouses and all other associated structures on the club site, relocating existing boat storage areas, decommissioning the existing marina, and forming the new 1.8-hectare site by incorporating part of the adjacent container terminal site. Part of the existing club site will be surrendered for the construction of the new Southern Port Access Route (S.P.A.R) and the adjacent Active Travel Route, and new quay walls will be constructed on the western extent of the site.

The new site will feature three dedicated two-storey club buildings for the Poolbeg Yacht & Boat Club, Stella Maris Rowing Club, and a new Maritime Training Centre, with a combined area of approximately 2,364 SqM. Additionally, it will include a 1.5-storey boat maintenance facility with integrated amenities for the Ringsend Registered Fishermen & Private Boat Owner's Association and Liffey & Port Marine Services, totalling 1,069 SqM. A five-storey DPC Harbour Operations building with 1,670 SqM of floorspace, including a fourth-floor function room, will also be part of the site.

The waterside amenities will comprise a new 258-berth marina, a dedicated boat launch area for the rowing club, a new slipway and boat lifting facilities, dedicated pontoons for DPC Harbour Operations, a new fuel berth, and all associated gangway and pontoon access infrastructure.

The project also includes 87 car parking spaces, 148 bicycle parking spaces, dedicated waste storage facilities, a new secure boat storage yard covering 3,965 SqM, two new vehicular entrances, and a new pedestrian crossing for improved site access. Additionally, there will be new publicly accessible landscaped open spaces, new boundary treatments and ISPS fencing where necessary, and associated landscaping, lighting, and site services works.

Overall, this project aims to build on the longstanding traditions established by local clubs and provide enhanced modern facilities for maritime activities, creating a welcoming hub for the club members, the local community and visitors alike.

This report sets out the Engineering basis for planning stage design of the scheme in terms of surface drainage, foul drainage and water supply. Also discussed is traffic and transport strategy, flood risk, and construction and environmental management strategy. Furthermore, an Access and Parking Report is included in the appendices. This report should be read in conjunction with the following drawings:

- CP1901_010-ROD-00-XX-DR-C-0001 Maritime Village: Existing Site Layout Overlaid with Proposed Buildings
- CP1901_010-ROD-00-XX-DR-C-0005 Maritime Village: Proposed Site Layout
- CP1901_010-ROD-00-XX-DR-C-0010 Maritime Village: Proposed Levels
- CP1901_010-ROD-00-XX-DR-C-0030 Maritime Village: Existing Drainage Layout Overlaid with Proposed Buildings
- CP1901_010-ROD-00-XX-DR-C-0031 Maritime Village: Proposed Drainage Layout
- CP1901_010-ROD-00-XX-DR-C-0040 Maritime Village: Existing Watermain Layout Overlaid with Proposed Buildings
- CP1901_010-ROD-00-XX-DR-C-0041 Maritime Village: Proposed Watermain Layout
- CP1901_010-ROD-00-XX-DR-C-0042 Maritime Village: Fire Fighting Storage Tank Details
- CP1901_010-ROD-00-XX-DR-C-0060 Maritime Village: Surface Water Details Sheet 1 of 4
- CP1901_010-ROD-00-XX-DR-C-0061 Maritime Village: Surface Water Details Sheet 2 of 4
- CP1901_010-ROD-00-XX-DR-C-0062 Maritime Village: Surface Water Details Sheet 3 of 4
- CP1901_010-ROD-00-XX-DR-C-0063 Maritime Village: Surface Water Details Sheet 4 of 4
- CP1901_010-ROD-00-XX-DR-C-0070 Maritime Village: Road and Pavement Details
- CP1901_010-ROD-00-XX-DR-C-0090 Maritime Village: Vehicle Tracking Sheet 1 of 2
- CP1901_010-ROD-00-XX-DR-C-0091 Maritime Village: Vehicle Tracking Sheet 2 of 2

2 PROPOSED DEVELOPMENT

The new site will feature three dedicated two-storey club buildings for the Poolbeg Yacht & Boat Club, Stella Maris Rowing Club, and a new Maritime Training Centre, with a combined area of approximately 2,364 SqM. Additionally, it will include a 1.5-storey boat maintenance facility with integrated amenities for the Ringsend Registered Fishermen & Private Boat Owner's Association and Liffey & Port Marine Services, totalling 1,069 SqM. A five-storey DPC Harbour Operations building with 1,670 SqM of floorspace, including a fourth-floor function room, will also be part of the site.

The waterside amenities will comprise a new 258-berth marina, a dedicated boat launch area for the rowing club, a new slipway and boat lifting facilities, dedicated pontoons for DPC Harbour Operations, a new fuel berth, and all associated gangway and pontoon access infrastructure. Refer to the Architectural Design Report prepared by Darmody Architecture which provides further details of the proposed Maritime Village (the proposed development for the purpose of this report) which forms part of the proposed 3FM Project.

3 SITE INFORMATION

3.1. Site Location

The proposed development is located south of the River Liffey estuary in Dublin Port, Ringsend. The site is mainly hardstanding with a number of existing buildings, mainly located to the west of the site. The site is bounded by the River Liffey to the north and west, Dublin Port dockland to the east and the R131 road to/from the east link toll bridge to the south.

3.2. Site Topography

The site topography is relatively flat, with the existing buildings ground floor level at circa 3.8mOD (Ordinance Datum), with the external hardstanding sloping away from the buildings to the north and south. The lowest point on site located to the south-west is at 2.94mOD, with the highest point to the east in the existing freight yard at 3.85mOD. Refer to drawing CP1901_010-ROD-00-XX-DR-C-0010 for levels.

Figure 1 Extract Image from Topographical Survey (Murphy Surveys)

The topographical survey is provided in Appendix A.

3.3. Site Utilities

ROD obtained existing service records from the following utility providers to inform the design; Bord Gais, ESB, Virgin Media, Eir and Uisce Éireann.

On review of this information, only Uisce Éireann services, watermain & foul, are located in the vicinity of the site. The remaining services are located outside of the site boundary and are therefore anticipated not to be impacted by the proposed works for the Maritime Village.

Existing Service Records are included in Appendix A.

3.4. Site Geology

A Geotechnical study was carried out by RPS Consulting Engineers for the overall 3FM development of which the proposed Maritime village forms part. (Please refer to architects reports for details of overall 3FM development). This report based its findings on existing geotechnical information from surrounding developments. This report found the following;

Table 1 Extract Image Geotechnical Study (RPS Consulting Engineers)

Material	Description	Depth to Top (m bgl)	Range of Unit Thickness (m)
Made Ground	Sand, Clay, Gravel with demolition waste, cinders and plastic	0.0	6.3 to 10.4
Marine Sediments	Typically comprising loose to dense sandy gravel	6.3 to 14.7	0.5 to 14.5
Glacio-marine deposits	Very Stiff sandy Silt and sandy Clay	19.0 to 22.8	12.0 to 19.5
Bedrock	Very weak to medium strong, grey, slightly weathered, fine grained Limestone, with weak Siltstone & Mudstone	41.3 to 47.1	Unproven

Based on the above information the report presents an "anticipated strata" for site as given below:

- 0-10m Made Ground
- 0-20m Marine Sediments, may include cohesive and/or granular layers
- 20-40m Glacio-Marine Deposits – Boulder Clay
- 40m+ Rock

Refer to Appendix C (Ground Investigation Extracts) for extracts from "Geotechnical Assumptions Report – Preliminary" issued by RPS Consulting Engineers.

3.5. Building Occupancy

The proposed development includes a number of mixed-use buildings illustrated below in Table 2 Building Occupancy Estimation. The occupancy of each building was assessed using the Building Regulations Technical Guidance Document B; Fire Safety, Table 1.1 Occupancy load factor. These figures were used to determine the expected water and foul loading requirements for the development.

Table 2 Building Occupancy Estimation

Building Breakdown	Floor Area (m2)	Occupancy Load Factor (Building Regulations Part D)	Estimated Occupancy
Stella Maris Rowing Club	771	5	154
Maritime Training Centre	803	5	161
Poolbeg Yacht and Boat Club	790	5	158
Harbour Operations Building	1670	7	239
Boat Maintenance Building	1069	30	36
			738

4 WATER SUPPLY

It is proposed to provide a new watermain to serve the proposed development. This section outlines the existing watermain services onsite and gives our proposals for the additional watermain requirements for the proposed development.

4.1. Existing Water Supply

Uisce Éireann were consulted with regard to the existing water supply within the site. A 100mm diameter ductile iron supply is noted to supply the existing club buildings which connects to a 6inch cast iron watermain from Dublin Port before connecting to an existing 9inch cast iron watermain to the south running adjacent Pigeon House Road.

Refer to Appendix B for existing watermain records.
Refer to Drawing CP1901_010-ROD-00-XX-DR-C-0040 for existing watermain layout.

4.2. Proposed Water Supply

A new connection to the existing 225mm public main running along Pigeon House road is proposed for the development. A pre-connection application has been sent to RPS to submit as part of the SID application. Water demand was estimated based on a building occupancy review as described in section 3.5. Based on these figures, it is estimated that average demand for this development is 0.656 l/s and the peak demand is 3.284 l/s. A ring main is proposed to provide connections for each building and external fire hydrants as required.

Additional fire storage allowance is to be provided via a series of underground tanks located south of the proposed club buildings. A maximum storage allowance of 252m^3 is proposed to provide 2,100 L/min for 2 hours, which is equivalent to 35L/s, which is to be confirmed with the fire consultant and Dublin City Fire Department following the planning process.

Refer to Drawing CP1901_010-ROD-00-XX-DR-C-0041 for proposed watermain layout.

5 FOUL DRAINAGE

It is proposed to provide new separate surface water and foul drainage systems to service the proposed development. This section describes the existing foul water drainage services on site. Furthermore, it also includes proposed foul water drainage infrastructure that would be required as part of the proposed development.

5.1. Existing Foul Drainage

An existing 225mm public combined sewer is located along Pigeon House Road to the south of the site. This sewer then discharges to Ringsend Wastewater Treatment Plant to the east. The invert level south of the proposed vehicular entrance is noted as 1.78mOD. Refer to section 3.3 for information on existing utilities.

Refer to Appendix B for existing drainage records.
Refer to Drawing CP1901_010-ROD-00-XX-DR-C-0030 for existing drainage layout.

5.2. Proposed Foul Drainage

A new foul sewer line will be required to serve the development. A Pre-connection enquiry is to be submitted to Uisce Éireann to gauge feasibility of discharging the foul from the proposed Maritime Village site to the existing public sewer to the south of the site.

It is proposed to connect to the public sewer at an existing manhole south of the site with an invert level of 1.78mOD. Foul water collected from the boat wash down slab and boat storage area will be treated and re-used using a Kingspan treatment plant product or similar.

2no. pump-out wastewater storage tanks will be installed in proximity to the Harbour Operations pontoon and the marina pontoon which shall discharge to the foul network within the site and in turn discharge to the public sewer.

The wastewater network has been designed in accordance with Uisce Éireann's '*Code of Practice for Wastewater Infrastructure'* (Document No. IW-CDS-5030-03) and will be constructed in accordance with same and Uisce Éireann '*Water Infrastructure Standard Details'* (Document No. IW-CDS-5030-01).

The entire foul sewer system was modelled in accordance with the Uisce Éireann Code of Practice and is included in Appendix E. A pre-connection application has been sent to RPS to submit as part of the SID application. Foul discharge was estimated similarly to water demand with estimated occupancy numbers as described in section 3.5. Based on these figures, the average demand for this development is 0.578 l/s and the peak demand is 3.205 l/s, based on estimated occupancy numbers The foul gravity sewers were assessed as per the design foul flow as per Uisce Éireann Code of Practice for Wastewater Infrastructure.

The average demand was assessed, and it achieves the discharge capacity. The assessment found that self-cleansing velocity (0.7m/sec) will be achieved for the development at design foul flow.

Refer to Appendix E for foul water calculations.
Refer to Drawing CP1901_010-ROD-00-XX-DR-C-0031 for proposed drainage layout.

6 SURFACE WATER DRAINAGE

It is proposed to provide a new surface water system to serve the proposed development. This section describes the existing surface water drainage services surrounding the subject site. Further, it also includes proposed surface drainage infrastructure that would be required as part of the proposed development.

6.1. Existing Surface Water Drainage

An existing 225mm concrete public surface water sewer serves the existing site which discharges to the sea to the west of the site.

Refer to Appendix B for existing drainage records.
Refer to Drawing CP1901_010-ROD-00-XX-DR-C-0030 for existing drainage layout.

6.2. Proposed Surface Water Drainage

It is proposed to construct a new surface water drainage system for the development. Rainwater from the roofs and hardstanding areas will be conveyed directly to the surface water drainage system via downpipes, gullies and channels respectively.

It is proposed to provide attenuation on site in the form of oversized underground drainage, including two 900mm diameter sewer pipes connected to a hydrobrake with a limited discharge rate of 3 L/s before discharging through the north key wall.

The proposed drainage is sized to accommodate a 1 in 100-year rainfall event in accordance with Dublin Drainage Strategy.
The entire storm water sewer system was modelled. The stormwater pipes are designed for 50mm/hr rainfall intensity (plus 10% for climate change) as per Greater Dublin Strategic Drainage Study. They were designed for a minimum self-cleansing velocity of 0.7m/s in accordance with BS EN 16933-2:2017.

A separate Flood Risk Assessment has been undertaken by RPS as part of the SID application.
Refer to Appendix D for surface water calculations.
Refer to Drawing CP1901_010-ROD-00-XX-DR-C-0031 for proposed drainage layout.

6.2.1. SuDS Approach

This should be read in conjunction with the following:

(i) CP1901_010-ROD-00-XX-DR-C-0031

As part of the development, a number of different Sustainable Drainage Systems (SuDS) measures are proposed to minimise the impact on water quality and quantity of the runoff from the site. However, opportunities to maximise the amenity and biodiversity of the site are limited given then challenging existing ground conditions.
The proposed SuDS measures include a combination of Source Control, Site Control and Regional Control measures as part of a Management Train whereby the surface water is managed locally in small sub-catchments rather than being conveyed to and managed in large systems further down the catchment, which would be emptied manually.
It is proposed to capture surface water run-off from the boat wash down area in a foul treatment package plant which can be recycled to wash the boats. The treatment plant would be sized for a storm event. It would be connected to an overflow tank in the event it did exceed capacity.
Due to the expected contamination of the existing soil as is typically found at Dublin Port, infiltration to the subsoil was considered not feasible due to the risk of contamination entering the River Liffey from infiltrated runoff.
It is proposed to provide the following SuDS measures:

1) Surface Water Attenuation in the form of oversized surface water pipes
2) Limiting surface water discharge from site using a hydrobrake flow control device
3) Rainwater harvesting from boat wash slab treatment works.

Impermeability Factors

To calculate the surface water run-off from the development, impermeability factors for various surface types are considered. The upper bound impermeability factors of 0.6 for commercial carparks and hardstanding areas, and 1.0 for commercial roofs are chosen in line with Table 26.14 'Impermeability and pollution indices for different land use types' of the SuDS Manual. This table has been reproduced in Figure 2 below.

TABLE 26.14 Impermeability and pollution indices for different land use types[1]

Land use surface type (LUST)	Impermeability (IMP_{RF})	Total suspended soluds pollution index (PI_{TSS})	Organic pollution index (PI_{Org})	Hydrocarbon pollution index (PI_{PAH})	Metals pollution index (PI_{HM})
Roofs					
• industrial/commercial	1.0	0.3	0.3–0.4	0.2	0.4–0.8
• residential	0.9	0.4–0.5	0.6–0.7	0.1	0.2–0.5
Highways					
• motorways	0.8–0.9	0.9	0.7	0.9	0.8
• major arterial highways	0.7–0.8	0.8	0.7	0.8	0.8
• urban distributor roads	0.6–0.7	0.7–0.8	0.5	0.8	0.7
• residential streets	0.4–0.6	0.4	0.6	0.6	0.6
• pavements	0.5–0.6	0.4	0.6	0.3	0.3
Car parks/hardstanding					
• industrial/commercial	0.6–0.8	0.6–0.7	0.6–0.7	0.7	0.4–0.5
• driveways (residential)	0.5	0.5	0.6	0.4	0.3
Open areas					
• gardens (all types)	0.1	0.3	0.2–0.3	0	0.01
• parks/golf courses	0.2	0.2–0.3	0.2	0	0.02
• grassed areas (including verges, all types)	0.1	0.2–0.3	0.2–0.3	0.05	0.05

Note
1 Pollution index values are based on reported land use type EMC distributions and impact potential thresholds from House *et al* (1993), Luker and Montague (1994), Butler and Clark (1995), D'Arcy *et al* (2000), Mitchell (2005) and Moy *et al* (2003).

ANNEX 5

Figure 2 'SuDS Manual Table 26.14 Impermeability and pollution indices for difference land use type'

7 ROADS AND TRAFFIC

The section describes the existing traffic and transport infrastructure on site and surroundings and provides details of the proposed access, circulation, and parking strategies. A supplemental Access & Parking Report can be found in Appendix H.

7.1. Existing Access

The existing site is bound by the R131 (East Link) and adjacent Pigeon House Road to the south. It is bound by an existing freight yard to the east. Dublin port channel bounds the site to the west and north which includes a marina to the north-west of the site. Access to the existing Stella Marris Rowing Club and Poolbeg Yacht and Boat Club is off Pigeon House Road which is accessed from a roundabout with the East Link Road and Pigeon House Road which terminates at the club buildings. A vehicle barrier separates Pigeon House Road and the adjacent R131.

Figure 3 Photograph of Front Circulation Area

Figure 4 Surrounding Road Network © OpenStreetMap

Refer to Drawing CP1901_010-ROD-00-XX-DR-C-0001 for existing site layout.

7.2. Proposed Access & Site Circulation

A primary access to the development is proposed centrally which transverses the proposed Southern Port Access Road (SPAR) Road which forms another part of the 3FM Strategic Infrastructure Development (SID) by Dublin Port Company (DPC). Vehicle parking is located to the east of the site, with access to the main carpark for the development directly to the east upon entering the development. To the north-east of the development, a private carpark for Harbour Operations is to be provided for Harbour operations staff only. To the east is proposed a boat wash bay and storage yard, with space provided for drop-off and turning of cars & trailers by site users. A slip way for vehicles with trailers is provided to the west of this turning area. The western portion of the site encompassing the public event space is proposed to be a pedestrianised area with the allowance for emergency vehicle access only to the area.

ROD have undertaken swept path analyses for a number of vehicles, including, refuse truck, coach, fire tender and car with trailer to ensure vehicle movements can be executed as required within the proposed site layout.

ROD have ensured the design of road and footway widths, vertical and horizontal profiles and pedestrian crossing locations comply with the Design Manual for Urbans Roads and Streets (DMURS) and Part M Access and Use of the Building Regulations.

Refer to Drawing CP1901_010-ROD-00-XX-DR-C-0005 for proposed site layout
Refer to Drawing CP1901_010-ROD-00-XX-DR-C-0090/0091 for swept path analyses.
Refer to Appendix H for access & parking report.

7.3. Existing Car Parking

The existing car parking for the site is located to the front (south) of the existing club buildings. There are 30no. existing car parking spaces for the club buildings. It is understood that parking on site is limited and often restricted for day-to-day use with vehicles often forced to park along Pigeon House Road when parking is not available in the allocated spaces.

7.4. Proposed Car Parking

The main carpark for the development is proposed to the south-east of the site which is accessed directly after the access to the development across the SPAR. Section 4.0

of The Dublin City Development Plan (2022-2028) Appendix 5 addresses transport and mobility technical requirements which should be read in conjunction with Chapter 8 of the Plan, Sustainable Movement and Transport. The Plan divides the Dublin City Council Area into three areas for the purpose of parking control, as shown on Map J of the Plan. An extract from Map J is shown below which indicates that the Maritime Village (marked with red X) is not within Zone 1 or 2, cyan and grey hatched respectively. Therefore, the site falls within Zone 3.

