3. The Proposed Development

Extension and Reconfiguration of Falmouth Docks

FDEC are looking to redevelop and modernise the existing facilities at Falmouth Docks to reinstate full alongside berth capacity and increase berth capacity. The proposed development aims to maintain existing business and future proof the docks with respect to cruise capacity, cargo capacity and renewable FLOW (Floating Offshore Wind), supporting the offshore wind market.

Demolition and removal of existing structures:

- Demolition of the existing Western Wharf timber piles and above surface infrastructure;
- Demolition of the Northern Arm concrete structure;
- Demolition of eight on-site buildings;
- Removal of foul ground within areas of the former Kings and Empire Wharves; and
- Removal of the gangway.

Construction of new buildings and structures:

- Reclamation of land behind Western Wharf through back-filling.
- Construction of a new Western Wharf suspended deck structure;
- Construction of Northern Wharf, a suspended deck between Queens Wharf and the Northern Arm;
- Upgrades and extension of the Queens Wharf suspended desk structure; and
- Upgrades to Duchy Wharf structure to facilitate the FLOW Deck;
- Potential strengthening of piles at County and Duchy Wharfs; and
- Installation of the FLOW Deck.

Dredging:

- Pocket dredge berth area to create clearance for large cruise vessels (Excellence class) and to meet FLOW renewable energy device underkeel requirements, depth of -10.5 m; and
- Surface skim of seabed to the east of the site to maintain -5.5 m depth.

Access and parking:

- A new designated area located adjacent to the cruise berths would be provided to facilitate the additional coaches and taxis for cruise passengers.

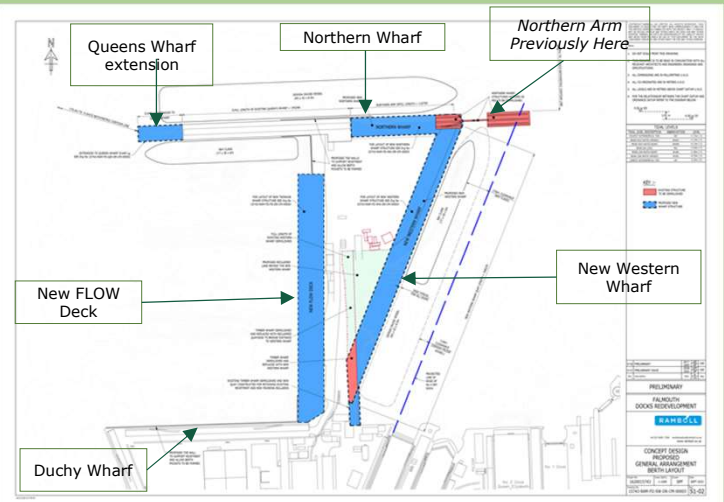
Landscaping and finishing works:

- Minor internal roadway improvements to mark internal routes.
- Installation of a number of trees in planters for biodiversity.

Consenting of the Proposed Development

- FDEC is submitting a **full planning application**, which is required for works above the Mean Low Water Mark (MLWM).
- A **Marine Licence Application (MLA)** is also being submitted to the MMO, which is required for works that would be undertaken below Mean High Water Springs (MHWS).

This Non-Technical Summary and the Environmental Statement supports both the planning application and the MLA and considers the proposed development as a whole.



Proposed Development Site Arrangement Plan

Access arrangements (to remain as existing)

4 Proposed Development Description

4.1 Introduction

4.1.1 This chapter provides a description of the proposed development, as assessed within this EIA, for the purposes of identifying and assessing the potential environmental impacts and likely significant environmental effects of the proposed development in the technical assessment chapters of this ES (Chapter 6 to Chapter 19).

4.1.2 In accordance with the EIA Regulations, this chapter sets out the physical characteristics of the proposed development, the main characteristics of the operational stage, as well as the estimations of the resources, emissions, residues and wastes envisaged as part of the proposed development.

4.1.3 A general description of the site and surrounding area is provided in Chapter 1: Introduction, with more detailed descriptions provided in each technical assessment chapter within this ES. These are therefore not repeated here.

4.2 Planning and Marine Licence Application

4.2.1 The proposed development would redevelop and modernise the existing facilities at Falmouth Docks to reinstate full alongside berth capability and increase berth capacity. The objectives of the proposed development are to repair and update the currently poor condition dock infrastructure in order to maintain existing business and future proof the docks with respect to cruise capacity, cargo capacity and renewable FLOW (supporting the offshore wind market).

4.2.2 The full planning application and MLA would comprise the following redevelopment activities:

- Pocket dredge of berth areas to achieve required underkeel clearance for larger cruise vessels (up to Excellence class) and the FLOW renewable energy device underkeel requirements (considered to be -10.5 m CD);
- Removal of foul ground within areas of the former Kings and Empire Wharves;
- Surface skim of seabed on eastern side of the site to maintain -5.5 m CD;
- Demolition of the remaining existing Western Wharf timber piles and above surface infrastructure;
- Construction of a new Western Wharf suspended deck structure with a deck level of +8.36 m CD (5.45 m AOD);
- Demolition of the Northern Arm concrete structure and substructure to below seabed level and removal of the gang walkway and old timber piles that are located west of this structure;
- Construction of a suspended deck structure (Northern Wharf) in the existing 90 m gap between Queens Wharf and the Northern Arm to create a longer functional wharf length, with a deck level of +8.36 m CD (5.45 m AOD);
- Upgrades to the existing Queens Wharf structure;
- Extension of the Queens Wharf suspended deck structure 50 m westward with a deck level of +8.4 m CD (5.49 m AOD);
- Installation of a 290 m deck (the 'FLOW Deck') to facilitate a FLOW device with a deck level of +8.36 m CD (5.45 m AOD);
- Upgrades to the existing Duchy Wharf structure to facilitate a FLOW device with a deck level of +8.24 m CD (5.33 m AOD);
- Potential strengthening works to Duchy and County Wharf piles; and
- Demolition of on-site buildings and re-configuration of Falmouth Dock activities.

4.3 Proposed Development Description

Site Arrangement

4.3.1 The arrangement of the proposed development across the site is illustrated in Figure 4.1.

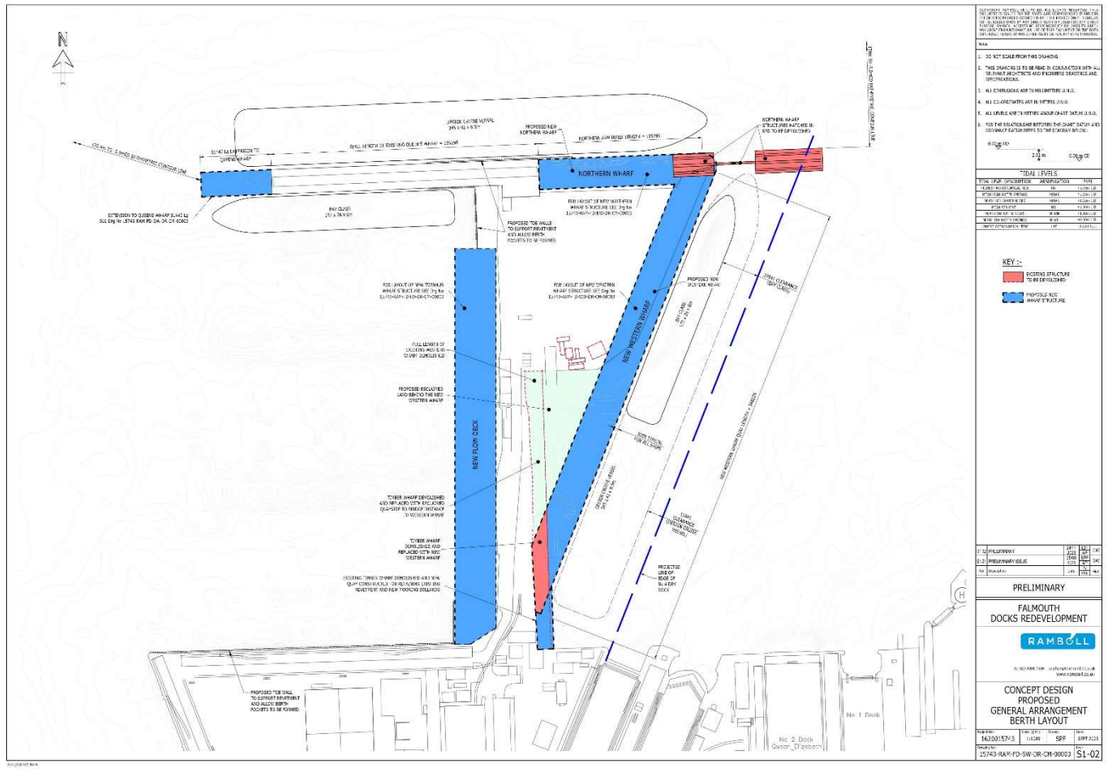


Figure 4.1: Proposed Development Site Arrangement Plan

4.3.2 The Western Wharf is proposed to be located on the eastern side of the site and would measure 348 m in length. The Western Wharf structure would extend north-eastwards from the landside docks to the north-eastern corner of the site, where it would wrap around to form a continuous deck surface with Northern Wharf. Land between the existing causeway and Western Wharf would be reclaimed as quayside.

4.3.3 The existing isolated concrete structure at the easternmost extent of Northern Wharf would be demolished to return this area of the site to open channel. The Northern Wharf structure would extend eastwards from the existing Queens Wharf structure and would wrap around to connect with Western Wharf.

