



CANARY WHARF
GROUP PLC

NQ.PA.23

North Quay Foul Sewerage and Utilities Assessment

Max Fordham
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1. Introduction

Overview

- 1.1 Canary Wharf (North Quay) Ltd (“the Applicant”) are submitting applications for Outline Planning Permission (OPP) and Listed Building Consent (“LBC”) to enable the redevelopment of the North Quay site, Aspen Way, London (“the Site”).
- 1.2 Two separate applications are being submitted as follows:
 - Application NQ.1: Outline Planning Application (all matters reserved) (“OPA”)- Application for the mixed-use redevelopment of the Site comprising demolition of existing buildings and structures and the erection of buildings comprising business floorspace, hotel/serviced apartments, residential, co-living, student housing, retail, community and leisure and sui generis uses with associated infrastructure, parking and servicing space, public realm, highways and access works; and
 - Application NQ.2: Listed Building Consent Application (“LBCA”) - to stabilise listed quay wall and any associated/necessary remedial works as well as demolition of the false quay in connection with Application NQ.1.
- 1.3 Together the development proposed under Applications NQ.1 and NQ.2 are referred to as the “Proposed Development”.
- 1.4 At the time of making the OPA, the Applicant is unable to determine exactly how much of the Proposed Development is likely to come forward in which land use. For this reason, the description of development provides the Applicant with flexibility as to the uses that could be undertaken on the Site.
- 1.5 However, in order to ensure that the level of flexibility is appropriately restricted, the OPA seeks approval for three Control Documents which describe the principal components of the Proposed Development, define the parameters for the Proposed Development (the “Specified Parameters”) and control how the Proposed Development will come forward in future. They provide the parameters, design principles and controls that will guide future reserved matters applications (“RMAs”). These Control Documents are – (1) the Development Specification; (2) the Parameter Plans; and (3) the Design Guidelines:
 - The Development Specification sets out the type and quantity of development that could be provided across the Site (including setting a maximum floorspace across the Site);
 - The Parameter Plans set the parameters associated with the scale, layout, access and circulation and distribution of uses classes and public space for the Proposed Development. They also establish the Development Zones and Development Plots across the Site; and

- The Design Guidelines set the design principles and controls for future development.

1.6 Together, these documents set out the information required to allow the impacts of the Proposed Development to be identified with sufficient certainty as future RMAs will be required to demonstrate compliance with the Specified Parameters and controls in these Control Documents.

Site Description

- 1.7 The North Quay site (“the Site”) is located in the north of the Isle of Dogs, within the administrative boundary of the London Borough of Tower Hamlets (the “LBTH”), at Canary Wharf. It is bounded by Canary Wharf Crossrail Station to the south, Aspen Way (A1261) to the north, Hertsmere Road to the west and Billingsgate Market to the east. The West India Quay Docklands Light Railway (DLR) station and Delta Junction are located on the western side of the Site and the Site also incorporates parts of North Dock, Upper Bank Street and Aspen Way.
- 1.8 The Site is 3.28 hectares (ha) in area. Currently the Site comprises mostly cleared land, being previously used as a construction laydown site for the Canary Wharf Crossrail Station. There are some temporary uses currently on site, including the LBTH Employment and Training Services, WorkPath and advertising structures.
- 1.9 A Grade I Listed brick dock wall (Banana Wall) exists below the surface of part of the Site, which originally formed the dockside until it was extended over to the south.
- 1.10 Existing access to the Site for vehicles is from Upper Bank Street to the east and Hertsmere Road to the west, which both link to Aspen Way. The Site is not currently accessible to the public, however pedestrian routes are located on each side of the Site (Aspen Way, Hertsmere Road, Upper Bank Street, and the western part of the dockside to the south). The Aspen Way footbridge which leads to Poplar also lands on the southern side of Aspen Way.
- 1.11 The Site is highly accessible by public transport. The West India Quay DLR station is located on the Site, the Poplar DLR station is accessed directly from the Aspen Way Footbridge, the Canary Wharf Crossrail Station is located immediately to the south of the Site, beyond which are the Canary Wharf underground and DLR stations. The Site’s PTAL varies from 5 ('very good') to 6a ('excellent'), with improved PTAL closer to Upper Bank Street. The score is expected to improve to 6a across the entire Site by 2021 owing to the planned opening of the Crossrail Station.
- 1.12 Beyond the Site, 1 West India Quay (the Marriot Hotel (107m AOD) and residential building (41m AOD) are located to the west, adjacent to the DLR tracks. Beyond these, along Hertsmere Road is a cinema, museum, shops, restaurants and other leisure facilities, forming part of the West India Quay Centre. Billingsgate Market is located to the east of the Site, on the opposite side of Upper Bank Street. Billingsgate Market is identified as a Site Allocation (4.2: Billingsgate Market) for redevelopment in LB Tower Hamlet’s Local Plan.

