

14 Utilities

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14.1 Introduction

This chapter has been prepared by Waterman Moylan Consulting Engineers.

This section examines the material assets serving the subject lands relating to surface water drainage, water supply, foul sewerage, electricity, gas and telecommunications.

14.2 Study Methodology

The methodology followed for this section is in accordance with the EPA “Environmental Impact Assessment Reports, Draft Guidelines 2017”. Information on built assets in the vicinity of the development lands was assembled from the following sources:

- A desktop review of Irish Water Utility Plans, ESB Networks Utility Plans, Gas Networks Ireland Service Plans, Eir E-Maps and Virgin Media Maps;
- Consultation with Irish Water and Dún Laoghaire-Rathdown County Council;
- Submission of a Pre-Connection Enquiry Application to Irish Water;
- Review of ESB Network Utility Plans & Site meetings with ESB Network
- Review of Gas Networks Ireland exiting network maps;
- Review of EIR Telecommunications exiting network maps;
- Site Inspection / Walkover;

As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Study (GSDSDS);
- IS EN752, “Drain and Sewer Systems Outside Buildings”;
- Irish Water’s Code of Practice (water demand and foul water loading);

14.3 The Existing Receiving Environment (Baseline)

Surface Water Drainage

The existing site drains surface water, unrestricted, to the surface water sewer on Brewery Road. There are no underground public surface water pipes within the subject site. The EPA Watercourse Maps shows the closest stream to the subject site is the Brewery Stream discharging in the Irish Sea in Blackrock.

