

Chapter 9.0

Part A

Material Assets – Utilities, Services and Waste

9A.0 Introduction

This chapter of the EIAR was prepared by Ken Manley, BE CEng MIEI FConsEI HDip EnvM Eng, Chartered Engineer and company Director at MHL and Associates Ltd and Orla O'Callaghan, BA, MPlan, Senior Planner at Cunnane Stratton Reynolds.

The EPA Guidelines for Environmental Impact Assessment Reports 2017 state that:

“The meaning of this factor is less clear than others. In Directive 2011/92/EU it included architectural and archaeological heritage. Directive 2014/52/EU includes those heritage aspects as components of cultural heritage. Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes roads infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils”.

Material Assets may be of either natural or human origin. This Chapter considers and assesses the effects of the proposed development on the material assets including utilities within and around the site during the construction and operational phases such as storm water drainage, foul water drainage, water supply and telecommunications, traffic and transportation and waste management. For this reason Chapter 9 has been split into two parts – Part A will consider Utilities, Services and Waste and Part B will consider Traffic and Transportation.

9A.1 Methodology

The methodology used to prepare this section of the EIAR is in accordance with the EPA 'Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EIAR)' (2017), and 'Advice Notes for Preparing Environmental Impact Statements September 2015'.

The following sources have been used to collate information on utilities and services within the general area of the site:

- Public Foul Drainage (Irish Water Records);
- Public Water Main Networks (Irish Water Networks)
- Electricity Supply Networks (ESB Networks);
- Telecommunications (Éir, Virgin Media etc).

This information has been supplemented by observations recorded during various site walkovers, surveys, and pre-application consultation with both Irish Water and Cork County and City Councils. Surface water runoff, foul drainage discharge and water supply requirements have also been designed with due regard to the following guidelines:

- SuDS Manual (CIRIA (2007));
- Irish Water Code of Practice for Wastewater Infrastructure Doc IW-CDS-5030-03 and Irish Water Code of Practice for Water Infrastructure Doc IW-CDS-5020-03, BS EN 752:2008 – drain and sewer systems outside buildings;
- Irish Water's Pre-Connection Enquiry Application

9A.2 Receiving Environment (Baseline Scenario)

The site of the proposed development is currently a greenfield site which has been farmed for a number of years and the lands immediately adjoining the site to the east and south are also greenfield. The western part of the site is bounded by the Ballyhooly Road. There is an existing commercial development to the east of the site outside the applicant's ownership.

There is existing residential development in the area including one off dwellings along the northern boundary of the site and residential estates further south and south west of the site on the opposite side of the Ballyhooly Road. City North Business Park is located further west of the site and there is existing commercial and retail development including Lidl and Ballyvolane Shopping Centre including Dunnes Stores and smaller retail units further south of the site. The existing infrastructure and utilities in the area have been investigated and the details are set out below:

9A2.1 Access/ Land

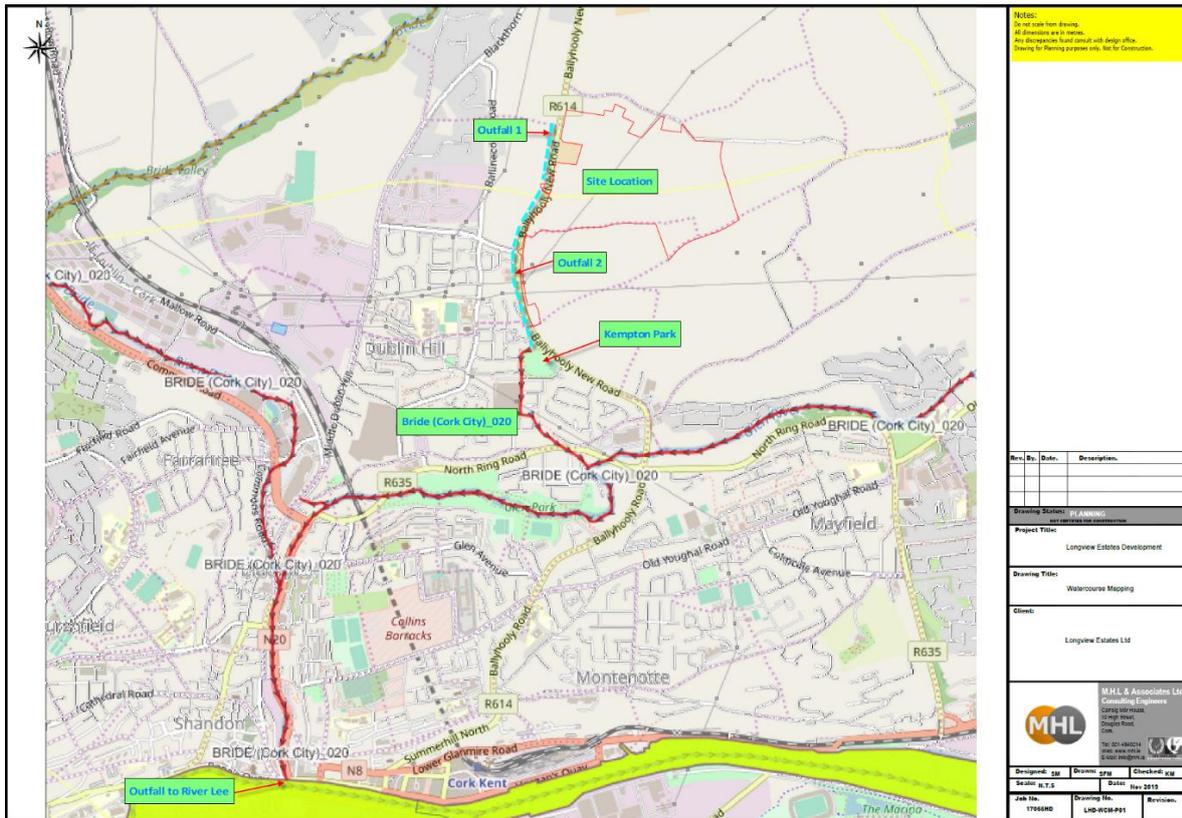
Existing access to the site is available from the Ballyhooly Road and the local road running along the northern boundary of the site. In addition to Longview Estates Ltd the lands are within the ownership of sister companies of Longview Estates including Waterrock View Ltd, Crystal County SPV Ltd and Donkey Aters SPV Ltd. Works are also proposed to land within the ownership of Cork City Council. All the relevant letters of consent have been included with this planning application.