4.3.4 A 50 m extension would project westwards from the existing Queens Wharf. Including the proposed westward extension and combined with the Northern Wharf infill section, Queens Wharf would measure 367 m in length and be able to accommodate vessels on its northern and southern berthing faces.

4.3.5 The FLOW Deck would be located on the western side of the site and would extend northwards from the existing Duchy Wharf, parallel to the existing causeway. The FLOW Deck would measure 290 m in length.

4.3.6 The existing Duchy Wharf would remain located in the south of the site.

4.3.7 The proposed development also comprises terrestrial components to support landside and dockside operations, which are set out in Section 4.5.

4.4 Land Use

Area Schedule

4.4.1 The total site area is 47.2 ha, although a portion of this area constitutes temporary site working areas and cabins. The marine component comprises 39.5 ha and the terrestrial component of the proposed development comprises 7.7 ha.

4.4.2 As the proposed development comprises marine infrastructure, no use-classes would be delivered from the marine parts of the scheme. However, Table 4.1 presents the existing deck area and the proposed development deck area (m^2) that would be constructed or removed as part of the proposed development.

4.4.3 Existing docks land and operational areas would be increased as a result of the deck areas provided as part of the proposed development, through the construction of new deck surface along with the removal of existing buildings on site to increase available logistics space. The area of hardstanding within the site is approximately 77,000 m^2.

4.4.4 The proposed development would provide 810 m additional length of quayside.

Table 4.1: Proposed Development Area Schedule

Use Class	Existing Deck Area m^2	Proposed Development Deck Area m^2
Western Wharf	2,132	7,733
Northern Arm	3,443	0
Northern Wharf	0	2,817
Queens Wharf	3,769	4,696
FLOW Deck	0	8,587
Duchy Wharf	2,300	2,300
Total	**11,644**	**26,133**

4.4.5 The proposed development would increase the area of suspended deck and wharf structures from 11,644 m^2 to 26,133 m^2, a total increase of 14,489 m^2.

4.4.6 The proposed development Western Wharf would comprise reclamation through back-filling along with the construction of the new dock area.

4.4.7 The Western Wharf, Northern Wharf, FLOW Deck and the Queens Wharf Extension would comprise suspended deck structures with a revetment beneath the deck. These piled structure would consist of a combination of both vertical and raking piles, supporting a series of longitudinal and transverse reinforced concrete beams with a reinforced concrete deck over. A transition slab would be positioned at the landward edge of the quays, bridging between the structures and the reclaimed land behind.

4.4.8 General arrangement plans for each of the suspended decks and wharf structures of the proposed development are illustrated in Figure 4.2 to 4.6.

Dredge Pockets

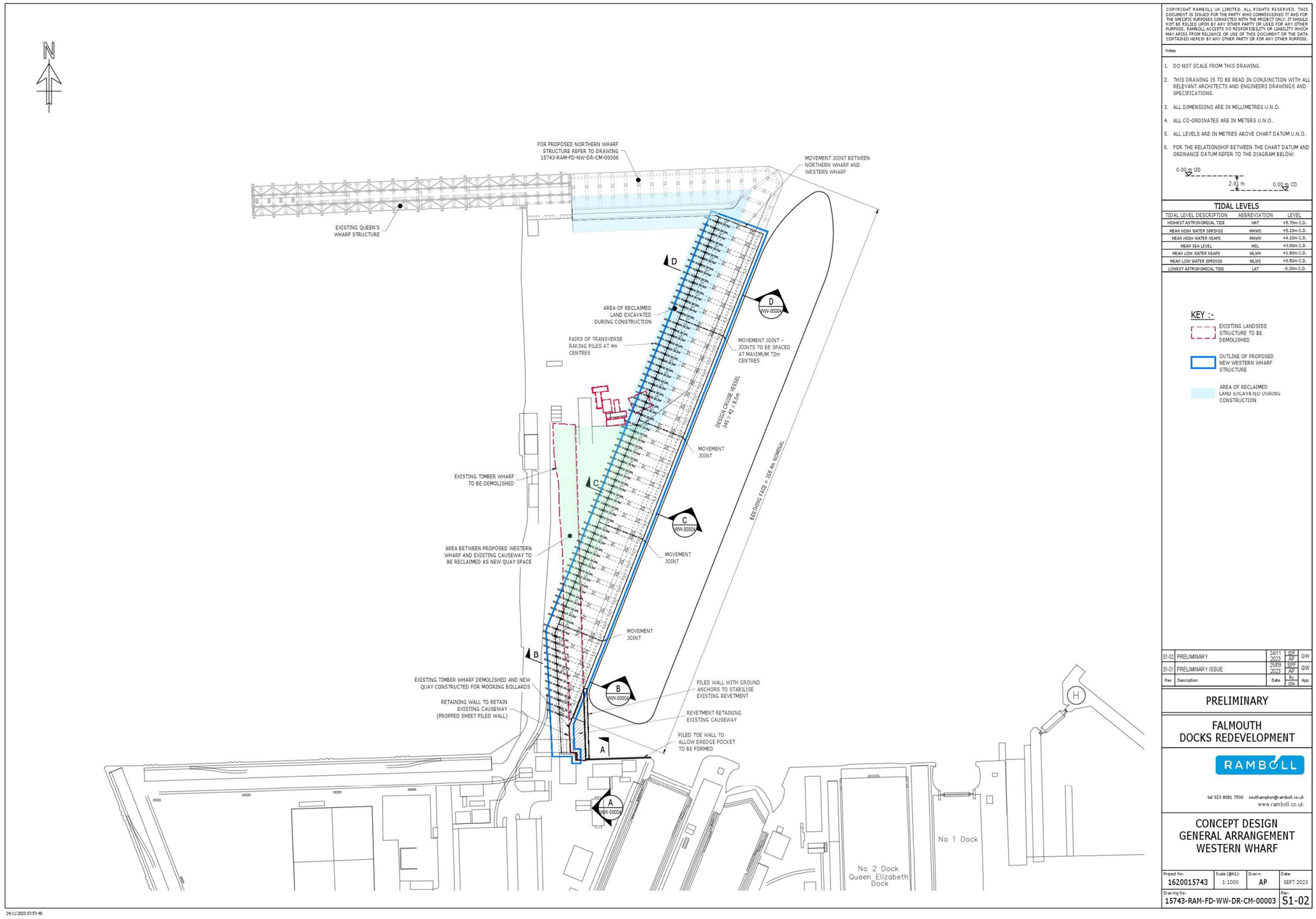
4.4.9 The proposed development would comprise depths of -10.5 m CD for Western Wharf, Queens Wharf, the FLOW mooring area and South of Queens in order to facilitate Excellence class cruise vessels, FLOW devices and Bay Class Royal Fleet Auxiliary (RFA) vessels to access and use these berths.

4.4.10 The eastern side of the causeway would comprise depths of -5.5 m CD.

4.4.11 These dredge depths are required to enable the clear draught of the design vessel with an additional 1 m underkeel clearance at Lowest Astronomical Tide (LAT) and 300 mm siltation allowance. The sides of the dredge pockets would be graded, and rock scour protection would be placed in the berth pockets.

4.4.12 The dredge plan, indicating the new seabed levels are displayed in Figure 4.7.

4.4.13 Limited maintenance dredging is proposed as part of the proposed development. The anticipated volume of maintenance dredging is estimated to be up to approximately 8,000 m^3 every five years (and accordingly, up to approximately 16,000 m^3 every 10 years), as required within the eastern berth pocket. This would be undertaken in line with the requirements of the marine licence, with proposed disposal at the Falmouth Bay Disposal site.



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6. FOR THE RELATIONSHIP BETWEEN THE CHART DATUM AND ORDNANCE DATUM REFER TO THE DIAGRAM BELOW:

TIDAL LEVELS

TIDAL LEVEL DESCRIPTION	ABBREVIATION	LEVEL
HIGHEST ASTRONOMICAL TIDE	HAT	+5.70m C.D.
MEAN HIGH WATER SPRINGS	MHWS	+5.10m C.D.
MEAN HIGH WATER NEAPS	MHWN	+4.10m C.D.
MEAN SEA LEVEL	MSL	+3.00m C.D.
MEAN LOW WATER NEAPS	MLWN	+1.80m C.D.
MEAN LOW WATER SPRINGS	MLWS	+0.50m C.D.
LOWEST ASTRONOMICAL TIDE	LAT	-0.20m C.D.

