Proposed Large Scale Residential Development at Rathgowan, Mullingar, Co. Westmeath

Applicant: Marina Quarter Ltd.

Volume II

Main Statement

CHAPTER 13

Material Assets:

Service Infrastructure & Utilities

August 2023

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

Table of Contents

13 Material Assets: Service Infrastructure & Utilities

13.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of material assets of the proposed residential development. This chapter details the existing environment, the proposed development, and the predicted impact on the environment. It will describe the methodology used to assess the potential impacts from the proposed development on the material assets in the study area, to describe baseline environment of the material assets in the study area, assess the likely impacts on these material assets, and sets out mitigation measures to be put in place to reduce the likely impacts of the material assets on the environment. This chapter considers the impacts on the material assets and not the people using the assets. People along with issues and impacts are discussed in Chapter 4 (Population and Human Health).

This chapter should be read in conjunction with Chapters 5, 6, 8, 9, 10, 11, 12, 16 and 17 of the EIAR and the Civil Design Report, the Outline Construction Traffic Management Plan, the Preliminary Construction Environmental Management Plan, the Construction Demolition & Operational Waste Management Plan and all engineering layouts and details submitted with the planning application and appended to this chapter.

Material Assets are resources that are valued and that are intrinsic to specific places. These may be economic assets of human or natural origin. With regard to Material Assets, the Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022) published by the Environmental Protection Agency (EPA) state:

> *'In Directive 2011/92/EU this factor 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.'*

Material Assets of a human origin include:

- Wastewater Network
- Surface Water Network
- Watermain Network
- Electricity Network
- Gas Network
- Telecom's infrastructure
- Waste

It is noted that Roads Infrastructure would also be classified as Material Assets. However, the Impact Assessment of Roads Infrastructure is dealt with in a separate chapter.

The proposed project is described in detail in Chapter 2 'Project Description'.

13.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Ryan Bragge and Michael Naughton (TOBIN Consulting Engineers) and Kieran Morley (Morley Walsh Consulting Engineers).

Ryan Bragge is a project engineer in the Building & Infrastructure sector with TOBIN. He also has over 25 years' experience in the building services industry also working across a number of projects in various sectors. Ryan has a degree in Civil Engineering from the University of Natal in South Africa where he is registered as a Professional Engineer with the Engineering Council of South Africa and is a full member of the South African Institute of Civil Engineering. His membership of Engineers Ireland is pending.

Michael Naughton is a design engineer in the Building & Infrastructure sector with TOBIN. He also has over 19 years' experience in the building services industry also working across a number of projects in various sectors. Michael has an honours degree in Civil Engineering from National University Galway and is a member of Engineers Ireland.

Ryan has been involved in EIARs for the following projects:

- Rathgowan, Mullingar Phase 3 (Glenveagh)
- Letterkenny Regional Sports Activity Hub (ATU Letterkenny)

Michael has been involved in EIARs for the following projects:

- Rathgowan, Mullingar Phase 3 (Glenveagh)
- Drumbiggil, Ennis (Glenveagh)

Kieran Morley is a director and senior building services Engineer with Morley Walsh Consulting Engineers. Kieran has over 16 years' experience in the building services industry and has worked across a broad spectrum of projects and industry sector with a particular focus on large scale residential development. Kieran has an honours degree in Building Services engineering and Post Graduate Diploma in Energy Management both from Dublin Institute of Technology. Kieran is also member of Engineers Ireland.

Kieran has been involved in the preparation of EIARs for the following projects:

- Rathgowan, Mullingar Phase 3 (Glenveagh)

13.3 Proposed Development

The full description of the proposed development is outlined in Chapter 2 'Development Description' of this EIAR.

The study area, which is 5.95 hectares in area, is located within the townland of Rathgowan within the development boundary of the town of Mullingar. The site is located to the northwest of the town centre. It is located to the south of the R394 (known locally as the 'c-link' road) which connects to the N4 to the north and N52 to the south. The site is accessible via the existing entrances off the roundabout on the R394.

The area surrounding the site is characterised by a mix of uses. The lands immediately adjoining the site to the east and south have been developed for residential use and generally comprise two-storey detached and semi-detached dwellings. The R394 or C-Link bounds the site to the north with agricultural land beyond. The site is bounded to the southwest the Ashe Road and an ESB substation. The site is relatively flat and comprises of grass with some hedgerows.

Permission was previously granted by Westmeath County Council for Phase 1 and 2 of a residential development (Planning References: 21/97 and 21/139). Both these phases 1 and 2 are currently at appeal stage with An Bord Pleanála. The current proposed LRD scheme will replace these two previously permitted applications.