- 1.13 To the north of the Site on the other side of Aspen Way are the Tower Hamlets College and The Workhouse leisure facility. They comprise part of a Site Allocation (4.1: Aspen Way) for redevelopment in LB Tower Hamlet's Local Plan. In close proximity to these there are lower rise residential properties (some with shops beneath them) as well as the Poplar Recreation Ground.
- 1.14 Beyond the Crossrail station and Crossrail Place to the south of the Site is the Canary Wharf commercial area, with the buildings closest to the Proposed Development including the HSBC (200m AOD), Bank of America and One Canada Square buildings (235m AOD).

Listed Building Works

- 1.15 Towards the south of the Site, the edge of the dock is defined by a quay wall known as the Banana Wall. The brickwork has a profile and counterfort buttresses, on a gravel bed. The Banana Wall was constructed between 1800-1802 and was Listed Grade I in 1983.
- 1.16 The Proposed Development will span over the Banana Wall with piles on either side of the wall providing support to the new structures. The new structures will leave a void or compressible material above to avoid permanent loading of the wall. The adjacent existing false quay deck will be removed. The excavation of the basement may require stabilisation works to be undertaken to ensure there are no impacts to the Banana Wall. Remedial works to the Banana Wall will also be undertaken if required.

2. Executive Summary

- 2.1 This document is the Foul Sewerage and Utilities Assessment that sets the framework and strategies for the North Quay Masterplan OPA to guide the subsequent RMAs.
- 2.2 The Site is located in the north of the Isle of Dogs, within the administrative boundary of the London Borough of Tower Hamlets (LBTH), at Canary Wharf. It is bounded by Canary Wharf Crossrail Station to the south, Aspen Way (A1261) to the north, Hertsmere Road to the west and Billingsgate Market to the east. The West India Quay Docklands Light Railway (DLR) station and Delta Junction are located on the western side of the Site and the Site also incorporates parts of North Dock, Upper Bank Street and Aspen Way.
- 2.3 The Site is 3.28 hectares (ha) in area.
- 2.4 A Grade I Listed brick dock wall (Banana Wall) exists below the surface of part of the Site, which originally formed the dockside until it was extended over to the south.
- 2.5 Aspen Way is a busy London arterial road and a local source of traffic and air pollution for the Site. The elevated DLR rail lines with their curved tracks the north side of West India Quay Station are also a noise source. Air quality and noise surveys and modelling studies have been undertaken to identify the levels of existing air and noise pollution on the Site.
- 2.6 The parameters of The Masterplan have informed an Indicative Scheme which makes a proposal for 7 buildings, with shared basement levels that total a maximum of approximately 355,000 sqm GIA. This total area is split, broadly speaking, into 56% office, 25% residential, 14% serviced apartments, 5% retail space. The shared basement is accessed via a shared ramp from under the Delta near Hertsmere Road.
- 2.7 The preliminary load calculations and infrastructure design strategies have been based on the Indicative Scheme for the purposes of establishing the feasibility of utility connections and capacities for the Proposed Development. The Indicative Scheme is considered a good representation of the likely requirements for utility connections for all the viable mix of uses set out in the Development Specification. These will be further developed and refined as part of the RMAs as each phase of the Masterplan is developed in the future.
- 2.8 The overall site covered by the OPA will be developed over a number of phases up to 2029. The following drawings show the site plan and massing for the outline planning application based on an Indicative Scheme. Refer also to the Environmental Statement ES Volume 1, Chapters 5 “Enabling and Construction Works” for full details of the phasing of the Proposed development.

