

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

NON-TECHNICAL SUMMARY

PROPOSED DUNSHAUGHLIN EAST STRATEGIC HOUSING DEVELOPMENT

AT

DUBLIN ROAD, DUNSHAUGHLIN, COUNTY MEATH



JSA John Spain Associates
Planning & Development Consultants
Chartered Town Planners & Chartered Surveyors

In Association with:

MCORM Architects | JOR Consulting Engineers | DOT Landscape
Consultants | Byrne Environmental Consulting Ltd | Irish Archaeological
Consultancy | Hydrocare Environmental | Openfield Ecology | Digital
Dimensions

December 2018

Non-Technical Summary

INTRODUCTION

This Environmental Impact Assessment Report (EIAR) has been prepared in support of the proposed Dunshaughlin East Strategic Housing Development application for residential, neighbourhood centre and associated infrastructure on a site to the north of the Dublin Road, Dunshaughlin, Co. Meath, for Rockture 1 Limited, the applicant.

This document is a summary of the information contained in the EIAR. For detailed information and key mitigation and remedial measures please consult the full EIAR document.

Purpose of the EIAR

The objective of this EIAR is to identify and predict the likely environmental impacts of the proposed development; to describe the means and extent by which they can be reduced or ameliorated; to interpret and communicate information about the likely impacts; and to provide an input into the decision making and planning process.

The EIAR is the primary element of the Environmental Impact Assessment (EIA) process and is recognised as a key mechanism in promoting sustainable development, identifying environmental issues, and in ensuring that such issues are properly addressed within the capacity of the planning system.

The Requirement for an EIAR

Projects needing environmental impact assessment are listed in Schedule 5 of the Planning and Development Regulations 2001-2018.

Schedule 5 (Part 2) of the Planning & Development Regulations 2001-2018 set mandatory thresholds for each project class. Sub-section 10(b) (iii) and (iv) addresses 'Infrastructure Projects' and requires that the following class of project be subject to EIA:

- (b) (i) Construction of more than 500 dwelling units.

Category 10(b)(iv) refers to 'Urban development which would involve an area greater than 2 hectares in the case of business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.'

The proposed Strategic Housing Development comprises of *inter alia* the provision of 913 no. residential units across a range of typologies, and a neighbourhood centre, on a site of 28.3 hectares. Therefore the proposed development requires mandatory Environmental Impact Assessment. This EIAR is submitted in compliance with that requirement.

The following components are addressed in the EIAR:

- Introduction and Methodology,
- Project Description and Alternatives Examined,
- Population and Human Health,
- Archaeology and Cultural Heritage,
- Biodiversity,
- Landscape and Visual Impact,
- Land and Soils,
- Water,

- Air Quality and Climate,
- Noise and Vibration,
- Material Assets,
- Interactions of the Foregoing,
- Principle Mitigation and Monitoring Measures,
- Non-Technical Summary.

It is necessary to examine each of these sections of the environment with respect to the impacts that the proposed development may have on them.

In addition to the components required under Schedule 5 of the Planning & Development Regulations 2001-2018, this planning application has examined a number of additional areas (such as Traffic and Transportation and Flooding), which have helped inform the contents of this EIAR, and which are included as standalone reports with the planning application.

PROJECT DESCRIPTION AND ALTERNATIVES EXAMINED

Development Description

The proposed development consists of a residential development comprising of 913 no. residential units, a neighbourhood centre, including 2 no. retail units, a café / restaurant unit, a primary healthcare / gym, a community facility and a childcare facility, all associated open space, a section of the Dunshaughlin Outer Relief Road, internal roads, cycle and pedestrian infrastructure, services and all other associated development on a site of c. 28.3 hectares.

The 913 no. residential units proposed consist of 505 no. houses (single, two, and three storey), 186 no. duplex units (three storey), and 222 no. apartments (four and five storey).