Phase 3 of this residential development was granted in January 2023 by Westmeath County Council under the LRD system. This Phase is located northwest of the subject site, on the opposite side of the R394 and coincides with the development area of Phase 1 and 2. The layout, however, differs considerably to that of Phase 1 and 2.

13.3.1 Aspects Relevant to this Assessment

Material assets considered as part of this assessment include the following:

- Watermains
- Stormwater Infrastructure
- Wastewater Infrastructure
- Electricity Network
- Gas Network
- Telecom Infrastructure
- Solid Waste

13.4 Methodology

13.4.1 Relevant Legislation & Guidance

The Material Assets Assessment was prepared in accordance with relevant European Union and Irish legislation and guidance, and in accordance with Schedule 6 of the Planning and Development Regulations 2001 as amended (S.I. No. 600 of 2001) and conforms to the relevant requirements as specified therein.

The following guidelines were referred to while preparing this appraisal:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Environmental Protection Agency (EPA) (EPA 2022)
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA 2003) (and revised advice notes (EPA 2015b)
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government 2018); and

- Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Impact Assessment Report (European Commission 2017)
- Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03, 2020)
- Code of Practice for Water Infrastructure (IW-CDS-5020-03, 2020)
- Recommendations for Site Development Works for Housing Areas, 1998

13.4.2 Site Surveys/Investigation

The scope of the investigation consists of a desk study, surveys and correspondence with utility providers. An ITM-coordinated detailed topographical survey was carried out by Land Surveys and a GPR Utility survey carried out by Scantech Geoscience both provided by the Developer.

In addition, site investigation of ground conditions was carried out under TOBIN's instruction by IGSL. These surveys are the basis for design of services for the scheme.

13.4.3 Consultation

Water Services information (surface water drainage, foul water drainage and watermains supply) was received from Irish Water and Westmeath County Council.

Morley Walsh reviewed the existing utilities (i.e., ESB, Gas & Telecoms) in the vicinity of the site to identify the serving of the development from same and any potential impacts of existing infrastructure. They also engaged with local engineers from Gas Networks Ireland and ESB to ascertain this information and access existing records in the vicinity of the development.

Mapping, where provided by these organisations, was overlaid with the project mapping and assessed.

13.5 Difficulties Encountered

While the information received was readily available, much of the mapping was drawn from GIS data that is known to have an 'indicative only' status. It is deemed suitable for planning purposes but requires ground-truthing for detailed design.

13.6 Baseline Environment

The proposed development consists of what is referred to as the 'current phase' of a broader development circa 394 no. residential units (all phases combined) and is located to the south of the C-Link Road. The phase north of the C-Link Road is referred to as Phase 3. While Phase 3 does not form part of the current planning application, it is a dominant component of the immediate environment within which the current phase is located, particularly in respect of utilities and services.

Also proposed is the provision of public realm landscaping including shared public open space and play areas, public lighting, resident car and bicycle parking, pedestrian and vehicular links throughout the development and cycle lane on the R394.

Vehicular access to the proposed development will be via the existing roundabout at the site boundary from the R394. The proposed access road width is 5.5m with 2m wide footpaths on both sides providing pedestrian access to the development. All internal roads have been designed in accordance with the requirements of Design Manual for Urban Roads and Streets and the Recommendations for Site Development Works for Housing Areas.

As part of this application, an additional pedestrian-only access will be provided at the western boundary of the site at the junction of the C-link road and Ashe Road. A segregated pedestrian/bicycle entrance will also be provided from Ashe Road at the southeast of the site. These access points will increase pedestrian and bicycle permeability through the proposed development.

A 150mm ø watermain connection from the existing 400mm ø watermain which runs along the R394 is proposed for the development. The 150mm ø watermain will run parallel to the main arterial road with 100m ø branches servicing the dwellings on the link streets. An existing 225mm diameter foul sewer runs within the site along the southern site boundary. It is proposed that wastewater generated from the proposed developments will discharge to this sewer via a gravity sewer. Due to site topography and constraints, it is proposed to provide a wastewater pumping station within the site to raise the wastewater generated by some dwellings prior to discharge to the onsite gravity network. This pumpstation has been included in the Phase 3 planning grant. The design thereof, however, allowed for the servicing of flows from Phase 3 as well as from the current phase.

13.6.1 Wastewater Drainage

There are no records or evidence of any foul water infrastructure within the proposed site. It is proposed to discharge the foul flow from the site to the existing external infrastructure. The proposed foul network has been designed in accordance with the Irish Water Specification and a Statement of Design Acceptance will be sought from Irish Water.