KEY :-

- EXISTING LANDSIDE STRUCTURE TO BE DEMOLISHED
- OUTLINE OF PROPOSED NEW WESTERN WHARF STRUCTURE
- AREA OF RECLAIMED LAND EXCAVATED DURING CONSTRUCTION

Rev	Description	Date	By	Chk	App
S1-02	PRELIMINARY	24/11/2023	BDF	AP	GW
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PRELIMINARY

FALMOUTH DOCKS REDEVELOPMENT

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CONCEPT DESIGN
GENERAL ARRANGEMENT
WESTERN WHARF

Project No:	Scale (@A1):	Drawn:	Date:
1620015743	1:1000	AP	SEPT 2023

Drawing No: 15743-RAM-FD-WW-DR-CM-00003 Rev: S1-02

Figure 4.2: Western Wharf General Arrangement Plan

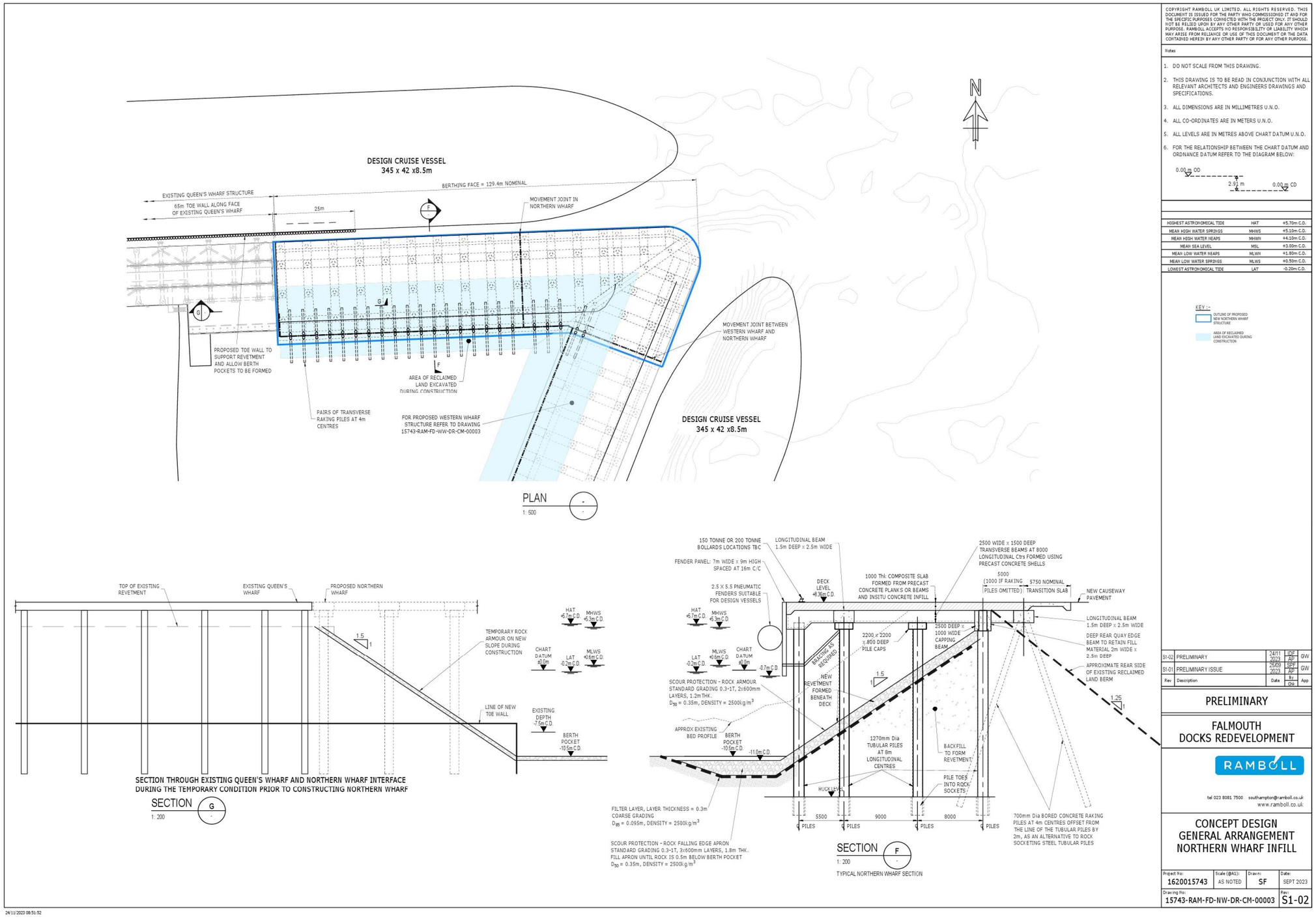
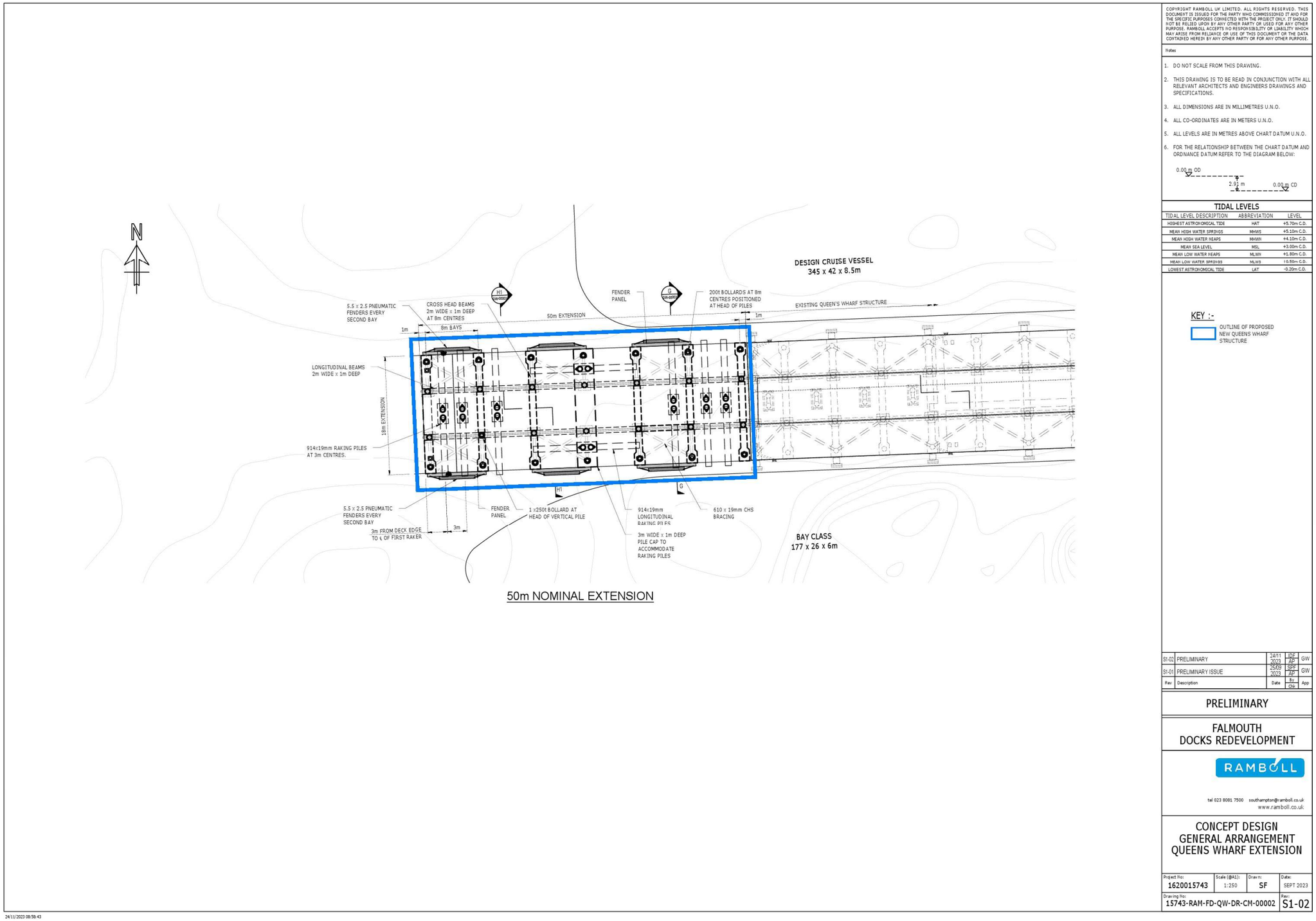


Figure 4.3: Northern Wharf General Arrangement Plan



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HIGHEST ASTRONOMICAL TIDE	HAT	+5.70m C.D.
MEAN HIGH WATER SPRINGS	MHWS	+5.10m C.D.
MEAN HIGH WATER NEAPS	MHWN	+4.10m C.D.
MEAN SEA LEVEL	MSL	+3.00m C.D.
MEAN LOW WATER NEAPS	MLWN	+1.80m C.D.
MEAN LOW WATER SPRINGS	MLWS	+0.50m C.D.
LOWEST ASTRONOMICAL TIDE	LAT	-0.20m C.D.