Location of the Subject Site

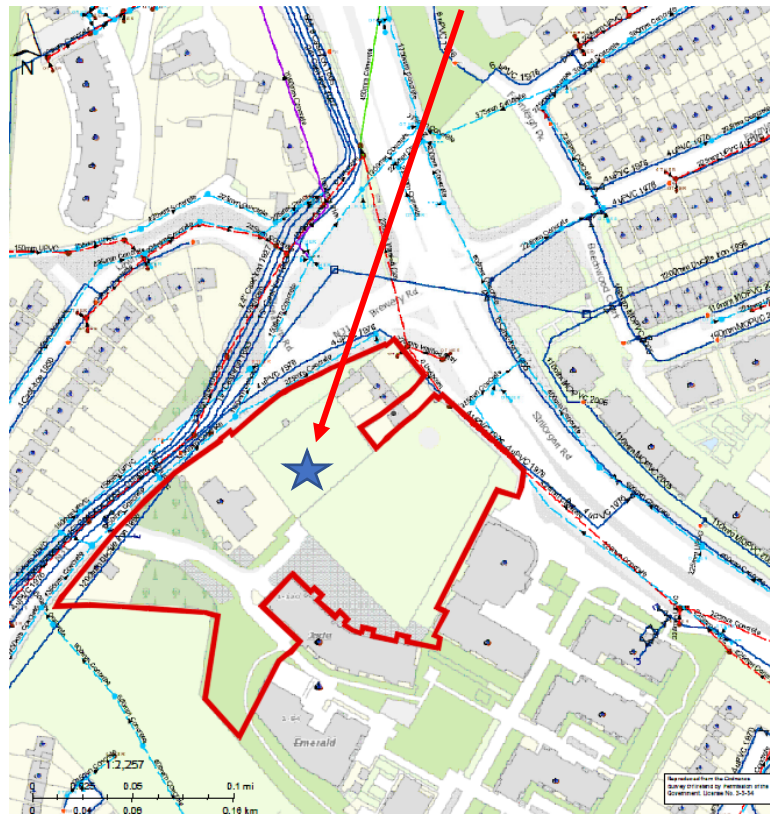


Figure 14.1 - Irish Water Records

Location of the Subject Site

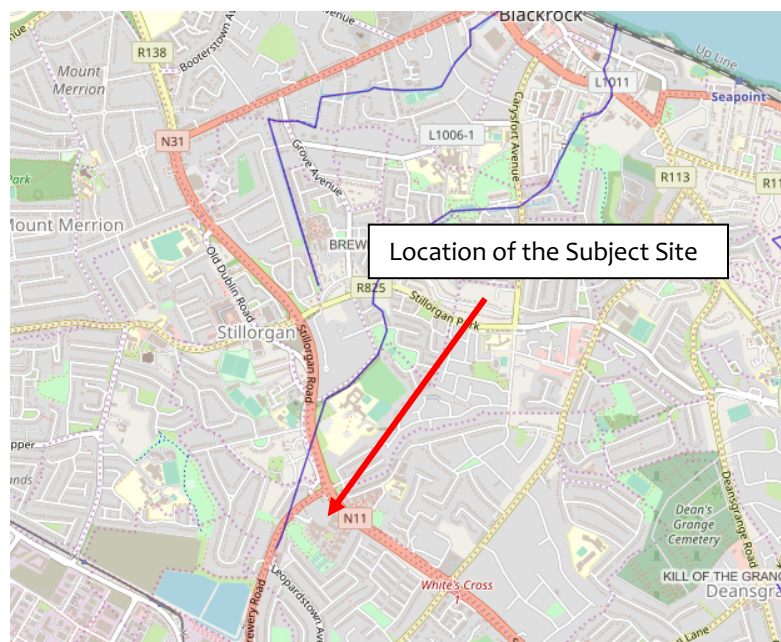


Figure 14.2 - EPA Watercourses Map

Also refer to Chapter 8.0 –Water of this EIAR for further information on the surface water infrastructure impacts and mitigation measures.

Foul Sewers

The proposed development can drain all foul drainage on site to the existing on-site private drainage system, which eventually drains to the public foul sewer, or directly to the public foul sewer in Brewery Road by gravity. The foul sewer drains to the West Pier Pumping Station where it is pumped via a rising main to the Ringsend Wastewater Treatment Plant.

Water Supply

There is an existing watermain on Brewery Road to the north of the subject site however a Pre-Connection Enquiry form was submitted to Irish Water on 09th of September 2018 which outlined our proposals for the provision of water supply and the response stated that a new connection from the 200mm MOPVC main on Stillorgan Road approximately 140m from the site will be needed to serve the development.

Gas

Gas Networks Ireland have been contacted and an existing gas network map for the area surrounding the proposed development has been obtained, refer to Figure 14.3 below. There are existing gas pipes on Stillorgan Road and Brewery Road.