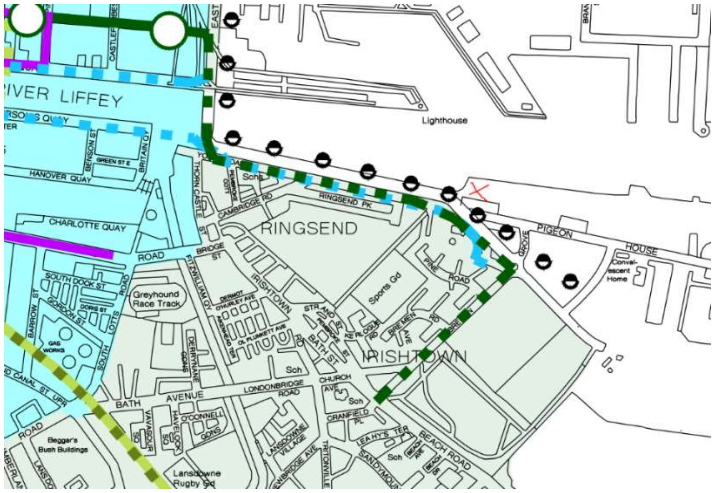


Figure 5 Extract from DCC Development Plan (Map J) – Red X indicates the Subject Site

An extract from Table 2 in Appendix 5 (Transport and Mobility: Technical Requirements) of Volume 2 of the Dublin City Development Plan 2022-2028. is shown below (Figure 6). The proposed parking is highlighted in the below Figure 6 according to the Development Plan Table 2 extract. These maximum numbers of car parking spaces have been considered for the design based on building use and floor areas.

Category	Land-Use	Zone 1	Zone 2	Zone 3
Retail and Retail Service	Café Restaurant and Takeaways	None	1 per 150sq. m. seating area	1 per 150sq. m. seating area
	Public Houses	None	1 per 300 sq. m. NFA	1 per 50 sq. m. NFA
	Club[5]	None	1per 10 sq. m. floor area	1 per 3 sq. m. floor area
	Retail Supermarkets exceeding 1,000sq.m. GFA	None	1 per 100 sq. m. GFA*	1 per 30 sq. m. GFA*
	Other Retail and Main Street	1 per 350 sq. m. GFA	1 per 275 sq. m. GFA	1 per 75 sq. m. GFA
	Retail Warehousing (non-food)	1 per 300 sq. m. GFA	1 per 200 sq. m. GFA	1 per 35 sq. m. GFA
Enterprise and Employment	Offices[6]	None[7]	1 per 200 sq. m. GFA	1 per 100 sq. m. GFA
	Manufacturing / Warehousing	1 per 450 sq. m. GFA	1 per 450 sq. m. GFA	1 per 200 sq. m. GFA
Sports and Recreation	Clubhouse Gymnasium[8] Courts Pitches		Dependent on nature and location of use	
Venue	Auditoriums Cinema Conference Centre Stadia[9] Theatre	1 per 100 seats	1 per 25 seats	1 per 10 seats

Figure 6 Extract of Table 2 from Appendix 5 of Volume 2 of the Dublin City Development Plan 2022-2028

Table 3 Vehicle Parking Breakdown From Development Plan

Car Parking Maximum Provisions				
Building / Use	**Use Class**	**Area SqM GFA**	**DCC Development 2022-2028 Plan Max. Provisions (Zone 3)**	
			Ratio	**Quantity Reqd.**
Harbour Operations	Office	1670	1 space per 100m^2	**17**
Stella Maris Rowing Club (excl. Marina Office)	Clubhouse / Gymnasium	771	Dependent on nature and location of use	**11**
Marina Management Office	Office	31	1 space per 100m^2	**1**
Poolbeg Yacht & Boat Club	Clubhouse / Gymnasium	790	Dependent on nature and location of use. (Assumed 1 space per 75m2 as per community centre.)	**11**
Maritime Training Centre (excl. Marine Chandlery)	Community Centre	736	1 space per 75m^2	**10**
Marine Chandlery	Retail	67	1 space per 75m^2	**1**
Boat Maintenance Facility - warehouse areas	Manufacturing / Warehousing	847.5	1 space per 200m^{2}GFA	**5**
Boat Maintenance Facility - clubhouse areas	Clubhouse / Gymnasium	221.5	Dependent on nature and location of use. (Assumed 1 space per 75m2 as per community centre.)	**3**
Max Total Required				**59**
Of which, 5% to be accessible spaces				3
Of which, 50% to be E-Car charging spaces				30

The Dublin City Development Plan 2022-2028 car parking standards does not set a specific provision for Sports and Recreation where it is recognised that the parking requirements are dependent on the activities and location. The existing site has parking capacity for c.30 cars, and often there is overspill parking onto Pigeon House Road adjacent the site. The proposed public car parking to service the clubs and public amenities is 59 spaces, which is approximately an 100% increase on the existing car parking. This additional parking is required to address the upcoming increase in capacity of new buildings, unmet generated demand of existing buildings and to avoid parking overflow on adjoining roads. The proposed Maritime Training Centre and Boat Maintenance Building will generate new parking demands in the daytime during weekdays, however this will not coincide with the peak activities of the Clubs which is in the evening and at weekends.

The Harbour Operations building is an essential service which is operational 24 hours a day, thus parking for staff and visitors is considered essential due to the nature of works with vehicle parking necessary for staff to travel to other areas of Dublin Port as

required. Provision shall be made for parking for up to 28 vehicles including the provision of disabled parking, and EV charging facilities.
The current site layout includes the following proposed parking.

Table 4 Proposed Vehicle Parking

Proposed Element	Standard Spaces	Accessible Spaces	E-Car Spaces	Trailer / Mini-bus spaces	Total Spaces
Main Carpark	42	4	8	5	59
Harbour Operations Carpark	21	2	5	0	28
Total Provision	63	6	13	5	**87**

Refer to Drawing CP1901_010-ROD-00-XX-DR-C-0005 for proposed site layout.
Refer to Appendix H for Access & Parking Report.

7.5. Proposed Cycle Parking

Appendix 5 of Volume 2 of the Dublin City Development Plan 2022-2028 provides details of cycle parking standards. In this regard, all new developments are required to fully integrate cycle facilities into the design and operation of the schemes, in accordance with Table 1 of the Plan (Figure 7). Bicycle parking is divided into two categories. Long term spaces are designed for use by residents and employees and shall be located in a secure and well-lit area. Short stay/visitor spaces are designed for use by the general public and shall be located in highly visible areas for ease of access. An extract from Table 1 (Bicycle Parking Standards for Various Land Uses) is shown below in Figure 7.
These requirements have been accounted for in the design of the development with a breakdown of bicycle parking requirements for each building illustrated below in Table 5.

Category	Land-Use	Zone	Long Term	Short Stay/ Visitor
Education	College of Higher Education	All Zones	1 per 5 staff 1 per 2 students	
	Crèche/Childcare Services[4]	All Zones	1 per 5 staff	1 per 10 children
	Primary Schools	All Zones	1 per 5 staff 1 per 5 students	
	Post Primary Schools	All Zones	1 per 5 staff 1 per 5 students	
Medical	Clinics and Group Practices	All Zones	1 per 5 staff	To be determined by the Planning Authority on case by case basis
	Hospital	All Zones	1 per 5 staff	1 per 10 beds
Retail and Retail Service	Café Restaurant	All Zones	1 per 5 staff	1 per 10 seats
	Public Houses	All Zones	1 per 5 staff	1 per 150 sq. m. GFA
	Retail	All Zones	1 per 5 staff	1 per 100 sq. m. GFA
	Retail Warehousing	All Zones	1 per 5 staff	1 per 100 sq. m. GFA
Enterprise and Em-ployment	Offices[5]	All Zones	1 per 75 sq. m. GFA	To be determined by the Planning Authority on case by case basis
	Manufacturing/ Warehousing	All Zones	1 per 200 sq. m.	-
	Clubhouse Gymnasium[6]	All Zones	1 per 5 staff	1 per 50 sq. m. GFA
	Courts Pitches	All Zones	1 per 5 staff	4 per pitch or court
Venue	Auditoriums Cinema Conference Centre Theatre Stadia	All Zones	1 per 5 staff	1 per 20 seats

Figure 7 Extract from Appendix 5 of Volume 2 of the Dublin City Development Plan 2022-2028

Table 5 Bicycle Parking Breakdown From Development Plan

Building / Use	Use Class	Area SqM GFA	No. People	DCC Development 2022-2028 Plan Min. Requirements			
				Long Stay		Short Stay	
				Ratio	Quantity Reqd.	Ratio	Quantity Reqd.
Harbour Operations	Office	1670	68	1 space per 75m² GFA	**23**	To be determined by planning authority on case by case basis	**2**
Stella Maris Rowing Club (excl. Marina Office)	Clubhouse / Gymnasium	771	10	1 space per 5 staff	**2**	1 space per 50m² GFA	**16**
Marina Management Office	Office	31	1	1 space per 75m² GFA	**1**	To be determined by planning authority on case by case basis	**1**
Poolbeg Yacht & Boat Club	Clubhouse / Gymnasium	790	**10**	1 space per 5 staff	**2**	1 space per 50m² GFA	**16**
Maritime Training Centre (excl. Marine Chandlery)	Community Centre	736	**10**	1 space per 5 staff	**2**	1 space per 100m² GFA	**8**
Marine Chandlery	Retail	67	2	1 space per 5 staff	**1**	1 space per 100m² GFA	**1**
Boat Maintenance Facility - warehouse areas	Manufacturing / Warehousing	847.5	N/A	1 space per 200m² GFA	**5**	none	**0**
Boat Maintenance Facility - clubhouse areas	Clubhouse / Gymnasium	221.5	**5**	1 space per 5 staff	**1**	1 space per 50m² GFA	**5**
Total Required					**37**		**49**
							86

According to the development plan parking for 86 bicycles is required.

The below table (Table 6) shows the bicycle parking provision as shown on the Proposed Site Layout. Where the number of short-term spaces are to "be determined by the planning authority", we have made assumptions based on similar developments and in liaison with the end users.

Table 6 Proposed Bicycle Parking

Proposed Bicycle Parking			
Proposed Element	**Users**	**Long Stay Spaces**	**Short Stay Spaces**
Secure Bike Store 01	All Site users (excl Harbour Operations)	76	
Secure Bike Store 02	Harbour Operations	16	
Short Stay Sheffield Stands	All Site Users		56
Total Provision		**92**	**56**
			148

This proposed cycle parking provision is in excess of the minimum standards set out in the Dublin City Development Plan and is a significant increase on the existing situation where there is no dedicated cycle parking provision. Along with the much improved access for active travel modes, this generous cycle parking provision will help encourage a modal shift to active travel modes.

8 CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN

This Preliminary Construction & Environmental Management Plan (CEMP) has been prepared to outline the envisaged the procedures, sequencing, construction methodology and environmental control measures anticipated by the Project Team engaged in the planning, liaison, and future construction of the proposed development. The appointed construction Contractor will prepare and be responsible for implementing the Final Construction & Environmental Management Plan for Construction.

8.1 Traffic Management

A full traffic management plan is to be agreed with Dublin City Council and the appointed contractor prior to works commencing on site. All construction traffic will utilise Pigeon House Road, with access to the existing club buildings to be maintained for the duration of the works.

The Contractors' site offices are to be separate from the Contractor's site materials storage compound and is to be located within the site boundaries.
A delivery plan should ensure that deliveries arrive at the correct part of site at the correct time. Instructions explaining such a plan should be sent to all suppliers and contractors.

8.2 Site Access and Egress

Contractor to submit details of access and egress arrangements for construction vehicles in and out of the site.

8.3 Public Road

Any works outside of the site must be co-ordinated with Dublin City Council, with full Traffic Management to be in place and agreed with DCC prior to any works commencing.

8.4 Road Maintenance

The site access road and surrounding roads will be maintained at all times. Road / wheel cleaning facilities will be implements from the outset of the project. All internal roads will be maintained in good condition throughout the project.
Condition surveys to be carried out prior to the works on the surrounding road.

8.5 HGV Movements

The traffic generated by the construction of the development is anticipated to peak during the earthwork activities which will create the most long-term consistent movement of HGVs over the construction programme. It is proposed to raise the ground level of the site by an average in excess of 1.5m over a 3-month period which will require an estimated 28,350m3 of imported fill material, or 3,544 HGV loads based on an average capacity of 8m3 per HGV. This equates to 60 HGV loads per working day, or 120 HGV movements per working day.

8.6 Measures to Prevent Pollution to Receiving Waters

Sedimentation and surface water run-off:

- In order to attenuate flows and minimise sediment input into the River Liffey from site run-off, all surface water run-off from the construction site shall be directed to a temporary attenuation facility, where the flow rate will be attenuated and sediment allowed to settle out, before passing through a hydrocarbon interceptor and being discharged.
- Sheet piling for the new seaward site boundary shall be installed prior to any excavation on the landward side. This will form an effective barrier to run-off from the site during construction.
- Any material stockpiled shall be located a minimum of 30 m from the seaward boundary of the site and shall also be covered and remain stockpiled for as short a time as possible.
- The Contractor shall provide method statements for weather and tide/storm surge forecasting and continuous monitoring of water levels and the removal of site materials, fuels, tools, vehicles and persons from flood zones in order to minimise the risk of input of sediment or construction materials into the river during flood events.

Cementitious materials:

The measures prescribed with regard to sedimentation and surface water run-off will also minimise the risk of any input of cementitious material into the River Liffey from the landside elements of the construction. However, the following measures shall also apply:

- All shuttering shall be securely installed and inspected for leaks prior to concrete being poured and all pouring operations shall be supervised monitored for spills and leaks at all times.
- In order to eliminate any remaining risk of input of cementitious material into the River Liffey, all pouring of concrete, sealing of joints, application of waterproofing paint or protective systems, curing agents etc. for outfalls shall be completed in dry weather.
- In order to prevent input of cementitious materials into the River Slaney from the in-stream elements of the construction, concrete structural elements shall be precast, wherever possible.
- Where concrete or other wet materials are to be used over water, appropriate bunded platforms shall be in place to capture any spilled concrete, sealants or other materials.

- Any such materials collected on these platforms shall be disposed of in accordance with the Construction and Demolition Waste Management Plan.

Hydrocarbons and other chemicals:

- Land-based vehicles and plant shall be refuelled off-site, where possible.
- All land-based fuelling of machinery shall be undertaken on an impermeable base in bunded areas at least 50 m from the seaward boundary of the site.
- All fuelling equipment shall be regularly inspected and serviced.
- Any petrol- or diesel-fuelled pumps or other machinery shall be located within temporary bunded units.
- All fuel, oils, chemicals, hydraulic fluids, on-site toilets etc. shall be stored in the construction site compound, on an impermeable base which shall be bunded to 110% capacity and appropriately secured.
- All plant and construction vehicles shall be inspected daily for oil leaks and a full service record shall be kept for all plant and machinery.
- All waste oils, empty oil containers and hazardous wastes shall be disposed of in accordance with the Waste Management Act, 1996 (as amended).
- Owing to the presence of contaminants within the construction site, excavation shall be limited to the absolute minimum necessary.

8.7 Waste Management Strategy

Scope:

The Contractor will develop a Construction and Demolition Waste Management Plan (CDWMP) that will detail:

- Licensing of Waste Disposal;
- Site clearance;
- Excavations, stockpiling and disposal of materials;
- Measures to protect water quality;
- Importation, stockpiling and placing of fill;
- Management of drainage works to ensure no pollution of watercourses;
- Construction vehicle management;
- Dust and noise abatement measures; and,
- Invasive species treatment.

Waste and Recycling Management:

The management of construction and demolition waste will reflect the waste management hierarchy, with waste prevention and minimisation being the first priority, followed by reuse and recycling. During site clearance and construction works, there are numerous opportunities for the beneficial reuse and recycling of materials. The subsequent use of recycled materials in reconstruction works also reduces the quantities of waste which ultimately needs to be consigned to landfill sites.

The Contractor will develop and implement a plan and manage all waste with a goal of achieving the waste hierarchy in accordance with the relevant statutory provisions as shown in the figure below.

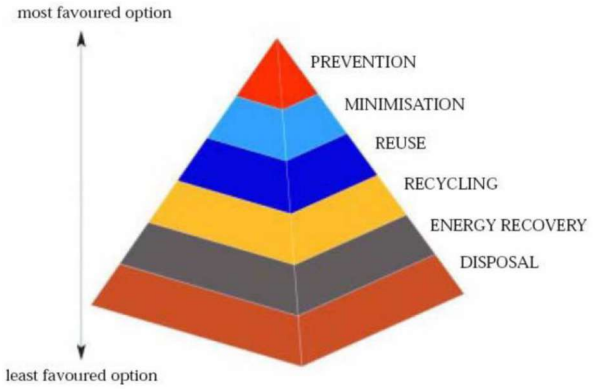


Figure 8 - Hierarchy of waste management

Source Segregation:

Wastes generated on the construction site will be identified and segregated according to their respective categories, as described by the European Waste Catalogue (EWC). Where possible, metal, timber, glass and other recyclable material will be segregated and removed off-site to a permitted/licensed facility for recycling.

In order to effect this, designated Waste Storage Areas (WSA's) will be created at the construction compounds or other suitable locations for the storage of segregated wastes prior to transport for recovery/disposal at suitably licensed/permitted facilities.

Suitably sized containers for each waste stream will be provided within the WSA and will be supervised by a WMC, who will be appointed by the Contractor. This will be the person responsible for the management of waste during the construction of the entire project. The number and sizing of containers will be agreed with Waste Contractors in advance of construction works commencing. Source segregation of waste will result in cost savings to the project as well as providing an environmentally sound route for the management of all construction and demolition wastes.

Material Management:

In order to prevent and minimise the generation of waste, the Contractor will be required to ensure that raw materials are ordered so that the timing of delivery, the quantity delivered, and the storage is not conducive to the creation of unnecessary waste. The Contractor, in conjunction with the material suppliers, will be required to develop a programme showing the estimated delivery dates and quantities for each specific material associated with each element of construction and demolition works.

Following a "just-in-time" approach improves cash flow, better utilises storage space and reduces potential loss to theft and accidental damage as well as making the site safer.

It is essential that the planning, construction works planning is carried out closely with the waste management contractors, in order to determine the best techniques for managing waste and to ensure a high level of recovery of materials for recycling.
The Contractor will be required to continuously seek to improve the waste management process on-site during all stages of construction and maximise opportunities for re-use and recycling where they exist. For example, in relation to waste packaging, the Contractor will seek to negotiate take-back of as much packaging waste as possible at source to ensure maximum recycling. The CDWMP will be included as an agenda item at the weekly construction meetings. In addition, the plan will be communicated to the whole team (including the Client) at the monthly meetings. This will include any updates to earlier versions of the document.

Waste Auditing

The Contractor will record the quantity (in tonnes) and types of waste and materials leaving the site during the construction phase. The name, address and authorisation details of all facilities and locations to which waste and materials from the construction phase are delivered will be recorded along with the quantity of waste (in tonnes) delivered to each facility. Records will show all material recovered and disposed of.

The waste management strategy for the project will follow the accepted waste hierarchy and the Contractor will implement the following types of measures to reduce waste and maximize opportunities for recycling:

- Wherever possible, materials for construction activities will be ordered as to require the minimum possible storage time;
- Materials will be ordered, where possible, in sizes to prevent wastage;
- Appointment of a WMC, who will be responsible for handling, storage and delivery of materials to the proposed development;
- Ensure that stored material is protected from damage from plant and environmental factors such as rain and wind;
- Secure storage areas to prevent unauthorised access;
- Establish a waste management compound to handle incoming waste from construction activities – this should facilitate the segregation of key waste streams to maximise the opportunity to re-use, recycle and return wastes generated on-site;
- Provide a separate secured area for dealing with hazardous waste; and,
- Provide separate facilities for the storage of fuels and chemicals.