13.6.2 Surface Water Drainage

There is limited existing surface water control on the existing site. There is no piped surface water network and existing storm water controls are limited to the heads of land drains constructed as part of the Brosna Arterial Drainage Scheme under the 1945 Arterial Drainage Act (occurring largely in Phase 3). However, during site inspections, these drains were found to be dry and were presumably originally only precautionary in nature.

It is evident that existing rainwater drainage from the site is by means of direct infiltration and percolation into the existing agricultural ground. The local groundwater flow direction is likely to mirror the site topography and catchment drainage. It is proposed to discharge surface water from the site to the existing surface water drainage infrastructure. The current site will be divided into a number of catchment areas and each area will be attenuated to reflect the greenfield run-off rate.

13.6.3 Watermain Network

There is an existing pipeline on the adjacent roads of 100mm uPVC located on the Ashe Road, and a 400mm Asbestos pipeline on the R394 both of which are owned and controlled by Irish Water.

Uisce Eireann have provided a Confirmation of Feasibility for the current phase confirming that a connection is feasible to the 400mm Asbestos pipeline to supply the water demand for the development.

13.6.4 Electricity Supply

There are existing power lines running along the eastern boundary of the site, this development proposes to underground the power line. There is a 10kV line running from south to north through the site that will also need to be undergrounded. It is proposed to provide 2 no. 125mm ESB red band ducts to location of existing poles to be jointed and diverted to run underground.

There will be new substations constructed on site to cater for the new development load. The proposed substations will provide power to several mini pillars which will provide power to the residential dwellings. Each mini pillar will serve a maximum of 8 no. dwellings and will be fed via a LV network ducted in accordance with ESB specifications for underground services.

All of the proposed residential units will be served by electric air-to-water heat pumps due to the requirement to meet Part L of the Building Regulations, of which L1 states that '*a building shall be designed and constructed so as to ensure that the energy performance of the building is such as to limit the amount of energy required for the operation of the building and the amount of carbon dioxide (CO2) emissions associated with this energy use insofar as is reasonably practicable*'. Heat pumps run at an energy efficiency of approximately 400% by which they are considered a renewable form of energy. All heat pumps will comprise invertor technology to reduce start up current and peak loading on the electrical network.

13.6.5 Natural Gas

There is no existing gas main at the site laid and it is not proposed to connect the development to natural gas infrastructure.

13.6.6 Telecoms / Communications

Telecoms ducting and cables will be laid within the development site during the construction stage. Prior to the operational phase of the development this internal network will be connected to the local infrastructure of one or more of the telecoms providers in the area.

A minimum of 2 ducted networks will be provided to allow for choice and competition for the end user. The underground network will consist of 110mm HDPE duct work connecting JB4 manholes with each JB4 manhole serving up to 8 dwellings.

- Possible Effect: Trench excavations will be relatively shallow and temporary, although extensive about the site. The main risk will be from surface water runoff from bare soil and soil storage areas during construction works. Construction activities can result in the release of suspended solids to local drainage features and can result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Surface waters are expected to stay within the site boundary and percolate through the soil/subsoil.

- Significance of impact: Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work. Prior to the commencement of earthwork silt fencing will be placed down-gradient of the construction areas where drains or drainage pathways are present. These will be embedded into the local soils to ensure all site water is captured and filtered. Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses and only in lengths that can be safely closed within the same working shift. The impact is therefore imperceptible.

13.6.7 Road Network

The proposed development can be accessed from the R394 Road and the Ashe Road. The access to the site is situated within a 50km/h urban speed zone. The R394 has a width of approximately 8.0m in the vicinity of the access to the development site. The R394 also provides a 2m wide raised footpath either side of the road.

13.6.8 Waste

The site is a greenfield with no waste facilities. There are currently waste collectors collecting the waste from the dwellings north of the development and it is anticipated that during the operational phase a similar plan will be in place.

13.7 Characteristics of Proposed Development

The proposed project is described in detail in Chapter 2 'Project Description'.

13.7.1 Proposed Wastewater Drainage

The two foul sewer networks across Phase 3 and the current phase are required to convey wastewater generated from the proposed development to existing external wastewater mains on the south and to the north of the site. The proposed foul sewer networks are presented on drawings:

- Proposed Drainage Layout Sheet 1 of 2 - (10906-2503),
- Proposed Drainage Layout Sheet 2 of 2 – (10906-2504)
- Proposed Rising Main and Storm Culvert Connection – (10906-2505)
- Standard Manhole Details Sheet 1 of 2 – (10906-2519)
- Standard Manhole Details Sheet 2 of 2 – (10906-2520)
- Standard Pipe Bedding Details – (10906-2521)
- Typical Site Work Details – (10906-2523)
- Proposed Foul Manhole & Drainage Schedule – (10906-2525)

(Phase 3 construction layouts have been designed by JOR Consulting Civil & Structural Engineers, subject to the planning grant approvals.)