KEY :-

OUTLINE OF PROPOSED NEW QUEENS WHARF STRUCTURE

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QUEENS WHARF EXTENSION

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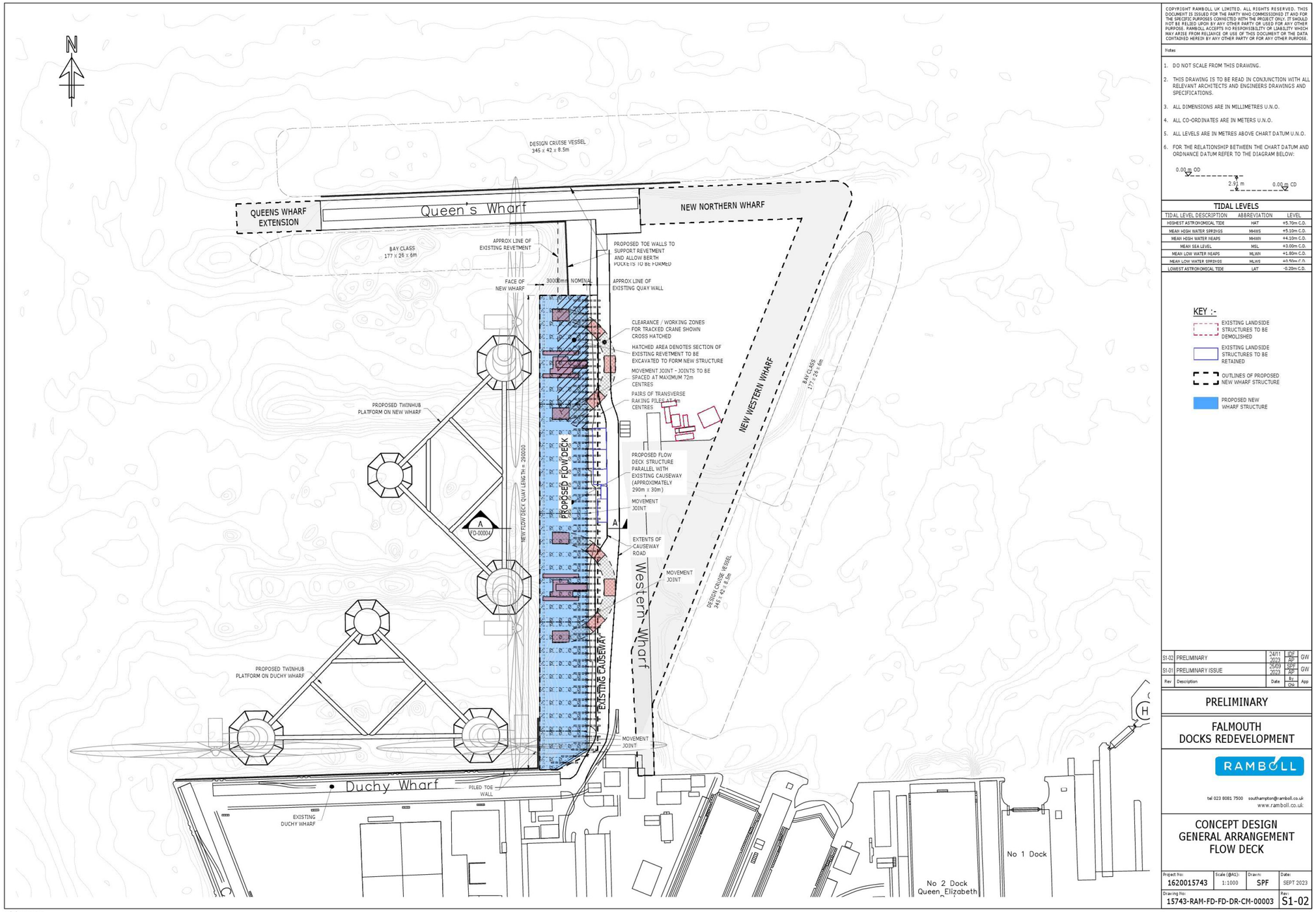
Figure 4.4: Queens Wharf Extension General Arrangement Plan



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MEAN HIGH WATER SPRINGS	MHWS	+5.10m C.D.
MEAN HIGH WATER NEAPS	MHWN	+4.10m C.D.
MEAN SEA LEVEL	MSL	+3.00m C.D.
MEAN LOW WATER NEAPS	MLWN	+1.80m C.D.
MEAN LOW WATER SPRINGS	MLWS	+0.90m C.D.
LOWEST ASTRONOMICAL TIDE	LAT	-0.20m C.D.

KEY :-

- EXISTING LANDSIDE STRUCTURES TO BE DEMOLISHED
- EXISTING LANDSIDE STRUCTURES TO BE RETAINED
- OUTLINES OF PROPOSED NEW WHARF STRUCTURE
- PROPOSED NEW WHARF STRUCTURE

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FLOW DECK

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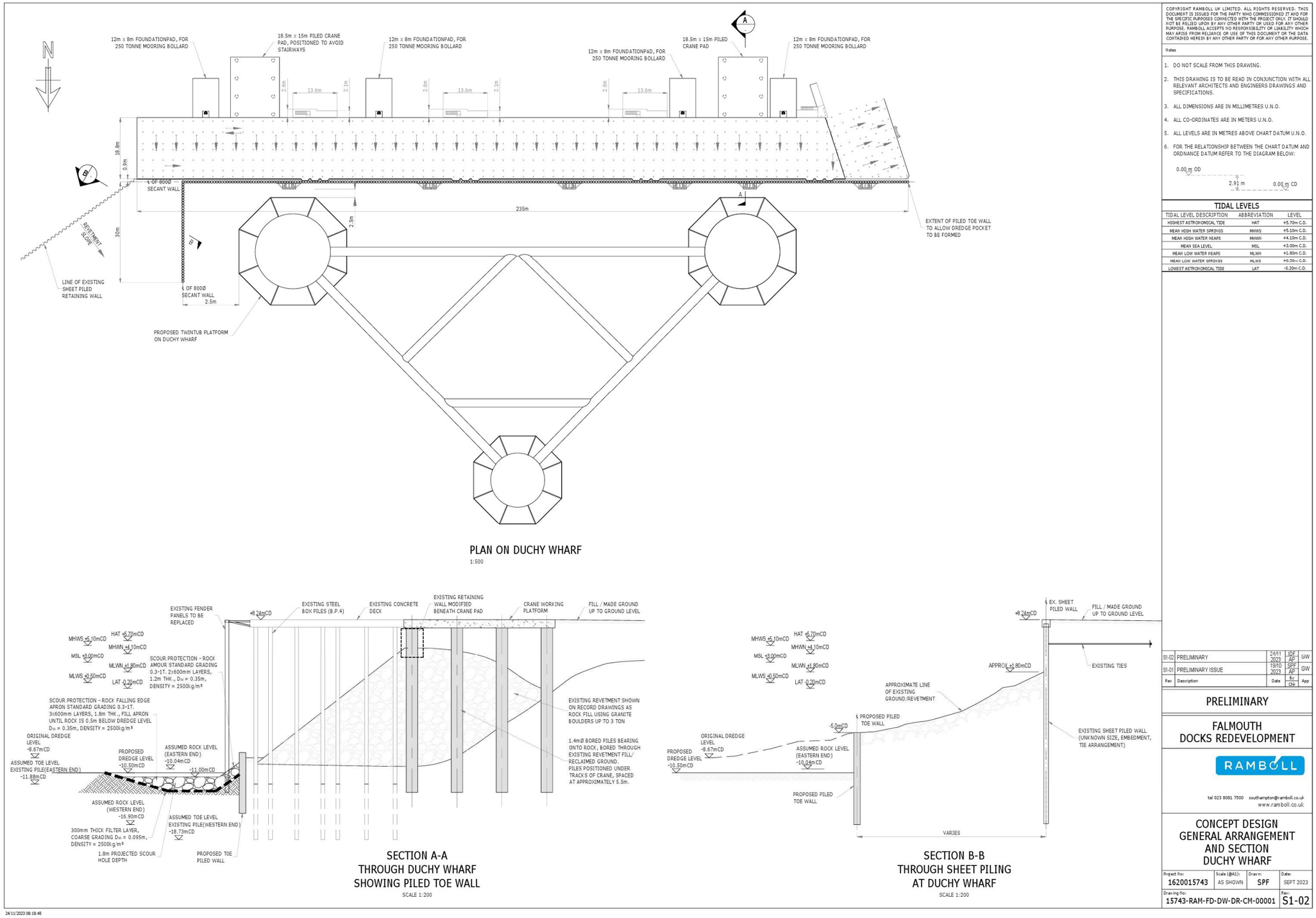
Figure 4.5: FLOW Deck General Arrangement Plan



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MEAN LOW WATER SPRINGS	MLWS	+0.50m C.D.
LOWEST ASTRONOMICAL TIDE	LAT	-0.20m C.D.

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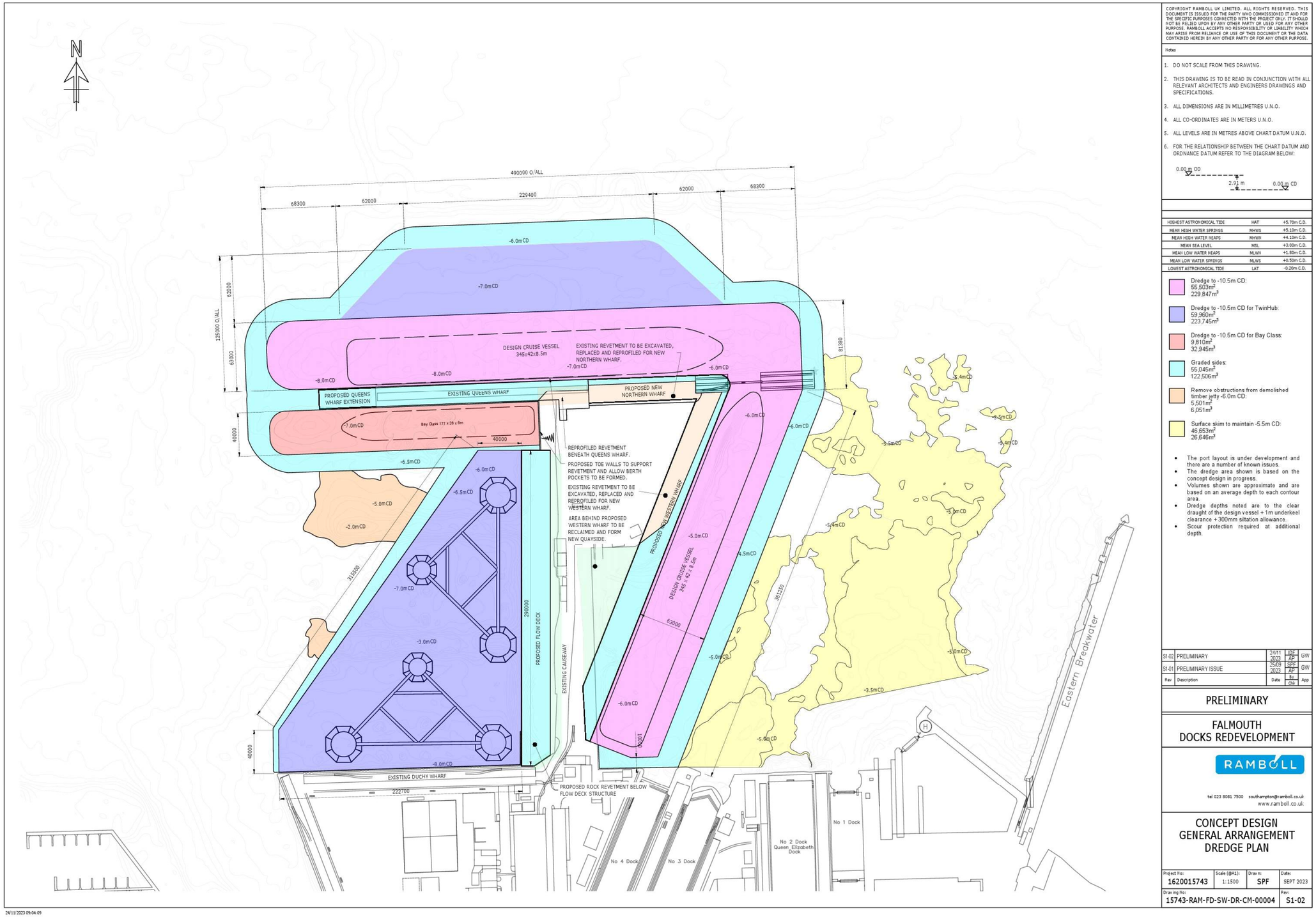
Figure 4.6: Duchy Wharf General Arrangement Plan