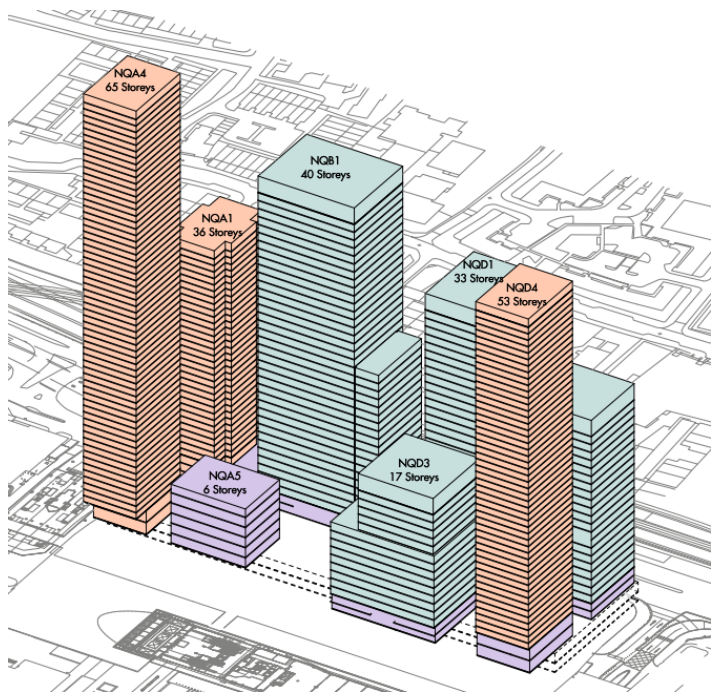


Figure 2.1: 3D Massing taken from Architect's information

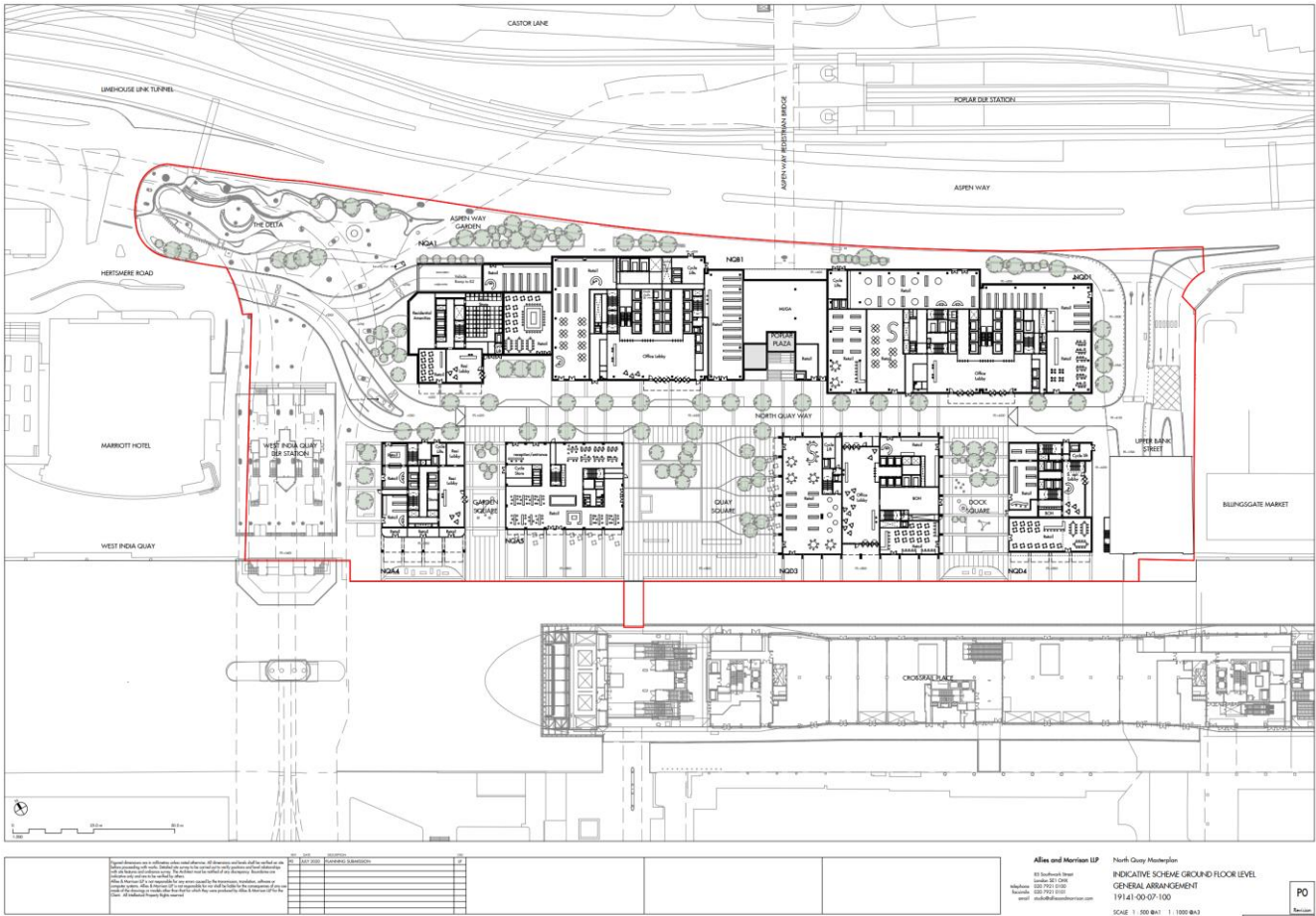


Figure 2.2: Site layout taken from Architect's information

- 2.9 This Assessment covers foul water drainage, mains cold water, electrical and telecommunications supplies.
- 2.10 A summary of the surface water drainage strategy for the Indicative Scheme is included in this Assessment; however, please refer to the Flood Risk Assessment and Drainage Strategy NQ.PA.30 prepared by Arup Associates for full details.
- 2.11 Detailed site survey information and existing utility apparatus searches carried out in 2017 have been used to set out the parameter plans of the Proposed Development to avoid the need for any major utility diversions.
- 2.12 Major utility routes are at the perimeter of the Site either in the existing footways or in the soft landscape adjacent to these footways.
- 2.13 From the survey information there are no major utilities crossing the Site that serve other developments.
- 2.14 There are a number of existing utility connections serving temporary buildings on the Site that will need to be removed. These disconnections will be developed as part of the RMAs as each phase of the Masterplan is developed in the future.
- 2.15 Major utility reinforcement works are required to support the Proposed Development. Discussions are ongoing with Thames Water Utilities Ltd (TWUL) and UK Power Networks (UKPN) regarding these requirements, as set out in this Assessment.



Figure 2.3: Google Map image of the existing North Quay site showing temporary buildings.

- 2.16 There are no gas utility supplies proposed for the Proposed Development as all heating, cooling, hot water and cooking energy within the development will be by electric means. This aligns with the wider Science Based Target and Net Zero Carbon pathway for Canary Wharf. This pathway aims to reduce natural gas usage and switch to electric solutions to reduce both the carbon emissions over the life of the development as the UK electrical grid decarbonises, and to eliminate any local air quality impacts from the Proposed Development.