In general, the northern half of the site gravitates to a wastewater pumping station located to the north of the current phase of the development. The pumping station has been designed to cater for circa. 181 units (including a crèche) from ex. Phase 1, ex. Phase 2 (equivalent to the current phase)

and Phase 3. Of these, 82 units are from the current phase. From here the wastewater will be pumped through a 100mm ø rising main to a discharge manhole located at north of the development along the C-Link Road from whence it gravitates to an existing Irish Water-owned gravity network. The remainder of units in the current phase gravitate to an existing 225mm ø gravity foul sewer main running along Ashe Road.

The pipework for the wastewater drainage system has been designed to provide for six times the dry weather flow for the combined phases in accordance with the Irish Water Code of practice and standard details. The proposed foul sewer networks have been designed using MicroDrainage 2018.1.1 and Causeway Flow modelling software. The results and outputs from the modelling can be found in the Civil Design Reports for each of the three phases.

- Possible Effect: Release of effluent from wastewater systems has the potential to contaminate groundwater and surface water.
- Significance of impact: Under the normal operation of the wastewater system, the impact on surface water or groundwater quality is imperceptible.

13.7.2 Proposed Surface Water Drainage

The proposed storm water drainage system has been designed to cater for all surface water runoff from all hard surfaces within the proposed development including roadways, roofs, parking areas etc. All stormwater generated on site will flow by gravity through a Petrol Interceptor to remove any hydrocarbons present. The separators have been sized to cater for the impermeable areas, i.e., roads, car parking and footpath areas of the site for which they have been designed. The current phase (east of the R394) and, as part of the planning grant, the northern-most storm sewer network in Phase 3 (west of R394) discharge to an existing 750mm concrete storm sewer along the R394. The remainder of Phase 3 discharges into an infiltration basin adjacent the Phase 3 access point, from whence an overflow outfall ties into the same 750mm concrete storm sewer located along the R394.

It is proposed to install the stormwater attenuation pond on site to allow for a controlled discharge northeast to the proposed overflow network. The combined discharge rate shall not exceed the greenfield runoff rate of 2 l/s/ha. The storm water drainage design has been undertaken using MicroDrainage and Causeway Flow modelling software. The analysis considered the 100-year return period plus an additional 20% to account for the effects of climate change.

The detention swales are proposed within the green areas above attenuation tanks to provide an emergency overflow relief mechanism and a local amenity to residents that is aesthetically pleasing.

The maximum and minimum stormwater pipe gradients will be between 1/30 and 1/300. All velocities at said gradients will fall within the limits of 0.75m/sec and 3m/sec as set out in “Recommendations for Site Development Works” as published by the Department of Environment.

- Possible Effect: Replacement of the greenfield surface with hardstand surfaces will result in an increased risk of pluvial flooding due to low permeability surfaces which will inhibit any downward percolation of rainwater. All surface water arising on site will drain to a stormwater attenuation tank and pond/bioswale at a controlled rate.

- Significance of impact: The risk of pluvial flooding is minimised by the drainage network set-up, controlled discharge rate as per the greenfield runoff-rate, gullies strategically located and the use of the retention pond for surface water storage. Designed run-off equates to that of the calculated greenfields value. The impact, therefore, is slight to imperceptible.

- Possible Effect: Release of pollutants and hydrocarbons from surface water runoff on impermeable areas.
- Significance of impact: The risk of hydrocarbons and pollutants entering the natural watercourse is eliminated by the introduction of a petrol/oil interceptor prior to discharging to the attenuation tank and pond/bioswale. The impact is therefore classed as imperceptible.

13.7.3 Proposed Watermain Network

The watermain layout has been designed in accordance with Irish Water Code of Practice for Watermain Infrastructure IW-CDS-5020-03. The water supply required for the proposed development shall be delivered via a 150mm ø spine watermain as per Irish Water requirements laid parallel to the main arterial street.

Current Phase: This phase contains a 150mm spine. It is proposed to connect the 150mm ø main spine to the 400mm asbestos watermain on the C-Link Road (R394), north-west of the proposed site (current phase) entrance.

The 100mm ø PE watermain branches from this spine main will service dwellings on link streets within the development.

- Possible Effect: Excavations will be relatively shallow and temporary. The main risk will be from surface water runoff from bare soil and soil storage areas during construction works. Construction activities can result in the release of suspended solids to local drainage features and can result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Surface waters are expected to stay within the site boundary and percolate through the soil/subsoil.
- Significance of impact: Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work. Prior to the commencement of earthwork silt fencing will be placed down-gradient of the construction areas where drains or drainage pathways are present. These will be embedded into the local soils to ensure all site water is captured and filtered. Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses. The impact is therefore slight to imperceptible.