Waste and Recycling Targets

The Contractor's CDWMP, waste handling and proposed construction methods should endeavour to achieve the following targets:

- The re-use of all earthwork's materials on site where possible;
- 100% recycling of surplus reinforcement and other metals, where possible;
- and,
- No contamination of skips, i.e. no additional costs due to inappropriate materials being placed in skips designated for particular waste streams.

Waste and Recycling Opportunities

The Contractor will seek opportunities, wherever possible, to reduce the amount of waste generated on site and maximize the potential for recycling materials in accordance with the waste hierarchy through the following:

- Maximising the re-use of soils on site during the construction of the proposed development;
- Storing materials in designated areas and separate from wastes to minimise damage;
- Returning packaging to the producer where possible;
- Segregating construction and demolition wastes into reusable, recyclable and
- non-recyclable materials;
- Reusing and recycling materials on site during construction where practicable;
- Recycling other recyclable materials through appropriately permitted/licensed
- contractors and facilities; and,
- Disposing of non-recyclable wastes to licensed landfills.

Waste Disposal Licencing:

Licensing Requirements
Under the Waste Management (Collection Permit) (amended) Regulations, 2016, a waste collection permit for appropriate EWC Code(s) and designations is required by a waste haulier to transport waste from one site to another. Compliance with the Waste Management (Shipments of Hazardous Waste in Ireland exclusively) Regulation, 2011 is also required for the transportation of hazardous waste by road.

The export of waste from Ireland is subject to the requirements of the Waste Management (Shipment of Waste) Regulations, 2007. The movement of material is subject to restrictions under Regulation 49 of the Birds and Natural Habitats Regulations 2011(as amended). The Contractor will ensure that the transport and movement of all waste is carried out in compliance with these requirements.

Waste may only be treated or disposed of at facilities that are licensed to carry out that specific activity, e.g. chemical treatment, landfill or incineration, for a specific waste type. Records of all waste movements and associated documentation will also be held on-site. Generally, operators of waste management sites will facilitate a site visit and inspection of documentation if deemed necessary. Prior to any on-site recovery process, including the operation of mobile plant, an operator must apply to the governing local authority for a waste facility permit under the Waste Management (Facility Permit and Registration) Regulations, 2007.).

Exclusion from Legislation:

The Directive on Waste contains several exclusions which make clear that certain materials are not subject to its requirements. A key exclusion affecting construction projects such as this development is set down in Article 2(1)(c). This states that the requirements of the EU legislation do not apply to:

> *"uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated"*

This provision is repeated in the Waste Management Acts, as amended by the European Communities (Waste Directive) Regulations, 2011 (SI No. 126/2011).

Should materials generated by construction activities fall within this provision, they are not then subject to the other requirements of the EU or national waste legislation.

This means that, for example, such materials are not defined as "waste", do not need to be handled by duly authorised waste collectors and do not need to pass to disposal or recovery facilities that are subject to waste licences or other equivalent form of statutory authorisation. In addition, the requirements of the Waste Hierarchy do not apply.

9 FLOOD RISK ASSESSMENT

The site is bounded to the north by the River Liffey Estuary, an industrial container storage yard and Dublin Port Docks to the east and the R131 and East Link Bridge to the west. Existing key walls exist along the northern boundary of the site at an approximate level of 3.3m, with an existing slipway located to the west.

Careful consideration is required regarding the site-specific flood risk characteristics due to the location of the development and potential impact due to a flood event. A preliminary flood risk assessment was carried out to review the existing information

available to inform the design of building floor levels and external site levels throughout the development.

As planning consultant for the entire 3FM development, RPS Consulting Engineers have issued a memo summarising their recommendations for the 3FM development with regards to flood risk entitled, "Dublin Port Coastal Water Levels Design Memo".

The memo references the Planning System and Flood Risk Management Guidelines (2009) the Strategic Flood Risk Assessment (SFRA) for the Dublin Port Masterplan 2040 published in 2018 which advises that any development should be set at the present day 0.5% AEP tidal event with a suitable allowance for climate change and an appropriate freeboard, taking account of data uncertainties and the site-specific wave climate.

With regards to the tidal water level for 0.5% AEP tidal event, RPS recommend that a level of 3.15mOD is considered. See extract below.

> *'The most up to date extreme water levels at Dublin Port are from Phase 1 of the Irish Coastal Wave and Water Level Modelling Study (ICWWS) 2018. Phase 1 provides an update to the Extreme Coastal Water Levels for the coast of Ireland, originally presented as output from the Irish Coastal Protection Strategy Study (ICPSS) undertaken between 2004 and 2013, which estimated water levels for a range of Annual Exceedance Probability Events at a series of points around the coast of Ireland. The predicted 0.5% AEP tidal water level from this analysis is 3.15m OD.*
>
> *It is recommended that a 0.5% AEP coastal level of 3.15m OD is used for the 3FM project. Consultation with OPW indicated that they are in agreement this is the most accurate assessment of present day flood levels for Dublin Port."*

With regards to an allowance for climate change RPS recommend an allowance for a 1m rise in sea levels. Their reasoning is explained in the extract below.

> *"The Irish Coastal Protection Strategy Study considered two future scenarios- the Mid Range Future Scenario (MRFS) which is an allowance of 0.5m on extreme water levels, and the High End Future Scenario (HEFS) which is an allowance of 1m on extreme water levels. The ICWWS has two further future scenarios- H+EFS which is an allowance of 1.5m on extreme water levels, and the H++EFS which is an allowance of 2m on extreme water levels.*
>
> *In 2021, RPS completed the report 'Dublin Port Bull Walls- Considering the Impact of Future Climate Change' on behalf of Dublin Port Company. The primary objective of this study was to review national guidance documents and the plethora of scientific literature to identify a likely set of future scenario conditions that could be used to assess the impact of climate change on the historical structures at Dublin Port by 2100. The report recommended a 1m increase in sea level rise. It is recommended that an allowance of 1m for climate change is included for the 3FM project."*

In consideration of freeboard, a safety margin to account for uncertainties in water level and wave action prediction, RPS recommend a freeboard of 0.3m is included for the 3FM project. This is within the range recommended by the Office of Public Works (OPW).

RPS have also considered the risk of flooding for wave action and have concluded that only Plot N within the 3FM need consider an additional 0.3m allowance for wave action.

Therefore, in summary, RPS recommend a finished floor level of 4.45mOD for the 3FM development, including the Maritime Village. An extract from the memo giving the derivation of this value is shown below.

- Present day 0.5% AEP flood level = 3.15mOD
- 1m high end future scenario climate change = +1.0m
- Freeboard to allow for uncertainty = + 0.3m

Refer to Appendix G for RPS Water Levels Design Memo.

10 ENVIRONMENTAL IMPACT ASSESSMENT

ROD have carried out an Appropriate Assessment (AA) Screening Report for the Maritime Village site which will feed into the Environmental Impact Assessment Report (EIAR) for the entire 3FM development to be included in the 3FM SID planning application. The AA Screening Report is intended to determine whether or not the proposed development, either individually or in combination with other plans or projects, is likely to have a significant effect on areas designated as being of European importance for nature conservation ("European sites"), thereby enabling the competent authority, either An Bord Pleanála or Dublin City Council in this case, to fulfil its obligations under Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ("the Habitats Directive").

It is the considered opinion of ROD, as the author of this AA Screening Report, that the proposed development, either individually or in combination with other plans or projects, in view of best scientific knowledge, does not have the potential to significantly affect any European site, in view of their Conservation Objectives, and, therefore, that AA is not required in respect of the proposed development.

11 CONSTRUCTION CARBON MANAGEMENT

Sustainability
Given the importance of reducing carbon emissions and embracing the concepts of the circular economy, a sustainable design was a key consideration in decisions made by the design team on the Maritime Village. Below were some aspects considered.

Concrete
It is proposed that the concrete specification for both structure and infrastructure will include for 50% GGBS with CEM I cement or 30% GGBS with more environmentally friendly CEM II cements to produce concrete with much lower embodied carbon than that produced solely with CEM I or II cements.

GGBS cement produces a technically superior, more durable concrete with superior appearance as the finished product has a lighter more even colour and smoother surface texture than concrete made with ordinary cement. In addition, it has significant environmental benefits – its production involves no extraction of raw materials, virtually no emissions of CO_2, and no emissions of SO_2 and NO_x all of which are released during the manufacture of traditional Portland Cement.

Glulam (Glue Laminated Timber)
It is proposed that the main structure of the boat maintenance building and roof structure of the club buildings be constructed in Glulam. The manufacture of Glulam is a resource-efficient process. The raw material is mostly homegrown spruce from sustainably managed forests, plus a synthetic glue.

The proportion of glue is negligible – less than 1% by weight.

The products are normally supplied by the Glulam manufacturer with what equates to a target moisture content of no more than 16%. The drying process largely makes use of bioproducts from the plants' own production line. Glulam that is customised for the client ensures minimal waste at the construction site.

The protective film in which it is wrapped is a recyclable material. Glulam has no negative environmental effects. Repairability is high and parts of a Glulam beam or post can be replaced if necessary. Once the glulam product has reached the end of its life, it makes an excellent biofuel.

Drainage
Sustainable drainage (SuDS) measures will be employed on the project. Measures will include filter drains, petrol or oil interceptors and surface water attenuation with a hydrobrake to limit surface water discharge from the site. Permeable paving is to be implemented for the new parking areas.

As infiltration is not feasible due to the contaminated nature of the sub-soil of Dublin Port, an overflow can be incorporated to allow surface water to drain from the permeable paving formation levels, thus providing additional surface water storage for the site.

Rainwater Harvesting
Foul water collected from the boat wash down slab and boat storage area will be treated and re-used using a Kingspan treatment plant product or similar.

12 PRELIMINARY STRUCTURAL SCHEMES

Sub-structure
Based on the assumed "anticipated strata", it is assumed that the site consists of made ground to a depth of 10m below existing ground level. Rock levels are assumed to be at 40m below existing ground level. At this stage we have no assumed geotechnical engineering properties for the strata between the made ground and rock and thus cannot determine whether piled foundations utilising skin friction would be feasible.

Therefore, at this stage and subject to further site investigation, It is recommended that the foundations for all buildings within the Maritime village site are piled foundations terminating at rock level. Due to the noise pollution caused by driven piles, the use of Continuous Flight Auger (CFA) piles would be recommended.

Super Structure
Club Buildings and Training Centre
We recommend floor plates and walls are constructed with in-situ reinforced concrete. This is to account for the long spans acting as transfer slabs to take the load from walls above. The first-floor floor plate also cantilevers beyond its support walls which would be best accommodated for by in-situ reinforced concrete slabs.

We would recommend the roof structure be constructed in Glue Laminated Timber (Glulam) supported on Glulam columns.

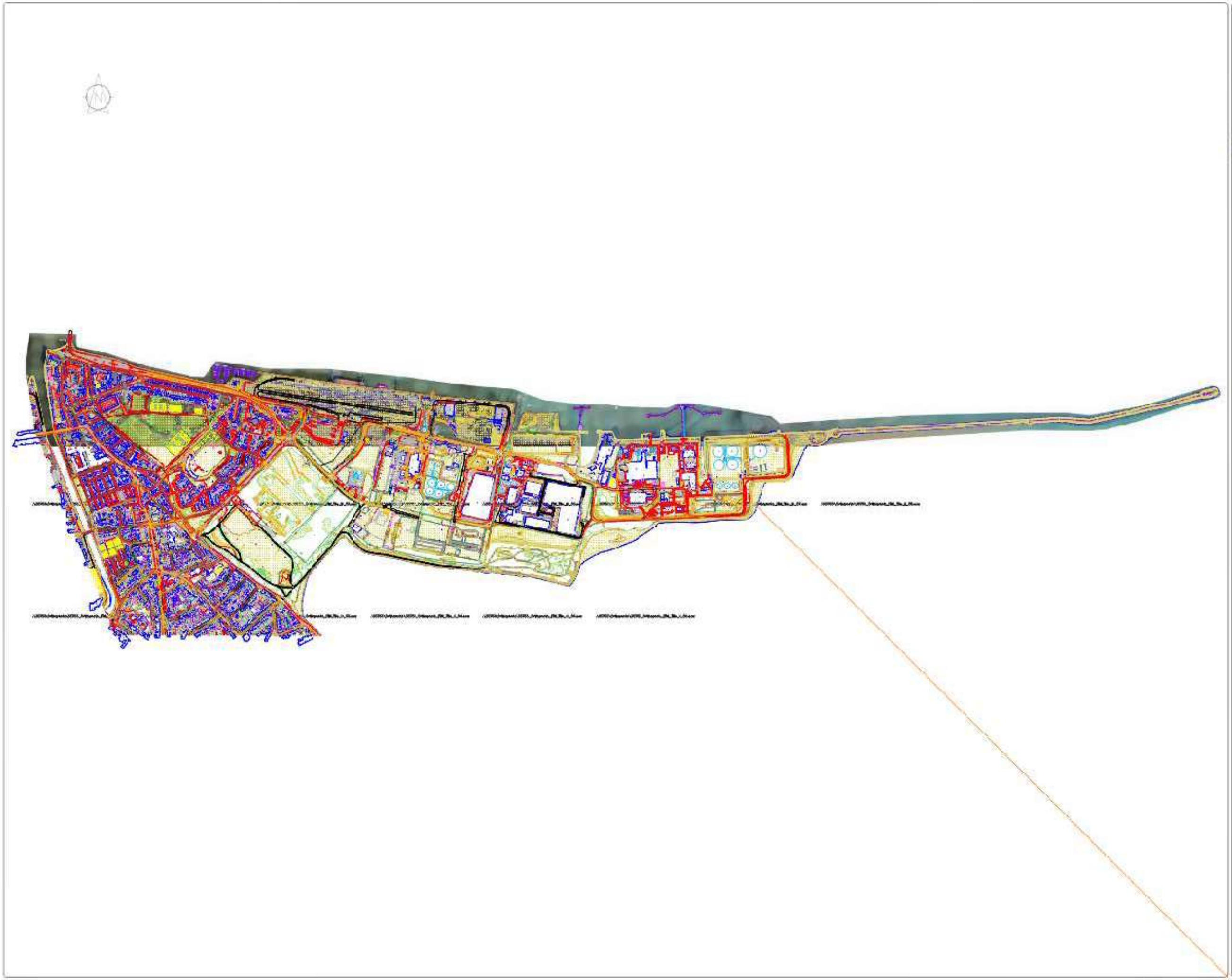
Harbour Operations Building
The Harbour Operations building incorporates glazed facades to all elevations and large cantilevered floor and roof slabs. Therefore, a load bearing wall solution would not be suitable in this instance. A framed solution is required. The frame could be structural steel or in-situ reinforced concrete. As precast concrete beams are typically designed as simply supported, they would not be suitable to cater for the cantilevers in this building. Lateral stability would be provided by in-situ concrete shear cores and shear walls. The choice between a steel or concrete frame may come down to the architect's preference. Steel beams and columns are smaller in cross section than reinforced concrete beams and columns for a given capacity. Therefore, steel framing elements are more discreet and better suit the aesthetics of glazed facades. For this reason, we recommend a structural steel frame for the Harbour Operations building.

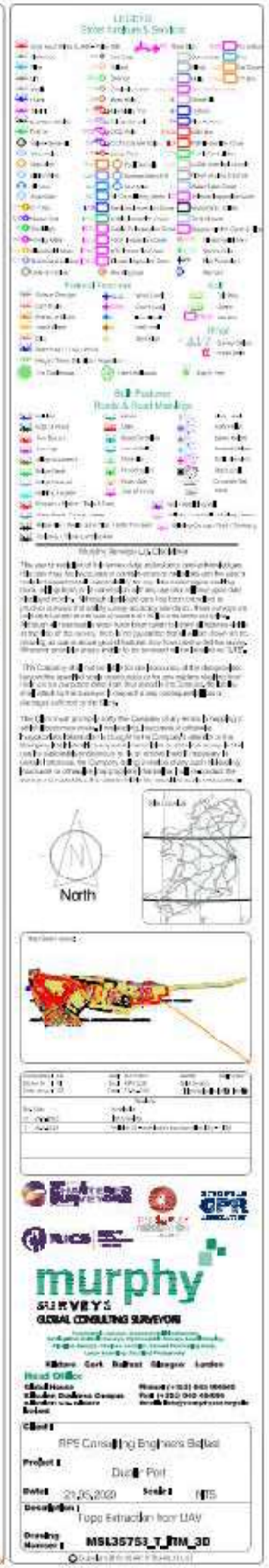
The floor plate option best suited to a steel framed structure is a composite metal deck and concrete topping. This floor plate type benefits from the efficiencies of composite action to optimise floor plate and beam depths.

Boat Maintenance Shed
The boat maintenance shed is akin to a single storey industrial building requiring large open work space with low magnitude roof loading. Portal frame structures are ideal for this type of building. Rigid connections between columns and beams provide lateral restraint against wind loads in the transverse direction while diagonal bracing between columns provides lateral restraint in the longitudinal direction. Portal frames are typically constructed in mild steel. However, with advances in technology in the timber industry and a focus on producing more sustainable building materials, Glue Laminated Timber (Glulam) is now a viable option in place of steel.

A Glulam portal frame structure would be our recommendation for the boat maintenance shed.

APPENDIX A
TOPOGRAPHICAL & UTILITY SURVEY




North
murphy
SURVEYS
GLOBAL CONSULTING SURVEYORS
Head Office
RPS Consulting Engineers Belfast
Dublin Port
21.05.2020
1:5
Topo Extraction from LiDAR
MSL35753_T_DM_30

ESB Networks

TITLE: 20220908-065_A3

COLOUR CODE:

- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 08-Sep-2022

** SCALE: 1:1800

** SCALE WHEN PRINTED ON AN A3 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

Maps reproduced by permission: Ordnance Survey Ireland Licence No. EN0092320, Copyright Ordnance Survey Ireland Government of Ireland

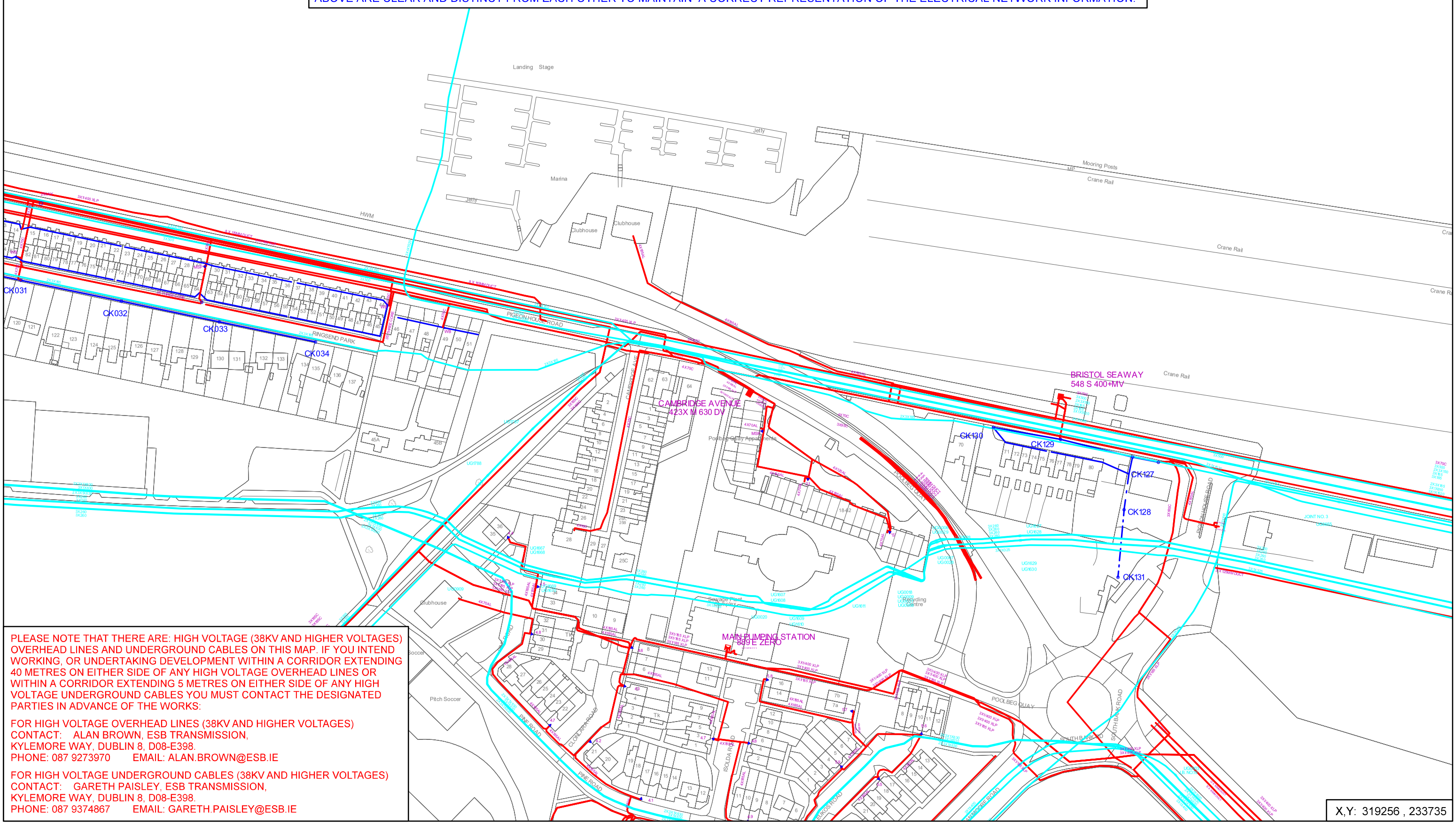
WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1800 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING: (A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES; (C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

X,Y: 318522 , 234170

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A3 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.

