

Chapter 8:

Water

## 8.0 WATER

### 8.1 INTRODUCTION

This section will focus on the environmental impact of the proposed development relating to water environmental aspects. This chapter has been prepared by Hydrocare Environmental Ltd. The chapter was written by Daniel Nolan, BA BAI, MSc, MIEI and reviewed by Sean O'Connor, M. Appd Sc., Dip. Public Health, PG dip. Env. Engr.

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.

A Site Specific Flood Risk Assessment has been completed by Hydrocare Environmental Ltd and is included with the planning application submission. Relevant details of the Site Specific Flood Risk Assessment and Stormwater Assessment prepared by JBA Consulting contribute to this chapter of the EIAR.

The surface drainage, foul water drainage, water supply and a new road network will be constructed to service the proposed development.

The proposed foul drainage will discharge to Irish Water foul sewer and is not discharged to the ground within the site.

Surface water will be diverted to downstream watercourses, controlled to greenfield runoff rates, via SUDS devices, attenuation tanks, and a piped network.

## **8.2 STUDY METHODOLOGY**

The potential impact of this development in relation to water bodies was assessed as per methodology and criteria outlined in the following documents:

- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002 & Draft 2017)
- EIA Directive 2014/EU/52
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018).
- Advice notes on current practice in the preparation of Environmental Impact Statements, (EPA, 2003)
- Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003).
- Development Management Guidelines (DoEHLG, 2007).

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.

## **8.3 THE EXISTING RECEIVING ENVIRONMENT**

The subject lands on which development is sought, is currently used as agricultural farm land. The proposed development site is adjacent to the existing 'Willows' development which is under construction.

The site consists of gently sloping lands. The land drains via ditch drains to the South East, however a section of the lands to the North slope strongly towards the North and drain towards a stream to the North.

Within the site boundaries are minor open ditch drains and minor watercourses. There is an OPW maintained channel, OPW Channel C1/11, which starts within the site and traverses across the site and eventually joins the Broadmeadow River over 2km North of the proposed site.

The site is drained by two watercourses, one located to the very North of the site and one located to the South East of the site. The South Eastern watercourse is the OPW maintained Channel C1/11 and drains most of the proposed development site. The lands contributing to the South Eastern watercourse have shallower gradients compared to land contributing to the Northern watercourse which receives flow from a steep gradient.

The site is located within the catchment of the Broadmeadow River. Dunshaughlin straddles three river catchments, the Boyne, the Tolka and the Broadmeadow. The upstream catchment contributing to watercourses within the site is quite small and is measured at <0.2 km<sup>2</sup> per the Site Specific Flood Risk Assessment Report carried out for this development.