13.7.4 Electricity Overview

New electricity services infrastructure will be put in place to serve the proposed housing development. This will consist of a ducted underground network comprising 125mm ESB red band ducts from each sub-station laid in circuits to individual mini pillars. Each mini pillar will serve up to 8 dwellings via a ducted 50mm underground house service connection. Final design is subject to ESB confirmation. All

installations to be carried out in accordance with IS10101 and ESB Code of Practice. Trench and duct installation in relation to the ESB Scope of Works to be carried out in accordance with ESB Networks Technical Guidance Document Current Edition Code of Practice. Prior to back filling and making good ESB Trench the contractor shall request ESB attendance to site to review and approve ducting provision.

- Possible Effect: Trench excavations will be relatively shallow and temporary, although extensive about the site. The main risk will be from surface water runoff from bare soil and soil storage areas during construction works. Construction activities can result in the release of suspended solids to local drainage features and can result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Surface waters are expected to stay within the site boundary and percolate through the soil/subsoil.
- Significance of impact: Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work. Prior to the commencement of earthwork silt fencing will be placed down-gradient of the construction areas where drains or drainage pathways are present. These will be embedded into the local soils to ensure all site water is captured and filtered. Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses and only in lengths that can be safely closed within the same working shift. The impact is therefore imperceptible.

- Possible Effect: Risk of interruption to existing services as a result of faults or after during installation as a result of poor workmanship, materials, design or extraneous influences.
- Stringent quality controls govern the design, materials fabrication and installation of this infrastructure. Causes of faults are therefore significantly limited to extraneous factors. The risk is therefore low, while the impact is moderate to high, but this is limited to the case of faults being caused by, and coinciding with, severe storm events.

13.7.5 Natural Gas Overview

The proposed project will not require any gas connections. Neither is there any existing gas infrastructure within the vicinity of the proposed development.

13.7.6 Telecoms Overview

New telecom services infrastructure will be put in place to serve the housing development. Trench and duct installation in relation to the Eir/Virgin scope of Works to be carried out in accordance with Eir & Virgin design guidelines (current edition). Prior to back filling and making good Eir/Virgin trench the contractor shall request utility provider attendance to site to review and approve ducting provision.

- Possible Effect: Trench excavations will be relatively shallow and temporary, although extensive about the site. The main risk will be from surface water runoff from bare soil and soil storage areas during construction works. Construction activities can result in the release of suspended solids to local drainage features and can result in an increase in the

suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Surface waters are expected to stay within the site boundary and percolate through the soil/subsoil.

- Significance of impact: Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work. Prior to the commencement of earthwork silt fencing will be placed down-gradient of the construction areas where drains or drainage pathways are present. These will be embedded into the local soils to ensure all site water is captured and filtered. Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses and only in lengths that can be safely closed within the same working shift. The impact is therefore imperceptible.

13.7.7 Road Network

All internal roads have been designed in accordance with the requirements of Design Manual for Urban Roads and Streets and the Recommendations for Site Development Works for Housing Areas. Autotrack vehicle swept path analysis has been completed for the proposed site layout for Large Car and Refuse Truck and Fire Tender to ensure the vehicles can safely manoeuvre around the site.

Road levels for the site will be proposed taking cognisance of the existing topography and ground conditions. All roads shall be constructed on a suitable bearing with a road construction makeup as per detail shown on drawings 10906-2506, 2507 & 2523. All roads will include a 1:40 camber from the centre of the road and longitudinal gradients of road sections lie between 1:21 and 1:200 to ensure adequate surface water drainage is achieved.

Lockable road gullies will be located, at a minimum, every 200m² with local low points allowing for double gullies as per Recommendations for Site Development Works for Housing Areas to ensure surface water drainage will not be blocked.

The use of shared surfaces raised junction and pedestrian crossing points along with strategically positioned drop kerbs and tactile paving will allow for full linkage for visually impaired and less-able pedestrians while also prioritising pedestrian movements over vehicular movements.

The vehicular access to the site will be off the existing formed entrance to the roundabout on the C-Link Road. Pedestrian and bicycle access to the proposed development will be provided adjacent to the vehicular access from the R394 roundabout and via a purpose-built pedestrian/cycleway from Ashe Road.

- Possible Effect: Excavations will be relatively shallow and temporary, although extensive about the site. The main risk will be from surface water runoff from bare soil and soil storage areas during construction works. Construction activities can result in the release of suspended solids to local drainage features and can result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Surface waters are expected to stay within the site boundary and percolate through the soil/subsoil.

