

Chapter 8:

Water

8.0 Water

8.1 Introduction

This chapter has been prepared by John Considine, BE, MIStructE, MIEI, CEng, FConsEIM, Chartered Engineer of Barrett Mahony Consulting Engineers.

This section of the EIAR assesses the impacts of the Proposed Strategic Housing Development (consisting of Alterations to Phase 1 Residential and Proposed Phase 2 Residential Development) at the Frascati Centre, Frascati Road, Blackrock, Co. Dublin (formerly known as Frascati Shopping Centre), on the water in the area. This section should be read in conjunction with the architectural drawings for the development & the project description chapter of this EIAR. The proposal relates to alterations to the Phase 1 permission for 45 no. apartments (Reg. Ref.: D17A/0950 & ABP Ref.: 300745-18), from second to fourth floor level of the Frascati Centre. The proposed development also includes the provision of 57 no. additional apartments, as an extension of the Phase 1 permission, located above the existing / permitted podium car park to the north west of the center, as a Phase 2 residential development. The subject application therefore relates to a total of 102 no. residential units.

A water chapter was included with the previous EIS for the rejuvenation project and with the EIAR submitted with the Phase 1 residential application. Where '**Existing**' is referred to in the text below it refers to the site prior to 2020 and includes the recent Frascati Shopping Centre Rejuvenation works which have been covered in a separate previously submitted Report.

This chapter has been prepared by John Considine, BE, MIStructE, MIEI, CEng, FConsEIM, Chartered Engineer of Barrett Mahony Consulting Engineers.

8.2 Study Methodology

The assessment of the potential impact of the proposed development on the water bodies was carried out according to the methodology specified by the EPA and the specific criteria set out in the Guidelines on Information to be Contained in an Environmental Impact Statement (EPA 2002 and 2017 (Draft)), EIA Directive 2014/EU/52, Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003), Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003), Development Management Guidelines (DoEHLG, 2007) and Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessments August 2018.

The following sources of information were used in the completion of this assessment:

- Site Visits
- Site Investigation Report
- Geological Survey of Ireland (GSI) online maps and databases
- ECFRAMS Flood Mapping from OPW
- EPA online maps and databases
- Topographical Survey
- Local authority record drawings

All drainage (surface and foul) and water supply will be provided in accordance with the requirements of Dun Laoghaire-Rathdown County Council and in particular with the following:

- Greater Dublin Regional Code of Practice for Drainage Works
- Greater Dublin Strategic Drainage Study (GSDSDS)
- Planning System and Flood Risk Management Guidelines
- Building Regulations (Part H)
- Irish Water Standard Details and Codes of Practice for Water and Wastewater Infrastructure
- CIRIA SuDS manual C753 (2015).

This chapter also encompasses knowledge obtained from site visits, drainage and water services record information received from Irish Water and the Local Authority. Additionally, information from the EPA and GSI websites has been utilised.

8.3 The Existing Receiving Environment

The subject site is located at the Frascati Centre, Frascati Road (N31), Blackrock, Co. Dublin (formerly known as Frascati Shopping Centre). The site is currently occupied by the Frascati Shopping Centre which occupies approximately 2.24 hectares of the total site footprint area of 2.7 hectares. The Frascati Centre is a two storey building made up of retail & restaurant space.

The site is bounded to the northeast by the Frascati Road and along the other boundaries principally by the back gardens of suburban housing at Frascati Park and George's Avenue. The Lisalea Apartments bound the site along part of its northern boundary.

The recent rejuvenation project provided for the improvement of the current retail space within the centre, along with the inclusion of additional retail services floor space, the provision of additional café / restaurant floor space and the provision of new / replacement car parking spaces.

The site is currently occupied by the existing Frascati shopping centre. The pre-existing culverted Priors Stream, (Figure 8.1), has been diverted successfully during the rejuvenation works for the Frascati Centre and now passes under the new two-storey car park.