- 2.17 It is proposed to have two main services infrastructure routes crossing the Site from West to East to allow for phasing and resilience of utilities and site services installations.
- Route 1: At the north of Site which allows connection to the main utility services in Aspen Way (water, drainage, telecoms etc). The services would be buried below ground under the soft and hard landscape including the combined cycle ways and pedestrian foot paths.
 - Route 2: Running through the centre of the Site to pick up all the southern buildings adjacent to the dock front. This would be in the form of a road box above the basement.
- 2.18 There will be two HV networks both coming from the West side of the Site.
- 2.19 The central route will be the designated route for any future heat network installation and space will be allowed within the road box and/or basement for the future installation of this heat network.
- 2.20 At the end of the final phase of the masterplan the site infrastructure network will form a loop around the proposed development.
- 2.21 The foul water drainage, surface water drainage, and potable mains water supply details that come forward at the RMA stage will take account of the TWUL Integrated Water Management Strategy for the Isle of Dogs. This strategy sets out the major TWUL reinforcement proposals for the Isle of Dogs including the North Quay Proposed Development. The proposed strategies have previously been set out in the following TWUL documents:
1. Thames Water Modelling Tasks 9 Sites, Canary Wharf Development Modelling Report, Jan 2015. Atkins
 2. Sewer Impact Study X4503 – 723 SMG 1579 Proposed Connection at Canary Wharf, Isle of Dogs Foul and Surface Water System. Thames Water Utilities Ltd (TWUL) 2015
 3. “Thames Water H139 Canary Wharf, Isle of Dogs Development Impact Studies. TW Project Number H139”. Thames Water Utilities Ltd (TWUL) 2017.
- 2.22 Refer to the Site Infrastructure drawing A[---]200 in Appendix B for details of the setting out of the Proposed Development in relation to the exiting major utility apparatus at the perimeter of the Site, and the new site services and utility distribution routes connecting each building within the Indicative Scheme.