9A2.2 Storm Water Drainage

The existing greenfield site, the subject of this application, slopes from east to west, draining towards the watercourse on the western side of Ballyhooly Road. A number of land drain connections provide a direct connection from the lands to this watercourse.

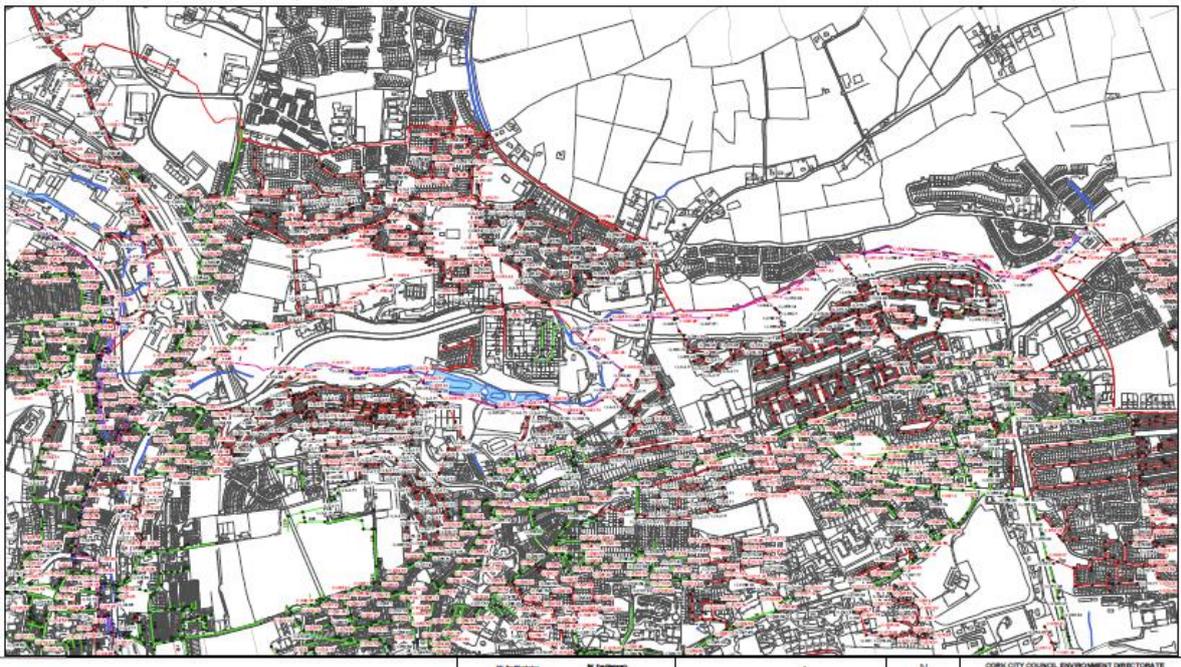
Existing storm water run-off from the R614 as it passes the site enters the watercourse by way of open drainage cuts through the existing ditch. This serves as an outfall for surface water falling on the public road and new housing to the north (Dublin Pike). This watercourse is culverted over a portion of its length from the Kilbarry Link Road (Labelled Lower Dublin Hill on the EPA Mapping) south to Kempton Park where it is designated by the EPA as Bride (Cork City) 020, links with the Glen River and ultimately is culverted under the N20 Blackpool Bypass out falling to the River Lee on Camden Quay.