X,Y: 319256 , 234170



PLEASE NOTE THAT THERE ARE: HIGH VOLTAGE (38KV AND HIGHER VOLTAGES) OVERHEAD LINES AND UNDERGROUND CABLES ON THIS MAP. IF YOU INTEND WORKING, OR UNDERTAKING DEVELOPMENT WITHIN A CORRIDOR EXTENDING 40 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE OVERHEAD LINES OR WITHIN A CORRIDOR EXTENDING 5 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE UNDERGROUND CABLES YOU MUST CONTACT THE DESIGNATED PARTIES IN ADVANCE OF THE WORKS:

FOR HIGH VOLTAGE OVERHEAD LINES (38KV AND HIGHER VOLTAGES)
CONTACT: ALAN BROWN, ESB TRANSMISSION,
KYLEMORE WAY, DUBLIN 8, D08-E398.
PHONE: 087 9273970 EMAIL: ALAN.BROWN@ESB.IE

FOR HIGH VOLTAGE UNDERGROUND CABLES (38KV AND HIGHER VOLTAGES)
CONTACT: GARETH PAISLEY, ESB TRANSMISSION,
KYLEMORE WAY, DUBLIN 8, D08-E398.
PHONE: 087 9374867 EMAIL: GARETH.PAISLEY@ESB.IE

X,Y: 319256 , 233735

A3

DUBLIN HARBOUR

Landing Stage

Marina

Yacht Club

Slipway

Slipway

Freight Yard

PIGEON

20 LS 2475 2x100PP 1x50WT 1x100PP 2501 2476 1x100PP 2477 1x50WT 2485 1x100PP 2486 2x100PP 1 x 1-way MD (14/10) 1 x 100CD 1 x 1-way MD (14/10) 1 x 3.5 mOS 1x50PP 2487 1x100PP 2510 2519 1x100PP 2520 2x100PP 2521 2511 2x100PP 2536 1 x 1-way MD (14/10) 1 x 100CD 2534 2x100PP 2533 1 x 1-way MD (14/10) 1 x 100CD Mh Mhs H LS 18 19 20 44 45 46 51 62 64 137

open eir Civil Engineering Infrastructure Service	Scale: 1:1000	Irish National Grid Co-Ordinates Centre XY: 318864 m, 234064 m
	Date 05/09/2022	Smallworld Powered by GE

THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND SHOULD NOT BE DISCLOSED TO ANY THIRD PARTY WITHOUT THE EXPRESS WRITTEN CONSENT OF open eir. THE DRAWING MAY NOT BE PHOTOCOPIED OR REPRODUCED IN ANY WAY.

THE INFORMATION GIVEN IS COMPILED FROM PASSIVE ACCESS RECORDS AND IS BELIEVED TO BE CORRECT. THERE MAY, HOWEVER, BE DEPARTURES FROM THE COURSE[S] AND DEPTH[S] SHOWN OR INDICATED. THERE MAY ALSO BE ITEMS OF open eir INFRASTRUCTURE OF WHICH NO RECORDS IS HELD. THE INFORMATION IS GIVEN WITHOUT PREJUDICE TO THE LEGAL RIGHTS OF open eir TO COMPENSATION SHOULD open eir INFRASTRUCTURE BE DAMAGED.

Ordnance Survey Ireland Licence No EN 0007904
Copyright Ordnance Survey Ireland and Government of Ireland

Includes Ordnance Survey Ireland data.
Reproduced under OSi Licence Number 3-3-34.
Unauthorized reproduction infringes Ordnance Survey Ireland and Government of Ireland copyright.
1964 Ordnance Survey Ireland, 2022

Important Safety Notice:

Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe.
Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1800 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health & Safety Authority publication, Code of Practice For Avoiding Danger From Underground Services which is available from the Health and Safety Authority (01 614 7000) or can be downloaded at www.hsa.ie.

Legal Notice:

Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the Information). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted Pipe (Medium Pressure)
- Inserted Pipe (Low Pressure)
- Distribution Pipe (Abandoned)

- .C=? Cover (depth in meters)
- CP Test Point
- End Cap
- Hot Tap
- Installation
- Valve
- Mains Verification **
- Pressure Monitor
- Protection (Sleeve)
- Protection (Slabbing)
- Reducer
- Service Terminator
- Tee
- Transition

** Please contact GNI on 1800-427747 for specific information.

DUBLIN HARBOUR

Landing Stage

Marina

Yacht Club

Slipway

Slipway

CP CP69-34

CP CP69-35

CP CP69-36

SPECIAL FABRICATION SEE PROFILE DETAIL 1

SPECIAL FABRICATION SEE PROFILE DETAIL 2

Profile-69-AL-27

69-AL-BC-SECTION-1-46

69-SVX01

Concrete Sleeve

Concrete Slab

POOLBEG QUAY

PIGEON

Freight Ya

C=0.7 C=2.3 C=1.0 C=0.7 C=1.0 C=0.75 C=0.8 C=0.75 C=1.2 C=4.23 C=4.61 C=1.0 C=0.8 C=0.6

90 PE-80 25 mbar
180 PE-80 25 mbar
90 PE-80 [4 Inj] 25 mbar
63 PE-80 25 mbar
500mm ST 40 bar
32 PE 25 mbar
63(mm)

22½° SWEEP
11¼° SWEEP
TO GABLE=0.6
TO GABLE=0.6

BM 4.56
BM 4.67

0 20 40 60 80 100 m

Design Department - CORK

Gas Networks Ireland

GAS TRANSMISSION NETWORK INFORMATION

Issue:	ROD CE - GNI/DLE/7221		
Location:	Stella Maric RC Ringsend		
Plot Date:	07/09/22	Contact:	1800-427747
Plotted by:	D O'S	Scale:	1:1000

DUBLIN HARBOUR

North Wall Lighthouse
(Flashing White)

Mooring Posts

Crane Rail

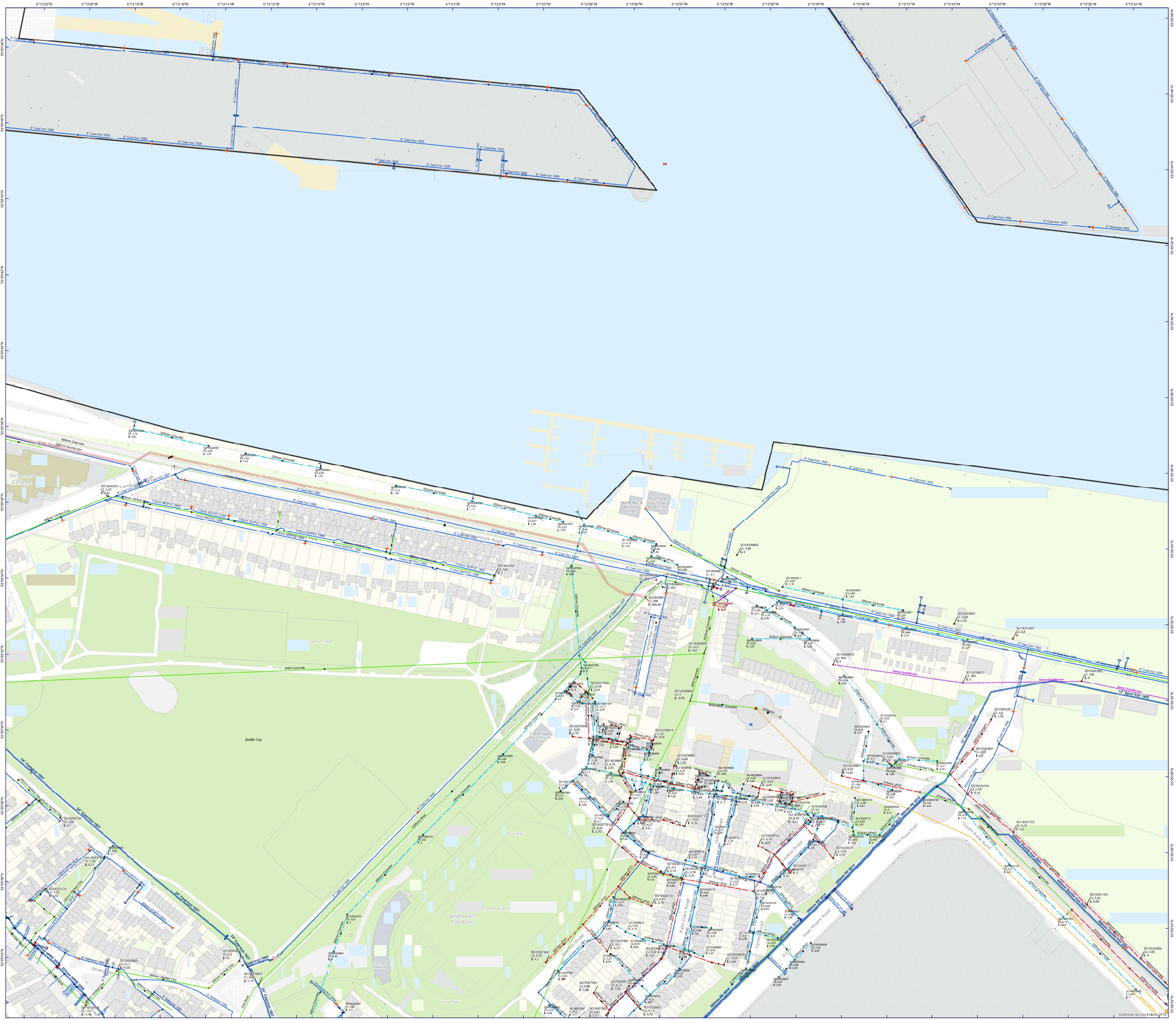
Ringsend Park

Sports Ground

PineRd3

Unit 7, Westgate Business Park, Ballymount, Dublin 24.	PROJECT NAME DESIGNED BY:	Ordnance Survey Ireland Licence No. EN0023805 (c) Ordnance Survey Ireland and Government of Ireland Produced on: 06/09/2022	@ A3

APPENDIX B
DRAINAGE & WATERMAIN RECORDS



UISCE ÉIREANN : IRISH WATER

Legend

Sewer Manholes

Manhole Type

- Standard
- Hatchbox
- Other; Unknown

Sewer Clean Outs

Cleanout Type

- Rodding Eye
- Waste Water Pump station
- Waste Water Kiosk
- Sewer Chambers
- Gravity - Combined
- Gravity - Foul
- Gravity - Overflow
- Pumping - Combined
- Pumping - Foul
- Gravity - Foul
- Proposed Sewer Sewer Point
- Proposed Sewer
- Out of Service Sewer
- Surface Gravity Mains

Storm Manholes

Manhole Type

- Standard
- Other; Unknown

Surface Fittings

Fitting Type

- Other; Unknown

Storm Discharge Points

Discharge Type

- Outfall
- Boundary Meter
- Unknown Meter ; Other Meter
- PRV
- Sluice Valve Open
- Butterfly Valve Open
- Sluice Valve Closed
- Single Air Control Valve
- Double Air Control Valve

Water Hydrants

Hydrant Function

- Fire Hydrant
- Water Kiosk
- Cap
- Other Fittings
- Tap

Water Distribution Mains

Owned By

- Irish Water
- Irish Water
- Irish Water

1. No part of this drawing may be reproduced or transmitted in any form or stored in any retrie system of any nature without the written permission of Irish Water as copyright holder except a agreed for use on the project for which the document was originally issued.

2. Whilst every care has been taken in its compilation, Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding tha it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works bein carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

© Copyright Irish Water

Reproduced from the Ordnance Survey Of Ireland by Permission of the Government. License No. 3-3-34

1:1,000

Print Date: 12/12/2022

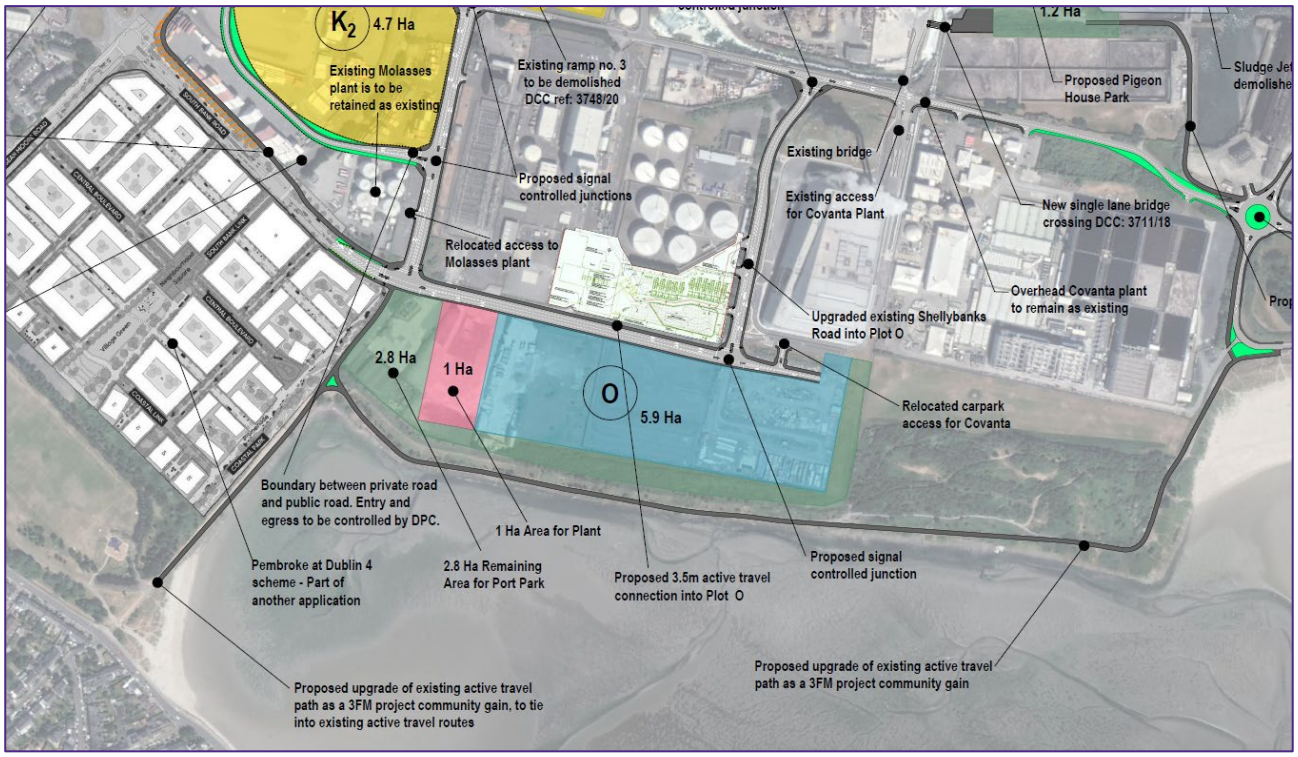
APPENDIX C
GROUND INVESTIGATION EXTRACTS

7 PLOT O

7.1 Brief Description of the Site & Proposed Development

The 5.9 ha Plot 'O' is situated within the main bounds of Dublin Port. The southern and eastern boundaries of the site are formed by the proposed new Port Park. The northern boundary will be road access to Plot 'O'. The western boundary will be formed by the area in pink reserved for Port Plant, as shown in Figure 7.1 below.

Figure 7.1 – Plot 'O' hatched in blue (Extract from 3FM Preliminary General Arrangement V3.0)



The proposed redevelopment involves construction of a new container storage and handling area, roads, buildings and other structures required for the safe and effective operation of the facility.

Plot N (Export Transit Storage) and Plot O (Import Transit Storage) will be operated together as a single terminal.

The current intention is that Plot 'O' will be utilised primarily for container imports and Plot 'N' will be utilised primarily for container exports.

7.2 Existing Site Information

7.2.1 Site Levels

The following topographic surveys have been supplied by Dublin Port Company.

- MSL35753_T&OR_IG_2D_Rev 0
- MSL35753_T_ITM_2D_rev1
- MSL35753_T_ITM_3D_rev 1

The current site levels for Plot 'O', identified on the Topographical Surveys, range between +7.00 and +7.70mCD (+4.49 and +5.19mOD).

7.3 Borehole Logs

No borehole or ground investigation records were initially found to be available for Plot 'O'. However, a number of surrounding developments, in particular the incinerator site directly north of Plot 'O' and the Ringsend Waste Water Treatment Plant north-east of Plot 'O' have been assessed for GI information. A summary of the findings for each of these investigations is provided below:

7.3.1 Dublin Waste to Energy Site

Proposed Amendment to Annual Tonnage at Dublin Waste to Energy Facility, Pigeon House Road, Dublin. Environmental Impact Assessment Report. Volume 2 Main Report. AECOM, February 2021.

The 2021 AECOM EIAR Report describes the following geology underlying the incinerator site directly north of Area O;

- Made Ground: Areas of tarmacadam and concrete hardstanding and topsoil underlain with gravels, sands, silts and clays including fragments of brick, concrete, glass, timber and cinders. Thickness between 1.6 m and 5.6 m;
- Marine Deposits: loose to medium dense, sandy silt and slightly clayey/silty fine sand. Thickness between 0.3 m and 2.5 m;
- Glacial and Fluvioglacial Deposits: medium to dense, sandy gravel with shell fragments and occasional cobbles and boulders, occasional silty material. Thickness between 10.5 m and 13.3 m;
- Outwash/Glacio-Marine Clay Deposits: upper layer of silt with sand laminations with a thickness between 5.5 m and 6.4 m. The lower layer is described as stiff to very stiff dark grey or black slightly sandy clay with layers and laminations of silt and silty sand with a proven thickness between 15.4 m and 16.5 m;
- Limestone Bedrock: dark grey, strong, mostly thinly bedded, fine grained limestones with interbedded shales. Localised weathered zones. Rock head depth between 36 m and 45 m below ground level (bgl).

GSI online geological mapping indicates that the bedrock underlying the Facility and surrounding area consists of dark limestone and shale of the Lucan Formation of Dinantian age (early Carboniferous era). These rocks were originally deposited as sediments in a marine basin that opened during continental rifting.

7.3.2 Ringsend Wastewater Treatment Site

Ringsend Wastewater Treatment Plant Upgrade Project, Dublin. Environmental Impact Assessment Report. Volume 3 Main Report. Royal HaskoningDHV, June 2018.