3. Foul Water Drainage

- 3.1 There will be an increase in foul water flow rates to the TWUL combined trunk sewer in Aspen Way due to the Proposed Development compared with the rates generated by the existing site.
- 3.2 TWUL with the GLA and LBTH are in the process of reviewing the capacity of the Aspen Way trunk sewer as part of their Integrated Water Management Strategy for the Isle of Dogs, which includes the requirements of the North Quay Proposed Development. TWUL have confirmed that the foul drainage flow rates for the Proposed Development match the figures provided to TWUL by LBTH including the phasing. Refer to Appendix A for correspondence with TWUL.
- 3.3 Foul water drainage connections will be provided to each building and will all fall via gravity to the site wide drainage network which will connect via one or more terminating outlets into the TWUL combined trunk sewer in Aspen way.
- 3.4 The selection of the existing manhole(s) in Aspen Way and the method of connection under the carriageway will need to be agreed with TWUL. It is currently proposed to connect to existing manhole reference 6501 (clouded on Figure 3.1). Details will be developed during the RMA stages.
- 3.5 The building connections will be phased up to 2029 and the first phase will be at the west of the Site, so the connecting manhole in Aspen Way will be located to the west side of the North Quay development. Manhole 6501 therefore is the most appropriate manhole to connect to, given its proximity to the first phase on the Site.
- 3.6 The foul water drainage system will be a gravity system apart from the basement which will be pumped via sumps.

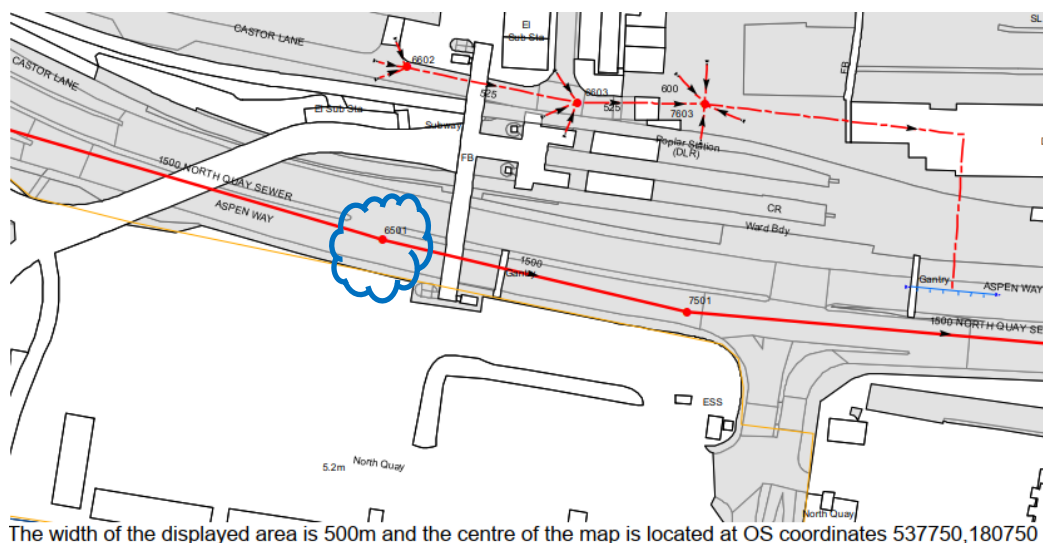


Figure 3.1. Extract from Thames Water Asset Location Search Sewer Map - ALS/ALS Standard/2016_3388638 TQ3780NE showing the combined sewer in Aspen Way to north of the North Quay site.

3.7 The table below summarises the proposed foul water flow rates for each building for each phase across the Indicative Scheme.

Indicative Scheme Building Name	Indicative Scheme Building Type	Drain Connection Point	Indicative Scheme Design Flow Rate (l/s)	Potential Construction Phase
NQA1	Residential	D.FW.01	25.71	1
NQA4	Residential	D.FW.02	37.92	1
NQA5	Retail	D.FW.04	7.83	2
NQD3	Commercial	D.FW.07	13.32	2
NQD4	Serviced apartments	D.FW.08	31.05	2
NQB1	Commercial	D.FW.03	21.57	3
NQD1/D2	Commercial	D.FW.06	23.49	4
Total to Aspen Way		D.FW.TOT	64.32	

Table 3.1: Foul Drainage flow rates at each point of connection to the site drainage network for the Indicative Scheme.