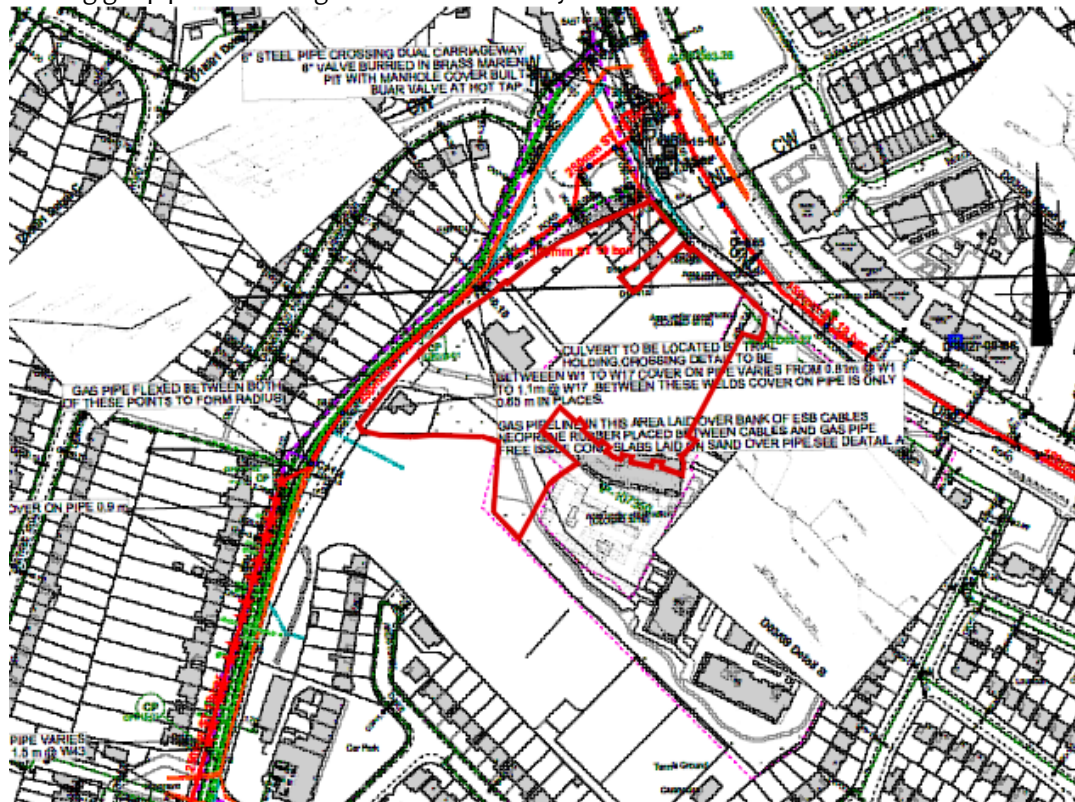


Figure 14.3 - Gas Network Map

ESB Supply

ESB Networks have been contacted and an existing ESB network map for the area surrounding the proposed development has been obtained, refer to Figure 14.4 below. The site is currently connected to the ESB network on Brewery Road.

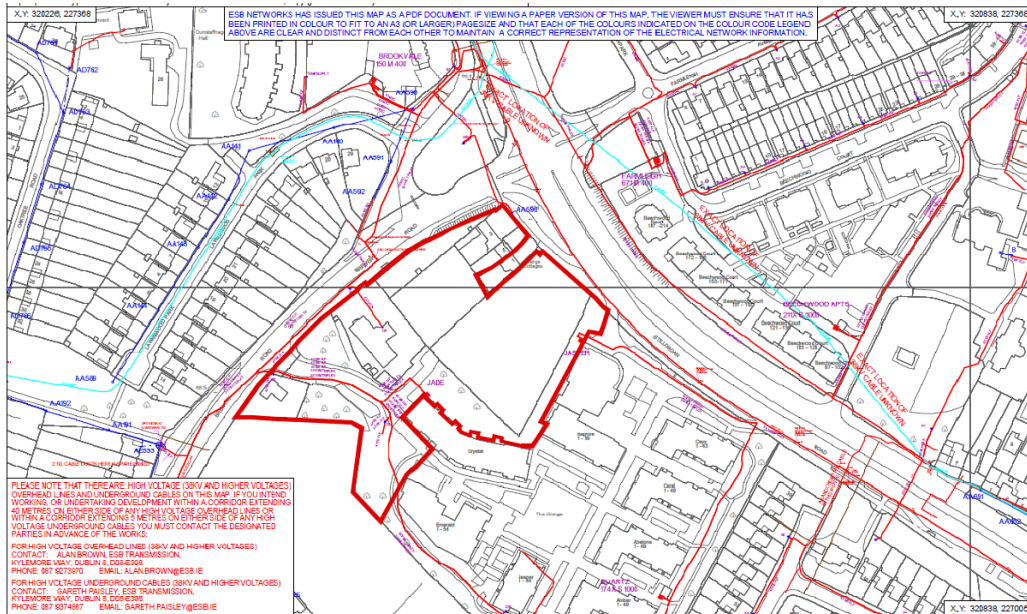


Figure 14.1 ESB Network Map

Telecommunications – Eir

Eir have been contacted and an existing Eir network map for the area surrounding the proposed development has been obtained. Figure 14.5 below. There are existing Eir services on Stillorgan Road and Brewery Road.