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MEAN SEA LEVEL	MSL	+3.00m C.D.
MEAN LOW WATER NEAPS	MLWN	+1.80m C.D.
MEAN LOW WATER SPRINGS	MLWS	+0.50m C.D.
LOWEST ASTRONOMICAL TIDE	LAT	-0.20m C.D.

Dredge to -10.5m CD:
55,503m²
229,847m³

Dredge to -10.5m CD for TwinHub:
59,960m²
223,745m³

Dredge to -10.5m CD for Bay Class:
9,810m²
32,945m³

Graded sides:
55,045m²
122,506m³

Remove obstructions from demolished timber jetty -6.0m CD:
5,501m²
6,051m³

Surface skim to maintain -5.5m CD:
46,653m²
26,646m³

- The port layout is under development and there are a number of known issues.
- The dredge area shown is based on the concept design in progress.
- Volumes shown are approximate and are based on an average depth to each contour area.
- Dredge depths noted are to the clear draught of the design vessel + 1m underkeel clearance + 300mm siltation allowance.
- Scour protection required at additional depth.

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Drawing No: 15743-RAM-FD-SW-DR-CM-00004
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Figure 4.7: Proposed Development Dredge Plan

Western Wharf

4.4.14 The Western Wharf is located in close proximity to the existing dry docks which is located within the wider Falmouth Docks site. The proposed development would maintain a 11.8 m clearance distance between the Excellence Class vessels and the edge of the closest dry dock (no 4.).

4.4.15 The Western Wharf would comprise:

- A suspended deck with a deck level of +8.36 m CD (5.45 m AOD);
- A reclaimed quayside to bridge the distance between the Western Wharf and existing causeway, and increase the functional area of the causeway deck area; and
- A quay to retain the existing revetment and new mooring bollards.

4.4.16 The Western Wharf would measure 348 m in length and would accommodate Excellence Class vessels up to 345 m in length, 42 m in width and with an 8.5 m draught.

4.4.17 At its north-eastern end, Western Wharf would wrap around the north-eastern corner of the site and join with Northern Wharf, in order to provide a continuous deck surface.

4.4.18 Western Wharf would consist of a suspended deck structure made up of steel circular hollow section (CHS) piles supporting reinforced concrete beams and a reinforced concrete deck. The deck would be formed of precast concrete planks with an in-situ concrete infill. The existing revetment would be excavated, replaced and reprofiled; the new revetment would be formed beneath the deck to accommodate the berth pocket depth of -10.5 m CD. A transition slab would be positioned at the landward quay edge of the deck which would sit atop the reclaimed land behind.

4.4.19 The suspended deck would be supported by 4 No. piles within each pile bent. The spacing between these piles would vary transversely, with a spacing of 5.5 m, 9.0 m and 8.0 m between piles running from the seaward to the landward edge. The bays of piles would then be spaced at 8.0 m centres longitudinally along the wharf and the wharf would be split into sections made up of nine bays to allow for movement joints to be included. At these movement joints, an additional set of piles would be required in order to separate the two sections of the structure, forming two pile bents adjacent to each other creating complete isolation between parts of the structure.

4.4.20 Each row of piles would be topped with a reinforced concrete transverse beam running between quay edges, and the second row of piles back from the seaward edge would be topped with a reinforced concrete longitudinal beam. A 1 m thick reinforced concrete deck would sit above the beams.

4.4.21 Raking piles would be included within the reclaimed land behind the structure. These would be included in pairs raking transversely to the quay in opposite directions at 4.0 m centres. Three pairs of raking piles raking longitudinally to the quay would be included between movement joints.

4.4.22 At the seaward quay edge, fender panels would be provided for the fenders to bear against during the berthing of vessels. These fender panels would be provided at every other pile bay and span between the two front piles. Bracing would then be required to span between the fender panels and the longitudinal beam.

Northern Wharf

4.4.23 The Northern Wharf is located in the north-east of the site, adjacent to the Queens Wharf and north of the Western Wharf. The Northern Wharf would be located adjacent to the north of the existing causeway. The Northern Wharf would therefore link the existing Queens Wharf structure and Western Wharf, creating a single, larger berth at the northern most extent of the dock within the site.

4.4.24 The northern wharf would comprise a suspended deck with a deck level of + 8.36 m CD (5.45 m AOD).

4.4.25 The Northern Arm infill would measure 120 m in length, and the berthing face of Northern Wharf is 130 m long.

4.4.26 Mooring bollards supplied along Western and Northern Wharf would be a mix of 150t, 200t and 250t mooring bollards.

Queens Wharf

Existing Queens Wharf

4.4.27 The existing Queens Wharf structure is located in the north of the site and projects westwards from the end of the existing causeway.

4.4.28 The existing Queens Wharf structure would remain as part of the proposed development, and would be connected to Northern Wharf (at its eastern end) and the Queens Wharf extension (at its western end).

4.4.29 The Queens Wharf is a suspended deck structure consisting of steel piles and bracing, with a reinforced concrete deck over. The deck level sits at + 8.4 m CD along the edges and rises to + 8.495 m CD towards the middle of the deck. The structure is approximately 195 m long and 18 m wide and is formed from pile bents consisting of four piles with concrete pile caps joined by longitudinal and transverse concrete beams. Concrete panels then span between these beams, forming the deck. The two end bays on the western end of the wharf also contain four raker piles within each bay.

4.4.30 Other features of the existing Queens Wharf include 150 t bollards, fenders, ladders and services.

4.4.31 The existing Queens Wharf structure has the capacity to allow for the increase in dredge depth on both sides of the wharf. A piled toe wall, 110 m long on the north and 100 m to the south, is proposed at the toe of the revetment beneath the existing eastern section of Queens Wharf. This is required to accommodate the new proposed dredge depth.

Queens Wharf Extension

4.4.32 A 50 m westward extension to the existing Queens Wharf would increase the length of operational deck to facilitate larger vessels along this berth (Queens Wharf extension) with a deck level of +8.36 m CD (5.45 m AOD)

4.4.33 The Queens Wharf extension would be a free-standing structure designed to accommodate berthing, mooring, and crane loads as well as general surcharge loadings without taking support from the existing Queens Wharf.

4.4.34 The Queens Wharf extension would measure 51.4 m in length and 18 m in width and would be of a matching design to the existing Queens Wharf suspended deck to accommodate Excellence Class vessels up to 345 m in length, 42 m in width and with an 8.5 m draught.

4.4.35 With Northern Wharf and the Queens Wharf extension at the eastern and western ends of the existing Queens Wharf structure, respectively, the total proposed Queens Wharf structure would measure 366.5 m in length. Vessels would be able to berth at both the northern and southern berthing faces.

4.4.36 The 345 m design vessels would be moored with bow and stern lines to bollards on the Northern Wharf and Queens Wharf Extension, with a spring line to the bollards on the existing Queens Wharf. The existing 150 t bollards on Queens Wharf are considered to be suitable for the vessels.

4.4.37 Longitudinally, the structure would comprise six 8 m bays with a 1 m overhang on each side and a concrete deck and beams supported by vertical and raking piles.

4.4.38 2.5 m x 5.5 m pneumatic fenders secured to fender panels large enough to span between vertical piles (8 m) and a tidal range of just above 5.90 m would be used to accommodate increased berthing energies from the increase in design vessel size. Without strengthening, the existing Queens Wharf structure does not have the capacity to allow for the use of such pneumatic fenders.

Therefore, the existing structure may require strengthening works to strengthen elements impacted by the increase in fender reaction in order for the pneumatic fenders to be used. Alternatively, an isolated fendering structure may be provided (such as the installation of 'fender piles' designed to support the fender panels and transfer load into the stronger deck elements of the Queens Wharf). However, this may increase the vessel offset from the berthing line.