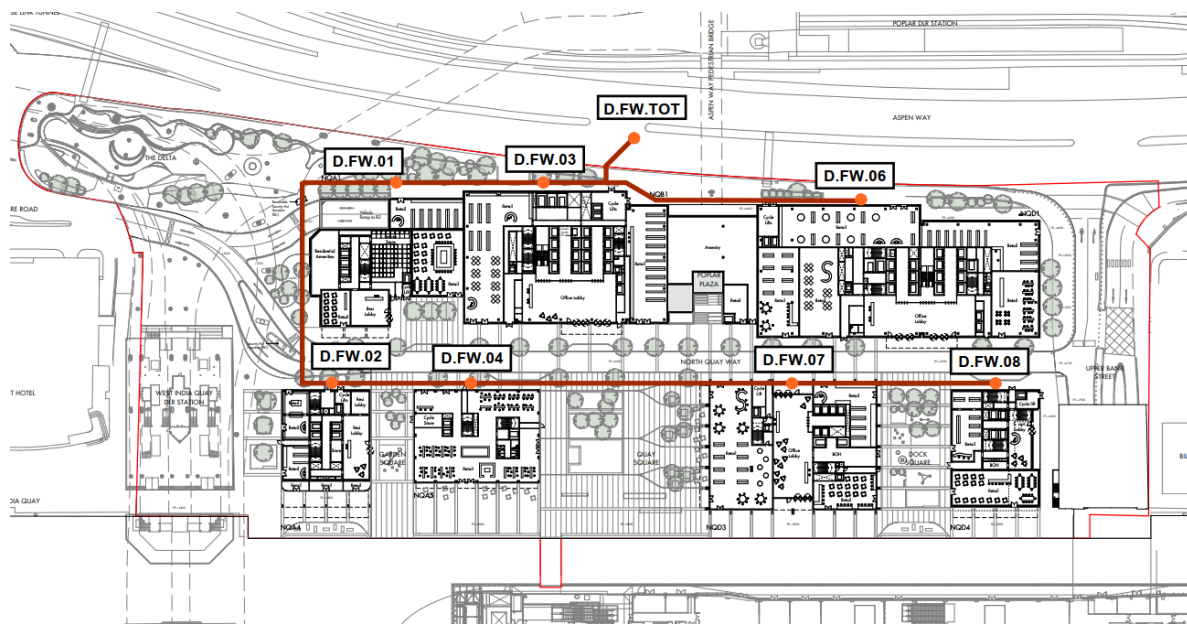


Figure 3.2: Site plan showing foul water connection points to each building and to the combined TW sewer in Aspen Way at existing manhole 6501.

3.8 The Indicative Scheme is considered a good representation of the likely foul water drainage flow rates of the Proposed Development as set out in the Development Specification.

3.9 Refer to drawings R[11] 200 and A[–] 200 in the Appendix B for the indicative foul water drainage schematic and infrastructure site plan for the Indicative Scheme.

4. Surface Water Drainage

- 4.1 From the Site Survey and TWUL asset information from 2017 the development area in its existing state is not occupied by any permanent buildings. Therefore, there is minimal direct surface water discharge to the TWUL network at present, and rainwater either soaks away into the ground across the Site or outfalls to the adjacent North Dock.
- 4.2 Full details relating to Surface Water Drainage are provided in the Flood Risk Assessment and Drainage Strategy Report (FRA) NQ.PA.30. This document should be referred to for full details. A summary taken from this report is as follows:
- 4.3 The design intent is that where possible surface water runoff should be discharged directly into the North Dock. Discharging directly to the docks has the following advantages:
- Avoiding impacts on the existing network.
 - Clean surface water acts to flush the dock system which benefits water quality in the docks.
- 4.4 Where surface water cannot be discharged into the docks, due either to the risk of contamination (e.g., road runoff or intensive green roofs) or because of hydraulic constraints, it will be conveyed to the existing combined TWUL sewer on Aspen Way in the following way:
- Soft-landscaped areas to the north of the Proposed Development are too far to discharge to the Docks via gravity and so will drain to buried geo-cellular attenuation tanks before being discharged to the Aspen Way sewer at the greenfield runoff rate.
 - Areas of green roof that cannot be discharged to the Docks for reasons relating to water quality will be discharged to the Aspen Way sewer.
 - Runoff from the access road, which ramps down into the basement will be stored in a storm pumping station before it is pumped to the high-level attenuation and then discharged to the Aspen Way sewer at the greenfield runoff rate.
- 4.5 Sustainable Drainage Systems (SuDS) are techniques that control surface water runoff as close to source as possible to reduce surface water run-off rates and volumes.
- 4.6 The presence of the basement over much of the development area and the high groundwater levels, limits the opportunity for infiltration of surface water.
- 4.7 Discharging directly into the docks or the River Thames is considered the most sustainable approach to manage surface water on the Proposed Development provided that appropriate water quality protection measures are incorporated.
- 4.8 The inclusion of soft landscaping and green roof reduces the impermeable area when compared to the existing situation. The Design and Access Statement (DAS) accompanying the OPA contains an illustrative landscaping scheme showing a number of potential SuD features.