The 505 no. houses proposed consist of the following:

- 45 no. 2-bedroom houses
- 382 no. 3-bedroom houses (including 4 no. bungalows)
- 50 no. 4-bedroom houses (including 5 no. bungalows)
- 28 no. 4/5-bedroom houses (three storey)

The 186 no. duplex units consist of the following:

- 20 no. 1-bedroom duplex units
- 84 no. 2-bedroom duplex units
- 73 no. 3-bedroom duplex units
- 9 no. 4-bedroom duplex units

The 222 no. apartments consist of the following:

- 50 no. 1-bedroom apartments
- 151 no. 2-bedroom apartments
- 21 no. 3-bedroom apartments

The proposed neighbourhood centre facilities consist of a childcare facility with a GFA of 1,282 sq.m, a community facility with a GFA of 180 sq.m, 2 no. retail units with GFA of 1,000 sq.m and 190 sq.m, a café / restaurant unit with a GFA of 370 sq.m, and a primary healthcare / gym unit with a GFA of 1,040 sq.m.

The development includes the delivery of a section of the Dunshaughlin Outer Relief Road from the Phase 1 site boundary to the northern site boundary, including connections to adjacent lands, improvements to a section of the Outer Relief Road delivered with the Phase 1 development to the south, a bus bay and toucan crossing on the Dublin Road, all associated open space, boundary treatment, internal roads, cycle and pedestrian infrastructure, foul and surface water drainage, a pumping station, attenuation tanks, car and cycle parking, ESB substations, other services and all other associated development.

Alternatives Examined

This chapter also includes a summary of alternatives which were considered for the proposed development of the subject lands. These options were considered as the scheme progressed and the key considerations and amendments to the design having regard to the key environmental issues pertaining to the lands are summarised in this section of the EIAR.

POPULATION AND HUMAN HEALTH

The 2014 EIA Directive (2014/52/EU) has updated the list of topics to be addressed in an EIAR and has replaced 'Human Beings' with 'Population and Human Health'. This chapter also meets the requirement for assessment of 'Human Beings', as set out in Schedule 6 of the Regulations.

Population (human beings) and Human Health is a broad ranging topic and addresses the existence, activities and wellbeing of people as groups or 'populations'. While most developments by people will affect other people, this EIAR document concentrates on those topics which are manifested in the environment, such as new land uses, more buildings or greater emissions.

- Economic Activity;
- Social Patterns;
- Land-Use & Settlement Patterns;
- Employment; and
- Health & Safety.

The proposed development will result in a generally positive alteration to the existing undeveloped green-field site in terms of the provision of residential unit, neighbourhood centre facilities, significant areas of open space and new road infrastructure to serve the growing need for quality housing in the area in accordance with the planning policy framework provided by the National Planning Framework, and at a local level the Meath County Development Plan and the LAP for Dunshaughlin. The proposed development will precipitate long term and positive impacts in respect of the health of future occupants. The proposed development will bring about an increase in population in the wider area, which has experienced muted growth during the 2011-2016 intercensal period.

The implementation of the range of remedial and mitigation measures included throughout this EIAR document are likely to have the impact of limiting any likely adverse environmental impacts of the construction and operational phase of the proposed development on population and human health.

ARCHAEOLOGY AND CULTURAL HERITAGE

Chapter 4 assesses the impact of the proposed development on features of archaeological and cultural heritage merit and proposes measures to safeguard these features. The assessment involved a desk study, field inspection, geophysical survey, and licenced archaeological test excavation within the proposed development area at Dunshaughlin.

The site is situated to the north of the R147 /Dublin Road immediately bordering 'The Willows Phase 1A, 1B and 1C' residential developments in Dunshaughlin townland, Co. Meath. The land comprises undeveloped pasture and arable fields with a slight south-facing slope, rising to a low peak in the north (c. 100m OD). The site is bound to the north and northwest by existing residential estates and the Dunshaughlin Business Park. The surrounding landscape is characterised by low land boggy pasture and arable land.

There are no recorded monuments situated within the application area although a *fulacht fia* ME044-010 is present c. 90m to the southeast. The zone of notification for the historic town of Dunshaughlin (ME044-033) extends c. 325m to the west; however only one sub-constraint is situated within a 1km radius, Motte ME044-033001 c. 390m to the west. The townland name Dunshaughlin derives from the foundation of a church by Bishop *Sechnall* or *Secuninus*, known as *Domhnach-Seachnall* (the church of Seachnall), sent to assist St. Patrick in AD 439. The marginal land to the north of the development area extends for at least 2km where the royal site of Lagore Crannóg ME038-027 is recorded. The wider environment includes the *Bru na Boinne* World Heritage Site situated c. 21km to the north and recent excavations c. 1-2km west along the route of the M3 have revealed evidence for prehistoric and medieval settlement. Recent archaeological investigations (geophysical survey, testing and monitoring) carried out within the footprint of Phases 1B and 1C of The Willows, to the immediate south of the proposed development area, have not revealed any archaeological features.