Figure 9A.1 Site Location and Watercourse to western side of Ballyhooly Road



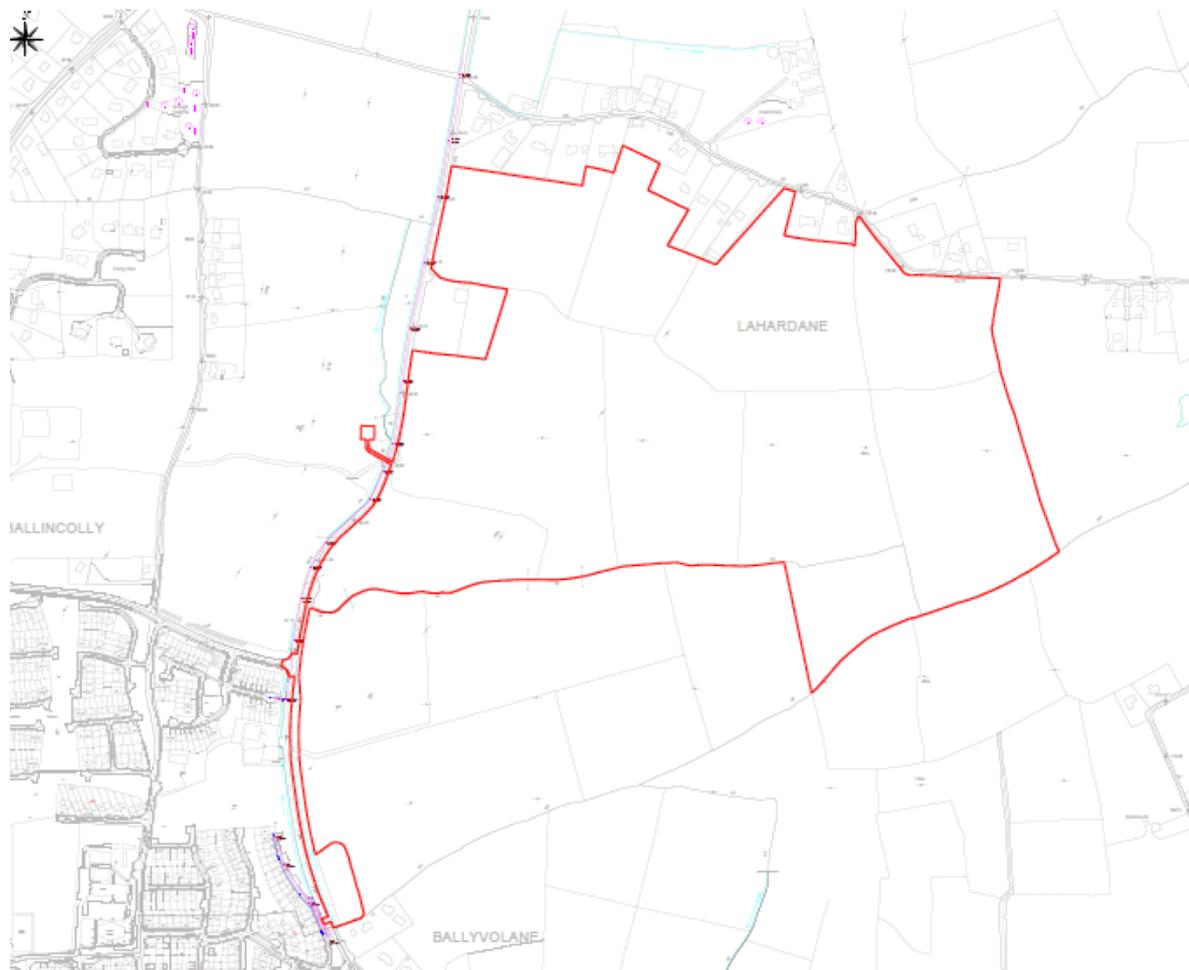
9A2.3 Foul Water Drainage

There is an existing 225mm diameter foul sewer running north to south along the Ballyhooly Road. This sewer links to the foul sewer serving Brookwood Housing Estate south of the Kilbarry Link Road.

Figure 9A.2 Existing Foul Water Network

9A2.4 Water Supply

It is proposed to connect the sites water supply to an existing pipeline present in the Dublin Hill area approximately 780m to the west of the site boundary. The extension of this watermain has been agreed with Irish Water and will comprise a 250mm HDPE watermain. As advised by Irish Water, there is presently sufficient capacity in the IW water network to supply the proposed development.

Figure 9A.3 Existing Irish Water Main**9A2.5 Power Supply**

There are a number of existing ESB transmission lines crossing the Ballyvolane Urban Expansion Area lands. There are two 110Kv lines namely the Kilbarry to Knockraha no.1 line and no. 2 line. There are also a couple of 38Kv lines. Two overhead power lines traverse the planning application site, a 110Kv line from north west to south east over 4 pylons and a smaller 38Kv line runs east to west along the southern part of the site.