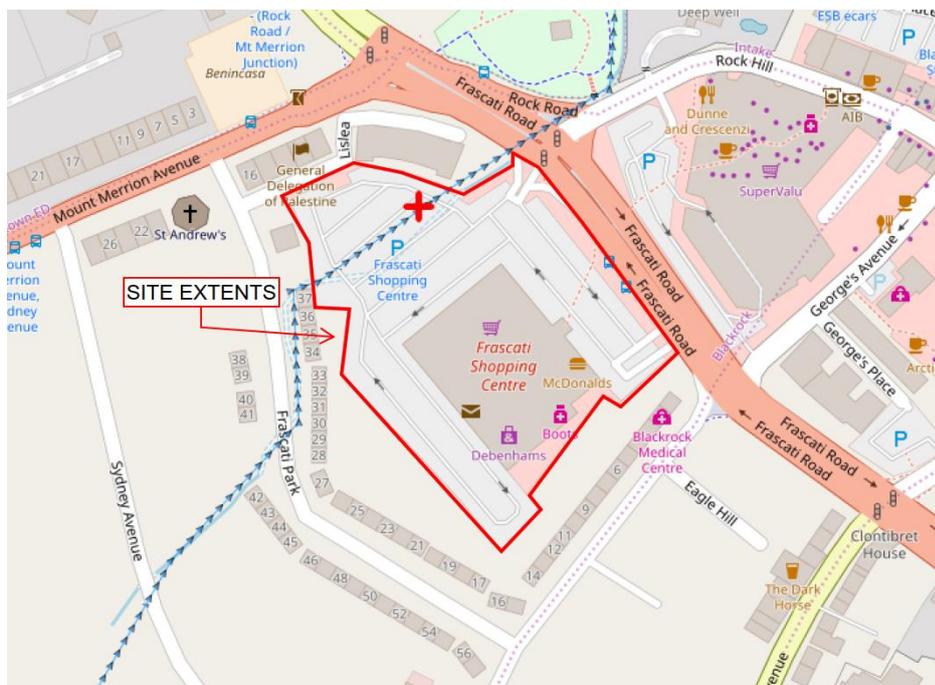


Figure 8.1 – EPA River Network Map Extract

8.3.1 Surface Water

The surface water system for the existing Frascati shopping centre has been sized appropriately and will be sufficient for the proposed apartment scheme, as an extension of the Frascati Centre.

8.3.2 Foul Water Drainage

The surface water system for the existing Frascati shopping centre has been sized appropriately and will be sufficient for the proposed apartment scheme, as an extension of the Frascati Centre.

8.3.3 Water Supply

The Greater Dublin Water Supply is supplied from raw water sources at Leixlip, Roundwood, Ballyboden and Ballymore Eustace and supplies approximately 1.3 million people within the Dublin City, Fingal, Dun Laoghaire Rathdown, South Dublin, Wicklow, Kildare and Meath Council areas.

The water supply in the region comes from Roundwood Treatment Works in County Wicklow. This reservoir is fed from the Vartry River. From Roundwood the water is piped via a tunnel to the Stillorgan service reservoir which is currently being upgraded.

The Greater Dublin Water Supply Strategic Study Report 1996-2016 was published in 1996 and outlined a 20-year investment strategy to address drinking water needs. One of the primary conclusions of the report was that leakage from water supply pipes in Dublin was unacceptably high, at 42.5%. This has now been reduced to 22% in the Dun Laoghaire Rathdown County Council (DLRCC) area and further reduction of leakage is one of the aims of Irish Water/DLRCC. Over 38% of the water mains in Dun Laoghaire Rathdown are over 50 years old. Irish Water/DLRCC also aim to rehabilitate/replace old defective pipework across its administration area, particularly in the older areas of the county.

The existing water supply network in the vicinity of the proposed development site is shown on the Irish Water watermain Map in Appendix 8.1 of this Chapter.

Discussions with Irish Water have indicated that there are currently no capacity or pressure problems in the public network. The public watermain on the Frascati Road currently has a pressure of between 3.0 bar (daytime) and 4.0 bar (night time). DLRCC has plans to reduce pressure in the area in the near future to between 1.5 and 2.0 bar as a water saving measure.