Dublin Bay Project, Dublin Corporation, Contract No. 2, Ringsend Wastewater Treatment Works, Volume 7 of Tender Documents, Ground Investigation Factual Report, Volume B2. Norwest Holst. October 1997.

The 2018 EIAR for the upgrade of the Ringsend Wastewater Treatment plant identified the following ground conditions;

Made Ground

Made Ground was encountered in all investigation locations on site to depths ranging from 6.3 m to 10.4 m bgl. The made ground is variable in composition, typically comprising brown and grey sand, gravel, clay and silt. The gravel consists of angular to sub-angular, fine to coarse, dark grey to black carbonaceous limestone and fine grained igneous rock. Sand was fine to coarse grained. Large proportions of anthropogenic (manmade) waste (e.g., building waste, cinders, tyres, metal and plastic) was observed in made ground as well as some asbestos and/or asbestos containing material.

The EIAR report summarised the overall ground conditions within the following Table 7-1.

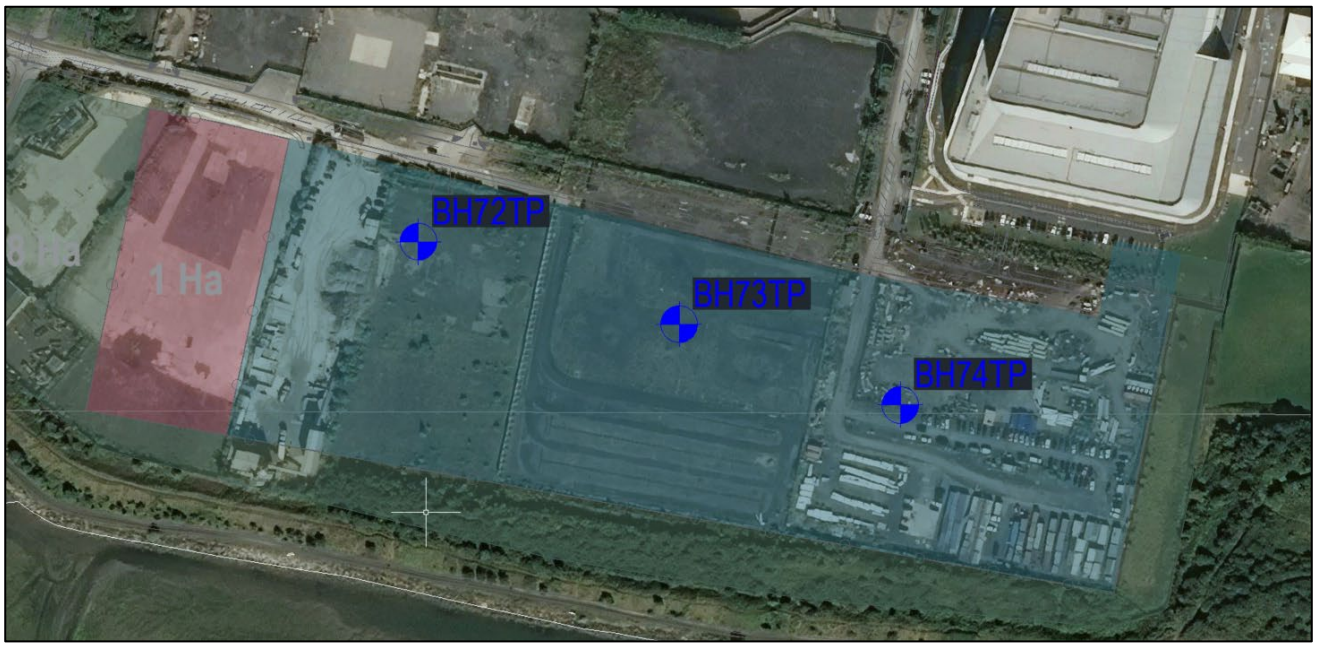
Table 7-1 – Assumed Ground Conditions

Unit	Material	Description	Depth to Top of Unit (m bgl)	Range of Unit Thickness (m)
1	Made Ground	Made Ground: SAND, CLAY, GRAVEL with anthropogenic inclusions (construction and demolition waste, cinders and plastic)	0.0	6.3 to 10.4
2a	Marine Sediments	Upper Marine Sediments: Typically comprising loose to dense sandy GRAVEL/gravelly SAND (not present in all locations)	6.3 to 10.4	0.5 to 4.5
2b		Typically comprising soft to firm sandy SILT and sandy CLAY	10.0 to 14.7	0.5 to 7.3
2c		Lower Marine Sediments: Typically comprising medium dense to dense sandy GRAVEL/gravelly SAND present in an upper and lower stratum	6.8 to 11.7	5.8 to 14.5
3	Glacio-Marine Deposits	Typically comprising firm to very stiff sandy SILT and sandy CLAY	19.0 to 22.8	12.0 to >19.5
4	Bedrock[4]	Typically comprising very weak to medium strong, grey, slightly weathered, fine grained LIMESTONE with interbedded very weak to moderately weak, brown and grey SILTSTONE and MUDSTONE. Evidence of karstification observed in places.	41.3 to 47.1	Unproven

BH72, 73 and 74 are located within Plot O, as shown in Figure 7.2. These were commenced as Trial Pits and continued as cable percussion boreholes to approximately 6m.

These boreholes show approximately 5m of made ground, though this could be deeper in the centre of the site – as the base level was not confirmed. The made ground would appear to be mixed waste.

Figure 7.2 - Ringsend Wastewater Boreholes relevant to Plot O



7.3.3 Idealised Strata

The anticipated strata are:

- 0-10m Made Ground
- 10-20m Marine Sediments, may include cohesive and/or granular layers
- 20-40m Glacio-Marine Deposits – Boulder Clay
- 40m+ Rock

7.4 Geotechnical Testing

No testing is available for the boreholes in the vicinity of Plot O.

7.5 Assumed Geotechnical Parameters

The following assumed Geotechnical Parameters have been based on the assessment of the materials across the other 3FM plots.

For settlement and negative skin friction on piles, the landfill layer will be considered as a very soft clay, for sensitivity analysis.

Marine sediments will be considered as either cohesive or granular, whichever presents a worst case in each design situation.

These parameters represent a 'cautious estimate' in accordance with BS EN 1997.

	γ (kN/m^3)	m_v (m^2/MN)	c_v (m^2/year)	φ' (°)	C' (kPa)	c_u (kPa)	E (kPa)	UCS (MPa)
Made Ground - Landfill	17	0.5	1.5	-	-	5	1,000	-
Marine Sediments - cohesive	17	0.4	1.5	-	-	5	1,000	-
Marine Sediments - granular	19	-	-	35	0	-	30,000	-
Glacio-Marine Deposits	19	0.2	5	-	-	40	40,000	-
Bedrock	22	-	-	40	5	-	100,000	30

8 SUMMARY

In the absence of project specific detailed Geotechnical Information, assumed geotechnical profiles have been developed from existing Geotechnical Information for the purposes of the Design Stage 2a.

These assumptions must be verified by the following actions before Stage 2a design can be completed:

- Project specific marine and land-based SI works should be undertaken as soon as possible.
- The design must be reviewed on receipt of SI information and assumptions validated.
- A detailed cable survey should be undertaken to determine the exact position and depth of the cables within the footprint of the proposed works.
- Consultations be undertaken with ESB with regards to the precise requirements for protection of the cable crossings prior to placement of the reclamation materials at the SPAR and any quay improvement works at Plot K.

APPENDIX D
SURFACE WATER CALCULATIONS

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	24.442	0.122	200.3	0.102	15.00	0.0	0.600	o	225	Pipe/Conduit
1.001	27.384	0.137	199.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
1.002	59.858	0.300	199.5	0.076	0.00	0.0	0.600	o	300	Pipe/Conduit
1.003	36.005	0.180	200.0	0.165	0.00	0.0	0.600	o	300	Pipe/Conduit
1.004	28.404	0.142	200.0	0.033	0.00	0.0	0.600	o	300	Pipe/Conduit
1.005	11.180	0.056	199.6	0.058	0.00	0.0	0.600	o	300	Pipe/Conduit
1.006	1.754	0.009	194.9	0.014	0.00	0.0	0.600	o	300	Pipe/Conduit
2.000	16.554	0.083	199.4	0.066	15.00	0.0	0.600	o	225	Pipe/Conduit
2.001	14.545	0.073	199.2	0.033	0.00	0.0	0.600	o	225	Pipe/Conduit
1.007	49.262	0.247	199.4	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit
3.000	46.745	0.234	199.8	0.050	15.00	0.0	0.600	o	225	Pipe/Conduit
4.000	42.701	0.423	100.9	0.036	15.00	0.0	0.600	o	300	Pipe/Conduit
3.001	41.635	0.208	200.2	0.033	0.00	0.0	0.600	o	300	Pipe/Conduit
3.002	10.823	0.054	200.4	0.040	0.00	0.0	0.600	o	300	Pipe/Conduit
5.000	44.926	0.247	181.9	0.000	5.00	0.0	0.600	o	900	Pipe/Conduit
5.001	1.618	0.009	179.8	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	3.311	0.102	0.0	0.92	36.6
1.001	3.189	0.102	0.0	1.11	78.4
1.002	3.052	0.178	0.0	1.11	78.4
1.003	2.752	0.344	0.0	1.11	78.3
1.004	2.572	0.377	0.0	1.11	78.3
1.005	2.430	0.435	0.0	1.11	78.4
1.006	2.374	0.449	0.0	1.12	79.4
2.000	2.521	0.066	0.0	0.92	36.7
2.001	2.438	0.099	0.0	0.92	36.7
1.007	2.365	0.548	0.0	2.22	1409.2
3.000	2.614	0.050	0.0	0.92	36.6
4.000	2.803	0.036	0.0	1.56	110.6
3.001	2.380	0.120	0.0	1.11	78.3
3.002	2.172	0.160	0.0	1.11	78.2
5.000	2.374	0.000	0.0	2.32	1476.0
5.001	2.127	0.000	0.0	2.33	1484.7

©1982-2019 Innovyze

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.008	23.432	0.117	200.3	0.049	0.00	0.0	0.600	o	900	Pipe/Conduit
1.009	9.666	0.048	201.4	0.095	0.00	0.0	0.600	o	225	Pipe/Conduit
1.010	22.954	0.115	199.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
1.011	6.745	0.838	8.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.008	2.118	0.756	0.0	2.21	1406.3
1.009	2.001	0.851	0.0	0.92	36.5
1.010	1.953	0.851	0.0	0.92	36.7
1.011	1.838	0.851	0.0	4.64	184.5

©1982-2019 Innovyze

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
07	3.732	0.421	Open Manhole	1200	1.000	3.311	225				
06	3.869	0.680	Open Manhole	1200	1.001	3.189	300	1.000	3.189	225	
05	3.421	0.369	Open Manhole	1200	1.002	3.052	300	1.001	3.052	300	
4	3.496	0.744	Open Manhole	1200	1.003	2.752	300	1.002	2.752	300	
02	3.625	1.053	Open Manhole	1200	1.004	2.572	300	1.003	2.572	300	
08	3.635	1.205	Open Manhole	1200	1.005	2.430	300	1.004	2.430	300	
10	3.621	1.247	Open Manhole	1200	1.006	2.374	300	1.005	2.374	300	
13	3.448	0.927	Open Manhole	1200	2.000	2.521	225				
12	3.444	1.006	Open Manhole	1200	2.001	2.438	225	2.000	2.438	225	
11	3.635	1.270	Open Manhole	1200	1.007	2.365	900	1.006	2.365	300	
								2.001	2.365	225	
21	3.573	0.959	Open Manhole	1200	3.000	2.614	225				
03	3.626	0.823	Open Manhole	1200	4.000	2.803	300				
20	3.603	1.223	Open Manhole	1200	3.001	2.380	300	3.000	2.380	225	
								4.000	2.380	300	
16	3.728	1.556	Open Manhole	1200	3.002	2.172	300	3.001	2.172	300	
10b	3.621	1.247	Open Manhole	1200	5.000	2.374	900				
14	3.705	1.578	Open Manhole	1200	5.001	2.127	900	5.000	2.127	900	
15	3.739	1.621	Open Manhole	1200	1.008	2.118	900	1.007	2.118	900	
								3.002	2.118	300	
								5.001	2.118	900	
22	3.458	1.457	Open Manhole	1200	1.009	2.001	225	1.008	2.001	900	
23	3.585	1.632	Open Manhole	1200	1.010	1.953	225	1.009	1.953	225	
24	3.585	1.747	Open Manhole	1200	1.011	1.838	225	1.010	1.838	225	
	2.000	1.000	Open Manhole	0		OUTFALL		1.011	1.000	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
07	718774.716	734078.112	718774.716	734078.112	Required	
06	718770.975	734053.958	718770.975	734053.958	Required	
05	718797.455	734046.979	718797.455	734046.979	Required	

©1982-2019 Innovyze

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
4	718855.202	734031.221	718855.202	734031.221	Required	
02	718891.063	734028.011	718891.063	734028.011	Required	
08	718895.601	734056.050	718895.601	734056.050	Required	
10	718897.469	734067.073	718897.469	734067.073	Required	
13	718885.903	734087.309	718885.903	734087.309	Required	
12	718883.383	734070.948	718883.383	734070.948	Required	
11	718897.768	734068.802	718897.768	734068.802	Required	
21	718997.494	734011.838	718997.494	734011.838	Required	
03	718908.854	734023.719	718908.854	734023.719	Required	
20	718951.269	734018.788	718951.269	734018.788	Required	
16	718957.205	734059.997	718957.205	734059.997	Required	
10b	718901.836	734066.461	718901.836	734066.461	Required	
14	718946.285	734059.929	718946.285	734059.929	Required	
15	718946.491	734061.534	718946.491	734061.534	Required	
22	718950.215	734084.668	718950.215	734084.668	Required	

©1982-2019 Innovyze

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
23	718951.629	734094.231	718951.629	734094.231	Required	
24	718928.957	734097.825	718928.957	734097.825	Required	
	718930.093	734104.474			No Entry	

©1982-2019 Innovyze

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	60	0.171	0.102	0.102
1.001	-	-	100	0.000	0.000	0.000
1.002	User	-	100	0.045	0.045	0.045
	User	-	60	0.051	0.031	0.076
1.003	User	-	100	0.071	0.071	0.071
	User	-	100	0.039	0.039	0.110
	User	-	60	0.092	0.055	0.165
1.004	User	-	60	0.019	0.011	0.011
	User	-	100	0.006	0.006	0.017
	User	-	100	0.016	0.016	0.033
1.005	User	-	100	0.045	0.045	0.045
	User	-	60	0.022	0.013	0.058
1.006	User	-	60	0.023	0.014	0.014
2.000	User	-	100	0.034	0.034	0.034
	User	-	60	0.053	0.032	0.066
2.001	User	-	60	0.054	0.033	0.033
1.007	-	-	100	0.000	0.000	0.000
3.000	User	-	60	0.084	0.050	0.050
4.000	User	-	60	0.061	0.036	0.036
3.001	User	-	60	0.055	0.033	0.033
3.002	User	-	100	0.040	0.040	0.040
5.000	-	-	100	0.000	0.000	0.000
5.001	-	-	100	0.000	0.000	0.000
1.008	User	-	60	0.081	0.049	0.049
1.009	User	-	60	0.159	0.095	0.095
1.010	-	-	100	0.000	0.000	0.000
1.011	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.221	0.851	0.851

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.011		2.000	1.000	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0
Number of Online Controls 1 Number of Storage Structures 0

©1982-2019 Innovyze

Simulation Criteria for Storm

Number of Time/Area Diagrams 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	Scotland and Ireland	Cv (Winter)	0.840
M5-60 (mm)	16.700	Storm Duration (mins)	30
Ratio R	0.300		

©1982-2019 Innovyze

Online Controls for Storm

Hydro-Brake® Optimum Manhole: 23, DS/PN: 1.010, Volume (m³): 2.2

Unit Reference	MD-SHE-0175-1500-1000-1500
Design Head (m)	1.000
Design Flow (l/s)	15.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	175
Invert Level (m)	1.953
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	15.0
Flush-Flo™	0.323	15.0
Kick-Flo®	0.704	12.7
Mean Flow over Head Range	-	12.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.2	1.200	16.3	3.000	25.3	7.000	38.0
0.200	14.4	1.400	17.6	3.500	27.2	7.500	39.3
0.300	15.0	1.600	18.7	4.000	29.0	8.000	40.6
0.400	14.9	1.800	19.8	4.500	30.7	8.500	41.8
0.500	14.6	2.000	20.8	5.000	32.3	9.000	43.0
0.600	14.1	2.200	21.8	5.500	33.9	9.500	44.1
0.800	13.5	2.400	22.7	6.000	35.3		
1.000	15.0	2.600	23.6	6.500	36.7		

©1982-2019 Innovyze

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.300
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	16.700	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	07	30 Winter	100	+0%				
1.001	06	30 Winter	100	+0%				
1.002	05	120 Winter	100	+0%	30/60 Winter	100/30 Summer		
1.003	4	120 Winter	100	+0%	30/30 Summer			
1.004	02	60 Winter	100	+0%	30/15 Summer			
1.005	08	60 Winter	100	+0%	30/15 Summer			
1.006	10	60 Winter	100	+0%	30/15 Summer			
2.000	13	120 Winter	100	+0%	30/15 Summer	100/30 Winter		
2.001	12	120 Winter	100	+0%	30/15 Summer	100/30 Winter		
1.007	11	120 Winter	100	+0%	30/60 Winter			
3.000	21	60 Winter	100	+0%	30/15 Winter			
4.000	03	60 Winter	100	+0%	30/60 Winter			
3.001	20	60 Winter	100	+0%	30/15 Summer			
3.002	16	60 Winter	100	+0%	1/15 Winter			
5.000	10b	120 Winter	100	+0%	30/60 Winter			
5.001	14	120 Winter	100	+0%	30/30 Winter			
1.008	15	120 Winter	100	+0%	30/30 Winter			
1.009	22	120 Winter	100	+0%	1/15 Summer	100/30 Winter		

©1982-2019 Innovyze

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	07	3.508	-0.028	0.000	0.57		19.2	FLOOD RISK	
1.001	06	3.469	-0.020	0.000	0.25		17.4	OK	
1.002	05	3.460	0.108	38.793	0.24		18.1	FLOOD	13
1.003	4	3.492	0.440	0.000	0.43		31.1	FLOOD RISK	
1.004	02	3.497	0.625	0.000	0.62		44.0	FLOOD RISK	
1.005	08	3.485	0.755	0.000	0.84		51.7	FLOOD RISK	
1.006	10	3.467	0.793	0.000	0.96		52.9	FLOOD RISK	
2.000	13	3.455	0.709	6.760	0.33		10.6	FLOOD	10
2.001	12	3.454	0.791	10.328	0.44		14.0	FLOOD	10
1.007	11	3.465	0.200	0.000	0.04		42.1	FLOOD RISK	
3.000	21	3.519	0.680	0.000	0.20		6.9	FLOOD RISK	
4.000	03	3.504	0.401	0.000	0.05		5.1	FLOOD RISK	
3.001	20	3.496	0.816	0.000	0.20		14.3	FLOOD RISK	
3.002	16	3.476	1.004	0.000	0.28		17.1	FLOOD RISK	
5.000	10b	3.465	0.191	0.000	0.00		0.4	FLOOD RISK	
5.001	14	3.465	0.438	0.000	0.01		4.4	FLOOD RISK	
1.008	15	3.466	0.448	0.000	0.03		25.3	FLOOD RISK	
1.009	22	3.464	1.238	6.454	0.65		19.5	FLOOD	9

©1982-2019 Innovyze

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.010	23	60 Winter	100	+0%	1/15 Summer				3.455
1.011	24	120 Winter	100	+0%					1.894

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.010	23	1.277	0.000	0.54		18.1	FLOOD RISK	
1.011	24	-0.169	0.000	0.14		18.1	OK	

©1982-2019 Innovyze

APPENDIX E
FOUL WATER CALCULATIONS

Foul Calculations =
IW Code of Practice for Wastewater Infrastructure, Appendix C - Wastewater Flow Rates for Design
Local Sports Club; 40 L/day/person
Office / Factory with canteen; 100 L/day/person

Dry Weather Flow
= PG+ I + E

PG = Average Daily Domestic Demand
(Wastwater discharge per person) x (Number of people - presumed)
= (40 x 473) + (100 x 265)
= 18,912 + 26,492 L/day
= 45,404 L/day

I = PG x 0.1
= 45,404 x 0.1
= 4,540.4

E = (Assume 0)

45,404 + 4,540.4 = 49,944.4 L/day
=0.578 L/s

Design Foul Flow
Peak = 6
Design Foul Flow = PG x Peak + I
= 45,404 x 6 + 4,540.4
= 276,964.4 L/day
= 3.205 L/s

APPENDIX F
WATERMAIN CALCULATIONS

Calculations

Water demand

Water demand =
IW Code of Practice for Wastewater Infrastructure, Appendix C - Wastewater Flow Rates for Design
Local Sports Club; 40 L/day/person
Office / Factory with canteen; 100 L/day/person

(Water demand per person) x (Number of people - presumed)
= (40 x 473) + (100 x 265)
= 18,912 + 26,492 L/day
= 45,404 L/day

Average day/peak week demand:
= 45,404 x 1.25
= 56,755 L/day
= 0.656 L/s

Peak demand

= 56,755 L/day x 5.0
= 283,775 L/day
= 3.284 L/s

APPENDIX G
RPS WATER LEVELS DESIGN MEMO

1. Introduction

In line with the Planning System and Flood Risk Management Guidelines (2009) the Strategic Flood Risk Assessment (SFRA) for the Dublin Port Masterplan 2040 published in 2018 advises that any development should be set at the present day 0.5% AEP tidal event with a suitable allowance for climate change and an appropriate freeboard, taking account of data uncertainties and the site-specific wave climate. Site specific design levels should be determined based on the best currently available information and guidance.