- Significance of impact: Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work. Prior to the commencement of earthwork silt fencing will be placed down-gradient of the construction areas where drains or drainage pathways are present. These will be embedded into the local soils to ensure all site water is captured and filtered. Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses. The impact is therefore slight to imperceptible.

13.7.8 Existing Properties

The site of the proposed development (current phase) is a 5.95 Ha. There are residential receptors within 100m of the proposed development site. The closest receptors are on the R394 to the northeast of the site.

- Possible Effect: Construction noise or dust being carried to neighbouring properties.
- Significance of impact: Site management will include numerous safe-working and environmental-welfare procedures (including dust-suppression) which will be monitored and enforced by various mechanisms. Construction noise will be periodic, generated only for the minimum period required and only during working hours. The impact is therefore slight.

13.7.9 Waste

The site is a greenfield with no waste facilities. There are currently waste collectors collecting the waste from the dwellings located to the south and west of the proposed development and it is anticipated that during the operational phase a similar plan will be in place.

- Possible Effect: Construction packaging has the potential to become airborne or waterborne, and could, without the adequate controls during construction, find their way into watercourses causing pollution and impediments to natural surface water flow, or into neighbouring properties.
- Significance of impact: Management, containment and handling of construction waste will be undertaken during construction work strictly in accordance with the Construction Environmental Management Plan. The impact is therefore slight to imperceptible.

- Possible Effect: Domestic waste has the potential to become airborne or waterborne, or present a health risk commonly associated with exposure.
- Significance of impact: Management, containment and handling of domestic waste will be undertaken in accordance with the existing services already offered to adjacent residential development. The impact is therefore slight to imperceptible.

- Possible Effect: Contaminated backfill of service trenches can cause instability to service lines.
- Significance of impact: Management, containment and handling of construction waste will be undertaken during construction work strictly in accordance with the Construction Environmental Management Plan. A waste sampling strategy is to be employed by the

Contractor to ensure all backfill material is inert. The impact is therefore slight to imperceptible.

13.7.10 Estimated Earthwork Volumes

Removal of the existing topsoil layer will be required. It is expected that all stripped topsoil will be reused on site. Estimated volumes have been stated elsewhere in this EIAR. It is noted that earthworks calculations are this stage of design are high-level estimations and that a full cut and fill exercise would be needed to establish exact volumes.

A construction waste management plan has been prepared and forms part of this application as a separate document. Soil and stones typically make up a significant proportion of construction waste. It is anticipated that the majority of excavation wastes will be re-used on site for landscaping and site restoration purposes. Any bedrock excavated shall be tested and if suitable re-used as fill under roads and footpaths.

- Possible Effect: Excavations will be relatively shallow and temporary, although extensive about the site. The main risk will be from surface water runoff from bare soil and soil storage areas during construction works. Construction activities can result in the release of suspended solids to local drainage features and can result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Surface waters are expected to stay within the site boundary and percolate through the soil/subsoil.
- Significance of impact: Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work. Prior to the commencement of earthwork silt fencing will be placed down-gradient of the construction areas where drains or drainage pathways are present. These will be embedded into the local soils to ensure all site water is captured and filtered. Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses. The impact is therefore slight to imperceptible.

13.8 The 'Do nothing' Scenario

The "Do Nothing" scenario refers to what would happen if the proposed development was not implemented. In this scenario, the effects described in this chapter would not arise and for this reason the 'do-nothing' scenario is considered to have a neutral effect with regards to utilities. The 'do-nothing' scenario is therefore not addressed further in this chapter.

As with the above, all utility companies have indicated that there is no intention to undertake network improvements in the vicinity other than standard maintenance or repairs if the development is not pursued.

13.9 Potential Significant Effects

13.9.1 Construction Phase

Wastewater contamination of groundwater and surface water:

- Possible Effect: Release of effluent from wastewater systems has the potential to contaminate groundwater and surface water.

Increased risk of pluvial flooding:

- Possible Effect: Replacement of the greenfield surface with hardstand surfaces will result in an increased risk of pluvial flooding due to low permeability surfaces which will inhibit any downward percolation of rainwater. All surface water arising on site will drain to a stormwater attenuation tank and pond/bioswale at a controlled rate.

Hydrocarbon pollution:

- Possible Effect: Release of pollutants and hydrocarbons from surface water runoff on impermeable areas.

Excavation-related silt migration:

- Possible Effect: Excavations (bulk or trench) will be relatively shallow and temporary, although extensive about the site. The main risk will be from surface water runoff from bare soil and soil storage areas during construction works. Construction activities can result in the release of suspended solids to local drainage features and can result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Surface waters are expected to stay within the site boundary and percolate through the soil/subsoil.