The water supply for the existing Frascati shopping centre has been sized appropriately and will have sufficient capacity for the proposed apartment extension of 57 no. apartments (Phase 2) and alterations to the 45 no. Phase 1 apartments.

8.4 Characteristics of the Proposed Development

Consideration of the Characteristics of the Proposed Development allows for a projection of the 'level of impact' on any particular aspect of the proposed environment that could arise. For this chapter the potential impact on water is discussed.

The proposal relates to alterations to the Phase 1 permission for 45 no. apartments (Reg. Ref.: D17A/0950 & ABP Ref.: 300745-18), from second to fourth floor level of the rejuvenated Frascati Centre. The proposed development also includes the provision of 57 no. additional apartments, as an extension of the Phase 1 permission, located above the existing / permitted podium car park to the north west of the centre, as a Phase 2 residential development. The subject application therefore relates to a total of 102 no. residential units.

The proposed alterations to the 45 no. apartments (Block A and B) and associated development, permitted under the Phase 1 residential development, includes the following:

- Internal rationalisation of the permitted units, including changes in overall unit size and internal layouts, and associated external alterations including the provision of winter gardens.
- Provision of an external walkway connection between the Phase 1 and Phase 2 residential blocks at second floor level.

- The refuse, car and cycle parking facilities permitted at lower ground floor level will be altered to cater for the additional residential units, including the introduction of a barrier control system.
- The main entrance to the Phase 1 residential scheme from Frascati Road will serve both the permitted and proposed units.
- A concierge facility room to serve the overall residential development is proposed at second floor level near the main core of Phase 1, with an associated minor reduction in the area of the permitted communal terrace at second floor level.
- The communal open space for Phase 1 and 2 will be accessible to all residents.
- Alterations to the cycle parking provision at lower ground floor / basement level and at the first-floor level podium car park.

The Phase 2 proposal consists of 20 no. studios, 22 no. 1 beds and 15 no. 2 beds (57 no. apartments) in three no. blocks (Block D, E & F), arranged around a central communal courtyard space, above the existing and permitted podium car park to the north west of the centre. Block D is a five storey block, Block E is a part two to part four storey block and Block F is a part two to part three storey block, all above three levels of podium / basement car park. Balconies / winter gardens are provided to all apartments (on the north western, north eastern, south western elevations and into the internal courtyard) and access to the blocks is via stair / lift cores and an external walkway fronting the communal courtyard. A roof terrace is also proposed at fifth floor level of Block E.

The proposal includes the allocation of 57 no. car parking spaces at lower ground floor level and 214 no. bicycle parking spaces at lower ground and surface level for the 102 no. residential units. The proposal includes alterations to existing surface car parking to provide additional landscaping and bicycle spaces, a bin storage area and stair / lift cores are proposed within the existing / permitted basement / podium car parks below the Phase 2 residential units, and the proposal includes all associated ancillary site development works. The proposal also includes alterations to the location of 30 no. permitted cycle parking spaces associated with the rejuvenation of the Frascati Centre, Reg. Ref.: D14A/0134, as amended.

The proposal is an extension of the existing / rejuvenated Frascati Centre and will be constructed almost entirely over the existing structure and therefore the proposed new development will have no increase in the building footprint.

The basement area, which will accommodate the car parking area for the residential units, has been constructed and the replacement car parking for the retail floor space in an additional podium level has been approved as part of the Phase 1 residential permission, with alterations proposed to facilitate the Phase 2 residential proposals.

As part of the proposed development, localised and limited strengthening works of existing column foundations and approximately 12 no. additional foundations for new columns are required. The 12-no. new column foundation locations are all located within the existing footprint of the existing car park. The size and depths of the new foundations are also similar to the existing foundation sizes and depths.

8.4.1 Surface Water

Culvert Diversion

The Priory stream culvert diversion was put in place as part of the Frascati shopping centre rejuvenation development. No further culvert diversions will be required. The site surface water, already constructed, connects to the Priory Stream.