FLOW Deck

4.4.39 The FLOW deck could facilitate up to two FLOW devices simultaneously. One device would be located west of the FLOW Deck and the other would be located north of Duchy Wharf (Figures 4.5 and 4.6).

4.4.40 Each FLOW device is designed to support two turbines. With the blades attached, the FLOW devices would be 230 m in height. The FLOW device hub height is 125 m.

FLOW Deck

4.4.41 The FLOW Deck structure would be located to the west of the existing causeway and would measure approximately 290 m in length and 30 m in width. The proposed deck level is + 8.36 m CD (5.45 m AOD).

4.4.42 The FLOW Deck would be a suspended deck consisting of steel CHS piles supporting reinforced concrete beams and a reinforced concrete deck. The deck would be comprised of precast concrete planks with an in-situ concrete infill. A new revetment would also be formed beneath the deck and a transition slab would be positioned at the landward quay edge of the deck which would sit atop the reclaimed land behind.

4.4.43 The suspended deck would be supported by five piles within each pile bent. The transverse spacing between piles would be 5.63 m. The bays of piles would be spaced at 8.0 m centres longitudinally along the wharf. Movement joints would be included at intervals of nine bays. At these movement joints, an additional set of piles would be required in order to separate the two sections of the structure, forming two pile bents adjacent to each other creating complete isolation between parts of the structure.

4.4.44 Each pile bent would support a reinforced concrete transverse beam running between the seaward and landward edges of the quay. Longitudinal beams would be positioned over the second line of piles from the seaward edge to support fender bracing and over the landward row of tubular piles to retain the made ground behind. A 1 m thick deck slab would be supported over the beams.

4.4.45 Raking piles would be included within the reclaimed land behind the structure in pairs raking transversely to the quay in opposite directions at 4.0 m centres.

4.4.46 At the seaward quay edge, fender panels would be provided for the pneumatic fenders to bear against. These fender panels would be provided at every other pile bay and span between the two front piles. Bracing would then be required to span between the fender panels and the longitudinal beam.

4.4.47 Mooring bollards would be located along the FLOW Deck and would be a combination of 150 t situated in the middle sections of the wharf and 200 t mooring bollards positioned towards the ends of the wharf with 250 t storm bollards provided further back.

Duchy Wharf

4.4.48 Duchy Wharf is a suspended deck structure located in the south-west of the site, which would remain as part of the proposed development. The deck is at a level of + 8.24 m CD (5.33 m AOD) and is approximately 235 m long and 18.8 m wide.

4.4.49 The structure is a reinforced concrete deck supported by steel box piles. At every other pile bent along the wharf there are also raking piles in between the fifth and sixth piles set back from the seaward face. These raking piles are raking to the north (seaward) from the head of the pile. On the landward side beneath the deck, there is a gravity retaining wall over a revetment which extends out towards the seaward side underneath the suspended deck.

4.4.50 Some alterations to the existing Duchy Wharf would be required to facilitate assembly of FLOW offshore wind devices. The increase in depth of the dredge pocket would cause instability in the revetment due to undermining. The preferred solution to maintain stability is to construct a pile toe wall which would retain the revetment and allow berth pockets to be formed. Suitable fender panels would be constructed northwards of the toe wall and a fendering system to allow the FLOW platform to be positioned on the berth (such as a raft).

4.4.51 The wind loads on the FLOW devices are considered to exceed the current capacity of the bollards on Duchy Wharf. Concrete foundations for larger mooring bollards would be located on the land behind Duchy Wharf to offer greater capacity for mooring lines as well as offer shallower angles which would be more efficient in restraining FLOW devices.

4.4.52 FLOW turbine towers would be lifted into place from the land behind Duchy Wharf. This would be carried out by a mobile crane lifting the towers and turbines from their stored position behind Duchy Wharf, with supporting plant and limited materials stored on Duchy Wharf itself. Two piled crane pads would therefore be located on the land behind Duchy Wharf. The crane pads have been designed to accommodate a load of up to 500 tones. The crane pads would be formed from bored concrete piles with a reinforced concrete deck over. The cranes would be approximately 150 m tall and would be hired on an ad hoc basis to meet the FLOW requirements. No large cranes would be located on the Duchy Wharf suspended deck. Currently a LHM15 harbour mobile crane operates on the Duchy and County Wharf and can accommodate a load of up to approximately 40 tonnes, and sits at a height of approximately 38 m.

4.4.53 Some strengthening works may be required to Duchy and County Wharf piles. This is dependent upon the recommendations of a condition survey and structural assessment which will be undertaken during the detailed design phase.

Terrestrial Components

4.4.54 The proposed development consists of the following terrestrial components:

- FLOW laydown area;
  - The area adjacent to the south of Duchy Wharf, which forms part of the existing working area, would be used as a FLOW laydown area. This area would be used to facilitate the storage of elements required to construct and maintain the FLOW devices, e.g. turbine blades.
  - The existing working dock area would be used for storage and assembly of the FLOW component which would be lifted and fitted onto the FLOW devices via crane (as described above).
  - Building demolition requirements to facilitate the creation of the FLOW laydown area are presented in Chapter 5.
- On-site access improvement works
  - In response to the new wharf structures and increased western wharf area, the internal access routes would be reconfigured (see proposed development access below).
- Relocation of commercial operations;
  - Whilst all new wharf structures would be suitable for freight activity, commercial operations would predominantly be relocated from the Duchy and County Wharfs to the Northern and Queen Wharfs.
- Retention of landing area through new quayside and possible relocation of shore side processing within the wider A&P site.

4.4.55 The Applicant has explored the provision of ship to shore power for Falmouth Docks which is likely to be available from Q2 2025. Ship to shore power would allow compatible vessels to connect to a power supply negating the need to run the engines. Currently, cruise ships are not compatible with ship to shore power.

4.5 External Lighting Strategy

4.5.1 Due to the nature of the proposed development as an operational dock operating 24/7 and the health and safety requirements for the wharfs and vessels, external lighting is required for the proposed development.

4.5.2 The existing Queens Wharf, Duchy Wharf and western edge of the Western Wharf are lit 24/7. Lighting comprises flood lights, lamps and red navigational lighting.

4.5.3 As part of the proposed development external lighting would be installed along the Northern Wharf and the eastern side of the Western Wharf, consistent with the existing lighting at the docks.

4.5.4 All vessels berthed at Falmouth Docks have to meet specific lighting requirements in accordance with the International Regulations for Preventing Collisions at Sea (COLREGs) and Port Marine Safety Code (PMSC). This includes provision for navigation lighting and deck lighting. Marine navigational lights comprise white, red and green external light fixtures. Boat navigation lights should be placed above the uppermost continuous deck and on the mast (Masthead light). Individual vessels berthing at Falmouth Docks are responsible for according with COLREGs and PMSC.

4.6 Landscaping and Biodiversity

4.6.1 The existing site is fairly poor ecologically, consisting of primarily developed land, but there are some small areas of reasonable quality vegetation on the site, including modified grassland, vegetated vacant/derelict land and supralittoral rock (boulders above the high tide line). Intertidal areas would be created and/or reinstated through the installation of revetments as part of the proposed development but would experience overshadowing from the suspended deck structures above.

4.6.2 Due to the nature of the site as an active dock, landside space is required for operational purposes, therefore achieving a biodiversity net gain through creation of new on-site habitats only is not considered to be a viable strategy. A biodiversity net gain will be achieved primarily through off-site measures.

4.7 Proposed Development Activities and Operations

4.7.1 The proposed development would continue to accommodate existing activities and industries as well as those introduced through the proposed development, which comprise:

- Cargo – glass recycling, granite, bulk cement, road salt, other bulk products and project cargo;
- Cruise – off-boarding and on-boarding of daily cruise vessels;
- FLOW – construction and maintenance of FLOW devices;
- Ship Repair- Berthing capacity for ship repair vessels; and
- Other – Ships that use the site but are not a main function of the operations and include irregular and inconsistent movements.

4.7.2 Due to the nature of the proposed development as an operational dock there is a need for flexibility within day to day operations. Numerous vessel types berth at Falmouth Docks for varying lengths of time. The vessels that would frequent Falmouth Docks include, but are not limited to:

- Freight Vessels:
  - Vessels typically berth for short periods of time and are approximately 60 – 100 m in length and approximately 7 m in height[1].
  - Vessels are crewed at all times and are lit at night;
- Military Vessels:
  - Berth period for vessels is dependent on specific work packages and varies. A typical timeframe would be three – six months;
  - Vessels are approximately up to 180 m in length and approximately 33 m in height[1];
  - Vessels are crewed at all times and are lit at night;
- Ship Repair Vessels:
  - Typical comprise vessels that have come from the dry docks.
  - Vessels berth for short periods of time and are approximately up to 260 m in length, but typically range from 80 m – 160 m and are approximately 39 m in height[1];
- Cruise Vessels:
  - Vessels typically berth for short periods of time and would be approximately up to 345 m, but in length and approximately 70 m in height[1], but typically range from 200 m – 270 m and are approximately 50 m in height; and
  - Vessels are crewed at all times and are lit.

4.7.3 In addition to the above vessels, many other vessels berth at Falmouth Docks. These vessels include, but are not limited to: GI rigs, survey vessels, tug boats, subsea-support vessels, ferries, accommodation vessels, tankers, dredgers, gas carriers and car carriers.

4.7.4 Table 4.2 displays the average vessel berthing duration from 2022 and 2023 data. Vessel berthing timeframes are anticipated to remain the same as part of the proposed development.