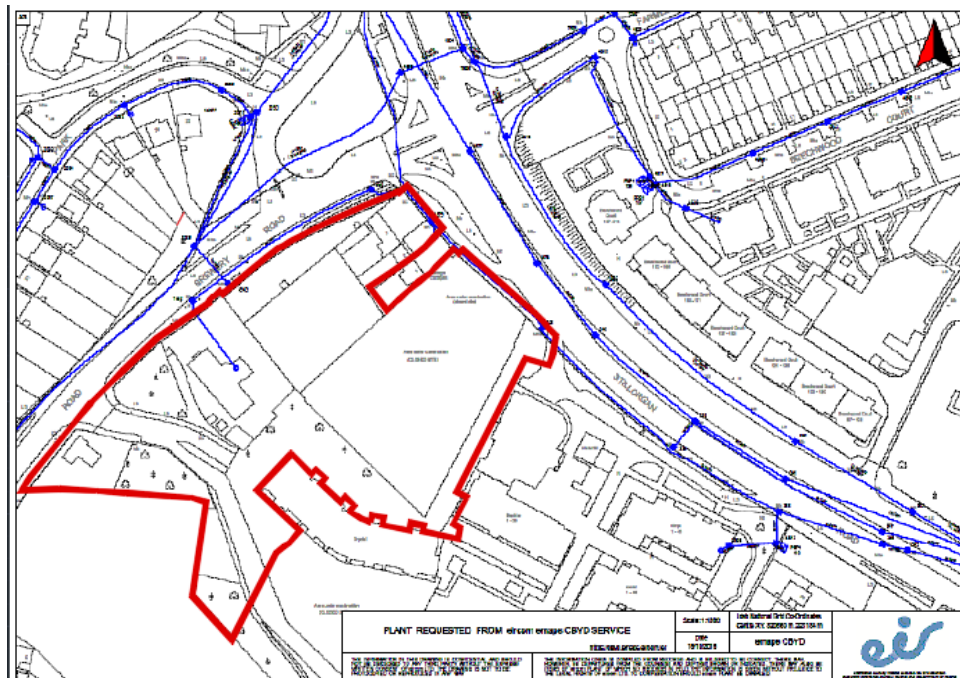


Figure 14. 2 - EIR Network Map

14.4 Characteristics of the Proposal

In summary, the project provides for the demolition (total c.1,398 sq m GFA) of:

- The Grange Select Marketing Suite' (1 storey)
- 'Oaktree Business Centre' (2 storeys)
- 'The Lodge' (2 storeys)

and the construction of a new 'Build to Rent' residential scheme of 287 residential apartment units; residential tenant amenity space of 961.5 sq m; a crèche facility of 658 sq m; and a substation of 96.5 sq m in the form of 6 new blocks (Blocks H, J, M, N, P and Q) ranging in height from 1 - 11 storeys. The residential element of the scheme provides for the following development mix:

- 19 x Studio Units (6.6%)
- 125 x 1 Bedroom Units (43.6%)
- 143 x 2 Bedroom Units (49.8%)

A total of 100 no. car parking spaces, 596 no. cycle spaces and 5 no. motorcycle spaces are also proposed together with all associated site development works.

Surface Water Drainage

It is proposed that the development will attenuate the surface water on site before discharging it, at a restricted rate, via two outfalls, to the same surface water public sewer on Brewery Road. The existing run-off rate was estimated for the 1 in 1, 1 in 30 and 1 in 100 year return periods using the modified rational method:

$Q = 2.78 \times A \times i$ (where A is the catchment area in Hectares and i is the rainfall intensity in mm/hr as estimated for the 60min storm from WinDes using Met Eireann Data.)

$A = 8794m^2 = 0.879ha$ (as measured from topographical survey)

i – 1-year return period = 12.163mm/h

30-year return period = 26.39mm/h

100-year return period = 34.237mm/h

Rainfall Event	Existing development run-off (l/sec)
Q1	$2.78 \times 0.879 \times 12.163 = 29.72$
Q30	$2.78 \times 0.879 \times 26.39 = 64.49$
Q100	$2.78 \times 0.879 \times 34.237 = 83.66$

Table 14.1 - Existing run-off Rates

The following parameters have been used in greenfield run-off rate calculations:

	Catchment
Site Area (Catchment) * ¹ – Ha	1.6
SAAR - mm* ²	835
SOIL Index* ³	0.37
Climate Change	20%

Table 14.2 - Surface Water Catchment Details

- *1 – The total site area within the application red line boundary.
- *2 – From MetEireann data.
- *3 – The soil type map of Ireland indicated Soil Type 1 however the SI would suggest this is not correct for this site and soil conditions are more in line with those expected for Soil Type 3. Therefore 0.37 is used as the Soil Index.

The local authority requirements are that post-development run-off rates are limited to greenfield run-off rates for the site. The greenfield run-off rates for the site have been calculated in accordance with the Institute of Hydrology report No 124 “Flood Estimation for Small Catchments”, using the UK SUDS Website. However, the Site Investigation suggest a Soil Type 3 and therefore, a Soil Index of 0.37 was used. The Site Investigation borehole logs can be found in Appendix A. The Greenfield run-off for the whole site is 5.65 l/s.