A previous design memo, on the coastal water levels applicable to Dublin Port, was produced in April 2018 but additional work has been undertaken in the assessment of flood risk to Dublin City in the interim. This updated design memo has been prepared to consider the most up to date information available on coastal water levels, and the allowances that should be included. The memo specifically relates to development levels that should be applied to the current development at Dublin Port which is the 3FM Project.

2. Previously Used Coastal Water Levels

Historically there have been a range of 0.5% AEP coastal levels used from various studies undertake for OPW/Dublin City Council and specifically for developments within Dublin Port. Table 1 provides a summary of levels that have been known to be used. These studies have worked with a range of datasets and tidal gauges which explains the differences in estimation.

Table 1: Previously used coastal water levels

Study/ Development	0.5% AEP level (m OD)	Notes
Eastern CFRAM Study	3.11	Present day coastal level from Irish Coastal Protection Strategy Study (ICPSS)
Dublin City Council	3.25	The 3.25m level is a predicted coastal level for 2031- includes an observed average sea level rise
Alexander Basin Redevelopment	3.07	Coastal level from early development of ICPSS model.
MP2 Project	3.33	Coastal level from an RPS analysis of extreme water levels in Dublin Port

These varying analyses have now been superseded by the Irish Coastal Wave and Water Level Modelling Study in 2018 which RPS completed for the OPW.

3. Irish Coastal Wave and Water Level Modelling Study (ICWWS)

The most up to date extreme water levels at Dublin Port are from Phase 1 of the Irish Coastal Wave and Water Level Modelling Study (ICWWS) 2018[1]. Phase 1 provides an update to the Extreme Coastal Water Levels for the coast of Ireland, originally presented as output from the Irish Coastal Protection Strategy Study (ICPSS) undertaken between 2004 and 2013, which estimated water levels for a range of Annual Exceedance Probability Events at a series of points around the coast of Ireland. The predicted 0.5% AEP tidal water level from this analysis is 3.15m OD. This is for Estimation Point NE22, the location of which is shown in Figure 1.

It is recommended that a 0.5% AEP coastal level of 3.15m OD is used for the 3FM project. Consultation with OPW indicated that they are in agreement this is the most accurate assessment of present day flood levels for Dublin Port.

Figure1 Location of North East coast estimation points (ICWWS)

4. Climate Change Allowance

Whilst there is a clear consensus that climate change will present significant challenges in the future, some uncertainty remains regarding the extent and magnitude of change, particularly within the coastal environment.

[1] Irish Coastal Wave and Water Modelling Study 2018, Phase 1- Extreme Water Levels, RPS https://www.floodinfo.ie/publications/?t=46

The Irish Coastal Protection Strategy Study considered two future scenarios- the Mid Range Future Scenario (MRFS) which is an allowance of 0.5m on extreme water levels, and the High End Future Scenario (HEFS) which is an allowance of 1m on extreme water levels. The ICWWS has two further future scenarios- H+EFS which is an allowance of 1.5m on extreme water levels, and the H++EFS which is an allowance of 2m on extreme water levels.

In 2021, RPS completed the report 'Dublin Port Bull Walls- Considering the Impact of Future Climate Change' on behalf of Dublin Port Company. The primary objective of this study was to review national guidance documents and the plethora of scientific literature to identify a likely set of future scenario conditions that could be used to assess the impact of climate change on the historical structures at Dublin Port by 2100. The report recommended a 1m increase in sea level rise.

It is recommended that an allowance of 1m for climate change is included for the 3FM project.

5. Freeboard

Freeboard is a safety margin to account for uncertainties in water-level and wave action prediction. The OPW typically recommend that a freeboard of 300-500mm above the still water level should be included. 300mm is generally considered where hard defences or raised ground is provided and 500mm where engineered earth embankments are the provided means of protection.

It is recommended that a freeboard of 0.3m is included for the 3FM project.

6. Allowance for Wave Action

RPS have undertaken an assessment of the risk from wave action and whether there should be additional consideration be given to proposed development levels. Over the proposed 3FM development only the Area N quay wall will be subject to waves of any significant nature from within the port. It is recognised that a level of wave overtopping at this location would be acceptable given the nature of the proposed development, but that an additional 150mm be added to finished levels. This allows for a 0.3m wave height.

7. Recommendation

In line with the Planning System and Flood Risk Management Guidelines (2009) the Strategic Flood Risk Assessment (SFRA) for the Dublin Port Masterplan 2040 published in 2018 advises that any development should be set at the present day 0.5% AEP tidal event with a suitable allowance for climate change and an appropriate freeboard, taking account of data uncertainties and the site-specific wave climate.

Using the coastal levels and allowances detailed within this design memo, the 3FM project should aspire to a development level of 4.45m OD allowing for climate change and freeboard above the present day 0.5% AEP level. This level is derived from:

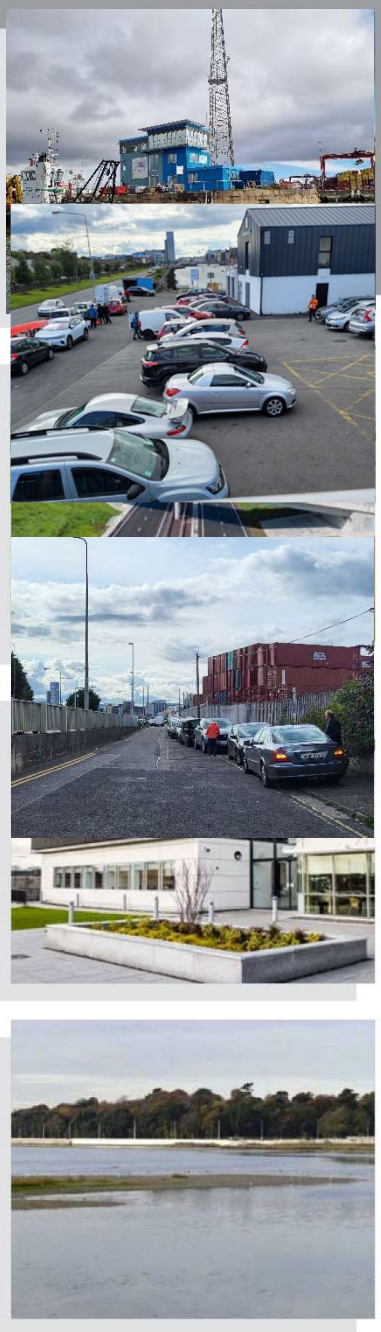
- Present day 0.5% AEP flood level = 3.15mOD
- 1m high end future scenario climate change = +1.0m
- Freeboard to allow for uncertainty = + 0.3m

The levels for Area N will be increased to 4.6m OD to allow for wave action. Note that Berths 52/53 on the north side of the River Liffey are also at 4.6m OD.

It is also noted that these aspirational levels. There will be visual, social or technical reasons why they cannot be achieved at all locations throughout the 3FM development e.g. where there is a need to tie into existing infrastructure. This approach is in line with the Planning and Flood Risk Management Guidelines which deal with this issue specifically.

APPENDIX H
ACCESS & PARKING REPORT

Prepared by
Roughan & O'Donovan
Arena House, Arena Road, Sandyford Dublin 18, D18 V8P6
Tel +353 1 294 0800 Email info@rod.ie www.rod.ie



3FM PROJECT: MARITIME VILLAGE

Access & Parking Report

Review & Acceptance | June 2024

ROD
ROUGHAN & O'DONOVAN

3FM PROJECT:
MARITIME VILLAGE
Access & Parking Report

Document No: ..... CP1901_010-ROD-00-XX-RP-C-0003

Author:..... John Bell (JB)

Checker: ..... Ben Gallery (BDG)

Approver:..... Ben Gallery (BDG)

Revision	Status	Suitability	By	Checked	Approved	Date
P01	S5	Review & Acceptance	JB	BDG	BDG	28/06/2024

3FM Project: Maritime Village

Access & Parking Report

TABLE OF CONTENTS

1. INTRODUCTION

This Access and Parking Report, prepared by Roughan & O'Donovan, has been prepared to describe and assess the existing access and parking infrastructure on the subject site and surrounding areas. It also provides details of the proposed access and parking strategy in respect of the proposed development.

1.1 Proposed Development

As part of the 3FM Project DPC intend on developing an integrate vital local club amenity space and public space within the planned 3FM Development and the overall DPC Masterplan. The design of the Maritime Village development has been carried out in cognisance of and in coordination with the designs of the adjacent proposed Southern Port Access Route (SPAR) and Active Travel Way to the south.

The proposed 3FM Maritime Village will provide replacement and upgraded facilities including Harbour Operations, club houses, public event space, boat maintenance building, and boat storage, along with increased permeability and safe access for active travel.

The proposed development is located on Pigeon House Road, Dublin on the site that includes Poolbeg Yacht & Boat Club, Stella Maris Rowing Club, and an area of the Dublin Port Company freight yard. The existing and proposed site is shown in Figure 1-1 and Figure 1-2 below.

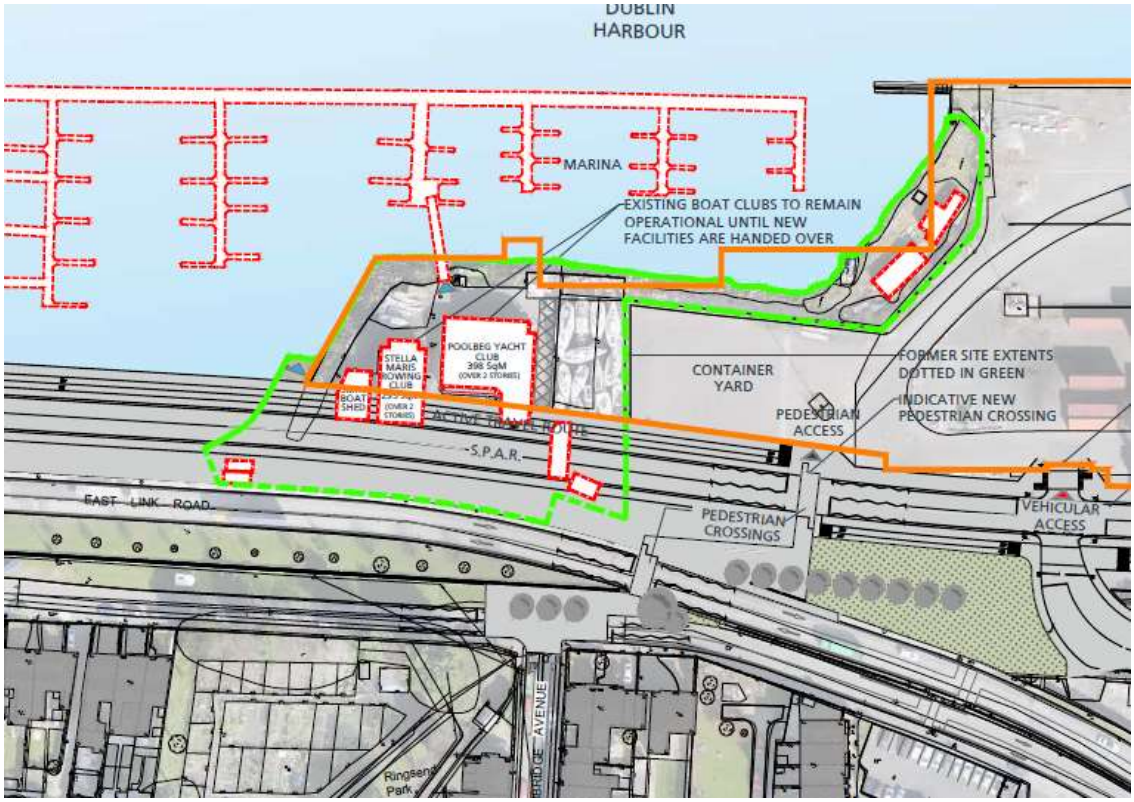


Figure 1-1 Existing Site Location and Layout (existing site outlined in green, proposed site outlined in orange)

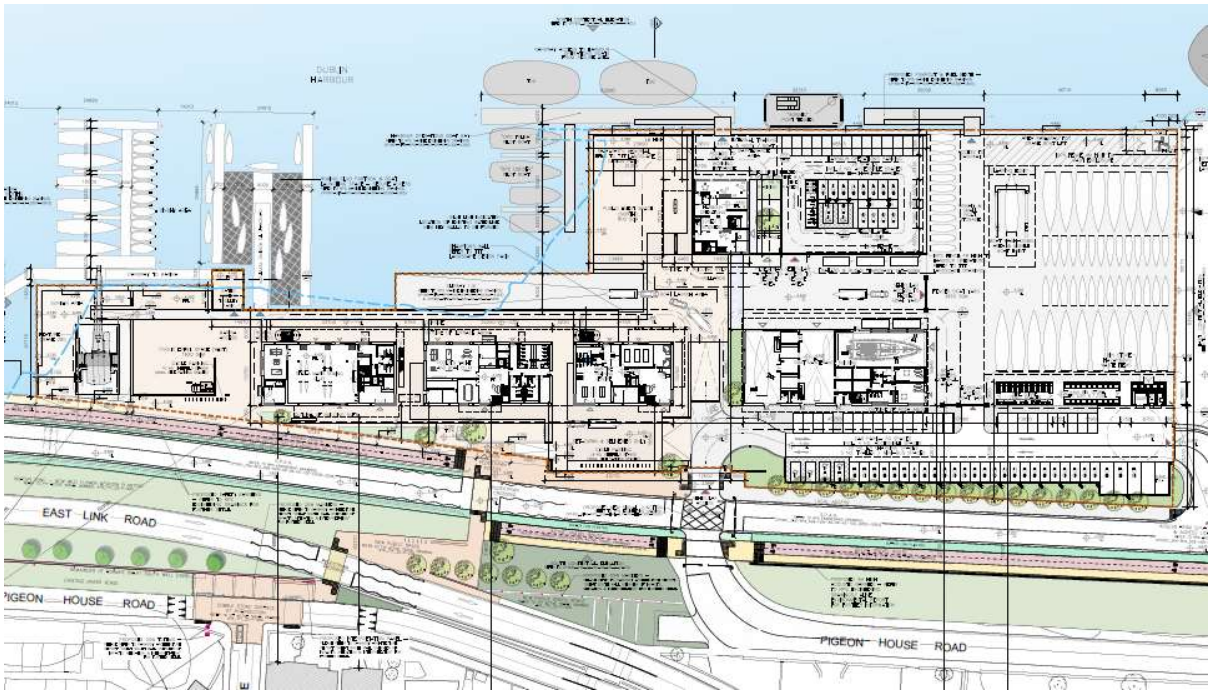


Figure 1-2 Proposed Site Plan

The proposed development consists of the redevelopment of the existing site to include 3 new 2-storey buildings to the west of the site which include the Stella Maris Rowing Club, Poolbeg Yacht & Boat Club and Maritime Training Centre. This area will be surrounded by public event space to the west of the site, with shared use to the front of the buildings, and vehicle access to the rear.

To the east of the site, a new carpark is proposed for the whole development. A new shared boat maintenance & workshop facility is proposed centrally on site, with a new boat hoist and wash slab to the north. A new shared boat yard is to be positioned to the east of the site.

A new Harbour Operations will be provided with a segregated parking area to service the building.

2. RECIEVING ENVIRONMENT

2.1 Existing Vehicular Access & Car Parking

The existing site contains Stella Maris Rowing Club, Poolbeg Yacht & Boat Club, and Ringsend Registered Fisherman & Private Boat Owners Association.

The existing site is bound by the R131 (East Link Road) and adjacent Pigeon House Road to the south. It is bound by an existing freight yard to the east. Dublin Port channel bounds the site to the west and north, which includes a marina, slipway and pontoon to the north-west of the site. Access to the existing Stella Maris Rowing Club and Poolbeg Yacht and Boat Club is off Pigeon House Road which terminates at the club buildings. A vehicle barrier separates Pigeon House Road and the adjacent R131.

Road access to the site is provided via Pigeon House Road from the roundabout at R131 East Link Road / Sean Moore Road. From here traffic can access from the East / north via East Link Road and via the toll cross Tom Clarke Bridge, or from the south

via Sean Moore Road towards Irishtown and Sandymount. The surrounding road network is shown on Figure 2-1 below.

Figure 2-1 Surrounding Road Network © OpenStreetMap

Existing parking is located to the front (south) of the existing club buildings. There is space for approximately 30 cars for the club buildings. This parking provision is limited and often restricted for day-to-day use. The image in Figure 2-2 shows of the car park during a typical evening of rowing and sailing activities.

Figure 2-2 Car parking during a typical summer evening of sailing and rowing activities

The existing parking is currently over utilised during large events / regattas with overspill parking onto the Pigeon House Road, where cars park along the western end of the street.

A parking survey was carried out on Wednesday the 9th August 2023 between 18.00-20.00 and again on 16th September to coincide with a regatta events held by Poolbeg Boat and Yacht Club. The survey data and accompanying photographs can be found in Appendix A. This two car parking surveys recorded the overspill of car park onto Pigeon House Road in the vicinity of the Maritime Centre, with a peak car parking demand of 53 spaces and 57 spaces respectively.

2.2 Existing Pedestrian & Cyclist Infrastructure

Pedestrians and cyclists can access the site via a signal controlled crossing of R131 East Link Road conecting between Pigeon House Road on either side, as shown on Figure 2-3 below. From here connection towards Ringsend (800m / 12 minutes walk / 3 minutes cycle) and the surround areas is via either Ringsend Park or Cambridge Road.

There is also a footpath on the north side of East Link Road that connects to Tom Clarke Bridge and the north quays.

Figure 2-3 Pedestrian Crossing of R131 East Link Road

As part of the 3FM Project it is proposed to develop an Active Travel Way (refer to drawing PA-001-D Partial Site Plan D) that will continue past the front of the Maritime Village that will continue along the Poolbeg Peninsula and connect to the North Quays and the surrounding walk and cycle infrastructure, making the site much more accessible for boat club members as well as for the general public and local community. A new road crossing will also pick up on a desire line coming from Ringsend Park and will continue the pedestrian route network from the park across to the new Maritime Village.