Separate System

A separate surface and foul water buried drainage system exists within the site which was renewed as part of the rejuvenation works. The new surface water drainage system is designed using the Micro Drainage Windes package.

SUDS Measures

The principles of Sustainable Urban Drainage Systems (SUDS) are embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS). The GDSDS addresses the issue of sustainability by requiring designs to comply with a set of drainage criteria which aim to minimize the impact of urbanisation by replicating the run-off characteristics of the greenfield site. The criteria provide a consistent approach to addressing the increase in both rate and volume of run-off as well as ensuring the environment is protected from pollution that is washed off roads and buildings.

These drainage design criteria are as follows:

- Criterion 1 – River Water Quality Protection
- Criterion 2 – River Regime Protection
- Criterion 3 – Flood Risk Assessment
- Criterion 4 – River Flood Protection

The requirements of SUDS are typically addressed by provision of the following:

- Interception storage
- Treatment storage
- Attenuation storage
- Long term storage (not required if growth factors are not applied to Qbar when designing attenuation storage)

In the case of the proposed development, the full implementation of SUDS measures is not deemed necessary because of the proximity of the site to the sea and the availability of the existing site SUDS measures already in place for the existing development. These measures, rainwater harvesting and petrol interceptors mean that the impact of the proposed development on the watercourse into which the site drains is minimized. It is proposed to reduce the quantity and increase the quality of the outflow from the site, compared to the existing situation by the implementation of SUDS measures on site. The proposed measures are as follows:

1. Green roof on the new portion of the development including the new central courtyard. Also new green roof landscaped area for the 45 no. apartments is being provided on the new shopping centre mall roof.

Pollution prevention through SUDS measures

The granular subbase and geotextiles below the new green roof area acts to improve the quality of discharge through a number of processes including; sedimentation, filtration, absorption and biodegradation. The permeable pavement is effective in the removal of organic matter, silt, loam and heavy metals. Additionally, hydrocarbons are digested within the subbase by naturally occurring microbes. The table below sets out in more detail the water quality treatment measures proposed.

Existing & Proposed Drainage Flow Paths

The proposed development will not alter the flow path from the site i.e. the gravity drainage connection to the watercourse outlined above. By employing SUDS measures the rate and quantity of the surface water which will be reduced while quality will be improved.

Overland Flow Routes for Exceedances

As described in Section 4.5.7 of the CIRIA SUDS Manual and NA 4.5.1 of BS EN 752:2008 designing for exceedances means considering the effect of what happens when rainfall intensity exceeds the capacity of the gullies or drains, and storm water runs overland to low points. This can occur in short periods of heavy rainfall – up to 150mm/hr. In the case of the exceedance of gully capacity, consider the impact on the two types of area within the site:

- 'Permeable Areas': As noted, an area of a green roof is proposed for the development. The high permeability of these areas reduces run-off as rainwater infiltrates the surface.

Protection from Overland Flows

Any significant risk from overflow has been covered in the existing Frascati shopping centre design and will be sufficient for the proposed apartment extension, which as noted is almost entirely on top of the existing building and will lead to no increase in the overall building footprint.

8.4.2 Foul Water Drainage

A foul drainage system exists within the site. This will be maintained and extended for the new development. The current foul water drainage system will have capacity for the proposed apartment extension. Confirmation that this is acceptable has been received from Irish Water in the form of a Letter of Design acceptance on the 11th of August 2020.

Foul Water Flow & BOD5 Calculation:

1. Existing Development:

The calculation of the flows and BOD5 quantity generated are set out below. These are based on the EPA document listed above.

Take 1 staff member per 40 sq.m of net floor area, the loading per staff member is;

- With canteen:
 - 60 litres per day flow
 - 30 g per day BOD5.
- Without canteen:
 - 30 litres per day flow
 - 20 g per day BOD5.