### **8.3.1 Visual Inspection of the Proposed Development Site**

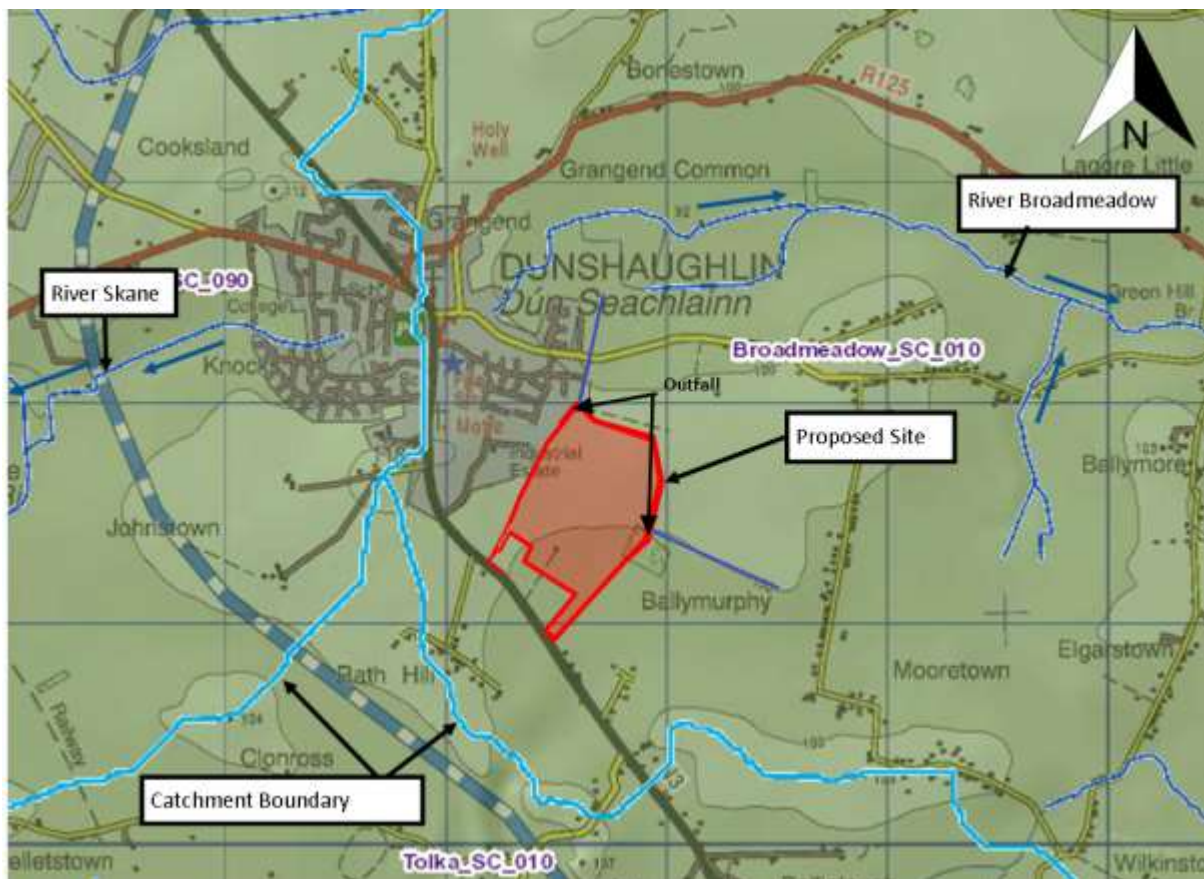
A visual inspection of the subject lands on 3 occasions in January 2018 determined the tillage land to be very soft underfoot following the recent harvest and extensive wet weather period. Water logging is evident within the machine tracks from the harvest. Lands used for pasture purposes, with grass cover, were less impacted and were soft to firm underfoot, with minimal pockets of ponding evident.

The only evident inflow to the site was from a ditch drain at the North West of the site, which drains towards OPW Channel C1/11. OPW Channel C1/11 commences within the proposed development lands. The inflow to the site from the ditch drain, is mostly from the stormwater drainage network serving the neighbouring business park to the North West of the development. A pooling of water was evident along the boundary of the business park which adjoins the proposed development site, this was evident to be caused by a to partial blockage of the ditch drain with dense vegetation and mud.

Watercourses within the site were noted to be deep, mostly greater than 1.5m deep, with minor flows evident during inspection. An increased water flow was evident along OPW Channel C1/11 closer to the location where the channel diverts out of the proposed site across the proposed eastern site boundary.

### **8.3.2 River Catchment**

The Environmental Protection Agency Envision mapping portal identifies the proposed development lands to be within the catchment of the Broadmeadow River. Dunshaughlin straddles three river catchments, the Boyne, the Tolka and the Broadmeadow.



**Figure 8.1: Site Location and Catchment Boundary**

### 8.3.3 Hydrology

The Broadmeadow River rises in Dunshaughlin, Co. Meath, approximately 750m distance North of the proposed development lands. All runoff waters from the subject lands are collected by ditch drains, which are hydrologically connected to the upper Broadmeadow River. The Broadmeadow River flows through the towns of Ratoath, Ashbourne & Swords discharging to the Malahide Estuary.