Figure 9A.4 Existing Power Lines traversing the site

9A2.6 Telecommunications

According to the Department of Communications, Climate Action and Environment National Broadband Plan the site is shown in an area where commercial operators are delivering or have indicated plans to deliver high speed broadband services. Operators are continuing to enhance their services in these areas to improve access to high speed broadband. It is indicated that Eir Fibre Broadband is live in the area with live Eir cabinets located in close proximity to the site on the Ballyhooly Road.

Figure 9A.5 Eir Fibre Broadband live in the site area

9A2.7 Public Lighting

There is existing public lighting serving the Kilbarry Link Road over its extents and on Ballyhooly Road to the end of the Mervue Lawn Residential Estate. On Ballyhooly Road this coincides with the extent of footpath provision.

9A2.8 Waste Management

In terms of waste management, the application site is within the southern region where the Southern Region Waste Management Plan 2015 applies. The Cork City Council Bye Laws for the *Segregation, Storage and Presentation of Household and Commercial Waste 2019* as effective from 1st May 2019 apply in this area. There are a significant number of waste contractors operating in the Cork area who are permitted to collect waste and already service houses and businesses in the Ballyvolane area. Examples of contractors include DMC Waste and Recycling, Country Clean Recycling Ltd, Kollekt, Wisser Bins, Healys Blue Bin and Greenstar.

9A.3 Potential Impact of the Proposed Development

Construction Stage

The construction phases of the proposed development may result in some slight and temporary impacts to the existing population in the area.

9A3.1 Access/ Land

The main construction access to the site will be provided from the Ballyhooly Road and a construction compound is proposed to be located in the proposed phase 6 of the development, to be reduced in size and relocated to residual land to the south in the Applicants ownership when Phase 6 is being developed. A preliminary Construction

Environmental Management Plan (CEMP) that has been prepared by MHL and Associates Ltd and accompanies this planning application. Once a Contractor has been selected and appointed a detailed final CEMP including traffic management details will be prepared and agreed prior to the commencement of development

It is proposed to re-use the bulk of the excavation within the site which will result in a reduction in the construction traffic associated with the proposed development. This will minimise the impact the development will have on local roads. There will be no direct effect on any properties adjoining the subject site.

There is the potential for indirect slight negative effects arising due to the proximity of premises to the works. Properties close to the proposed development site may experience temporary disruption for example due to dust and noise from the construction works. These potential effects are addressed in other chapters of this EIAR including Air Quality and Climate and Noise and Vibration. Construction phase effects on land use and property are expected to be slight negative, temporary effects.

9A3.2 Storm Water Drainage

A combination of infiltration to the east and stormwater attenuation to the west of the site is proposed to drain the development. Soil infiltration rates to the east of the site were high (Priority Site Investigation Report) while infiltration rates to the west of the site were low. This result informed the design team that a SuDS compliant system could be used for surface water collection for the eastern portion of the proposed development while the remainder of the site needed to be positively drained off the site via attenuation tanks. In areas where soil infiltration was not possible due to topography and soil type, SuDS type measures such as the use of permeable paving on internal junctions and open drainage swales have been employed.

To ensure a robust design, attenuation flow rates were restricted to Q_{bar} rates for each of the individual phases. Groundwater seepage rates as stated previously in this chapter were included in the design calculations of the network including the sizing of attenuation tanks.

The use of soakaways for surface water infiltration is proposed in locations generally to the east of the site (in phases 2 & 5).

Surface water quality will be treated through the use of Oil Separators and SUDS measures. For this development, the following SUDS measures are proposed:

- Planted swales running adjacent to roadways where feasible.
- Kilsaran permeable paving at suitable locations throughout the site
- Storm-tech attenuation chambers in conjunction with Hydroflow vortex control to maintain a maximum outflow of 5 l/s/ha (Avg Q_{bar}).
- Infiltration soakaways on the eastern portion of the development where the topography is flatter and infiltration tests were conducive to infiltration.

It is proposed to connect the main surface water discharge to the local network at a location 0.8km south on Ballyhooly Road, Outfall 2. Neighbourhood 4 (Phase 4) will connect at Outfall 1, and as previously outlined will be used to recharge the existing stream during low flow periods.

The proposed tie-in locations were selected following discussions with Cork City Council. The proposed outlets into the existing watercourse will incorporate outfall header walls to

mitigate riverbed erosion; no works will occur within the river-bed. Further details is provided in the Water and Hydrology Chapter of this EIAR.

Potential impacts on surface water during the construction period include:

- Surface water runoff during the construction phase may contain increased silt levels (e.g. runoff across areas stripped of topsoil) or become polluted by construction activities. The discharge into nearby water bodies has the potential to cause pollution.
- Discharge of rainwater pumped from excavations may also contain increased silt levels (potential impact on existing hydrology e.g. discharge to existing water drainage infrastructure).
- Accidental spills and leaks associated with storage of oils and fuels, leaks from construction machinery and vehicles, and spillage during refuelling and maintenance.
- Concrete runoff, particularly discharge of wash water from concrete trucks (potential impact on existing hydrology e.g. infiltration to ground).
- Discharge of vehicle wheel wash water (potential impact on existing hydrology e.g. discharge to existing/proposed surface water drainage infrastructure).
- Improper discharge of foul drainage from contractor's compound (impact on existing hydrology e.g. cross-contamination of existing surface water drainage).
- Works associated with the crossing of the existing watercourse as part of the diversion of the 38KV Overhead ESB Line

The potential impacts from the construction phase on surface water is likely to be short term and significant without mitigation measures in place.