(i) Retail

Total Net Floor Area	=	9,240 m ²
Retail with no staff canteen	=	3,240 m ²
No. of Staff (3240/40)	=	81
Retail with staff canteen (M&S & Debenhams)	=	6,000 m ² (approx.)
No. of Staff (6,000/40)	=	150
Total Flow (81x30 + 150x60)/1,000	=	11.43 m ³ /day
Total BOD5 (81x20 + 150x30)/1,000	=	6.12 kg/day

(ii) Restaurants (McDonalds & Debenhams Café)

Total Net Area	=	740 m ²
No. of Restaurant seats (740/1.5) (1 per 1.5 m ²)	=	493 m ²
Assume 2 full dinner per seat/day	=	986
Flow per diner	=	15 L/day
BOD5 per diner	=	15 g/day
Total Flow (986 x 15)/1,000	=	14.80 m ³ /day
Total BOD5 (980x15)/1,000	=	14.80 kg/day

(iii) Total for the Existing Development: Retail & Restaurant combined

Total Foul Water Outflow (11.43 + 14.80)	=	26.23 m³/day
Total BOD5 (6.12 + 14.80)	=	20.82 kg/day
Peak Foul Outflow / Water Demand (6 x 26.23)/86.4	=	1.82 l/s

(iv) 45no. Apartments Under Construction

Total no. of Apartments	=	45
Total Population (45 x 2.7) (2.7 residents per apt)	=	121.5
Flow per resident	=	150 L/day
Additional 10% Infiltration of Flow ((150/100) x 10)	=	15 L/day
BOD5 per resident	=	60 g/day
Total Flow [121.5 x (150 + 15)] /1,000	=	20 m ³ /day
Total BOD5 (121.5 x 60)/1,000	=	7.29 kg/day

Note:

In summary, the existing development generates a foul water flow of 26,230 litres per day resulting in an estimated peak foul flow of 1.8 l/sec (6 times the dry weather flow).

2. Proposed Development:

(i) Apartments

Total no. of Apartments (102 less 45 to be altered under construction)	=	57
Total Population (57 x 2.7) (2.7 residents per apt)	=	154
Flow per resident	=	150 L/day
Additional 10% Infiltration of Flow ((150/100) x 10)	=	15 L/day
BOD5 per resident	=	60 g/day
Total Flow [154 x (150 + 15)] /1,000	=	25.41 m ³ /day
Total BOD5 (154 x 60)/1,000	=	9.24 kg/day

(ii) New Development: Apartment & Existing

Total Foul Water Outflow (20 + 25.41 + 26.23)	=	71.64 m³/day
Total BOD5 (9.24 + 7.29 + 20.82)	=	37.35 kg/day
Peak Foul Outflow / Water Demand (6 x 71.64) / 86.4	=	4.975 l/s

In summary, the development, including the additional apartments, will generate a foul water flow of 71,64 litres per day resulting in an estimated peak foul flow of 4.975 l/sec.

8.4.3 Water Supply

The apartments will connect to the shopping centre ring main which connects to the 150-diameter public watermain on the Frascati Road. The approximate daily demand and peak flow figures are as above.

8.5 Potential Impact of the Proposed Development

The following provides an assessment of the potential impact on the water environment of the proposed development without mitigation measures being incorporated into the detailed design and construction phase. The mitigation measures and predicted impact of the proposed development are set out below in Section 8.8.

8.5.1 Surface Water

Construction Phase

The following are the potential impacts of the proposed scheme during the construction stage:

- Mobilization of sediments and harmful substances during the construction phase, due to exposed soil and earth movement/excavation, which may be flushed into the culverted stream during rainfall events;
- Accidental spills of harmful substances such as petrol/diesel or oil during the delivery and storage of harmful substances or by leakages from construction machinery;
- Potential for building materials or silts to be washed into the surface water system, causing blockages and pollution.

Operational Phase

There is no foreseeable negative impact on the surface water regime in the area due to the new development given the fact that site is located so close to the nearby sea, (approx. 250m away).

The potential impact from the operational phase on surface water is likely to be long term and low. The potential impact on water quality does not arise during the operation phase.