The historic mapping shows the area as open fields with some small outbuildings or lean-tos along the northern perimeter in the early 19th century. An old laneway, shown on the mapping appears to be fossilised as a truncated sunken track to the immediate north of the proposed development area. No evidence for features or structures of archaeological or built heritage were identified during a review of the aerial photos or field inspection. There are no Protected Structures recorded within the area of proposed development, with the nearest example comprising Sechnal House (MH044-213) located c. 160m west.

Geophysical survey was carried out across the entire development area which identified several anomalies of archaeological potential (licence 18R0012). The remains of two circular anomalies were noted in the northern fields, one of which was defined by two concentric circular ditches. Potential pit/linear/ deposits anomalies were also noted in the middle fields.

A programme of licenced archaeological test trenching (licence 18E0495) was undertaken that targeted all geophysical anomalies and accessible greenfield areas. A total of six areas containing features of archaeological potential (designated as AA1–6) were identified during testing, the most significant of which is a probable ring-barrow (prehistoric burial monument) in AA3. In addition, two spreads of burnt mound material were noted at AA1 and AA2, the former associated with two pits, and three single pits in AA4–6. These features are indicative of Bronze-Age habitation in the locale which correspond with the recorded *fulacht fia*, ME044-010, situated outside of the application area. The features in AA1-6 are heavily truncated and are considered on current evidence to be of local significance.

Due consideration was given to options for redesigning the development to avoid impacting AA1-6. Difficulties encountered by the design team included maintenance of appropriate density and layout, and the use of open space as attenuation. As such groundworks associated with the proposed development will have a direct significant negative impact on the *in-situ* archaeological remains in AA1–6.

The testing has indicated that the results of the geophysical survey are accurate, i.e. areas indicated as having no archaeology are confirmed as such, and as such we now have a good understanding of the site. There may, however, be direct negative impacts on previously unrecorded small-scale archaeological features or deposits that have the potential to survive beneath the current ground level outside of the tested areas. This will be caused by ground disturbances associated with the proposed development. Impacts may range from moderate negative to significant negative.

There are no features of architectural value situated within the proposed development area or its immediate vicinity therefore there is no potential impact to the built heritage resource.

Consideration has been given to the Phase 1B and Phase 1C developments in The Willows to the immediate south of the proposed development area. No archaeology was identified in either of these areas during investigations (Geophysical Survey, Test Trenching, and Monitoring) and as such there is no further cumulative impact of the three developments proceeding than that identified above.

The following pre-construction mitigation measures were formulated in consultation with the National Monuments Service of the Dept. of Culture, Heritage and the Gaeltacht, and deemed appropriate in this regard.

CH PRE-CONST 1: It is acknowledged that preservation in-situ of archaeological sites is the preferable option. However given the difficulties of redesigning the layout of the development, coupled with the truncated nature of the archaeological remains, preservation by record of the features in AA1–6 is recognised as an acceptable form of archaeological mitigation in this instance. This will be carried out by a licence-eligible archaeologist in consultation with the National Monuments Service. Full provision will be made available for the resolution of any archaeological remains, both on site and during the post excavation process, should that be deemed the appropriate manner in which to proceed.

CH PRE-CONST 2: A buffer of 10m surrounding the remains has been set out and these areas are considered to be the minimum excavation areas. No groundworks or construction works will be carried out within these area without prior consultation with the project archaeologist.

CH PRE-CONST 3: All topsoil stripping and ground disturbances associated with the proposed development will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works, further archaeological mitigation may be required such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoCHG.

There are no proposed mitigation measures during the operational phase of the project.

No mitigation is required regarding the built heritage resource.

The mitigation measures recommended above, including the monitoring of works by qualified archaeologists would support effective monitoring during construction to allow the further assessment of the scale of the predicted impacts and the effectiveness of the recommended mitigation measures. No monitoring is required during the post-development phase of works.

BIODIVERSITY

A review of the biodiversity of the site was carried out by OPENFIELD Ecological Services and this included a study of existing information from the area, consultation with staff from the Development Applications Unit of the Department of Arts, Heritage and the Gaeltacht and Inland Fisheries Ireland, and a series of site surveys. Site surveys were carried out in July 2017. July is within the optimal season for general habitat survey and for surveying breeding birds. Surveys for bats were undertaken in July 2018, for the optimal season, by Brian Keeley.