2.3 Existing Public Transport

The nearest bus stops are in Ringsend where the Dublin Bus Routes C1, which operates between Adamstown and Sandymount with services every 6-10 minutes, and the Route 47, which operates between Poolbeg Street and Belarmine with hourly services.

The proposed BusConnects Ringsend scheme will provide bus priority and active travel measures connecting along the Liffey Estuary Quays through Ringsend to Sean Moore Road linking the City Centre with the Docklands and an onward cycling connection to Ringsend and Irishtown. This will further provide improved accessibility for walking, cycling and public transport to the Maritime Village.
See Drawing CP1901_010-ROD-00-XX-SK-C-0032 in Appendix 3 for a visual expression of the information above.

3. EXISTING PEDESTRIAN & TRAFFIC VOLUMES

Surveys were carried out on 28th June 2023 to understand the existing traffic conditions. These surveys recorded all traffic at the end of Pigeon House Road adjacent the site entrance and all pedestrian and cycle movements at the ramp onto Pigeon House Road adjacent the pedestrian crossing of East Link Road. The full results of the surveys are included in **Appendix B** and a summary of the results are provided below.

The result of the survey showing the total vehicular traffic along Pigeon House Road accessing the site is presented in Figure 3-1 below.

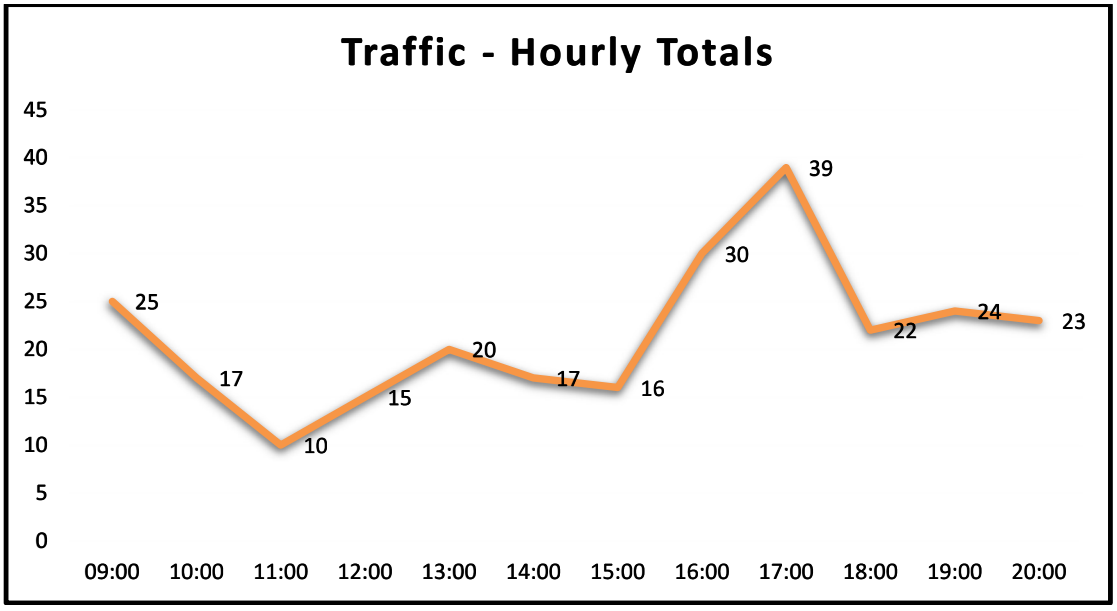


Figure 3-1 Two-way Traffic Movements at the Site Entrance on Pigeon House Road

During the day there was a steady volume of traffic coming and going of about 20 vehicles two-way. The peak period for traffic access the site was from 5 – 6pm when there was a total of 39 vehicle movements including 27 inbound vehicles and 12 outbound vehicles.

The result of the survey showing the total pedestrian and cyclists volumes accessing the site is presented in Figure 3-2 below.

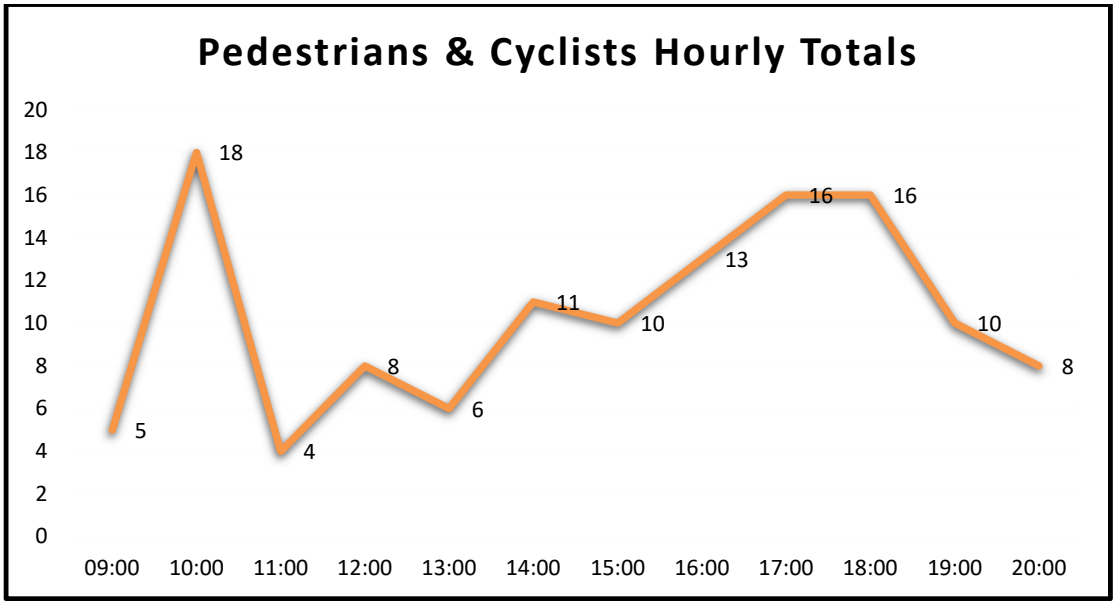


Figure 3-2 Combined Pedestrian & Cycle To and From the Site

Pedestrian and cycle movements peaked at 10am where 18 movements were recorded and then again between 4 and 6pm when 16 movements per hour were recorded.

These surveys confirm that there is a steady number of people accessing the site during the day, and it gets busier in the late afternoon and early evening when training and events take place.

4. MARITIME VILLAGE ACTIVITIES

The Maritime Village includes the provision of new facilities to replace the existing for Stella Maris Rowing Club, Poolbeg Yacht & Boat Club and the Boat Storage and includes the proposed Harbour Operations and Maritime Training Centre and Boat Maintenance Facility.

This section describes the current activities at the present Maritime Village facilities, as well as any changes or extra activities that are envisaged as part of the proposed new Maritime Village (details of the project are outlined in Section 1.1.).

4.1 Poolbeg Yacht & Boat Club

Poolbeg Yacht & Boat Club membership is between 250 to 320. The club offers keel boat and yacht training, dinghy sailing courses, powerboat training courses to club members and the public.

The Club provide regular training courses and holds a number of special events during the summer months, and the racing calendar typically goes from May to September with regattas taking place on Wednesday evenings from 7pm and on Saturdays or Sundays from 12pm.

4.2 Stella Maris Rowing Club

Stella Maris Rowing Club has a total membership of c.420 and offer training programmes to youths and adults and participate in regattas / competitions on the water from March to October. The Club also has indoor rowing from October through to March and a gym / boat maintenance throughout the year. The Club anticipates doubling of membership over the next 10 years.

The Club host an annual Regatta with clubs from along the East Coast travelling to compete. This Regatta can attract up to 1,500 people throughout the day, which would include participants and spectators. These events require the coordination with the other Clubs and the sharing of the facilities between the Clubs. Competitors and their boats / trailers are accommodated on site and spectators must walk, travel on public transport or avail of on-street parking in the wider Ringsend area.

4.3 Boat Yard

The existing boat yard is congested with boats in the off season. The proposed boat yard will provide much needed additional space, and it will be commercial operated and will primarily be used by boat owners from the Clubs.

4.4 Maritime Training Centre

The Maritime Training Centre typically provides training courses that run Monday to Friday from 9am to 5pm, and with occasional evening and weekend training. It would be expected to have a parking demand of 10 cars when a training course is taking place.

4.5 Boat Maintenance Building

The Boat Maintenance Facility will be shared by the clubs on the site, and this will be coordinated through a Boating Committee. Typically training takes place Monday to Friday during the day (9am to 5pm) with an average parking demand of 4-5 cars.

4.6 Harbour Operations

The Harbour Operations will provide for the co-location of Harbour teams and assets with direct water access and commanding views of the Port, River, Berths and Basins. The proposed Operation Centre will be location between the public spaces / clubs and the proposed Boat Yard, and the site will be secure and contain its own car parking. Operational traffic to and from the Harbour Operations will access via the eastern most access from the site onto the SPAR. This access will be gated and restricted to Harbour Operations traffic only. Port Operations are 24-7/365 and the current shift arrangements are as follows:

- Normal Office Hours are 09:00 to 17:00
- Marine Ops Shifts are 10:00 – 22:00 and 22:00 to 10:00
- VTS Shifts are 10:00 – 22:00 and 22:00 to 10:00
- Tugs Shifts are 07:00 – 19:00 and 19:00 to 07:00
- Pilots work an on-demand shift with the shift starting at 06:00

The proposed capacity and typical occupancy of the Harbour Operations Centre is set out in Tables 4-1 and 4-2 below.

Table 4-1 Harbour Operations - Current Plus Allowance for Future Capacity (staff / operatives)

Current plus allowance for future capacity	
Harbour Master (Deputy/Assistant)	5
Marine Supervisor	2
Clerical & Admin	3
Vessel Traffic Services (VTS)	6
Pilots	14
Marine Operatives	24
Tug Masters	12
Hot Desk	2
Projected Functional Requirements	**68**

Table 4-2 Harbour Operations – Typical Occupancy

Occupancy	Weekday	Evening	Weekend	Shift Change
Harbour Master	1			
Deputy Harbour Master	1			
Assistant Harbour Master	1			
Marine Supervisor	1			
Clerical & Admin	2			
VTS	1	1	1	2
Pilots	2	2	2	rotating
Marine Operatives	4	4	4	8
Tug Masters	2	2	2	4
Hot Desking	2			
Visitors	2			
Total	**19**	**9**	**9**	**14+**

5. PROPOSED ACCESS & CIRCULATION STRATEGY

The site layout has been designed and arranged to allow ease of movement into and around the site.

The primary access to the Maritime Village crosses the proposed SPAR which forms another part of the 3FM Strategic Infrastructure Development by Dublin Port Company (DPC). The primary access will via Pigeon House road and across the SPAR, with access controlled by barriers and traffic signals to restrict movements so that traffic can cross the SPAR but not turn onto it. A separate access will be provided at the eastern end of the site to provide for Harbour Operations personnel to connect on to the SPAR.

The public car parking is located to the east of the primary site entrance, with access to the parking directly to the east upon entering the development. Further into the site past the car park, space is provided for drop-off and turning of cars & trailers and for access to the slipway and to the east of this is a trailer storage area. To the north-east of the development, a private car park for Harbour Operations is to be located for staff and visitors to the building.

Taxi's drop-off and pick up would take place inside the car park, where taxis can use of the turning head at the eastern end of the public car park.

The western portion of the site, encompassing the public event space, is proposed to be a pedestrianised area with the allowance for emergency vehicle access only to the area.

Site circulation is designed such that vehicle access will be in the eastern portion of the site with permeability from the site entrance, through the parking area and into the working/manoeuvring area in front of the Boat maintenance building.

Gated access will be provided to the Boat Yard from the west adjacent the Harbour Operations and south at the public car park. During the boating season, when events / regattas are being held, the gates to the Boat Yard can be opened to allow for ease of movements between the slipway and the public car park.

On occasion other clubs would arrive at the site via coach. It is proposed that coaches will set-down and park in the trailer set-down area, and then exit via the Boat Yard into the public car park.

The access and circulation areas are designed to comply with the Design Manual for Urbans Roads and Streets (DMURS) and Part M Access and Use of the Building Regulations. Vehicle tracking analysis using Autotrack Software, has been undertaken for critical of vehicles including, refuse truck, coach, fire tender and car with trailer to ensure vehicle movements can be executed as required within the proposed site layout. These swept path analyses can be found on **Drawing CP1901_010-ROD-00-XX-DR-C-0090**.

6. TRAFFIC GENERATION

The estimated traffic generation for the Maritime Village includes for a continuation of existing traffic accessing the clubs and facilities plus traffic accessing the proposed Harbour Operation Centre, Training Facility, and Public Amenity Spaces.

Vehicular traffic accessing the club facilities is not anticipated to change substantially for typical weekday activities, with improved access for active modes off-setting future increases in club members. On a typical summer evening the clubs will generate 20 vehicles per hour two-way during the day and an evening time peak of zero vehicles per hour from 5 – 6pm.

Larger volumes of traffic would occur on regattas and large events held by the clubs. These events will be coordinated between the Clubs to ensure that traffic and parking is managed. The parking and trailer storage can be used by the clubs and visiting clubs. On occasion the Boat Yard may be used for overflow car parking, with capacity for up to forty cars. This will bring the total parking availability on site to approximately one hundred cars. While most traffic accessing these events will arrive in the morning and depart in the afternoon, it is expected that the peak hour will see 75% of the parking capacity being occupied in the morning and a similar percentage departing in the evening.

As most of the car parking on the site will be occupied by the Clubs and the visiting Clubs, spectators would walk in from the surround areas. The associated traffic and car parking would be distributed on the surrounding streets in Ringsend rather than crossing the SPAR into the Maritime Village.

The Maritime Training Centre will generate new traffic to the site, and this will typically be on weekdays with up to 10 cars arriving in the morning and then leaving in the late afternoon.

The Boat Maintenance Facility will generate new traffic to the site, and this will typically be on weekdays with up to 5 cars arriving in the morning and then leaving in the late afternoon, with occasional evening time and weekend training.

The public will be able to access the public amenity space and it is expected that this might generate up to 5 vehicles per hour at peak times.

Harbour Operations are 7 days a week and traffic generated by staff is estimated to be 10 vehicles arriving in the morning and 10 leaving in the afternoon. The remaining staff arrivals and departure times will be spread out during the day based on the various shift patterns. During the day Harbour Operations traffic will access via the dedicated access onto the SPAR that will be restricted to Harbour Operations staff only.

Table 6-1 summarises the expected traffic generation for a typical Weekday during the boating season (March – October) AM Peak Hour of 09:00 – 10:00, the PM Peak of 17:00 – 18:00 and the Weekend Regatta / Large Event at Mid-day.

Table 6-1: Traffic Generation Estimates – Two-way Hourly Traffic Movements

Building / Facility	**Weekday AM Peak**	**Weekday PM Peak**	**Weekend Regatta, Mid-day**
Combined Rowing, Yacht & Boating Club	20	40	75
Harbour Operations	10	10	5
Maritime Training Centre	10	10	-
Boat Maintenance Facility	5	5	-
Public Amenity	5	5	-
Combined Total	**50**	**70**	**80**

Table 6-2 summaries the expected traffic generation for a typical Weekday during the boating season (March – October) for a 24 hour period.

Table 6-2: Traffic Generation Estimates – Two-way Hourly Traffic Movements

Typical Weekday traffic volumes	**24 Hour**		
Building / Facility	**inbound**	**outbound**	**two-way**
Harbour Operations	37	37	74
Combined Rowing, Yacht & Boating Club	163	163	327
Maritime Training Centre	10	10	20
Boat Maintenance Facility	5	5	10
Public Amenity	40	40	80
Combined Total	**255**	**255**	**511**

7. PROPOSED CAR PARKING

The Dublin City Development Plan 2022-2028 car parking standards does not set a specific provision for Sports and Recreation where it is recognised that the parking requirements are dependent on the activities and location. The existing site has parking capacity for c.30 cars, and often there is overspill parking onto Pigeon House Road adjacent the site. The proposed public car parking to service the clubs and public amenities is 59 spaces, which is a near two-fold increase on the existing car parking. This additional parking is required to address the upcoming increase in capacity of new buildings, unmet generated demand of existing buildings and to avoid parking overflow on adjoining streets. The proposed Maritime Training Centre and Boat Maintenance Building will generate new parking demands in the daytime during weekdays, however this will not coincide with the peak activities of the Clubs which is in the evening and at weekends.

The Harbour Operations building is an essential service which is operational 24 hours a day, thus parking for staff and visitors is considered essential due to the nature of works with vehicle parking necessary for staff to travel to other areas of Dublin Port as required. Provision shall be made for parking for up to 28 vehicles including the provision of disabled parking and EV charging facilities. This car parking provision ensures that adequate car parking can be reserved for essential staff / operatives including a shift changeover, and adequate car parking is provided for other staff and visitors. The expected peak car parking demand is calculated as follows:

- Normal Office Hours parking demand: 19
- Allowance for daytime shift change over 5
- Allowance for pilots and visitors 4
- Total Harbour Operations Car Park required 28

8. PROPOSED CYCLE PARKING

The Dublin City Development Plan 2022-2028 sets out cycle parking standards, with all new developments required to fully integrate cycle facilities into the design and operation of the schemes, and cycle parking should be secure, highly visible and easy to access. These requirements have been accounted for in the design of the development with a breakdown of bicycle parking as follows:

- Harbour Operations 16
- At site entrance opposite Poolbeg Yacht and Boat Club 56
- Bike Store 76
- Total 148

This proposed cycle parking provision is more than the minimum standards set out in the Dublin City Development Plan and is a significant increase on the existing situation where there is no dedicated cycle parking provision. Along with the much improved access for active travel modes, this generous cycle parking provision will help encourage a modal shift to active travel modes.

9. CONSTRUCTION STAGE TRAFFIC MANAGEMENT

Refer to the Engineering Report for details of the Construction and Environmental Management Plan.