There is the continued potential for flooding at the low point of the Frascati Road.

8.5.2 Foul Water Drainage

A separate foul drainage system exists within the site. The potential impact of the proposed development on the local foul sewerage network during the construction phase of the development would therefore be none or minimal.

Construction Phase

The following are the potential impacts of the proposed scheme during the construction stage:

- Mobilisation of sediments and harmful substances during the construction phase, due to exposed soil and earth movement, which may be flushed into the culverted stream during rainfall events;
- Accidental spills of harmful substances such as petrol or oil during the delivery and storage of harmful substances or by leakages from construction machinery.

Operational Phase

The development will result in an increase in the wastewater discharged from the site to the public sewer system.

There exists a minor risk associated with the possibility of leakage from damaged foul sewers and drains within the development site. Any foul water leakage could result in minor contamination of groundwater in the area.

The potential impact from the operational phase of the development is therefore likely to be long term and minimal.

8.5.3 Water Supply

Construction Phase

During the connection of new mains to existing mains on site there is a small risk that contamination of the existing supply may occur. The potential impact on the local public water supply network would be short term and imperceptible.

Operational Phase

The additional apartments at the Frascati Centre will result in an increased demand for water from the municipal water supply system, estimated to be approximately 71,640 litres per day compared to the estimated existing demand of 26,230 litres per day. The calculations for these figures are set out in Section 8.4.

8.6 Potential Cumulative Impacts

The permitted upgrade works to Blackrock Shopping Centre (Planning Reg. Ref.: D17A/0644) are at an advanced stage and are expected to be largely complete once Phase 2 residential development commences on site. However, the potential impact from the construction of the Phase 2 development has been assessed in conjunction with the potential impact of the Phase 1 residential development construction.

Given the scale of the proposed development, and the capacity of the surrounding environment to accommodate a development of this nature, it is not likely to give rise to any significant effects cumulatively or, in combination with, other developments in the area.

8.7 Do Nothing Impact

8.7.1 Surface Water

If the proposed development were not constructed there would be no effect on the existing surface water network and storm water from the lands will continue to be discharged to the culverted watercourse.

8.7.2 Foul Water Drainage

If the proposed development were not constructed there would be no increase in foul to be discharged to the 825mm diameter foul sewer on Frascati Road.

8.7.3 Water Supply

If the proposed development were not to go ahead there would be no increase in the demand on the existing water supply network.

8.8 Remedial and Mitigation Measures

Remedial and mitigation measures describe any corrective measures that are either practicable or reasonable, having regard to the potential impacts discussed above. This includes avoidance, reduction and remedy measures as per the guidance set out in Section 4.7 of the Development Management Guidelines 2007 to reduce or eliminate any significant adverse impacts identified.

8.8.1 Surface Water

Construction Phase

The following remedial or reductive measures to mitigate the impact of the construction phase on the existing environment are proposed with reference to water:

WTCONST 01: Surface Water Construction Stage Measures to be Implemented:

- A method statement for all works to be carried out will be prepared by the contractor and agreed with Dun Laoghaire Rathdown County Council prior to commencement of works to outline what measures are to be taken to ensure there is no loss of service during the works;
- Dewatering measures should only be employed where necessary. These are not likely to be required here.
- All new drains should be tested and surveyed prior to connection to the existing site drainage.
- If any concrete mixing is carried out on site, the mixing plant should be sited in a designated area with an impervious surface;
- Existing surface drainage channels within the site that serve adjacent lands will be retained where possible to prevent causing increased flooding impacts;
- Construction methods used should be tailored to reduce, as much as possible, dust and noise pollution;
- Comprehensive traffic management procedures, including the provision of access/egress on the Frascati Road should be prepared and agreed with the Local Authority. These traffic management measures should be implemented at times when traffic disruption may be experienced;
- Road sweeping and/or wheel wash facilities should be provided, as required;
- All oils/diesel stored on site for construction equipment are to be located in appropriately bunded areas;
- Filters and silt traps will be used to prevent rain washing silts and other materials into the surface water network and creating blockages.
- The Priory Stream Watercourse & groundwater under the site need to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase is to be discharged into the existing site surface water system via filters and silt traps at a controlled rate.