Although the subject development lands divert all runoff to the Broadmeadow River catchment, the subject lands divert flows in two distinct directions. The northern portion of the development lands slope towards the north and ditch drains collect and convey runoff water to a deep watercourse at the northern extremity of the subject lands which then flows north before eventually connecting to the *Ratoath Stream* approximately 750m distance North of the proposed development site. The *Ratoath Stream* is a tributary to the River Broadmeadow, refer to EPA Streams and River Map below.

South of the crown of the subject development site, runoff waters are collected by ditch drains conveying water to the south east of the site, before diverting east from the site via a small watercourse eventually joining to a stream named by the EPA as *Lagore Big*. The *Lagore Big* stream diverts to the *Ratoath Stream* which is a tributary to the River Broadmeadow, refer to EPA Streams and River Map below.

There is only one watercourse flowing into the subject lands. This watercourse is a minor ditch drain flowing into the site as a culverted ditch drain from the adjoining business park to the west of the site, with very low flow evident during January 2018. Refer to the maps below for location of streams. This watercourse is a continuation of the ditch drain west of the business park development, which existed prior to the neighbouring business park development west of this proposed site. The business park drains to this ditch drain via a 300mm diameter and 450mm diameter storm sewer pipes.

The Site Specific Flood Risk Assessment Report states there is no attenuation system located within the business park, and therefore flows from the business park may be flashy in a nature. As the business park is commercial in nature, flows may be carrying a level of hydrocarbons and silt through to the watercourses within the site at current.

The subject lands are elevated within the immediate landscape and all other ditch drains divert runoff water out from the subject lands.