Table 4.2: Average Vessel Duration in Docks (2022/23)

Vessel Type	Average Duration in Docks (Days)
Cargo	6.7
Cruise	1.1
Ship Repair	6.4
Military	19.6
Other	4.9

4.7.5 The existing site serves as a frequent cruise destination throughout the cruise season (between 01 April to 31 October inclusive)[2]. At present approximately eight to nine vessels visit the site per month throughout the season.

4.7.6 Cruise vessels carrying passengers typically stay in Falmouth for a day, generally arriving on the morning high-tide and departing on the evening high-tide. Table 4.3 displays the duration and frequency of cruise calls in 2023.

Table 4.3: Duration and Frequency of Cruise Calls 2023

Duration of Cruise Call	Frequency of Cruise Call
Day Call	39
Over Night	1
Over Night x 2 Days	1
Over Night x 3 Days	0
Over Night x 4 Days	1

[1] Vessel heights above calculated above mean water line, are indicative and will vary depending on the tide.

[2] The typical cruise season runs between 01 April to 31 October however, occasionally cruise ships visit in the winter months.

4.7.7 The presence of cruise in Falmouth reduces pressures on local accommodation, healthcare, waste services, energy and road networks (as these services are all managed and maintained on board) while securing consistent tourist footfall in the town and wider county. Visits are generally planned at least one year in advance giving the tourist attractions time to plan for these seasonal peaks.

4.7.8 Due to the flexible nature of the existing and proposed dock use, there can't be certainty on a fixed future cruise schedule beyond 2024. Cruise ships vary in size, and currently Falmouth Docks does not have the capacity to berth excellence class cruise vessels. Currently, excellence class vessels anchor within the Falmouth Bay area and transport cruise passengers to Falmouth Docks via tender (Table 4.4).

4.7.9 Table 4.4 displays the number of berthing and tender cruise vessels that visited Falmouth Docks in 2023 and the current number of cruises booked in 2024 and the associated passenger numbers.

Table 4.4: Cruise Vessels and Passenger Numbers

Year	Berthing Cruise Vessels	Cruise Passengers	Cruise Tender Calls	Cruise Tender Passengers	Total Calls	Total Passengers
2023	32	22,884	10	22,673	**42**	**45,557**
2024*	36	29,664	12	42,806	**48**	**72,470**
Total Average	34	26,274	11	32,740	**45**	**59,014**
*2024 values are based on current bookings which may be subject to change						

4.7.10 The projected cruise and passenger numbers for 2024 reflect the increase in excellence class vessels visiting Falmouth. In 2024, it is projected that 59.1% of passengers visiting the docks would arrive via tender call which represents only 25% of total cruise calls.

4.7.11 The proposed development will increase cruise capacity at Falmouth Ports to accommodate up to 120,000 passengers per year and would accommodate excellence class cruise vessels within the port (allowing these vessels to berth), which would comprise approximately 6,000 passengers per ship.

4.7.12 Based on the existing data, the projected capacity at Falmouth Docks has been calculated for the operational development (2027). As the 2027 cruise schedule is currently unknown, the following assumptions have been derived to enable assessment and a conservative approach has been adopted:

- To accommodate the increase in passengers of up to 120,000 people, it is assumed that 11 additional excellence class vessels would be required per year.
- The increase in berth capacity as a result of the proposed development is anticipated to reduce the number of tender calls as the docks could accommodate larger cruise ships alongside.

4.7.13 Table 4.5 displays the average number of berthing non-cruise vessels in 2022 and 2023.

Table 4.5: Number of Berthing Vessels

Vessel Type	No. of Vessels 2022	No. of Vessels 2023	Projected No. of Vessels 2024	Average
Freight	41	39	N/A	40
Ship Repair	22	23	N/A	23
Military	23	18	N/A	21
Other	58	59	N/A	59

Cargo Operations

4.7.14 The proposed development would continue the existing cargo operations with sufficient landside capacity and facilities that would be prioritised for cargo operations while not disrupting the other essential dock operations. All berths would be suitable for cargo operations.

Freight Vessels

4.7.15 The operational development would accommodate approximately 24 freight vessels a year, an increase of 12 freight vessels from the existing operations.

Glass Recycling Export

4.7.16 The site is an important export site for glass recycling collected from the wider county of Cornwall. These cargo operations often require large amounts of landside deck space to operate from. The safe loading of cargo requires approximately 18 m deck width for gangway, loading and crew to load the glass cargo onto the vessel safely. The existing site is unable to meet the export targets for this glass under current berth conditions and due to the use of wharfs by other vessels, such as RFA vessels, for extended periods of time.

Granite Export

4.7.17 The site is also a significant export location for local granite quarried from surrounding areas; the quarry is understood to have long-term planning permission in place and so this demand is not anticipated to reduce in the future.

4.7.18 These cargo operations often require significant amounts of landside deck space to operate from, including sufficient loading capacity of these areas. The current loading capacity of the wharves is restricted and therefore limits the availability for certain cargo vessels which require a minimum tonnage specification in order to unload heavy project cargos.

Commercial Fisheries

4.7.19 Commercial fish processing and fish landings, currently located on the Western Wharf, would be relocated to an existing facility and operations maintained on site as part of the redevelopment.

Ship Repair

4.7.20 Existing business at the wider Falmouth Docks site, including essential ship repair, would be maintained. The ship repair industry is a critical service that the wider Falmouth Docks site is able to provide with the dedicated dry dock facilities located to the south-east of the site redline boundary. The proposed development would continue to provide berthing space for shir repair vessels. A&P's Falmouth facility is the largest ship-repair complex in the UK.

4.7.21 Ship repair activities would not be impacted by the proposed development.

MoD Vessels

4.7.22 Falmouth Docks facilitate Ministry of Defence (MoD) vessels for the majority of the year. There is an MoD contract in place for RFA vessels to use Falmouth, these RFA vessels are understood to berth at the site for prolonged time periods which results in limited berth capacity for other vessels. The proposed development would resolve such conflicts.

4.7.23 Whilst berthed, MoD vessels are self-sufficient.

Other Activities

4.7.24 The site also serves other essential functions for the county and southwest, for example it is a dock of refuge and provides berths for port tugs. The site also hosts international public events such as Falmouth Tall Ships and the Armed Forces Day.

4.7.25 These activities would not be impacted by proposed development.

FLOW

4.7.26 In 2020, the UK government increased the 2030 offshore wind target set by the Offshore Wind Sector Deal from 30 gigawatts (GW) to 40 GW, with at least 1 GW coming from FLOW. Allocation Round 4 consent has been given to a FLOW developer, with a possible assembly and maintenance base at Falmouth Docks due to its location and facilities. Demand for FLOW and dock infrastructure is only considered to increase in the future to support net zero targets.

4.7.27 The site is considered to be a prime location for renewable FLOW due to its proximity to the Celtic Sea and other offshore wind sites such as Hayle which are within the 72-hour weather forecasting window required for FLOW and towing distances. The site is well suited to serve as a base for FLOW operation and maintenance services; vessels that support offshore wind development are understood to use the existing site.

4.7.28 The proposed development would support FLOW and make use of the site's location in proximity to the WaveHub site off the coast of Hayle, Cornwall, which is to be used by to install the first floating offshore wind technology into the Celtic Sea. The Celtic Sea site has the infrastructure to support up to two 16 MW FLOW devices, which could provide power to approximately 45,000 homes. Upgrades to dock infrastructure would be required to support the operation and maintenance of FLOW devices.

4.7.29 The proposed development would therefore meet the needs of the FLOW devices, which are large and require significant quayside areas with good mooring loading capability. Duchy Wharf and the FLOW Deck are proposed to be used for the assembly of FLOW turbines. Duchy Wharf and the FLOW Deck would facilitate the crane movements required to assemble the FLOW devices and to avoid clashes with vessels and other operations.

4.7.30 Tugboats would pull FLOW devices into the site's western basin. The proposed development would have capacity for two FLOW devices, which would berth alongside Duchy Wharf and the FLOW Deck respectively. Each device would be able to support two wind turbines. FLOW turbines and towers would be lifted from their stored position on the land behind Duchy Wharf using a mobile crane. Supporting plant and limited materials are to be stored on Duchy Wharf.

4.7.31 An indicative FLOW Device construction programme is presented in Table 4.6.

Table 4.6: Indicative FLOW Device Programme

Activity	Timeframe (Months)											
	1	2	3	4	5	6	7	8	9	10	11	12
Receipt of offshore equipment	■	■	■	■								
Receipt and storage of Wind Turbine Generator (WTG) and towers				■	■	■						
Offshore pre-installation				■	■							
Wet Tow North Floater (Towage)				■								
WTG Integration North Floater (Canes alongside)					■	■						
Offshore hook up North Floater (Towage)							■	■				
Wet Tow South Floater (Towage)						■						
WTG Integration South Floater (Crane Operations)							■	■				
Offshore hook up South Floater (Towage)									■	■		

4.7.32 The following assumptions have been adopted in respect of the FLOW programme:

- At any one time, there would only be one fully integrated FLOW device (two turbines), with a second FLOW device base alongside the FLOW Deck awaiting integration on the Duchy Wharf, with one crane required to facilitate assembly.
- It is anticipated that once a FLOW device is fully integrated it would be towed out to sea.
- It is assumed that a fully integrated FLOW device would remain in dock for up to two weeks.
- Once a fully integrated FLOW device is deployed at sea, return to Falmouth Docks would only occur if and the FLOW device required significant repairs that were unable to be conducted at sea; all required repair equipment is available. The FLOW device would not occupy a berth if not being actively repaired due to requirements and commitments to other operations.