APPENDIX 1
PARKING SURVEY DATA

Pigeon House Road - car parking and traffic movements survey, 9th August 2023

Time	Maritime activities - car parking			Residential - car parking		Traffic movements	
	Maritime Clubs Site	Pigeon Hs Rd - west end	Combined	Pigeon Hs Rd - east end	Off-Street	Vehicles in	Vehicles Out
18:00	29	20	49	6	7	4	4
18:30	29	20	49	6	7	4	2
19:00	29	23	52	6	6	5	3
19:30	30	23	53	7	6	2	6
20:00	29	22	51	7	4		

Site Map: car parking survey areas

Photo: Pigeon House Road - view eastbound

Photo: Maritime Clubs - site parking

Pigeon House Road - car parking and traffic movements survey, 16th September 2023

Time	Maritime activities - car parking			Residential - car parking	
	Maritime Clubs Site	Pigeon Hs Rd - west end	Combined	Pigeon Hs Rd - east end	Off-Street
12:00	25	26	51	10	3
12:30	29	28	57	11	4
13:00	29	28	57	12	6
13:30	29	28	57	13	3
14:00	28	26	54	14	3

Site Map: car parking survey areas

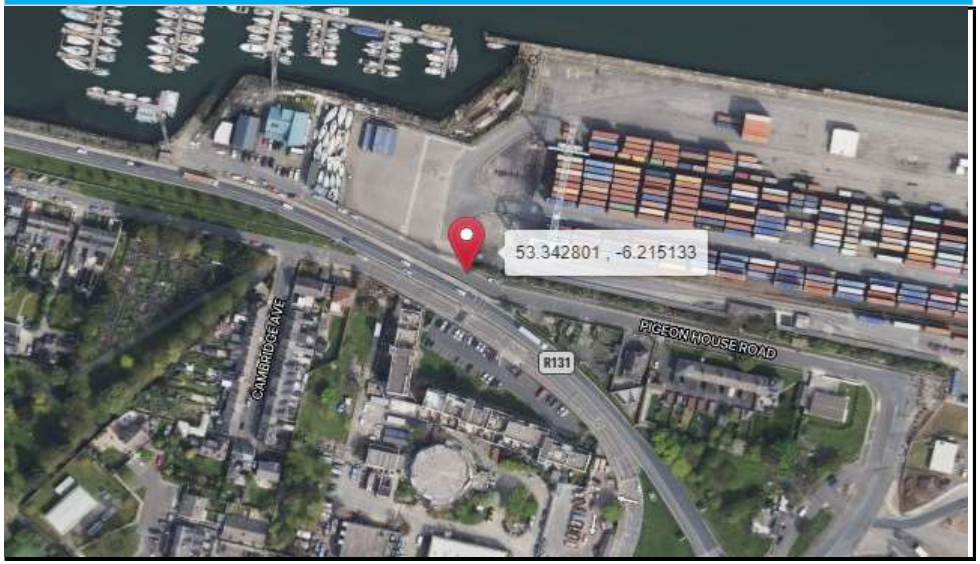
Photo: Pigeon House Road - view westbound

Photo: Maritime Clubs - site parking

APPENDIX 2
TRAFFIC & PEDESTRIAN SURVEY DATA

Irish Traffic Surveys LTD

Sites Overview



Irish Traffic Surveys

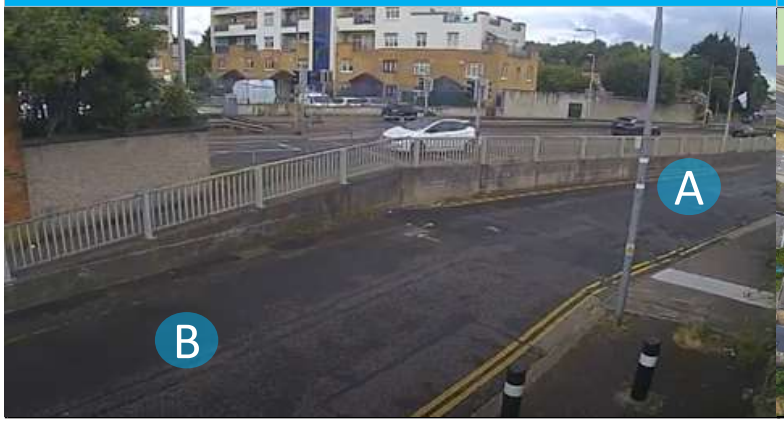
Survey Name :	ITS J-756 Maritime Village
Survey Type:	Junction Turn Count Survey
Date:	28.06.23
Time:	09:00-21:00
Location:	Pigeon House Rd, Dublin
Classification:	Car, LGV, OGV1, OGV2, PSV, MC, PC
Grid Reference:	O 18912 33968
X:	318912
Y:	233968
Latitude:	53.342801
Longitude:	-6.215133
Address (near):	Pigeon House Road, Pembroke East A ED, Dublin, Dublin 4, Leinster, D04 TC98, Ireland

Irish Traffic Surveys LTD

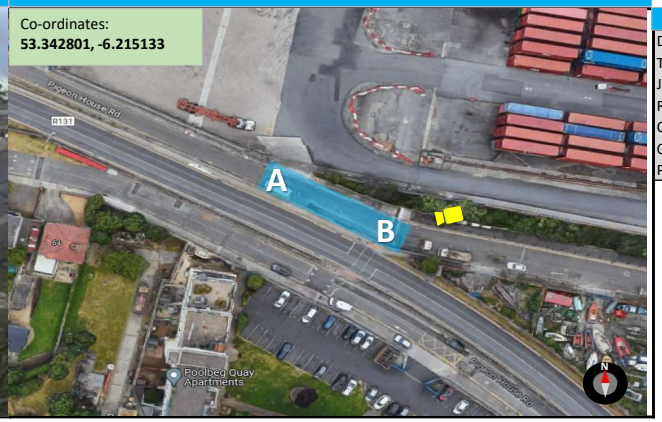
Survey Name :	ITS J-756 Maritime Village
Site:	Junction Turn Count Survey
Date:	28.06.23
Time:	09:00-21:00
Location:	Pigeon House Rd, Dublin
Classification:	Car, LGV, OGV1, OGV2, PSV, MC, PC

Irish Traffic Surveys

Site 1 - Cam A9



Mapping Image



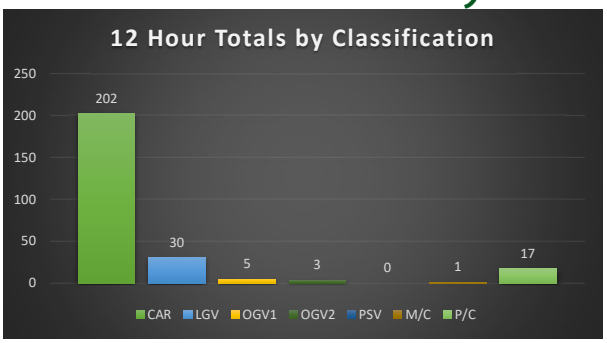
Date:	28.06.23
Time Period:	09:00-21:00
Junction Type:	Link
Reporting Interval:	15min
Classification scheme:	Car, LGV, OGV1, OGV2, PSV, MC, PC
Queues Required:	No
Pedestrian required:	No

Irish Traffic Surveys LTD

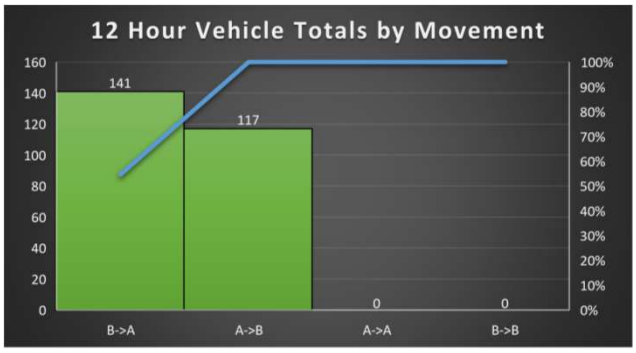
Survey Name :	ITS J-756 Maritime Village
Site:	Junction Turn Count Survey
Date:	28.06.23
Time:	09:00-21:00
Location:	Pigeon House Rd, Dublin
Classification:	Car, LGV, OGV1, OGV2, PSV, MC, PC

Irish Traffic Surveys

Site 1

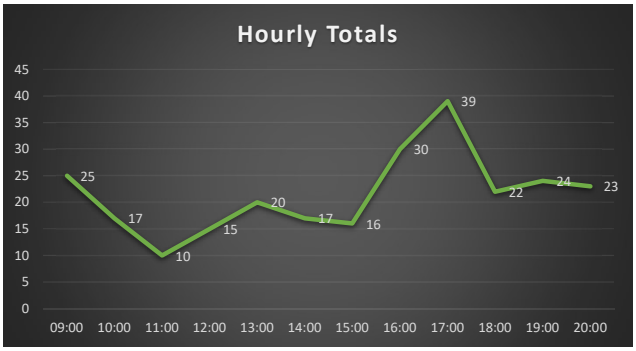


12hr Matrix	A	B
A	0	117
B	141	0
Totals	A	B
Entries	117	141
Exits	141	117



Movement	12hr Total	% Total
A->A	0	0.0%
A->B	117	45.3%
B->A	141	54.7%
B->B	0	0.0%
Total	258	100.0%

TIME	Period total	% of 12hr Total
09:00	25	10%
10:00	17	7%
11:00	10	4%
12:00	15	6%
13:00	20	8%
14:00	17	7%
15:00	16	6%
16:00	30	12%
17:00	39	15%
18:00	22	9%
19:00	24	9%
20:00	23	9%
Total	258	100%



TIME	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	% of 12hr Total
09:00	18	4	3	0	0	0	0	10%
10:00	14	2	0	1	0	0	0	7%
11:00	6	2	2	0	0	0	0	4%
12:00	13	0	0	2	0	0	0	6%
13:00	18	1	0	0	0	0	1	8%
14:00	13	3	0	0	0	0	1	7%
15:00	11	4	0	0	0	0	1	6%
16:00	26	4	0	0	0	0	0	12%
17:00	29	5	0	0	0	1	4	15%
18:00	15	3	0	0	0	0	4	9%
19:00	19	0	0	0	0	0	5	9%
20:00	20	2	0	0	0	0	1	9%
Total	**202**	**30**	**5**	**3**	**0**	**1**	**17**	
% Total	**78.29%**	**11.63%**	**1.94%**	**1.16%**	**0.00%**	**0.39%**	**6.59%**	

Irish Traffic Surveys LTD

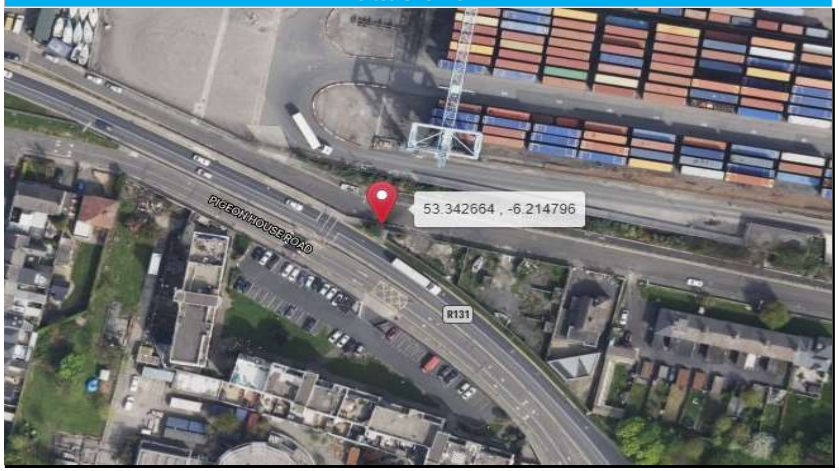
Survey Name :	ITS J-756 Maritime Village
Site:	Junction Turn Count Survey
Date:	28.06.23
Time:	09:00-21:00
Location:	Pigeon House Rd, Dublin
Classification:	Car, LGV, OGV1, OGV2, PSV, MC, PC

Irish Traffic Surveys

	A => A								A => B								B => A								B => B							
TIME	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	TOT	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	TOT	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	TOT	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	TOT
09:00	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	2	1	2	0	0	0	0	5	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	3	6	2	0	0	0	0	0	8	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	5	1	1	0	0	0	0	7	13	3	2	0	0	0	0	18	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	3	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	6	1	0	1	0	0	0	8	8	1	0	0	0	0	0	9	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	3	1	1	0	0	0	0	5	3	1	1	0	0	0	0	5	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	4	0	0	1	0	0	0	5	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	5	0	0	1	0	0	0	6	8	0	0	1	0	0	0	9	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	3	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	8	0	0	0	0	0	1	9	10	1	0	0	0	0	0	11	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	3	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	2	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	8	2	0	0	0	0	0	10	5	1	0	0	0	0	1	7	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	4	3	0	0	0	0	0	7	1	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	6	3	0	0	0	0	0	9	5	1	0	0	0	0	1	7	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	4	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	7	2	0	0	0	0	0	9	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	6	20	4	0	0	0	0	0	24	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4	6	2	0	0	0	0	2	10	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	3	5	1	0	0	0	1	0	7	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	5	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	10	2	0	0	0	0	0	12	19	3	0	0	0	1	4	27	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	4	1	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	8	2	0	0	0	0	1	11	7	1	0	0	0	0	3	11	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
19:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	6	0	0	0	0	0	3	9	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	3	0	0	0	0	0	2	5	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	12	0	0	0	0	0	5	17	7	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20:15	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	5	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0
20:30	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
20:45	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1	4	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	15	1	0	0	0	0	1	17	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0
12 HR TOT	0	0	0	0	0	0	0	0	92	13	2	2	0	0	8	117	110	17	3	1	0	1	9	141	0	0	0	0	0	0	0	0

Irish Traffic Surveys LTD

Sites Overview



Irish Traffic Surveys

Survey Name :	ITS J-756 Maritime Village
Survey Type:	Junction Turn Count Survey
Date:	28.06.23
Time:	09:00-21:00
Location:	Pigeon House Rd, Dublin
Classification:	Peds, PC
Grid Reference:	O 18934 33954
X:	318934
Y:	233954
Latitude:	53.342664
Longitude:	-6.214796
Address (near):	Pigeon House Road, Pembroke East A ED, Dublin, Dublin 4, Leinster, D04 TC98, Ireland

Irish Traffic Surveys LTD

Survey Name :	ITS J-756 Maritime Village
Site:	Junction Turn Count Survey
Date:	28.06.23
Time:	09:00-21:00
Location:	Pigeon House Rd, Dublin
Classification:	Peds, PC

Irish Traffic Surveys

Site 2 - Cam A9

Mapping Image

Date:	28.06.23
Time Period:	09:00-21:00
Junction Type:	Link
Reporting Interval:	15min
Classification scheme:	Peds, PC
Queues Required:	No
Pedestrian required:	Yes

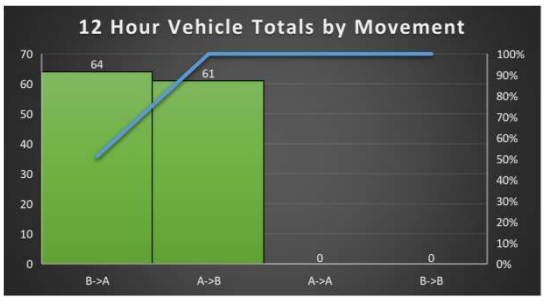
Irish Traffic Surveys LTD

Survey Name :	ITS J-756 Maritime Village
Site:	Junction Turn Count Survey
Date:	28.06.23
Time:	09:00-21:00
Location:	Pigeon House Rd, Dublin
Classification:	Car, LGV, OGV1, OGV2, PSV, MC, PC

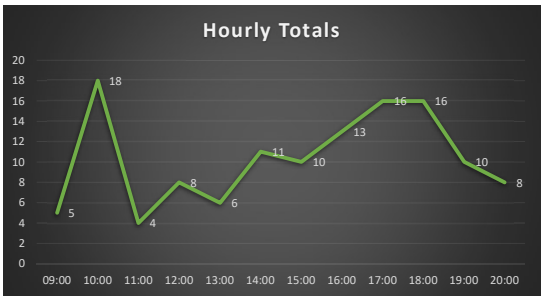
Irish Traffic Surveys

Site 1 Peds

12hr Matrix	A	B
A	0	61
B	64	0
Totals	**A**	**B**
Entries	61	64
Exits	64	61

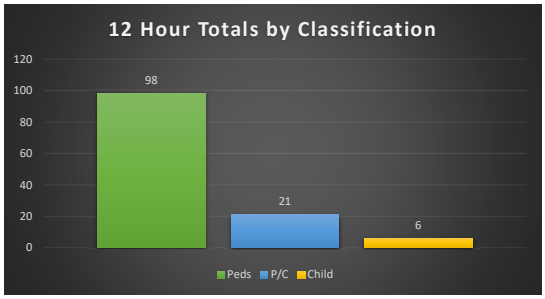


Movement	12hr Total	% Total
A->A	0	0.0%
A->B	61	48.8%
B->A	64	51.2%
B->B	0	0.0%
Total	125	100.0%



TIME	Period total	% of 12hr Total
09:00	5	4%
10:00	18	14%
11:00	4	3%
12:00	8	6%
13:00	6	5%
14:00	11	9%
15:00	10	8%
16:00	13	10%
17:00	16	13%
18:00	16	13%
19:00	10	8%
20:00	8	6%
Total	125	100%

TIME	Peds	P/C	Child	% of 12hr Total
09:00	5	0	0	4%
10:00	15	2	1	14%
11:00	4	0	0	3%
12:00	8	0	0	6%
13:00	5	1	0	5%
14:00	8	1	2	9%
15:00	7	2	1	8%
16:00	11	1	1	10%
17:00	12	4	0	13%
18:00	12	4	0	13%
19:00	6	3	1	8%
20:00	5	3	0	6%
Total	**98**	**21**	**6**	
% Total	**78.40%**	**16.80%**	**4.80%**	



Irish Traffic Surveys LTD

Survey Name :	ITS J-756 Maritime Village
Site:	Junction Turn Count Survey
Date:	28.06.23
Time:	09:00-21:00
Location:	Pigeon House Rd, Dublin
Classification:	Peds, PC

	A => A								A => B								B => A								B => B							
TIME	Peds	P/C	Child					TOT	Peds	P/C	Child					TOT	Peds	P/C	Child					TOT	Peds	P/C	Child					TOT
09:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	1	1	0	0	0	0	14	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	13	2	1	0	0	0	0	16	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	6	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	3	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	3	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	4	1	1	0	0	0	0	6	4	0	1	0	0	0	0	5	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	6	2	1	0	0	0	0	9	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	6	6	0	1	0	0	0	0	7	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	3	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	7	3	0	0	0	0	0	10	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	5	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	7	3	0	0	0	0	0	10	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0
19:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	4	3	1	0	0	0	0	8	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
20:30	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4	2	2	0	0	0	0	0	4	0	0	0	0	0	0	0	0
12 HR TOT	0	0	0	0	0	0	0	0	47	12	2	0	0	0	0	61	51	9	4	0	0	0	0	64	0	0	0	0	0	0	0	0

APPENDIX 3
DRAWING: CP1901_010-ROD-00-XX-SK-C-0032
EXISTING & PROPOSED BUS ROUTES

TOM CLARKE BRIDGE
RIVER LIFFEY
PROPOSED SITE LOCATION
RIVER LIFFEY
R131
13min WALK
L13
C1
47
RINGSEND
RINGSEND BRIDGE
R802
RINGSEND PARK
10min WALK
S2
IRISHTOWN STADIUM
SHELBOURNE PARK GREYHOUND STADIUM
RIVER DODDER
R802
R131
L13
C1
47
18min WALK
LONDON BRIDGE
R111
R111
TRITONVILLE RD
IRISH TOWN
SEAN MOORE PARK
RIVER DODDER
R802
DUBLIN BAY
AVIVA STADIUM
TRITONVILLE RD
SANDYMOUNT RD
L13
C1
47
S2

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS, SPECIFICATIONS AND DESIGNER'S RISK ASSESSMENTS.
2. ALL LEVELS ARE IN METRES TO ORDNANCE DATUM, MALIN HEAD.
3. THE TOPOGRAPHICAL INFORMATION IS REPLICATED FROM INFORMATION RECEIVED FROM OTHERS AND IS ISSUED AS BACKGROUND INFORMATION ONLY.

LEGEND:

- EXISTING BUS ROUTE & BUS STOP 47 BELARMINE - PODLBEG STREET
- EXISTING BUS ROUTE & BUS STOP C1 SANDYMOUNT - ADAMSTOWN STATION
- PROPOSED BUS ROUTE S2 BUS CONNECTS
- PROPOSED BUS ROUTE L13 BUS CONNECTS
- PROPOSED SITE BOUNDARY
- PEDESTRIAN ROUTE TO CLOSEST BUS STOP FROM DEVELOPMENT

No.	Revision	Date	By	Chk'd	Appd

Project Stage: PLANNING

ROD ROUGHAN & O'DONOVAN

Offices:
Dublin - Sandyford & Santry
Leeds - Otley
Ireland t +353 (0) 1 294 0800
UK t +44 (0) 113 360 1720

Client: DUBLIN PORT COMPANY (DPC)

Project Title: 3FM PROJECT: MARITIME VILLAGE

Drawing Title: EXISTING & PROPOSED BUS ROUTES

Drawing Number	Rev.
CP1901_010-ROD-00-XX-SK-C-0032	P0

Scale:	Date:	Job No:	Status Code
1:2,500@A1	JUNE'24	22.149	S4 - FOR STAGE APPROVAL

Drawn:	Checked:	Approved:
AC	-	-