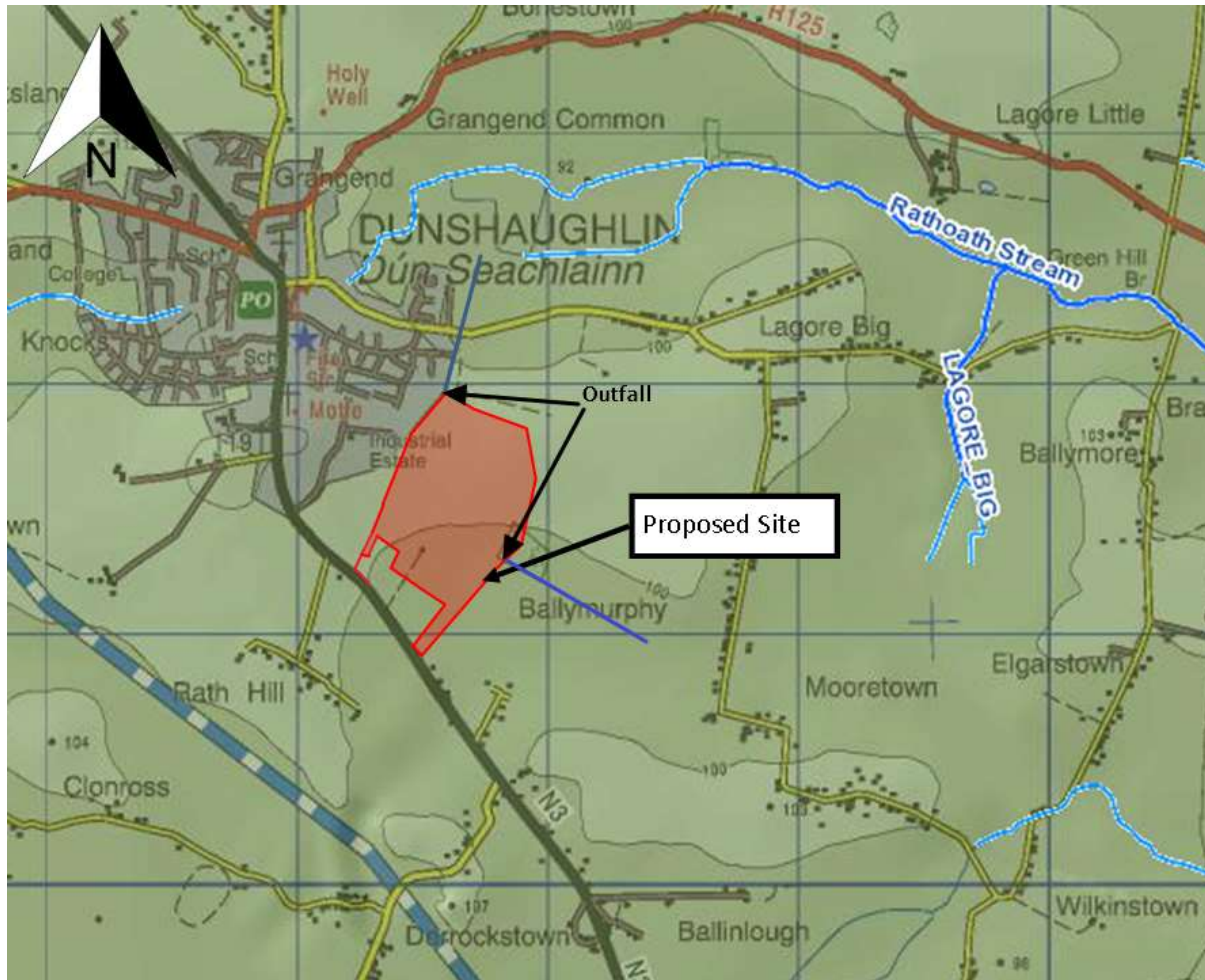


Figure 8.2 – EPA Envision Portal – Streams and Rivers



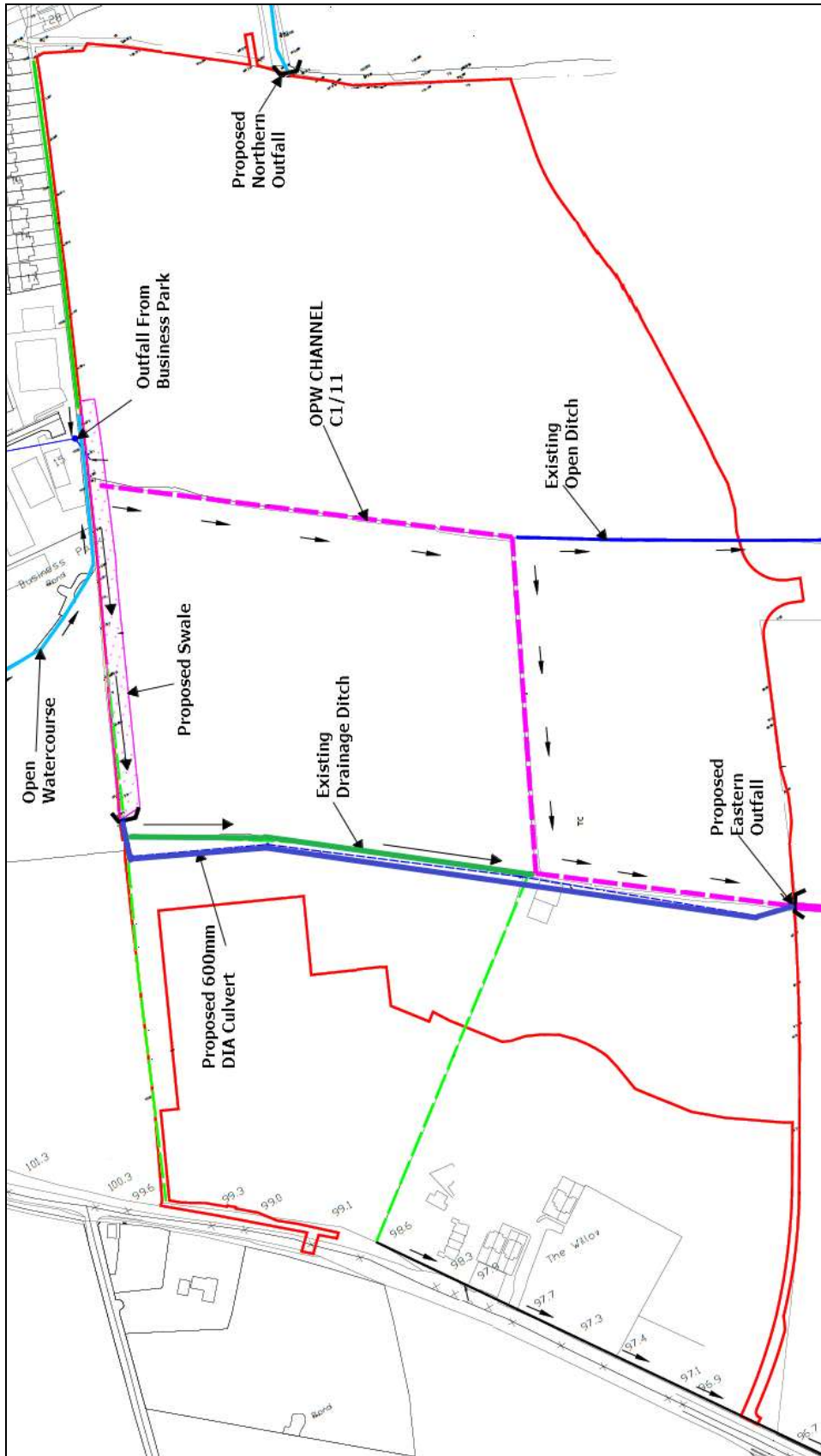


Figure 8.3 – Watercourses and Stream Plan

### 8.3.4 Water Quality

The EPA classify the upper section of the Broadmeadow River to be of a poor water quality and at risk of not achieving a good status (data to 2015 from EPA). See mapping outlined below. Most lands within the catchment to the Upper Broadmeadow River, upstream of Ratoath Village, are used for agricultural purposes. Runoff from lands undergoing intensive agricultural practices are likely to have a strong influence on the quality of the river networks, with fertilizer and slurry spreading, resulting in runoff waters to be nutrient rich, with risk of enteric bacteria entering the river networks. At current, the subject lands are used for agricultural practices. Due to the CLAY type soil and subsoil, poor infiltration exists with runoff volumes relatively high. The subject development lands in their current use are likely to be proportionately contributing to the poor water quality produced from within the upper catchment of the Broadmeadow River.