Construction waste dispersal:

- Possible Effect: Construction packaging has the potential to become airborne or waterborne, and could, without the adequate controls during construction, find their way into watercourses causing pollution and impediments to natural surface water flow, or into neighbouring properties.
- Possible Effect: Contaminated backfill of service trenches can cause instability to service lines.

Electrical faults:

- Possible Effect: Risk of interruption to existing services as a result of faults or after during installation as a result of poor workmanship, materials, design or extraneous influences.

Dust/noise:

- Possible Effect: Construction noise or dust being carried to neighbouring properties.

13.9.2 Operational Phase

Domestic waste dispersal:

- Possible Effect: Domestic waste has the potential to become airborne or waterborne, or present a health risk commonly associated with exposure.

Electrical faults:

- Possible Effect: Risk of interruption to existing services as a result of faults or after during installation as a result of poor workmanship, materials, design or extraneous influences.

13.9.3 Cumulative Effects

None of the construction Phase effects are cumulative. (This includes the cumulative effect of Phase 3.)

Cumulative operational effects are limited to those associated with domestic waste.

13.10 Mitigation

13.10.1 Construction Phase Mitigation

Wastewater contamination of groundwater and surface water:

- Significance of impact without mitigation: Under the normal operation of the wastewater system, the impact on surface water or groundwater quality is imperceptible.
- Significance of impact with mitigation: None required.

Increased risk of pluvial flooding:

- Significance of impact without mitigation: Short term but potentially severe.
- Significance of impact with mitigation: The risk of pluvial flooding is minimised by the drainage network set-up, controlled discharge rate as per the greenfield runoff-rate, gullies strategically located and the use of the retention pond for surface water storage. Designed run-off equates to that of the calculated greenfields value. The impact, therefore, is slight to imperceptible.

Hydrocarbon pollution:

- Significance of impact without mitigation: Ongoing and moderate to severe.
- Significance of impact with mitigation: The risk of hydrocarbons and pollutants entering the natural watercourse is eliminated by the introduction of a petrol/oil interceptor prior to discharging to the attenuation tank and pond/bioswale. The impact is therefore classed as imperceptible.

Excavation-related silt migration:

- Significance of impact without mitigation: Short term and slight.

- Significance of impact with mitigation: Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work. Prior to the commencement of earthwork silt fencing will be placed down-gradient of the construction areas where drains or drainage pathways are present. These will be embedded into the local soils to ensure all site water is captured and filtered. Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses. The impact is thereby mitigated slight to imperceptible levels.

Construction waste dispersal:

- Significance of impact without mitigation: Temporary but moderate to severe.
- Significance of impact with mitigation: Management, containment and handling of construction waste will be undertaken during construction work strictly in accordance with the Construction Environmental Management Plan. In the case of backfill material, a waste sampling strategy is to be employed by the Contractor to ensure all backfill material is inert. The impact is thereby mitigated slight to imperceptible levels.

Electrical faults:

- Significance of impact without mitigation: Temporary but moderate to severe.
- Significance of impact with mitigation: Stringent quality controls govern the design, materials fabrication and installation of this infrastructure. Causes of faults are therefore significantly limited to extraneous factors. The risk is therefore low, while the impact is moderate to high in the case of faults being caused by and coinciding with severe storm events.

Dust/Noise experienced by neighbours:

- Significance of impact without mitigation: Temporary and moderate.
- Significance of impact with mitigation: Site management will include numerous safe-working and environmental-welfare procedures (including dust-suppression) which will be monitored and enforced by various mechanisms. Construction noise will be periodic, generated only for the minimum period required and only during working hours.

13.10.2 Operational Phase Mitigation

Domestic waste dispersal:

- Significance of impact without mitigation: Ongoing and moderate to severe.
- Significance of impact with mitigation: Management, containment and handling of domestic waste will be undertaken strictly in accordance with the Operational Environmental Management Plan. The impact is thereby mitigated slight to imperceptible levels.

Electrical faults:

- Significance of impact without mitigation: Temporary but moderate to severe.

- Significance of impact with mitigation: Stringent quality controls govern the design, materials fabrication and installation of this infrastructure. Causes of faults are therefore significantly limited to extraneous factors. The risk is therefore low, while the impact is moderate to high, but this is limited to the case of faults being caused by, and coinciding with, severe storm events.

13.10.3 Cumulative Mitigation

The only identified negative Significant Cumulative Effect is that associated with poorly managed domestic waste during the operational stage. This is somewhat self-regulating, in that the effect thereof is felt by the residents who will necessarily have management structures in place to address these issues. This effect is also addressed by national and local regulations, thereby providing a ready mechanism for enforcement of necessary mitigation measures.