It was found that the site is not within or adjacent to any area that is designated for nature conservation at a national or international level. There are no plants recorded from the site that are listed as rare or of conservation value. There are no habitats that are examples of those listed on Annex I of the Habitats Directive. There are no alien invasive plant species as listed on Schedule 3 of SI No. 477 of 2011. The lands are in the catchment of the Broadmeadow River and drainage ditches lead to this river via the Rathoath Stream to the north of the site.

The site can be described as series of agricultural fields with traditional field boundaries, made up of hedgerows and treelines, some with accompanying drainage ditches. Overall the habitats on the site have been evaluated as 'low local value' although these field boundaries are of 'high local value'. The site contains no confirmed roost

locations for Bats although they are using the area for foraging and/or commuting. Tall trees provide some suitable roost locations. There was no evidence of Badgers using the site.

A total length of 1,690m of field boundary is to be removed to facilitate the development, while approximately 640m are to be retained. Good site management practices will ensure that pollution to water courses does not occur during the construction phase. Additional landscaping will compensate for the loss of habitat that will occur, including 700m of new hedgerow along with new meadow areas. With the suggested mitigation in place, the ecological impacts by this proposed development will be minor negative. There are no impacts that could affect any area designated for nature conservation.

LANDSCAPE AND VISUAL IMPACT

This section of the EIAR submission evaluates the likely effects on the landscape and visual environment of the proposed construction of a strategic housing development (SHD) located on the outskirts of the town of Dunshaughlin, Co. Meath.

A series of photomontages is included with the application to illustrate the physical and visual character of the proposed development as viewed from publicly accessible surrounding locations. The views are displayed as 'existing' and 'proposed'.

The site is located on the eastern development boundary of Dunshaughlin in the townland of Dunshaughlin. The subject lands, some 28.3 Ha, are currently under both grazing and tillage farmland, and lie to the east of Dunshaughlin Town. The site is accessed off the R147 which would have originally been the main road between Dublin and Cavan and which is now replaced by the M3 Motorway to the south west of the site. The local Lagore / Dunshaughlin Road runs to the north of the site. Dunshaughlin Business Park adjoins the site on the western boundary and the Maelduin, Coldrick's Pass and Kellett's Grove housing developments adjoin the north-western corner of the site. An earlier phase of the current Willows development lies to the south of the Strategic Housing Development (SHD) Lands. Mature tree lined boundary hedgerows surround the site to the west north and east with no definitive existing physical boundary between the site and the earlier development phase to the south. A wooden fence defines the eastern boundary to the lands. The subject lands are low lying and generally rise in a northerly direction. The northwest corner of the site is 105M OD and south-eastern corner is at approximately 97.00M OD.

The development will comprise of a mainly residential development with some retail and a crèche. The duplex and apartment sections of the development have the potential to be the most visible elements of the scheme particularly when set in a wider rural environment. The current phase of the Willows development on the southern boundary and the existing Dunshaughlin Business Park and Maelduin, Coldrick's Pass and Kellett's Grove estates to the west and north of the site create a developed edge to the site.

The proposed construction of a significant new residential development, including roads, open spaces and general infrastructure on undeveloped lands will lead to visual effects as follows: -

- General construction and traffic to and from the site
- The removal of hedgerows and green fields
- The appearance of new roadways, buildings and street lighting
- The provision and development of new landscape elements

The proposed development would create a significant change in the overall landscape from agricultural to residential.

The development has been designed to incorporate the visible architectural and engineering aspects of the proposals into a coherent landscaped entity reducing the negative visual aspects of the built environment by: -

- Creating separation from the existing commercial and residential elements to the west and north with a landscaped corridor including tree planting footpaths and cycleways.
- Providing significant areas of attractive active and passive open space throughout the development
- The restricting of the taller elements of the apartment blocks to the lower elevations of the site
- The retention of the mature hedgerows on the west and north of the site.

The main negative visual impacts will arise from the construction phase particularly to views from the Coldrick's Pass estate. The landscaped corridor to the north and west will develop over time creating a valuable open space.

There will be minimal negative visual impacts from the R147 and from the Dunshaughlin Business Park.