Operational Phase

The following mitigation measures are proposed for the operational phase of the proposed development with reference to water:

WTOPERA 01: Surface Water Operational Stage Measures to be Implemented:

- Water Quality: The green roof for the apartments on the shopping centre roof will improve the quality of surface water run from the site.

8.8.2 Foul Water Drainage

Construction Phase

Effluent generated on the site from the contractor's sanitary facilities will be discharged to a holding tank and removed off site by a certified waste removal contractor in accordance with the requirements of the Waste Management Act of 1996 and 2001. Any other arrangements would be subject to agreement with DLRCC Drainage Division.

The following remedial or reductive measures to mitigate the impact of the construction phase on the existing environment are proposed: -

WTCONST 02: Foul Water Drainage Construction Stage Measures to be Implemented:

- All new drains should be tested and surveyed prior to connection to the existing site drainage.
- Any new drains will be inspected and where necessary sealed to ensure that uncontrolled ground water inflow does not occur;
- Any leakage from the foul sewer to be cordoned off and the contaminated effluent and soil collected and disposed by licensed contractors.

Operational Phase

WTOPERA 02: Foul Water Drainage Operational Stage Measures to be Implemented:

- Dual & low flush toilets and water economy outlets will be used to reduce flows from the development.

8.8.3 Water Supply

Construction Phase

None. Watermain connection already exists.

Operational Phase

WTOPERA 03: Water Supply Operational Stage Measures to be Implemented:

- The site water main system will be metered as directed by the Council to facilitate detection of leakage and the prevention of water loss.
- Dual & low flush toilet will be provided to reduce the water demand.

8.9 Predicted Impacts of the Proposed Development

8.9.1 Surface Water

Construction Phase

Provided that the proposed mitigation measures are implemented, the impact of the proposed development during the construction stage will be of a temporary nature and will be minimal.

Operational Phase

There will be a decrease in surface water run-off from the new development due to the SUDS measures proposed. Surface water run-off will also improve in quality due to these measures.

'Worst-case' scenario

The worst-case scenario is that flooding occurs on-site and in the surrounding area due to this development. The design of the new drainage system ensures that the pipe sizes, gradients etc. will be more than adequate for the anticipated stormwater flows. The depth, size, gradient and proximity to the sea of the receiving culverted watercourse means that blockage downstream of the site is not conceived to be a risk.

8.9.2 Foul Water Drainage

Construction Phase

Provided that the proposed remedial and mitigation measures are implemented, the impact of the proposed development during the construction stage will be of a temporary nature and will be minimal.

The contractor's operations will result in the generation of effluent and sanitary waste from facilities provided for the workforce on site.

Operational Phase

The increase in water consumption and resulting foul water flow is a function of the usage of the development.

'Worst-case' scenario

A 'worst-case' scenario resulting from the construction of the development would result in the contamination of groundwater and the local streams by foul effluent from the development. However, the mitigation measures outlined will ensure that this does not occur.

8.9.3 Water Supply

Construction Phase

Provided that the proposed remedial and mitigation measures are implemented, there will be no appreciable impact of the proposed development during the construction stage on the water supply in the area.

Operational Phase

The increase in water consumption is a function of the usage of the development.

The installation of water saving devices will further reduce the impact of the re-development on the existing water supply network.

'Worst-case' scenario

The 'worst case' scenario would be the pollution/contamination of the water supply by an accidental spillage or contamination. However, the mitigation measures proposed will ensure that this will not occur. There is no new construction to the public watermain so the risks are very small.

8.10 Monitoring

All surface water drainage works will be approved by Dun Laoghaire Rathdown County Council, Sanitary Services Division, and will be carried out in accordance with the GDR COP (Greater Dublin Regional Code of Practice for Drainage Works). Foul and water works will be carried out in accordance with Irish Water latest Codes of Practice.