9A3.3 Foul Water Drainage

The construction stage of the proposed development will involve the construction of new foul sewers and will require the construction of a gravity sewer network, a pumping station and a rising main to pump the discharge to the existing Irish Water wastewater network to the south east of the site. There is a potential risk of short-term impacts when connecting to existing manholes. There is a risk of pollution of groundwater by accidental spillage of foul effluent during connections. However once best practice construction practices are adhered and Irish Water procedures followed the impact on foul drainage during the construction stage will be minimised and no long term impacts will result from the construction stage.

As the topography of the site generally falls from the east towards the Ballyhooly Road to the west, this allows for the majority of the foul water network to be gravity fed with the exception of phase 5 on the far eastern side of the site.

The following indicates how the foul network will develop as the various phases are complete.

Phase 1: Foul network will be gravity fed and will connect to existing 225mm foul sewer running north to south on Ballyhooly Road.

Phase 2: A new strategic pump station is required along Ballyhooly Road to the south of the residential development. This station is required to accommodate additional phases and future developments in the Urban Expansion Area (UEA). The existing foul network has capacity for Phase 1 only. The applicant has entered into a Project Works Service Agreement (PWSA) with IW for the delivery of this infrastructure.

Phase 3: Additional foul network required for Phase 3 housing will be tied into development foul network and be gravity fed to new Irish Water pumping station.

Phase 4: Additional foul network required for Phase 4 housing will be tied into development foul network installed along Ballyhooly Road and be gravity fed to new Irish Water pumping station.

Phase 5: Due to topography constraints, wastewater from Phase 5 will need to be pumped in order to connect to the overall development foul network. A new pumping station will be constructed bordering Phase 5 to achieve this. The rising main from the pumping station will extend north along the main distributor road through the proposed development before tying into the overall development foul network at a location adjacent to Phase 2. Wastewater will then be gravity fed to the new Irish Water pumping station.

Phase 6: Additional foul network required for Phase 6 will be tied into development foul network and be gravity fed to new Irish Water pumping station.

Further detail on the proposed foul water network is provided in the Water and Hydrology Chapter of this EIAR.

Figure 9A.6 Proposed Foul Network Neighbourhood 1



9A3.4 Water Supply

A 150mm diameter PE Class C watermain is proposed to supply water to all fire hydrants in the proposed development. The water supply for the proposed development will be taken from a 250mm watermain which will be extended from Upper Dublin Hill by Irish Water. The proposed water main network is shown on the MHL and Associates Ltd drawings accompanying this planning application. The construction of the water supply pipe network shall be in accordance with Irish Water Code of Practice for Water Infrastructure Doc IW-CDS-5020-03.

During the construction of the water main network, there is likely to be short term (temporary) disruption to local water supply service. However, this will be temporary to facilitate connections to the network. All such temporary shutdowns will be agreed with Irish Water in accordance with the appropriate procedures and people that will be affected will be advised in advance of the short-term impacts that they may experience. There is a potential risk of contamination to the existing water supply during the construction phase when the development is being connected to the water supply.

There will be a minor water demand for the site compound and offices during the construction period.

As noted in the CEMP prepared by MHL and Associates It is anticipated that a significant amount of material arising from the works will be classified for re-use as fill material under roads and pavements. The objective is to ensure the absolute minimum amount of material leaves the site as waste.

Operational Stage

9A3.9 Access / Land

There are two proposed vehicular accesses on the Ballyhooly Road and a further access on the local road to the north of the site. Once completed, the roads, footpaths and landscaped open spaces of the proposed development will be open to the public. The distributor road and multiple pedestrian and cycle links to be developed will provide access to surrounding areas and the rest of the urban expansion area as it is developed.

9A3.10 Storm Water Drainage

Once operational the potential impacts on surface water are increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff (note, the scheme has been designed to attenuate to 5 l/s/ha on average which is equal to or less than greenfield run-off rates for each of the specific neighbourhoods).

Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas – likely to be small scale in nature). This is deemed to be an imperceptible temporary adverse impact.

The proposed surface water strategy is described in greater detail in the Water and Hydrology Chapter. In summary an assessment of the impacts considering the proposed mitigation measures set out in that chapter concludes that all of the potential impacts both during the construction and operational stages of the proposed development are considered to be of neutral significance and impact and will not result in any residual impacts.