5. Mains Potable Water Supplies

- 5.1 There will be an increase in mains potable water flow rates due to the Proposed Development compared with the flow rates to the existing temporary buildings on the Site.
- 5.2 TWUL with the GLA and LBTH are in the process of reviewing the capacity of the potable water network as part of their Integrated Water Management Strategy for the Isle of Dogs. They are currently carrying out an impact study for the growth on the Isle of Dogs including the North Quay Proposed Development. TWUL have confirmed that the potable water design flow rates for the Proposed Development match the figures provided to TWUL by LBTH.
- 5.3 A potable water network will be installed across the Site connecting to the existing water main in Aspen Way. The network will be phased with two distribution routes running East to West at the north and centre of the Site.
- 5.4 The potable water networks will include connections to each of the buildings within each phase. Where dual supplies to a building are required, these will be provided either side of a valve, allowing any section of pipe to be shut.
- 5.5 Where fire supplies are required to the Site these will be provided from the TWUL main.
- 5.6 For the residential buildings it is proposed that each building will be provided with a bulk water supply. The water supply will serve a boosted potable water system to distribute domestic cold water to each apartment. Each commercial building and the serviced apartment building will have a single metered mains water connection.
- 5.7 Rainwater collection and potentially condensate water recovery will be considered in each Reserved Matters Application for the office buildings with large roof areas and cooling loads. For the Indicative Scheme space has been allowed within the basement plantrooms for required storage tanks.
- 5.8 The following table summarises the proposed mains potable water design flow rates for each building across the Indicative Scheme.

Indicative Scheme Building Name	Indicative Scheme Building Type	Loading Units	Design Flow Rate (l/s)	Potential Construction Phase
NQA1	Residential and Retail	4636	8.61	Phase 1
NQA4	Residential and Retail	10088	13.64	Phase 1
NQA5	Retail	562	2.47	Phase 2
NQD3	Offices and retail	1046	3.56	Phase 2
NQD4	Serviced Apartments	7200	11.17	Phase 2
NQB1	Offices and retail	2770	6.34	Phase 3
NQD1/D2	Offices and retail	3079	6.88	Phase 4
Total Diversified		29483	25.75	

Table 5.1 Mains domestic potable water flow rates for each building within the Indicative Scheme

6. Mains Grid Electrical Supplies

- 6.1 There will be an increase in the electrical load to the Site due to the Proposed Development compared with the current electrical load of the existing buildings.
- 6.2 New electrical connections and alterations are required across the whole of the Proposed Development.
- 6.3 The Applicant has entered into an agreement with UK Power Networks (UKPN) to provide a total electrical capacity of 22MVA for the Proposed Development. 14 MVA will be supplied from the Westferry Circus Main Substation and the remaining 8MVA from the Simpson Road Main Substation.
- 6.4 Each proposed building within the Proposed Development will be provided with medium voltage (MV) supplies originating from both these UKPN HV networks. For domestic residential buildings sufficient utility LV substations will be provided at low level to serve the building loads, and for commercial buildings metered MV supplies will be provided to a network of private LV substations distributed through the building.

- 6.5 The normal power loads of the two large commercial buildings (NQB1 & NQD1/D2 in the Indicative Scheme) will be shared between the two utility MV supplies, with essential life safety and firefighting systems having resilient power supplies from both MV networks.
- 6.6 All other building types will primarily be served by a single utility MV intake to each building, with a second utility intake to each building used to serve secondary supplies for life safety and firefighting services.
- 6.7 A number of power supplies will be required to serve site infrastructure services and the public realm. These will be derived from the landlords supplies in the surrounding buildings.
- 6.8 The table below summarises the proposed electrical loads for the Development Plots. An allowance has been made for the primary or secondary life safety service supplies in any one building to be operational at any given time.