The greenfield run-off rate (Qbar) of 5.65 l/s is based on Soil Type 3 in line with the Site Investigation (SI) results. The SI indicated that the site is underlain by an overburden, generally of made ground or cobbles and Granite Rock is present at a depth of between 0.8m and 2.6m below ground level.

In addition, there is a natural average slope of c. 1:30 across the site which will increase the rate of run-off from site, even in its greenfield state.

It is proposed to limit the discharge from site to 5.65 l/s as agreed with Johanne Codd of DLRCC split across two outfalls by providing a Sustainable Drainage System (SUDS). A Hydrobrake will be installed on both outfalls. This will greatly reduce the run-off from site when compared to the existing run-off as calculated in 4.1 above, reducing the impact of the development on the surrounding environment and reducing the risk of the public surface water sewer surcharging during high storm events.

Foul Sewers

A Pre-Connection Enquiry form was submitted to Irish Water on 09th of September 2018 which outlined the foul water discharge proposal. A response was received on 31st January 2019 stating that a connection to the foul water sewer is feasible without an upgrade meaning the existing network has sufficient capacity to drain the proposed development.

The proposed development will consist of 287 residential units and a new Crèche to accommodate 23 staff and 115 children. Based on Irish Waters Code of Practice, the peak foul flow from the proposed development will be as follows:

Description	No. of Units	Flow l/h/day	Population per Unit	Infiltration Factor	Total Discharge (l/d)
Residential Units	287	150	2.7	1.1	126,967.50
Crèche	1	50	138	1.1	7,590
Total l/d					134,557.50 l/d

Calculation of Proposed Peak Foul Flow		
Total Daily Discharge (from Table 1.)	134,558	l/d
Dry Weather Flow (DWF)	1.56	l/s
Peak Foul Flow (=6 x DWF)	9.34	l/s

Table 14.3 - Foul Water Calculations

Water Supply

Despite the existence of an existing watermain on Brewery Road, a Pre-Connection Enquiry form was submitted to Irish Water on 09th of September 2018 which outlined our proposals for the provision of water supply and the response stated that a new connection from the 200mm MOPVC main on Stillorgan Road approximately 140m from the site will be needed to serve the development.

An estimate of water demand from the public water supply system for the proposed site has been based on the development of a total of 287 No. residential units and a crèche using Irish Waters expected demand for the respective residential and commercial uses.

Description	No. of Units	Flow l/h/day	Population per Unit	Total Discharge (l/d)
Residential Units	287	150	2.7	116,235
Crèche	1	50	138	6,900
Total				123,135 l/d

Table 14.4 - Water Supply Calculations

The total water requirement from the public supply, for the development, is estimated at 122.3m³/day.

ESB Network

A new connection will be made to the existing ESB network at the eastern boundary of the site at Brewery Road. The exact extent and location of these connections will be agreed with ESB during the design stage of the project.

All works on the ESB supply infrastructure will be carried out in accordance with ESB relevant guidelines.

Gas

A new gas connection will be made at the eastern boundary of the site on Brewery Road. The exact extent and location of these connections will be agreed with Gas Networks Ireland during the design stage of the project.

All works on the gas supply infrastructure will be carried out in accordance with Gas Networks Ireland relevant guidelines. All gas infrastructure will be below ground with the possible exception of a gas pressure reduction station if required by Gas Networks Ireland.

Telecommunications – Eir

A new connection will be made to the existing Eir network at the eastern boundary of the site at Brewery Road. The exact extent and location of these connections will be agreed with Eir during the design stage of the project.

All works on the Eir supply infrastructure will be carried out in accordance with Eir’s relevant guidelines. All Eir infrastructure will be below ground with the possible exception of a Fibre Cabinet if required by Eir.

14.5 Potential Impact of the Proposed Development During the Construction Phase

The following potential impacts from the construction of the proposed development may occur:

Surface Water

- There is a risk that once topsoil has been stripped from the site there will be higher runoff rates from the lands with increased amount of silt to existing watercourses in the runoff.
- There is a risk of pollution of groundwater / watercourses / soils by accidental spillage of oils / diesel from temporary storage areas or where maintaining construction equipment.
- There is a risk of damage to existing buried utilities during excavations works resulting in temporary loss of supply to existing properties.
- There is a possibility of a temporary Increase in traffic due to deliveries of materials and other construction related traffic.
- There will be some minor disruption to traffic when connecting to the existing sewers on Brewery Road and Stillorgan Road.
- Cross Connection between surface water and foul pipes.