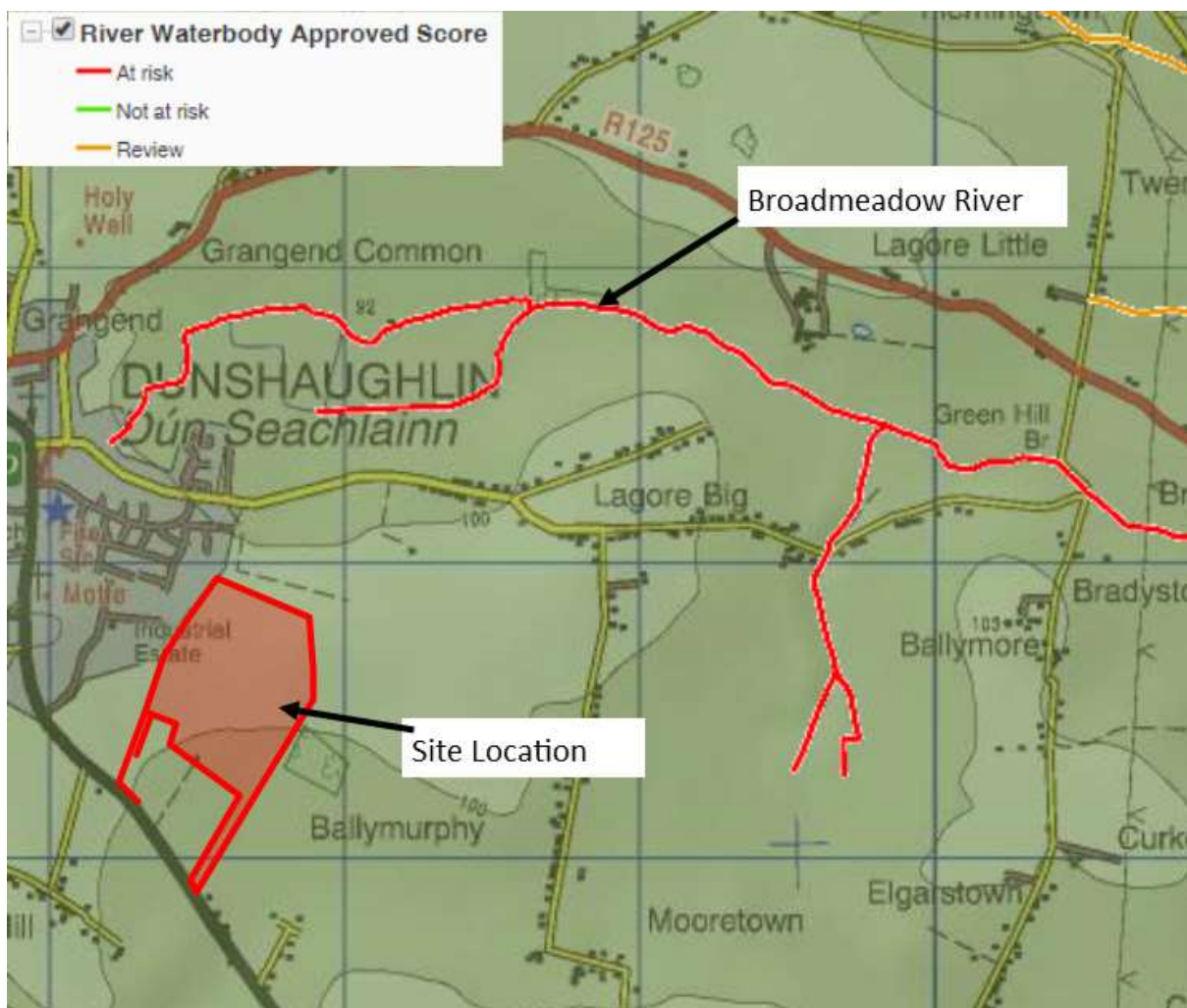


Figure 8.4 – EPA Envision Portal - Waterbody Approved Score



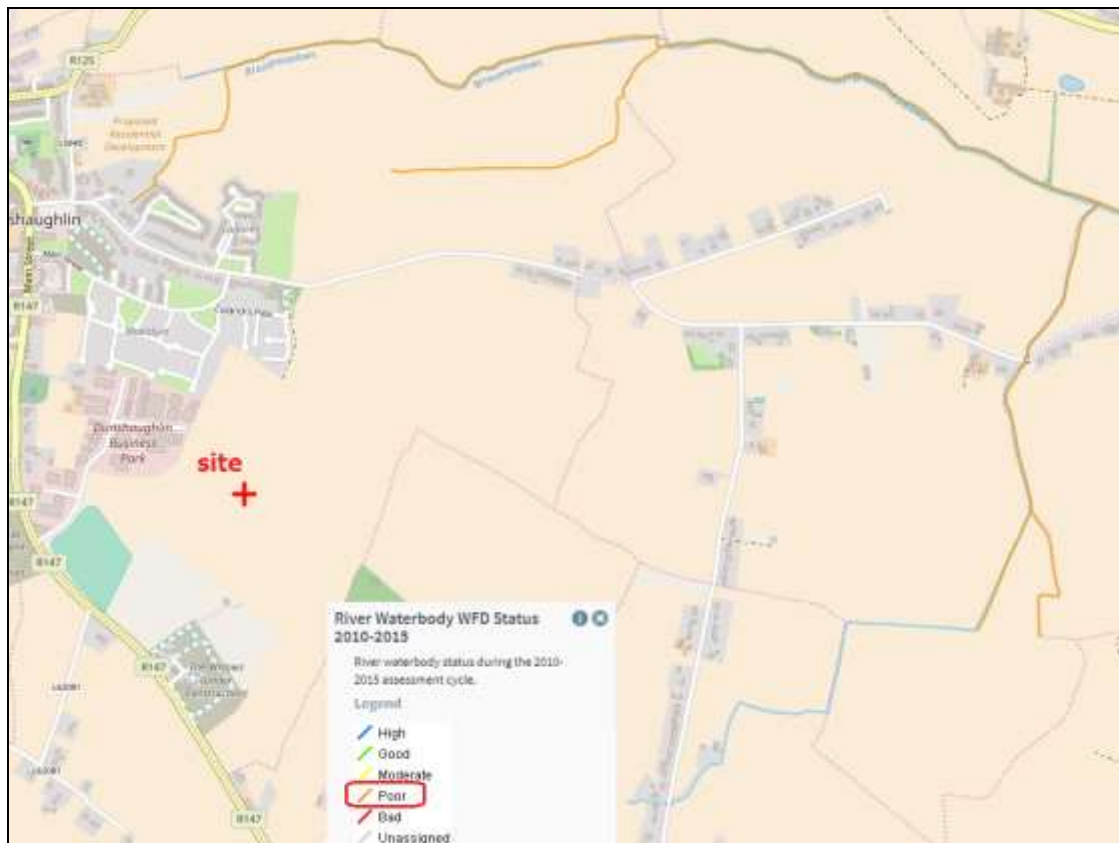


Figure 8.5 – EPA Envision Portal – WFD Status – Poor Water Quality

### 8.3.5 Foul Sewer

There are two existing foul pump stations (located near the site) and two existing 225mm diameter gravity sewers located on the proposed site. The existing 225mm gravity sewer is in two sections, one section is gravitating southwards towards the R147 pumping station and the second section gravitates northwards through the adjacent land situated north of the site and to an existing pump station located north of the Lagore Road. It is proposed to connect the new development into the existing 225m gravity sewer at various locations. The discharge from the proposed development will then gravitate to the existing pump station.

The Dunshaughlin Wastewater Treatment Plant controlled by Irish Water is located North East of Kilmessan Village and is over 12 km from the Dunshaughlin Area. The plant has been constructed to cater for ,12,000PE and currently has sufficient capacity to cater for this development. Refer to Irish Water pre-connection agreement included in Appendix 8.1 herewith.



**Figure 8.6 – From Water, Wastewater services and Surfacewater Management Design Report’ by JOR**

### 8.3.6 Watermain

The public watermain is in the control of Irish Water and exists local to the subject lands along the R147.

The proposed ‘Water, Wastewater services and Surfacewater Management Design Report’, compiled by Joseph O’Reilly Consulting Engineer states that for potable water supply it is proposed to connect the development to the 200mm diameter water main that was installed during the Phase 1A & 1B construction stage which is connected to the existing 200mm public watermain in the R147 road. The 200mm water main will be installed to the northern boundary of the site where future connection can be made to link to the water main on the Lagore Road.

## 8.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

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.

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The surface drainage, foul water drainage, water supply and a new road network will be constructed to service the proposed development.

The proposed foul drainage will discharge to Irish Water foul sewer and is not discharged to the ground within the site.

Surface water will be diverted to downstream watercourses, controlled to greenfield runoff rates, via SUDS devices, attenuation tanks, and a piped network.