Indicative Scheme Building Name	Indicative Scheme Building Type	New Supply From Westferry Primary Substation (MVA)	New Supply From Simpsons Road Primary Substation (MVA)
NQA1	Residential and Retail	0.63	-
NQA4	Residential and Retail	-	1.41
NQB1	Offices and retail	2.56	2.56
NQA5	Retail	1.17	-
NQD1/D2	Offices and retail	2.73	2.73
NQD3	Offices and retail	2.10	-
NQD4	Serviced Apartments	3.10	-
Life Safety Supplies	-	0.53	1.03
Infrastructure & Public Realm	-	0.69	0.2
Total	702	13.51 (14 available)	7.93 (8 available)

Table 6.1: Electrical loads and Supply Source for each building within the Indicative Scheme

7. Telecommunications

- 7.1 A number of separate telecoms duct networks will be provided running east-west at the north and through the centre of the Proposed Development and connecting to the existing networks in Aspen Way.
- 7.2 Each of the North Quay networks will comprise below ground cable duct banks with access chambers at regular intervals. Some duct banks will carry Openreach telecoms cables, and others will be shared by the Applicant's communications cables and those of other third-party utility telecoms providers.
- 7.3 The networks will serve the telecoms rooms of each building in the Proposed Development, to provide sufficient incoming connections for the voice and data services required for building operations, and infrastructure capacity to facilitate the fit-out of fibre or copper telecoms connections as required by residential and commercial tenants.
- 7.4 The networks will be owned and maintained by the Applicant's Estate Management Team who will allow access to the networks by telecom providers. The networks will allow diverse connections to buildings either by using separate networks or by routing cables from opposite directions.

8. Appendix A - Communications with TWUL

8.1 Canary Wharf (North Quay) Ltd and their consultant Max Fordham LLP have liaised with TWUL on the potable water and drainage requirements for the Proposed Development. Below is the most recent communication regarding the Proposed Development.

Date 09/04/2020.

Response from TWUL Strategic Development Manager.

Apologies for the delay – I’m currently working on temporary supplies to new centres springing up around London to support the current crisis.

I’ve been waiting for a response from our clean and waste modelling team to provide a few paragraphs to support the pre-application.

As the Canary Wharf team know, we are working in collaboration with the GLA and LBTH to produce a Integrated Water Management Strategy for the Isle of Dogs – including the North Quay scheme. We have recently carried out a review of all schemes proposed within the IoD with LBTH and its good that the figures in your document match the numbers provided by LBTH – including the phasing.

Clean Water

Thames Water are currently carrying out an impact study for growth on the Isle of Dogs in the Finsbury Park FMZ – including the North Quay Development. New phasing data has been provided with total properties and the status of the planning e.g. under development/Completed/Allocation. There will be a lot of debate around the validity of some of these sites and as part of this study they will be assessed as low/medium/high growth scenario. There are 57 sites of over 100 properties with varying statuses in the information provided.

Three scenarios will be required -

- Developments 2016-21
- Addition of developments 2021-26
- Addition of developments 2026-31

Waste Water

Awaiting response

9. Appendix B - Drawings

NOTES:

1. ALL SITE UTILITIES TO BE SET OUT WITH BUILDING FOUNDATIONS TO ALLOW FOR CONSTRUCTION OF INFRASTRUCTURE TO RESPECT UTILITY COMPANY EASEMENT REQUIREMENTS.
2. ALL UTILITY INTAKE ROOMS TO BE EITHER ABOVE OR BELOW GROUND LEVEL.
3. ROUTES FOR UPRN HV CONNECTIONS TO PRIMARY SUBSTATIONS TO BE DETERMINED BY THE UTILITY COMPANY.
4. INFRASTRUCTURE ADJACENT TO ASPEN WAY UNDER CYCLE PATH OR
5. INFRASTRUCTURE UNDER NORTH QUAY WAY RIVER CROSSING AND CENTRE OF SITE
6. INFRASTRUCTURE INSTALLATION TO TAKE ACCOUNT OF PHASING OF MASTERPLAN

LEGEND:

- 1. HV NETWORK WEST FERRY CIRCUS SUBSTATION
- 2. HV NETWORK SIMPSON ROAD SUBSTATION
- 3. LV NETWORK (CNCL)
- 4. END HV NETWORK
- 5. SURFACE WATER NETWORK
- 6. POOL WATER NETWORK
- 7. FLOOD WATER NETWORK
- 8. FLOOD WATER NETWORK
- 9. EXISTING 150mm WATER TRUNK MAIN
- 10. EXISTING 150mm WATER TRUNK MAIN
- 11. NEW SITE WATER MAIN
- 12. INCOMING UTILITIES
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