LAND AND SOILS

A review of the Land and Soil environmental elements of the site and proposed development was carried out by Hydrocare Environmental Ltd. The study considered the baseline soil and land data which was obtained from government sources and site investigation works for the proposed development.

Baseline description data used to describe the receiving environment has been sourced from the following resources:

- Environmental Protection Agency Mapping Viewers and Online Data Sources.
- Geological Survey of Ireland Mapping Viewers and Online Data Sources.
- Trial Pit Site Investigation Data carried out by Hydrocare Environmental Ltd.
- Site Specific Flood Risk Assessment Report by Hydrocare Environmental Ltd.
- Site Investigation Report by IGSL Ltd.
- OPW and Meath County Council Flood Mapping Databases.
- Site Walkover and Inspection.
- Irish Water in relation to Watermain and Wastewater Treatment.
- Topographical Survey.
- OSI historical mapping archive.

The subject lands on which development is sought, is currently used as agricultural farm land. The total land take of the development will be 28.3 hectares.

The subject land topography can be described as mildly undulating rising from South to North. The crown of the site is located ca. 700m from the southern boundary and 175m from the northern boundary. The elevation across the site varies from ca. 99mAOD to 105mAOD. A gently cross fall sloping downward from the west to east also exists.

A Site Investigation consisting of Trial Hole log data was undertaken across the site by Hydrocare Environmental Ltd. The investigation determined the soil and subsoil to be of a CLAY soil type down to 3m below ground level across the site. WTL in the Trial Hole logs varied across the site, ranging from 0.6m BGL to 1.5m BGL.

Previously permitted phases of 'The Willows' development on lands immediately adjacent to the proposed development site, had a detailed site investigation carried out prior to construction in 2017 by IGSL Ltd. The Site Investigation is in accordance with BS5930, Code of Practice for Site Investigation (1999) and appropriate Eurocodes. This site investigation also determined the soil to be of a CLAY soil type down to 3m below ground level across the site.

EPA, GSI mapping data of the proposed development site along with Trial Hole data carried out across the site confirm the underlying soil and subsoil to be of a CLAY type soil with low-permeability. No bedrock has been recorded to within 3m of the ground surface in the SI reports.

Dust and silt are potential contaminants relating to construction activities. Spillages of fuels, oils and greases, from tools and machinery are other potential sources of contamination to soils and water. The potential pathway for contamination to occur under scrutiny in this section is via, the soil i.e. infiltration or runoff. The potential receptors regarded as sensitive to contaminants are groundwater and surface water bodies.

The permeability of the subsoil is very low as determined from on-site infiltration testing, SI and as indicated on EPA mapping datasets for soil and subsoil. The groundwater quality is classified as good and is likely well protected by the poorly draining soils in this locality.

It is evident that 95% of the site area is considered to be well protected with low to moderate vulnerability classification per the Geological Survey of Ireland GSI. The further most NW corner of the development site, ca. 5% of the total site area, is located in high to extremely vulnerable classification land and should be given appropriate attention prior to construction to establish bedrock levels and mitigate any potential spillages in this location.

Any contamination instances during construction will likely occur in localised areas only, with effects likely to be negative if no remedial action is taken. The negative effect would be minor for small spillages due to the deep low permeable subsoils overlying the aquifer, which offers a high degree of protection to the aquifer. Implementing a construction and environmental management plan which focuses on restricting use of harmful substances, the containment of substances in segregated bunded locations and an emergency spillage remedial action procedure, will allow for the effect of such spillages to be reduced to a brief duration event with neutral overall effect once remedial action is taken.

Erosion of soils during the construction phase is highly likely if appropriate mitigation measures are not implemented. Topsoil contains a high quantity of nutrients, drainage qualities and is highly fertile. Topsoil should be removed and stockpiled to be used within the site for gardens and landscaped areas.

Stockpiling of topsoil and subsoil may result in runoff water with high quantities of silt. Silt can cause contamination and blockage of drainage networks and watercourses. Erosion of soil and subsoil will result in silt runoff which contains high quantities of nutrients and is likely to have a negative impact to local watercourses. The immediate receiving environment drains to the Broadmeadow River which is noted by the EPA to be of poor water quality status.