Foul Water

- There is a risk of the ingress of ground/surface water to the foul water network.
- There is a risk of damage to existing buried utilities during excavations works resulting in temporary loss of supply to existing properties.
- There is a possibility of a temporary Increase in traffic due to deliveries of materials and other construction related traffic.
- There will be some disruption to traffic during construction works on the public road.
- Cross connection between foul and surface water pipes.

Water Supply

- There is a risk of contamination of the existing water supply during construction of the development when connection of the trunk watermain to the public water supply is being made.
- There is a risk of damage to watermain fittings due to high pressure in the existing watermain.
- There will be a minor water demand for site offices.
- There is a possibility of a temporary increase in traffic due to deliveries of materials and other construction related traffic.
- There is a risk of damage to existing buried utilities during excavations works resulting in temporary loss of supply to existing properties.
- The proposed development will not give rise to any significant long term adverse impact. Negative impacts during the construction phase will be short term only.

ESB Network

The installation of the ESB utilities for the development will be conducted in parallel with the other services. This will mainly involve excavation of trenches to lay ducting, construction/installation of access chambers and backfilling of trenching. The trenching and backfilling works will be carried out in conjunction with the construction of the roads and footpaths throughout the scheme.

The relocation or diversions of the existing overhead ESB lines may lead to loss of connectivity to and / or interruption of the supply from the electrical grid to the surrounding areas. Any loss of supply will be managed by ESB Networks to minimise impact on neighbouring properties.

The site compound will require a power connection. This likely adverse impact will be temporary and negligible.

Gas

The installation of the gas utilities for the development will be conducted in parallel with the other services. This will mainly involve excavation of trenches to lay ducting, construction/installation of access chambers and backfilling of trenching. The trenching and backfilling works will be carried out in conjunction with the construction of the roads and footpaths throughout the scheme.

Potential loss of connection to the Gas Networks Ireland infrastructure while carrying out works to provide service connections. This likely adverse impact may be characterised as a temporary, regionally short term, moderate impact.

Telecommunications - Eir

The installation of the telecommunications utilities for the development will be conducted in parallel with the other services. This will mainly involve excavation of trenches to lay ducting, construction/installation of access chambers and backfilling of trenching. The trenching and backfilling works will be carried out in conjunction with the construction of the roads and footpaths throughout the scheme.

Potential loss of connection to the Telecommunications infrastructure while carrying out works to provide service connections. This likely adverse impact may be characterised as a temporary, regionally short term, moderate impact.

The site compound will require a telecommunications connection. This likely adverse impact will be temporary and negligible.

14.6 Potential Impact of the Proposed Development During the Operational Phase

Surface Water

- There is a potential impact from increased surface water flows that could lead to downstream flooding.
- There is a potential impact for the discharge of contaminants from the proposed development and road surfaces to the surrounding drainage sewers. These would include particulates, oil, soluble extracts from the bitumen binder etc. The quality of runoff from the site would be dependent on the time of year, weather, particulate deposition from the atmosphere and any gritting or salting carried out by the Local Authority. The time of year has a major bearing on the quality of storm water run-off - in particular the first rains after a prolonged dry period where accumulated deposits of rubber, particulates, oils, etc. are, washed away.
- Stagnation of the water and siltation within the attenuation areas may occur.

Foul Water

- Blockages may occur within the pipe network and the waste water could become septic.
- Foul water could be connected to the surface water drainage network.
- Increased flows to the wastewater network and the Ringsend treatment plant.

Water Supply

There will be an increased demand for water once the development is occupied.

ESB Network

There will be an increased demand for power once the development is occupied.

Gas

There will be an increased demand for gas once the development is occupied.

Telecommunications - Eir

The impact of the operational phase of the proposed development on the telecommunications network would be to increase the demand on the existing network.

14.7 Potential Cumulative Impacts

In the event of future development adjacent to the proposed development, there are no predicted cumulative impacts arising from the construction or operation phase related to the material assets – built services provided that the other developments implement appropriate mitigation measures.

Existing Grange Development

There are no additional impacts to those noted in section 14.6 on the Utilities.