13.11 Residual Impact Assessment

13.11.1 Construction Phase

The construction stage of the proposed development will comprise of site clearance and preparation, excavation and the construction of the proposed 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/short term disturbance. Provided mitigation measures are adhered to as part of this development, 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 slight.

13.11.2 Operational Phase

The proposed development will have a positive impact on the surrounding environment by providing much needed housing in the area and meeting the needs of the growth population.

The loading in the wastewater and watermains from the proposed development will be adequately accommodated in the foul and watermain network. Upgrade works to the nearby wastewater treatment plant will be beneficial to developments in the surrounding area.

In compliance with the SUDS manual the runoff from the development will mimic the existing greenfield run off and hence have no impact in the surrounding network. Improved controls on the surface water along with silt management and/or silt traps the proposed development will result in an improvement in the quantity and quality of discharge off site.

13.11.3 Cumulative Impact

The only identified negative Significant Cumulative Effect is that associated with poorly managed domestic waste during the operational stage. This is somewhat self-regulating, in that the effect thereof is felt by the residents who will necessarily have management structures in place to address these issues. This effect is also addressed by national and local regulations, thereby providing a ready

mechanism for enforcement of necessary mitigation measures. Therefore, the residual impact following implementation of mitigation measures is long-term but imperceptible to slight.

13.12 Risk of Major Accidents or Disasters

13.12.1 Electrical

The presence of the ESB substation and the high voltage lines present a risk of high impact but, considering the stringent regulations and codes of practice governing the installation and operation of these utilities, offer a low likelihood of occurrence. The risk of a major accident is therefore considered moderate, subject to the observation of these mitigating factors.

13.12.2 Wastewater Spillage

The presence of the proposed wastewater pumpstation constitutes a risk of moderate impact but, considering the standards to which this pumpstation would be required to be constructed and managed (being those of Irish Water), the likelihood of occurrence is low. The risk of a major accident is therefore considered low, subject to the observation of these mitigating factors.

13.13 Significant Interactions

13.13.1 Population & Human Health

Construction Phase: Weak negative interaction with adjacent population due to disruption of services during construction.

Operational Phase: Strong positive interaction with adjacent and occupant population with the provision and upgrade of services and service links.

13.13.2 Soils & Geology

Construction Phase: Weak neutral interaction due to earthworks operations during construction.

Operational Phase: No interaction.

13.13.3 Hydrology & Hydrogeology

Construction Phase: Weak negative interaction with increased potential for accelerated run-off, silt loading of surface water, and possible disruption of groundwater flows during construction.

Operational Phase: Weak neutral interaction with disruption of natural surface flows limited to the extends of the site.

13.13.4 Air Quality & Climate Change

Construction Phase: Weak negative interaction with potential for increased rainfall to disrupt construction activities.

Operational Phase: No interaction.

13.13.5 Noise & Vibration

Construction Phase: Some negative interaction due to earthworks and construction activities generating noise and vibration during construction.

Operational Phase: No interaction.

13.13.6 Landscape & Visual Impact

Construction Phase: Weak negative interaction with temporary unsightliness of construction activities during construction.

Operational Phase: Strong positive interaction from aspects of landscaping forming part of the stormwater controls.

13.13.7 Material Assets: Traffic & Transport

Construction Phase: Some negative interaction with disruption of service roads due to increased construction traffic and the laying of services across roadways requiring temporary and partial closure of lanes during construction.

Operational Phase: No interaction.

13.13.8 Biodiversity

Construction Phase: Some negative interaction with transformation of the site from the current usage.

Operational Phase: Potential weak negative interaction with transformation of the site from the current usage. It is noted, however, that the aims of the proposed landscaping would, in part, address the rehabilitation of the site to an environmentally desirable state. Comments listed here are subject to these efforts.

13.13.9 Cultural Heritage & Archaeology

Construction Phase: No interaction.

Operational Phase: No interaction.

(These comments are based on findings of earlier site assessments that rule out the presence of culturally or archeologically significant artifacts.)

13.14 References & Sources

- Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022).
- Code of Practice for Water Infrastructure (IW-CDS-5020-03), July 2020 (Revision 2), Irish Water.
- Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03), July 2020 (Revision 2), Irish Water.
- Design Manual for Urban Roads and Streets (DMURS), Department of Transport, Tourism & Sport / Department of Housing, Planning & Local Government, Government of Ireland.
- CIRIA SuDS Manual 2015.

13.15 Appendix

- Civil Design Report
- Preliminary Construction Environmental Management Plan
- Outline Construction Traffic Management Plan
- Construction Demolition & Operational Waste Management Plan
- Civil engineering layouts and details