Stockpiling of soils will be temporary and localised, without mitigation a short term negative local impact to downstream watercourses is possible which is likely to have an short term negative effect on the Broadmeadow River water quality further downstream. It is recommended that soils are not stockpiled within 20m of drainage ditches, to mitigate this potential risk, which will be outlined as a mitigation procedure to be noted in the construction and environmental management plan.

Dust blown from dry soil mounds is likely from stockpiles of CLAY in summer months. The effect of CLAY blown particles are likely to have momentary to temporary negative impact. Dust suppression procedures, such as wetting the stockpile, and personal protection measures, must be detailed in the construction and environmental management plan.

The operation of the development is unlikely to have any significant effect with regards to the soils and hydrogeology. The development operation phase can be considered to generate a neutral, continuous effect with regards to land and soil.

The proposed development will have an estimated 10-year duration of construction. Over this time, the land use will change from agricultural lands to a Strategic Housing Development.

The construction of the development will have a minimal impact on soil, hydrogeology and geology once the appropriate mitigation and monitoring measures be implemented throughout the construction duration. Accidental spillages of oils, grease, fuels and chemicals used during the construction phase will have no long-term significant adverse effects on the soil, geology and hydrogeology when stored and used in a responsible manner. Any such spillages would have moderate negative input and will be short term in nature only once the appropriate mitigation measures to minimise impact are implemented.

Implementation of the mitigation measures outlined in the chapter will minimise potential adverse impacts of the construction phase to the land and soils environment. It is predicted that the construction phase is likely to have a neutral effect on the land and soils environment.

WATER

A review of the water environmental elements of the site and proposed development was carried out by Hydrocare Environmental Ltd, which considered environmental impacts to surface water and groundwater features. The study considered proposed foul water drainage, stormwater drainage and water supply and potential impacts to the water environment.

Baseline description data used to describe the receiving environment has been sourced from the following resources:

- Environmental Protection Agency Mapping Viewers and Online Data Sources.
- Geological Survey of Ireland Mapping Viewers and Online Data Sources.
- Trial Pit Site Investigation Data carried out by Hydrocare Environmental Ltd.
- Site Specific Flood Risk Assessment Report by Hydrocare Environmental Ltd.
- OPW and Meath County Council Flood Mapping Databases.
- Site Walkover and Inspection on three occasions in January 2018.
- Irish Water in relation to Watermain and Wastewater Treatment.
- Topographical Survey.
- OSI historical mapping archive.

Proposed foul and stormwater drainage and water supply will be provided in accord with the requirements of Meath County Council and in particular with the following:

- Greater Dublin Regional Code of Practice for Drainage Works
- Greater Dublin Strategic Drainage Study (GDSDS)
- Building Regulations (Part H)
- Irish Water Codes of Practice for Wastewater and Water Infrastructure
- CIRIA SUDS Manual C753
- Planning System and Flood Risk Management Guidelines

The subject lands on which development is sought, is currently used as agricultural farm land.

The proposed wastewater loading from the development can be catered for by the existing Irish Water wastewater treatment plant with details included within the proposed drainage design.

A detailed hydraulic model of the entire stormwater drainage system was carried out by JBA Consulting Ltd which deemed the entire development complies with current drainage regulations and flood risk management guidelines. The site is located within flood zone C and is not at risk of flooding up to the 100 year return period.

The existing soil type is a slow percolating CLAY and is classified by the EPA to have a low to medium vulnerability indicating a deep CLAY with low permeability overlies the aquifer. The aquifer is considered to be relatively well protected by the overlying CLAY subsoil and groundwater is likely to not be negatively impacted by the proposed development. The groundwater is currently categorized by the EPA to be of a good quality. There are no proposed foul water discharges to the ground. The proposed development must be constructed in accord with current best practice guidelines and mitigation measures outlined in the chapter are to be implemented.

The site is located within the Broadmeadow River Catchment. The Broadmeadow River has a poor quality status per the EPA. The Broadmeadow River is ca. 750m North of the proposed development and flows west to east towards Ratoath.

The proposed development is hydrologically connected to the Broadmeadow River via a series of small ditch drains including an OPW controlled channel. The OPW Channel is proposed to be partially diverted through the proposed development site, subject to OPW section 50 application prior to commencement of construction.

The potential for contamination of water bodies during construction activities is considered likely to have a negative effect on the water environment. Adequate controls must be implemented to mitigate the risks to contaminating the groundwater and surface water which should be included in the construction and environmental management plan.