General Dock Operation and Maintenance Activities

4.7.33 Port operation and maintenance activities would include:

- General site maintenance requirements;
- Cathode protection replacement (once every 10 years); and
- Fender replacement (once every 10-20 years).

4.7.34 As mentioned previously, limited maintenance dredging is proposed as part of the proposed development. The anticipated volume of maintenance dredging is estimated to be up to approximately 8,000 m^3 every 5 years (and accordingly, up to approximately 16,000 m^3 every 10 years), as required within the eastern berth pocket. This would be undertaken in line with the requirements of the marine licence, with proposed disposal at the Falmouth Bay Disposal site.

4.8 Proposed Development Access

Vessel Access

4.8.1 As per existing arrangements, vessels would access the site via Carrick Roads from the Celtic Sea or English Channel.

4.8.2 Vessels accessing the proposed development would include but not be limited to:

- Cruise ships (up to Excellence Class);
- Cargo vessels;
- MoD vessels;
- Fishing vessels;
- Ships for repair; and
- Tugboats with the FLOW devices.

4.8.3 Vessels would approach Falmouth Docks through the Carrick Roads channel. Vessels would berth alongside the wharfs, with the exception of the tugboats bringing in FLOW devices.

4.8.4 As the site is within the control of the Applicant, the movements and berthing arrangements of different vessels would be managed appropriately by the FDEC.

4.8.5 Pilots are regularly used at Falmouth Docks and operate in accordance with A&P's Pilotage Guidelines. This would include the FLOW devices under tow.

Vehicular Access

4.8.6 As per existing access arrangements, vehicles would access the site via Tinners Walk. The A39 is the main road passing through Falmouth and starts (or ends) at Falmouth Docks. The site is not accessible to the public, all persons accessing the site are required to report to the main gate, which is the only site access/egress point.

4.8.7 During the operational stage, vehicles accessing the proposed development would include but not be limited to:

- Coaches and taxis carrying cruise passengers;
- Shuttle buses;
- Staff vehicles;
- Waste vehicles;

- Cargo vehicles;

Figure 4.8: Vehicle, Cyclist and Pedestrian Access

4.8.8 The proposed development would make use of existing vehicle movements within the site, utilising existing infrastructure. The routing of different vehicle types through the Falmouth Docks site is illustrated on Figure 4.8.

4.8.9 Internal roads and routing would meet the minimum requirements to facilitate emergency vehicle access.

Parking

4.8.10 Existing dedicated staff parking is provided outside of the site, within the wider Falmouth Docks. The number of staff would remain broadly as existing and therefore staff parking provision would not change.

4.8.11 A new designated area located adjacent to the cruise berths would be provided to facilitate the additional coaches and taxis for cruise passengers (Figure 4.8).

Pedestrian and Cycle Access

4.8.12 Pedestrian movements within the site are limited to staff, visitors accompanied by staff and off-loading of cruise passengers.

4.8.13 Passengers disembarking from cruise ships can be discharged from any berth on-site and are escorted via waiting taxis/coaches/shuttle buses to the selected destination. For those vessels berthed on Duchy or County Wharfs, cruise passengers are permitted to walk directly from the berth to Falmouth town via dedicated safe routes. Shuttle buses are also available for these passengers.

4.8.14 As displayed in Figure 4.8., pedestrian and cycle access to the site would remain via the main gate, as existing.

4.9 Proposed Development Deliveries and Servicing

Deliveries and Servicing Management

4.9.1 The proposed development is designed to support the delivery of cargo, which would remain consistent with current operations.

4.9.2 As part of future docks operations, the Applicant is exploring the possibility of using the existing rail infrastructure for delivery of freight to the site. Whilst this does not form part of the proposed development as it is not currently considered viable, future opportunities are being considered by the Applicant.

Waste Management

4.9.3 The proposed development would generate the following operational waste streams, in line with existing operational waste:

- International catering waste;
- General waste;
- Dry mixed recycling;
- Scrap metal and scrap wood;
- Hazardous waste, such as oily rags; and
- Liquid waste, sewage, grey water, oily water.

4.9.4 As part of the existing cargo operations, waste material such as glass, is delivered to the site, loaded onto a vessel and shipped to Hull.

4.9.5 As per existing arrangements, waste from vessels would be stored in a segregated waste skip located close to the vessel and transferred to a waste handling compound.

4.10 Proposed Development Utilities

Electricity

4.10.1 The estimated electrical supply required for the proposed development would be the same as existing.

4.10.2 The main power supply to the site is the existing 8-substation ring main on site has an agreed supply capacity of 3.5 MVA and is operated and maintained at 11 KV. This substation would remain as part of the proposed development and would continue to provide power up to the existing capacity.

4.10.3 A&P would continue to purchase 100% renewable energy sources from the grid.

4.10.4 All vessels berthing at the site are required to be self-sufficient and therefore, the increased berth capacity of the proposed development would not increase the electrical supply demand.

Ship to Shore Power Provision

4.10.5 Shore power facilities are required to support the cruise and floating offshore wind sectors. The Applicant would provide a modern shore power facility at Falmouth Docks, which forms part of a separate application. This would be a flexible, mid-range shore supply connection compatible with a variety of vessel types.

4.10.6 Two following two locations within the site A&P would be served by ship to shore power:

- The southern side of Queens Wharf; and
- The western end of Duchy Wharf.

4.10.7 The use of a smart grid would allow the demand normally placed on the grid to be kept to a minimum by managing loads more efficiently. Energy storage would also be provided on site to shift loads outside of peak times.

Gas

4.10.8 There are no gas connections with the site and the proposed development would not require a gas supply.

Potable Water

4.10.9 Existing potable water is supplied to berthing vessels via a flexible metered hose connection which would remain the same for the operational development.

Foul Water

4.10.10 Foul water from the proposed development is generated via berthing vessels. All foul water is taken away by road tanker to a suitably permitted waste facility, as per existing arrangements.

4.10.11 Cruise vessels are required to manage their own foul waste.

Surface Water Drainage

4.10.12 A Flood Risk Assessment (FRA) has been produced and accompanies the planning and marine license applications. The FRA comprises details on surface water drainage.

4.11 Proposed Development Sustainability

Sustainability Appraisal

4.11.1 The proposed development design has embedded measures to reduce carbon. As far as practicable, the proposed development involves the extension and upgrades of existing infrastructure, thereby minimising the materials required for the construction of new infrastructure.

4.11.2 The design of the proposed development was informed by a Designing Out Carbon Workshop held on 14 December 2023. In order to minimise and avoid carbon, the design of the proposed development has therefore investigated the potential to, if possible and as far as practicable:

- Minimise material quantities requirements;
- Source and procure materials locally;
- Re-use the materials from existing structures/assets;
- Use low carbon, recycled, pre-cast or pre-fabricated materials;
- Consolidate deliveries;
- Maximise the operational lifespan of structures and minimise need for replacement; and
- Consider the end-of-life of materials and possibilities for their re-use or recycling.

4.12 Proposed Development Operational Provisions and Controls

4.12.1 The following plans, which describe the operational provisions and controls at the site, are already in place as Falmouth Docks is an existing operational port. These will be updated as appropriate for the proposed development.

Port Marine Safety Plan

4.12.2 The Port Marine Safety Code is a national standard for every aspect of port marine safety.

4.12.3 Health and safety policies and systems set out within the existing Port Marine Safety Plan at the site would be reviewed and updated for the proposed development.

Marine Safety Management Plan

4.12.4 The Applicant has an existing Marine Safety Management Plan (MSMP) in place. This would be updated for the proposed development.

4.12.5 Aspects of the MSMP incorporated into the proposed development comprises:

- Legislation – keep under review harbour powers and applicable legislation.
- Safety Management – Ensure effective data capture and analysis of Marine Incidents and follow the processes outlined in the Marine Safety Management System.
- Conservancy and Hydrographic Survey – Ensure the port has an adequate schedule of hydrographic surveys and investigate reported wreck and obstructions.
- Emergency preparedness and response – Maintain a training schedule for exercising emergency plans and to involve third parties where possible.
- Training – Ensure that personnel in the marine team are appropriately trained and qualified.
- Liaison and consultation – routine port user group meetings and open consultation regarding amendments to Byelaws, Directions and Codes of Practice.

Emergency and Disaster Management

4.12.6 The proposed development has been designed giving consideration to the potential for major accidents and hazards. A summary of emergencies that could occur during the proposal's lifetime and the measures that have been incorporated into the proposed development design in response to these incidents is as follows:

- Fire: Internal roads within the proposed development would be accessible by emergency services and emergency personnel. The existing fire evacuation procedure will be reviewed and updated as necessary to reflect the proposed development.
- Accidental Spills: The existing Accidental Spill Procedure would remain in place and typical best practice measures would be adopted.
- Navigational Risk: Risks associated with navigation and potential collisions of vessels with the marine infrastructure would be mitigated through a full Navigational Risk Assessment (see ES Volume 2 Technical Appendix 2.9). These mitigation measures would ensure risks are reduced to acceptable levels and would include measures such as the development of an appropriate navigational lighting strategy.

Monitoring

4.12.7 Current monitoring undertaken at the site comprises the following:

- Wave buoy, meteorological and tide gauge monitoring;
- AIS monitoring; and
- Monthly dry docks discharge water quality monitoring.

This monitoring would remain in place and continue once the proposed development is operational.