9A3.11 Foul Water Drainage

As described in the Water and Hydrology Chapter of this EIAR the operational stage of the proposed development will result in increased effluent volumes to the foul network. Irish Water have confirmed that the existing foul sewer in the area has the capacity to accommodate the initial phase of the development and that future phases of the development will require the construction of a gravity sewer network, a pumping station and a rising main to pump the discharge to the existing Irish Water wastewater network to the south east of the site.

In terms of assessing impacts of the pumping station once operational an Odour Emissions Report has been undertaken by AWN Consulting and is enclosed at Appendix 9A.1. The assessment used air dispersion modelling using the United States Environmental Protection Agency's regulatory model AERMOD (Version 19191). The aim of the study was to assess the potential odour emissions associated with the pumping station, based on a stack height of 2 metres, and to quantify the ambient predicted odour levels relative to the ambient odour guideline values. The assessment concluded that the odour dispersion modelling results for the Ballyvolane Pumping Station, at a stack height of 2 metres, are within the relevant odour guideline criteria and thus will not cause a nuisance at the worst-case residential receptor. The maximum hourly odour concentration is 0.22 OUE/m³ at the worst-case residential receptor based on a conservative odour emission rate from the station. The worst-case

odour concentration of 0.22 OUE/m³ is 15% of the relevant odour criterion of 1.5 OUE/m³ as a 98th%ile and thus the pumping station will not cause an odour nuisance at nearby receptors.

The Applicant has entered into a Project Works Services Agreement (PWSA) with Irish Water. This PWSA makes provision of land for a pumping station and Irish Water has committed to carrying out network improvements. This will address any foul water constraints that existed in the Lahardane area for Phase One development, as defined under the Urban Expansion Area (0-1175 Houses), and will allow for the Ballyvolane greater area to be opened up. Provision will be made for all properties along the northern boundary of the site to connect to the proposed foul water sewerage network.

The impact of the proposed development on foul water drainage is likely to be long term and imperceptible.

9A3.12 Water Supply

The impact on water supply during the operational stage of the proposed development is an increase in the quantity of water to be treated and supplied through the network. Irish Water have confirmed that there is sufficient capacity in the Irish Water network to supply the proposed development. In order to facilitate the connection of the proposed development the network will be extended. All plumbing fixtures and fittings to be installed within the development should be to the current best practice for water consumption to minimise future water usage. The potential impact on water supply once operational is likely to be long term and imperceptible. Provision will be made for all properties along the northern boundary of the site to connect to the water supply as extended.

9A3.13 Power Supply

The impact of the operational stage is that an Electrical Diversified Load of approximately 2.7MW is required which will be split over up to 5 no. Unit Sub Stations spread throughout the site. These are indicated on the layouts prepared by Horgan Carroll Architects however the final siting of these unit subs will be agreed with the ESB in advance of construction.

The 110Kv power line running through the site is being retained and it is proposed to incorporate it into the greenway to achieve the 25 metre buffer that is required at either side of the 110Kv line. As noted the proposed development also provides for the undergrounding of part of a 38 Kv line that traverses the planning application site from east / west.

The potential adverse impact of the proposed development on power supply is likely to be long term and minimal.

9A3.14 Telecommunications

The impact of the proposed development on the telecommunications network would be to increase the demand on the existing network. The proposed impact is likely to be long term and minimal. Provision will be made for all properties along the northern boundary of the site to connect to the broadband ducting proposed as part of the design solution.

9A3.15 Public Lighting

The proposed lighting for the development has been prepared by MHL and Associates Ltd. The proposed street lighting has been designed to EN 13201 and British Standard BS 5489.

The 'Lighting Reality Pro' software package was used to choose an appropriate lantern type and to optimise the lighting design. The Philips BGP615 DM10 3.8klm LED was selected for the internal estate roads and the Philips BGP623 DM12 10.0klm LED for the distributor road. It is proposed to use Philips BGP623 DM12 11.0klm LED for the Ballyhooly Road. These are designed and manufactured to comply with EN 13201 and IP65 optic and gear housing 10 joules shock resistant. The site-specific public lighting design reports are included within the accompanying Engineering Design Report by MHL and Associates.

9A3.16 Waste Management

Given the nature of the proposed Project i.e. a large residential development including a local centre, a number of different waste materials will be generated once the development is operational. As an established area within Cork City, there are a number of waste disposal contractors serving this area.

The generation of waste during the operational stage is unavoidable. The potential impacts on the environment from waste during the operational phase would be due to a lack of or improper waste management within the development. If waste is not managed or stored appropriately, it is likely to give rise to litter and/or pollution issues and could result in significant quantities of waste being sent unnecessarily to landfill. Further the targets and requirements set out in the Cork City Bye Laws and the Southern Region Waste Management Plan would not be met.

The implications of such is that vermin may be attracted to the immediate area as a result. In addition, if unauthorised waste contractors were used, waste materials could be incorrectly managed and disposed of illegally and result in negative environmental impacts or pollution. Thus, all waste generated must be managed in accordance with the relevant local, regional and national waste guidance and legislation and taken to suitably registered and licenced waste facilities for processing, segregation, reuse, recycling, recovery or disposal, as deemed appropriate.