Future Phase 2 Development

Evidently, the applicant does not control the entirety of remaining lands to provide consolidated development to the N11 frontage. This current application therefore relates to a Phase 1 development on lands that can deliver critically required residential units. OMP Architects have developed a phased Masterplan approach to provide an indicative future context for consideration by An Bord Pleanála, which is enclosed herewith. There has been a carefully considered design approach to development to ensure that the subject application can be delivered without compromising existing amenity or the future potential for development addressing the N11.

The Masterplan successfully integrates this new phase of development with the existing built fabric of The Grange. The approach has been to set the blocks around a central garden, which complements the existing scheme and delivers significant enhancements to the public realm.

Overall, it is estimated that there is potential for a further c. 250 units as part of a Phase 2 development.

There are no additional impacts to those noted in section 14.6 on the Utilities.

14.8 Do Nothing Scenario

No change of use of the brownfield lands and therefore no further impact to the material assets – built services would exist.

14.9 Mitigation Measures - Construction Phase

Surface Water

- The contractor will appoint a suitably qualified person to oversee the implementation of measures for the prevention of pollution to the receiving surface water environment.

- Regular testing of surface water discharges will be undertaken at the outfall from the subject site.
- Where silt control measures are noted to be failing or not working adequately, works will cease in the relevant area. The system is cleaned and starts working again.
- All fuels and chemicals will be bunded, and where applicable, stored within double skinned tanks / containers with the capacity to hold 110% of the volume of chemicals and fuels contents. Bunds will be located on flat ground a minimum distance of 50 m from any watercourse or other water conducting features, including the cut off trenches.
- All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.
- Temporary traffic management will be implemented as appropriate during the construction of the connections to Brewery.
- Surface Water pipes will be carefully laid so as to minimise the potential for cross connections.

Foul Water

- All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.
- Foul water pipes to be laid with sufficient falls to ensure self-cleansing velocity
- Foul pipes will be carefully laid so as to minimise the potential for cross connections.

Water Supply

- All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.
- All water mains will be cleaned, sterilised and tested to the satisfaction of the Irish Water/Local Authority prior to connection to the public water main.
- All connections to the public water main will be carried out under the supervision of the Irish Water/Local Authority.

ESB Network

- Where possible backup network supply to any services will be provided should the need for relocation or diversion of existing services be required otherwise, relocation or diversion works will be planned with the service provider to incur minimal impact, with users notified in advance of any works.

Gas

- Where possible backup network supply to any services will be provided should the need for relocation or diversion of existing services be required, otherwise relocation or diversion works will be planned with the service provider to incur minimal impact, with users notified in advance of any works.
- Connections to the existing gas networks will be coordinated with the relevant utility provider and carried out by approved contractors.

Telecommunications - Eir

- Where possible backup network supply to any services will be provided should the need for relocation or diversion of existing services be required, otherwise relocation or diversion

works will be planned with the service provider to incur minimal impact, with users notified in advance of any works.

- Connections to the existing telecommunications networks will be coordinated with the relevant utility provider and carried out by approved contractors.

14.10 Mitigation Measures - Operational Phase

Surface Water

- Flow restrictors with attenuation storage will be used to slowdown and store surface water runoff from discharging above green field rates to the sewer.
- Attenuation systems will be constructed on-line to intercept the first flush during rainfall events after periods of dry weather.
- Sustainable urban drainage measures such as permeable paving and swales will be provided.
- A petrol interceptor will be installed to prevent hydrocarbons entering the local drainage system.
- The attenuation storage systems will be constructed at a fall to maintain movement of water and thus prevent stagnation. Silt would be collected at a sump and removed periodically.
- Regular maintenance of the drainage network, including petrol interceptor.
- The drainage network will be inspected annually and maintained.

Foul Water

- The foul network will be inspected annually and maintained.

Water Supply

- It is not envisaged that any other remedial or reductive measures will be necessary upon the completion of the development.

ESB Network

- On completion of the construction phase no further mitigation measures are proposed in relation to the electrical infrastructure.

Gas

- On completion of the construction phase no further mitigation measures are proposed in relation to the gas infrastructure.

Telecommunications - Eir

- On completion of the construction phase no further mitigation measures are proposed in relation to the telecommunications infrastructure.

14.11 Predicted Impacts of the Proposed Development During Construction Phase

Surface Water

Due to the proposed mitigation measures outlined above no significant impact will arise during the construction phase of the proposed development on a surface water quality.