Any contamination instances during construction will likely occur in localised areas only, with effects likely to be negative if no remedial action is taken. The negative effect would be slight due to the deep low permeable subsoils overlying the aquifer, which offers a high degree of protection to the aquifer. Implementing a construction and environmental management plan which focuses on restricting use of harmful substances, the containment of substances in segregated bunded locations and an emergency spillage remedial action procedure, will allow for the effect of such spillages to be reduced to a brief duration event with only a short-term slight negative effect overall.

Stockpiling of topsoil and subsoil may result in runoff water with high quantities of silt. Silt can cause contamination and blockage of drainage networks. The immediate receiving environment drains to the Broadmeadow River which is noted by the EPA to be of poor water quality status.

As the stockpiling of soils will be temporary and localised, a temporary negative effect to the water quality of the Broadmeadow River is possible if no mitigation measures are taken during construction. Although any effect is likely to be imperceptible due to the >750m distance between the source and receptor. It is recommended that soils are not stockpiled within 20m of drainage ditches and this will be outlined as a mitigation procedure to be noted in the construction and environmental management plan.

The existing agricultural use of the proposed development lands is likely to be contributing proportionally to the poor-quality status of the Broadmeadow River with high nutrient runoff likely.

Subject to implementation of mitigation measures outlined, the operation phase of the proposed development is not likely to have a negative impact to any surface water features or groundwater features upon completion of the construction works.

Mitigation measures during the construction phase of the development must be implemented to mitigate potential negative impact to the local minor watercourses which tribute to the Broadmeadow River and for protection of groundwaters during the construction phase of the development.

Water Supply will be in accordance with the requirements of Irish Water.

AIR QUALITY AND CLIMATE

Byrne Environmental Consulting Ltd have assessed the potential air quality and climatic impacts that the Dunshaughlin Strategic Housing Development may have on the receiving environment during the construction and operational phases of the project. The assessment includes a comprehensive description of the existing air quality in the vicinity of the subject site, a description and assessment of how construction activities and the operation of the development may impact existing air quality and climate, the mitigation measures that will be implemented to control and minimise the impact that the development may have on local ambient air quality and finally to demonstrate how the development shall be constructed and operated in an environmentally sustainable manner.

In terms of the existing baseline air quality environment, site specific baseline data and published data available from similar environments indicates that levels of nitrogen dioxide (NO₂), carbon monoxide (CO), sulphur dioxide (SO₂) particulate matter less than 10 microns (PM₁₀) and less than 2.5 microns (PM_{2.5}) and benzene are well below the National and European Union (EU) ambient air quality standards. Predicted levels of domestic heating and traffic generated air pollutants will not exceed the ambient air quality standards and the impact of the development in terms of ambient levels of NO₂, PM₁₀, PM_{2.5}, CO, SO₂ and Benzene is deemed insignificant.

The construction phase of the development has the potential to generate short term fugitive dust emissions and diesel engine exhaust emissions associated with construction vehicles and plant however these emissions will be controlled by appropriate mitigation techniques and through the implementation of a construction phase air quality management and monitoring plan throughout the duration of the construction phase.

The operational phase the development will see the functioning of modern, well insulated thermally efficient buildings in which energy efficiency shall be achieved by implementing sustainable features into the developments buildings and infrastructure design. The design of the residential units will ensure their operation will have a minimum impact on the receiving climate and that their design will withstand future potential extreme weather events associated with climate change.

National air quality standards shall not be adversely affected as a result of the short-term construction phase or the long term operational phase, thus ensuring that the potential for adverse impacts on human health, local air quality or climate is negligible.

The heating of the development shall be provided by natural gas which is a less polluting fuel source than traditional fossil fuels such as oil and coal. In relation to the construction phase, a dust minimisation and monitoring plan has been prepared as construction activities are likely to generate short term fugitive dust emissions. Emissions from traffic-derived pollutants have focused on improvements in both engine technology, exhaust technology and fuel quality with vehicles over recent years.

Road traffic would be expected to be the dominant source of greenhouse gas emissions associated with the development. Vehicles will give rise to CO₂ and NO₂ emissions in the vicinity of the proposed development. EPA guidance states that a development may have an influence on global climate where it represents "a significant proportion of the national contribution to greenhouse gases". Greenhouse gas emissions as a result of the development will be insignificant in terms of national CO₂ emissions and therefore, it is concluded that the impact of the proposed development on climate will be negligible.