Waste materials generated will be segregated on site, where it is practical. There will be bins and receptacles provided to facilitate segregation at source. The appointed waste contractor will collect and transfer the wastes to the licensed waste facility. Waste contractors will be required to service the development on a regular basis each week. A preliminary Operational Waste Management Plan (OWMP) has been prepared for this planning application which estimates the waste that the proposed development will generate. The proposed development is not anticipated to have a significant effect on municipal waste services.

9A.4 Potential Cumulative Impacts

The potential cumulative effects of development on material assets have been assessed taking into account other permitted and planned developments in the surrounding area as listed in Chapter 2 of this EIAR. The development of other zoned lands within the Ballyvolane Urban Expansion Area will be subject to future planning applications and new connections to the water supply network to facilitate development. Any new connection to the water supply network would require a road opening licence and separate mitigation. There is potential for some traffic disruption to local residents during this process and the potential for (temporary) short term loss of service to water supply when a new connection is made. Any potential impacts will be short term and minimised through the implementation of mitigation measures set out in a construction management plans. Considering the minimal use of material assets during the construction stage the cumulative construction impacts of development on material assets are therefore anticipated to be negligible.

Once operational the developments will generate additional foul sewage to the existing network and there will be an increase in the quantity of water to be treated and supplied through the network. There will also be an increase in demand for power and telecommunications connections in the area. Other residential developments that are developed in the site area will generate similar waste types to the proposed development and will be required to engage the services of suitably authorised waste contractors. The cumulative effects of development on material assets are predicted to be long term and negligible.

9A.5 Do Nothing Impact

If the proposed development were not to take place there are no predicted impacts on these material assets.

9A.6 Mitigation Measures

All possible measures shall be taken to avoid unplanned disruptions to any services and utilities within the site area during the construction of the proposed development. Mitigation measures that are identified in the Water and Hydrology Chapter of this EIAR and the CEMP are relevant to material assets. These measures are considered to result in any adverse effects on material assets during the construction stage being avoided or suitably mitigated.

Construction Stage

The following measures are proposed during the construction phase to mitigate against potential risks to the surrounding hydrological environment:

- The site-specific Construction and Environment Management Plan (CEMP) will be developed by the appointed works contractor and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in this CEMP. Construction will occur on a phased basis and earthworks management will be carried out by contractors in accordance with best practice to prevent surface and ground water impacts.
- The proposed undergrounding of the 38KV ESB overhead line and subsequent crossing of the watercourse to the west will be carried out in accordance with ESB Networks requirements and will include directional drilling to avoid impact with the stream. All necessary measures including protective bunds, temporary bridges and silt fences will be provided by the appointed contractor. Inland Fisheries Ireland will be consulted before any of these works are carried out on-site.
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate, to the existing watercourse. It is anticipated that a suitably experienced Earthworks Contractor will be appointed to carry out the bulk excavations on the site, with all required measures being put in place to the satisfaction of the Local Authority.
- All spoil/earthworks storage areas (plans of which are included) will be located on well-vegetated lands and will be surrounded by secure silt fencing. It is proposed to use the lands reserved for the school campus as stock-pile areas, in conjunction with existing ditches to create the necessary barriers and sediment ponds to ensure silt run-off is fully controlled.
- If de-watering of earthworks materials is required the resulting water will be pumped out onto well-vegetated areas away from springs, drains or rock outcrops and

allowed to run-off into formed settlement ponds prior to discharge to the main drainage system.

- In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints, and other chemicals will be stored in secure bunded hardstand areas. Refuelling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water inlets or outlets (where not possible to carry out such activities off site). Any hardstand areas will be isolated from main drainage runs and will include petrol interceptors prior to discharge.
- Concrete batching will take place off site and wash down and wash out of concrete trucks will take place off site (at authorised concrete batching plant in full compliance with relevant planning and environmental consents).
- Discharge from any vehicle wheel wash areas will be directed to on-site settlement ponds and will pass through a hydrocarbon interceptor prior to discharge.
- The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tankered off-site to a licensed facility if necessary, until a connection to the public foul drainage network has been established.
- The construction compound's potable water supply will be protected from contamination by any construction activities or materials in the instance that a temporary well has to be sunk.
- Spill Kits to be kept in designated areas.
- All water mains will be cleaned and tested in accordance with Irish Water guidelines and standards prior to connection to the public water main.
- The proposed public lighting for the development has been designed in accordance with the relevant standards and will be installed by a competent electrical contractor.
- Waste generated will be stored temporarily on site until it is collected by a licensed waste contractor. All waste generated will be managed and disposed of in accordance with the Construction Environmental Management Plan (CEMP), a preliminary version of which has been prepared by MHL and Associates Ltd for this planning application and the final CEMP which will be agreed with the appointed site contractor. All waste generated will be managed in accordance with the relevant local, regional and national waste guidelines and legislation and taken to suitably registered and licensed waste facilities for processing, segregation, reuses and recycling, recovery or disposal as deemed appropriate.