There will be disruption to local traffic during the connection of the water surface sewers from the proposed development to the existing water surface sewers.

Foul Water

Due to the proposed mitigation measures outlined above, the impact of the foul network construction will be not significant.

There may be short term disruption to local traffic on connection of the foul sewers from the proposed development to the existing foul sewers.

Water Supply

Due to the proposed mitigation measures outlined above, the impact on the water supply infrastructure during the construction phase of the proposed development is slight.

There will be disruption to local traffic during the connection of the watermains from the proposed development to the existing watermains on Brewery Road and Stillorgan Road.

ESB Network

Implementation of the measures outlined in Section 14.9.4 will ensure that the potential impacts of the proposed development on the site's material assets do not occur during the construction phase and that any residual impacts will be short term.

Gas

Implementation of the measures outlined in Section 14.9.5 will ensure that the potential impacts of the proposed development on the site's material assets do not occur during the construction phase and that any residual impacts will be short term.

Telecommunications - Eir

Implementation of the measures outlined in Section 14.9.6 will ensure that the potential impacts of the proposed development on the site's material assets do not occur during the construction phase and that any residual impacts will be short term.

14.12 Predicted Impacts of the Proposed Development During Operational Phase

Surface Water

Due to the proposed mitigation measures outlined above many of the potential impacts will not arise during the operation phase of the proposed development on surface water quality.

Surface water discharge from the site will be restricted by means of attenuation, therefore, no adverse impact in respect of flooding downstream will arise from the proposed development.

Foul Water

There will be increased flows in the existing foul water drainage network, resulting in a moderate impact in terms of demand on the receiving foul water network. This impact will be managed through consultation with Irish Water to ensure any necessary upgrades are provided and that connections are carried out in accordance with the Code of Practice.

Water Supply

There will be an increased demand for water supply due to the development resulting in a moderate impact in terms of demand on the water supply infrastructure. This impact will be managed through consultation with Irish Water to ensure necessary upgrades are provided and that connections are carried out in accordance with the Code of Practice.

ESB Network

The demand on power supply will increase due to the development of the lands. The development of the lands will be constructed in phases, with the final phase being completed circa 2025.

Gas

The demand on gas supply will increase due to the development of the lands. The development of the lands will be constructed in phases, with the final phase being completed circa 2025.

Telecommunications - Eir

The demand on telecommunications supply will increase due to the development of the lands. The development of the lands will be constructed in phases, with the final phase being completed circa 2025.

14.13 Monitoring and Reinstatement

The proposed monitoring of the various built services during the operation stage will include:

- Surface water drainage and SUDS features will be monitored and maintained by the Developer.
- The water usage within the proposed development will be monitored via the bulk water meters. Records will be maintained by Irish Water to ensure any excess usage is identified and investigated as necessary.
- Irish Water will monitor the operation of the foul drainage network including the receiving environment.
- The construction and waste management plans will be adhered to.
- The provision of utility services including electricity, gas and broadband will be monitored by the relevant utility provider.

14.14 Interactions

The main interactions relating to this EIAR Chapter are Water (Hydrology and Hydrogeology), Population and Human Health and Traffic and Transport.

During construction stage, the connection of wastewater services has the potential to impact the local surface water from a hydrology and hydrogeology perspective. There are potential implications for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development. The construction of the various services will also interact with construction traffic as outlined in the Traffic and Transport Chapter.

During the operation stage, the water supply and foul drainage services have a potential interaction with the available water supply and with potential pollution to natural water bodies.

14.15 Difficulties Encountered

There were no particular difficulties encountered compiling the Material Assets –Utilities chapter of the EIAR.

14.16 References

Code of Practice for Water Infrastructure – Connections and Developer Services, (2017), Irish Water
Code of Practice for Wastewater Infrastructure – Connections and Developer Services, (2017), Irish Water
Eircom Emaps
Environmental Impact Assessment Reports – Draft Guidelines, (2017), Environmental Protection Agency
ESB Networks
Gas Networks Ireland – Cork Design Department
Greater Dublin Strategic Drainage Study (GSDSDS), (2015), Dublin Drainage
Irish Building Regulations – Part H 2010 – Drainage and Waste Water Disposal