NOISE AND VIBRATION

Byrne Environmental Consulting Ltd have assessed the potential noise and vibrational impacts that the proposed Dunshaughlin Strategic Housing Development may have on the receiving environment during the construction and operational phases of the proposed development. The assessment includes a comprehensive description of the existing ambient baseline noise climate in the vicinity of the subject site, a description of how construction activities may impact the existing ambient noise climate, the mitigation measures that shall be implemented to control and minimise the impact that the development may have on the receiving environment and the mitigation by design measures that are intended to ensure that the inward noise impact from the external environment is controlled within each building.

Ambient noise levels in the vicinity of the site shall temporarily increase during the construction phase, however noise levels shall be controlled, minimised and managed through the implementation of best practice construction noise and vibration mitigation measures and by the implementation of a Construction Phase Noise and Vibration Management Plan. The operational phase of the development will not have an adverse or unacceptable impact on the noise climate or any adverse vibrational impact at any receptor located in the vicinity of the site.

The existing baseline noise climate has been assessed at the site over the course of typical daytime and night time periods. The principal sources of existing noise experienced at the site include road traffic noise from the R147 Dublin Road to the south of the site and to a lesser extent from traffic movements within the Dunshaughlin Business Park to the west of the site.

The noise impact assessment has considered the potential outward impacts associated with the construction and operational phases of the proposed development on the surrounding environment. The assessment has also assessed the inward noise impact of the surrounding environment including external transportation noise on the proposed development in order to ensure that suitable internal noise levels can be achieved across the site within the residential dwellings.

During the operational phase, the outward noise impact to the surrounding environment will be limited to additional traffic on surrounding roads. The impact assessment has concluded that additional traffic from the proposed development will have an imperceptible impact on the surrounding noise environment.

Internal noise levels within the proposed residential dwellings across the site have been assessed with regard to the existing noise levels and future noise sources, in particular road traffic noise and from potential future activities within the Dunshaughlin Business Park. Sound insulation performance values for glazing, walls, roofs and ventilation systems have been specified as part of the assessment in order to ensure acceptable internal noise levels are achieved during both daytime and night-time periods.

MATERIAL ASSETS

Material Assets considers physical resources in the environment which may be of human or natural origin. The objective of the assessment is to ensure that these assets are used in a sustainable manner, so that they will be available for future generations, after the delivery of the proposed development.

In accordance with the 2017 Draft EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, "*Material assets can now be taken to mean built services and infrastructure*". Material assets of a natural origin are dealt with comprehensively within the other chapters of the Environmental Impact Assessment Report.

This chapter considers the key aspects relating to material assets of a human origin of the proposed development site and the surrounding area, namely traffic infrastructure, potable water supply, wastewater discharge, electricity and gas supply.

The Material Assets chapter describes existing services to the application site and describes the predicted impacts which the development may have on these services and recommends mitigation measures.

The proposed development will have a positive impact on the existing urban environment by creating high quality residential units to respond to current housing need and to cater for the needs of a growing population on residential zoned lands, also including significant open space provision.

Traffic movements associated with the proposed development are likely to have a long-term and neutral impact on the operation of the local road network as demonstrated in the standalone Traffic and Transport Assessment (prepared by ILTP) being implemented. This chapter concludes that there is unlikely to be any significant adverse impacts on material assets as a result of the proposed development during the construction or operational phase of the development.

INTERACTIONS BETWEEN ENVIRONMENTAL FACTORS

The purpose of this chapter of the EIAR is to draw attention to significant interaction and interdependencies in the existing environment. John Spain Associates in preparing and co-ordinating this EIAR ensured that each of the specialist consultants liaised with each other and dealt with the likely interactions between effects predicted as a result of the proposed development during the preparation of the proposals for the subject site and this ensures that mitigation measures are incorporated into the design process. This approach is considered to meet with the requirements of Part X of the Planning and Development Act 2000, as amended, and Part 10, and schedules 5, 6 and 7 of the Planning and Development Regulations 2001-2018. The detail in relation to interactions between environmental factors is covered in each chapter of the EIAR.

SUMMARY OF EIA MITIGATION AND MONITORING MEASURES

This chapter provides a summary of all the mitigation and monitoring measures proposed throughout the EIAR document for ease of reference for the consent authority and all other interested parties.