8.10.1 Hydrogeology

The Hydrological & Hydrogeological Qualitative Risk Assessment prepared by AWN for the project, which has been submitted as part of this application, also assesses the impact of the stormwater runoff and foul effluent from the proposed development and confirms that although no specific monitoring is required as part of the proposed development, it is envisaged that general monitoring will continue in the area throughout the life of the development.

8.10.2 Surface Water

Construction Phase

Monitoring during the Construction Phase of the development should consist of the following:

- Normal quality control inspection of the works
- Monitoring of possible discharges to the existing culverted watercourse at its outfall may also be required by DLRCC to ensure that no unauthorised discharges are occurring.
- Pressure testing and CCTV inspections of any new surface water drains following completion of stages of the construction is recommended to ensure that the required construction standards are being maintained.
- Upon completion of the development, monitoring of the discharges from the development will be undertaken as required.

Operational Phase

Monitoring during the operational phase of the development is recommended as follows:

- All filters, silt traps, hydro-brakes and overflows should be inspected regularly and in particular after heavy rainfall events to ensure that they are not blocked.
- Gullies in the public road should be inspected and cleaned as required
- Pollutants which accumulate within the oil petrol interceptor on site should be regularly monitored and removed as necessary.

8.10.3 Foul Water Drainage

Construction Phase

Monitoring during the Construction Phase of the development should consist of the following:

- Normal quality control inspection of the works;
- Monitoring of possible discharges to the existing culverted watercourse is also required by Dun Laoghaire Rathdown County Council to ensure that no unauthorised discharges are occurring;
- Pressure testing and CCTV inspections of the foul sewers following completion of stages of the construction is recommended to ensure that the required construction standards are being maintained;

Operational Phase

No monitoring of foul effluent from the development is necessary.

8.10.4 Water Supply

Metering will allow the water supply to the development to be monitored, this is to be done to the requirements of Irish Water.

8.11 Reinstatement

8.11.1 Hydrogeology

No specific reinstatement measures are required.

8.11.2 Surface Water

Construction Phase

Reinstatement at completion of the works will involve:

- Leaving the area in a neat and clean condition, removing all deleterious materials that may have been deposited during construction works.

Operational Phase

Following completion of the development no reinstatement works are envisaged.

8.11.3 Foul Water Drainage

Construction Phase

Reinstatement at completion of the works will involve:

- The cleaning of the existing sewers in the vicinity of the development as required;
- Leaving the area in a neat and clean condition, removing all deleterious materials that may have been deposited during the construction works.
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Operational Phase

No reinstatement works are envisaged upon completion of the development.

8.11.4 Water Supply

Any excavations will be fully reinstated to the requirements of Irish Water.

8.12 Interactions

None anticipated.

8.13 Difficulties Encountered in Compiling

None.

8.14 References

- Guidelines on the information to be contained in Environmental Impact Statements (EPA 2002) and Advice Notes on Current Practice in the preparations of Environmental Impact Statements (EPA 2003)
- BS EN 752:2008 “Drain and Sewer Systems outside Buildings”
- Part H of the Building Regulations
- Greater Dublin Strategic Drainage Study
- Ciria C697 “The SUDS Manual”
- Sewers for adoption: 6th Edition
- Guidelines on the information to be contained in Environmental Impact Statements (EPA 2002) and Advice Notes on Current Practice in the preparations of Environmental Impact Statements (EPA 2003)
- BS EN 752:2008 “Drain and Sewer Systems outside Buildings”
- Part H of the Building Regulations
- Greater Dublin Strategic Drainage Study
- Ciria C697 “The SUDS Manual”
- Sewers for adoption: 6th Edition
- Guidelines on the information to be contained in Environmental Impact Statements (EPA 2002) and Advice Notes on Current Practice in the preparations of Environmental Impact Statements (EPA 2003).
- Dun Laoghaire Rathdown County Council Water Main Map.

APPENDIX 8.1- Public Water Main Map in the vicinity of the site