The control measures relating to surface water run-off during the construction phase of the development shall follow best practice as recommended by CIRA 2010 and ISO 14001:2015 – Environmental Management Systems and C741 Environmental good practice on site guide (4th edition) and CIRIA (2015) Coastal and marine environmental site guide (second edition) (C744).

As noted in the preliminary CEMP the implementation of the following measures will minimise the impact on material assets in the area of the proposed development during the construction phase:

- In order to reduce the risk of defective or leaking sewers, all new sewers should be constructed in accordance with Irish Water standards.
- All appropriate measures will be taken to minimise as far as possible the risk of spillage that could lead to surface and ground contamination.
- No storage of hydrocarbons or any polluting chemicals will occur within 50m of watercourses/ active drains. Any diesel or fuel oils stored on site will be bunded to

110% of the capacity of the storage tank. Re-fuelling of plant will not occur within 50m of watercourses/ active drains and only in bunded refuelling areas

- The construction compound will be adequately served in terms of foul drainage and water supply for staff. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established. The construction compound's drinking water supply shall be protected from contamination by any construction activities or materials.
- The design and connection to all necessary site infrastructure will be in accordance with all relevant codes of practice and guidelines and will be coordinated with the relevant utility provider and carried out by approved contractors.
- The CEMP sets out how waste is to be managed during the construction period.

All works near utilities apparatus will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have. Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements.

Operational Stage

- All new foul and surface water drainage lines will be pressure tested and surveyed to identify any possible defects prior to being made operational.
- Water conservation measures such as the use of low flush toilets and low flow taps will be incorporated into the proposed dwellings to reduce water volumes and reduce the demand on public water supply and wastewater infrastructure.
- Once operational waste to be removed from the development will be by licenced waste contractors only.
- The surface water drainage strategy been designed to control the flow of storm water off site to 5 litres per second per hectare of land (98.2l/s) which is below the existing green field runoff rate of 149.4l/s
- Secure refuse and recycling store are proposed at ground floor level of the apartments in Neighbourhoods 2 and 6. Secure bin stores are located adjacent to duplexes in Neighbourhoods 1, 2 and 5. All residential waste generated within individual apartments will be brought by residents to the shared bin store area. This area will be easily accessible to residents. Residents will be required to segregate their waste beforehand and then use the appropriate bins provided.
- Bins will be provided within all units in the local centre. The retail units have dedicated storage areas where waste can be stored. Alternatively, waste can be stored here temporarily and moved to the shared bin store by the community centre by tenants. The doctor's surgery will have bins internally for general waste. This waste will be taken to the shared bin store as required.
- The crèche and community centre will use the dedicated waste store adjoining the community centre and crèche. There is additional ancillary waste storage area within

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the bin store adjoining the apartments in Neighbourhood 2. There is more than sufficient bin storage space between the two bin stores in the local centre to accommodate the apartments and commercial and community units.

- Full bins from the communal waste storage area will be removed by the appointed waste contractors. Set down areas for refuse collection are conveniently proposed close to the waste storage areas. All bins will comply with BS EN 840 2012 in order to ensure that the collection vehicles can service the bins, and all bins will have a fitted lid to prevent waste escaping from bins and generating litter.
- Bins within the storage area will be colour coded and labelled so that they are easily identifiable and to avoid cross contamination between the different waste streams. Informational signage will indicate what waste can be disposed of in what bin. Access to the bin storage area will be restricted to residents and waste contractors.

9A.7 Residual Impact

The construction stage of the proposed development will comprise of site clearance and preparation, excavation and the construction of the proposed development over six phases of development. The potential impacts associated with the construction stage of the proposed development on material assets are likely to be temporary and will cause minor disturbance. Provided mitigation measures are adhered to there is unlikely to be any adverse impacts on material assets during the construction stage and any residual impacts on the existing foul and waste systems would be temporary and minor.

Provided the mitigation measures proposed being implemented, the residual impacts on the foul and water systems during the operational stage are long term and imperceptible.

No significant impacts from either the construction or operational stages of the development are likely, as a consequence of the connection to the Power and Telecommunications networks.

9A.8 Monitoring

Once operational water usage within the proposed development will be monitored by water meters. Water usage will therefore be monitored by Irish Water to avoid leaks, breakages, etc.

Once operational the relevant service providers will be responsible for monitoring measures in relation to the power-supply and telecommunications infrastructure etc. The management company for the apartments will monitor the collection of waste from the apartments.

9A.9 References

Environmental Protection Agency (2017) Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft August 2017)

European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report

The following sources have been used to collate information on built services within the general area of the Site:

- Public Foul Drainage (Irish Water Records);

- Public Water Main Networks (Irish Water Networks)
- Electricity Supply Networks (ESB Networks);
- Telecommunications (Éir, Virgin Media etc).