### **8.4.1 Surface Water**

The site is located on elevated ground relative to the nearest EPA labelled watercourse, which is the Ratoath Stream, a tributary of the Broadmeadow River. The ground elevations of the site will be between 4m and 10m above the 0.1% AEP (1 in 1000-yr) Fluvial Flood Level of the Ratoath Stream at its closest point to the proposed development site. The site is therefore located in Flood Zone C and is not likely to be at risk of fluvial flooding. Refer to the Site Specific Flood Risk Assessment carried out by Hydrocare Environmental Ltd included as part of this planning application submission.

The proposed development will result in a full alteration of the character of the site, from agricultural land, to housing and commercial developed land. The proposed development will generate an increased volume of runoff waters compared to the pre-development agricultural land state due to the impermeable nature of roads, roofs and other associated hard standings.

The proposed development will have separate drainage systems for wastewater and surface water generated from within the development. Both the wastewater & surface water drainage networks have been designed by Joseph O'Reilly Consulting Engineers and are designed to accord with policies and guidelines outlined in 'BS EN 752:2008 Drain and Sewer Systems outside buildings' and Building Regulations 2010, TGD Part H and the Greater Dublin Strategic Drainage Study (GSDS).

The surface water drainage network for the proposed development has been designed to control the rate of runoff water discharging to the receiving environment. Sustainable Urban Drainage System principles provided by CIRIA (UK) C753 Design Manual and the Institute of Hydrology (UK) - IH 124 method were used to predict the pre-development runoff rates in various rainfall events and has been calculated and used to select maximum allowable discharge rates to the receiving environment.

Controlling the runoff rate of surface water runoff to the receiving environment, ensures that an imperceptible effect will be expected at the receiving sensitive water body which is the Broadmeadow River. There are two outfalls proposed for this development. Both outfalls receive stormwater which will have passed through attenuation tanks and petrol interceptors. Fuel and Oil spillages are a potential threat to the receiving environment and to reduce the likelihood of these contaminants entering the stream network, petrol interceptors have been included upstream of both outfalls. A swale is proposed to divert runoff from the business park. This swale will improve the water quantity of the runoff waters which currently discharge direct to OPW channel C1/11.

### **8.4.2 Wastewater**

The wastewater generated from the development once complete will discharge to Irish Water's wastewater network at two locations. It is proposed to discharge the wastewater from the proposed development into the existing 225mm gravity sewer main which runs through the proposed site. The gravity sewer was installed a number of years ago and discharges from two waste water pumping stations, one located adjacent to the development site on the R147 and second located along Lagore Road, which is North of the proposed site. The proposed foul layout will tie into the existing 225m gravity sewers at several different locations. Due to the layout of the existing gravity sewer and the site, the proposed foul system is made up of 5 separate foul networks and 8 localised connections (collector systems) to the existing 225mm gravity sewer. The development is expected to take up to 10 years to complete and therefore the wastewater loading will incrementally increase over the duration of the development.

### **8.4.3 Water supply**

'Water, Wastewater Services and Surfacewater Management Design Report' by Joseph O'Reilly Consulting Engineer states:

*“A 200mm diameter water main was installed during the Phase 1A & 1B construction stage which is connected to the existing 200mm public watermain in the R147 road. It is proposed to connect a 200mm watermain to feed the proposed development with 100mm branches servicing the various different areas within the site. The 200mm water main will be installed to the northern boundary of the site where future connection can be made to link to the water main on the Lagore Road. Refer to drawing C-003 for proposed water main layout. The maximum daily water demand is 467,800 l/day.”*

## **8.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT**

This section will focus specifically on water related environmental impacts which will arise as a result of the proposed development during the construction phase and the operational phase.

### **Construction Phase**

During the construction phase excavating, hauling, and depositing of large quantities of soil material will occur. There are no basements proposed in the development or underground car parks. All construction excavations including drainage works will be within the upper soil and subsoil depths, likely to be no more than 3 metres deep.

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 aquifer is classified by the EPA as low to moderately vulnerable with 5m to >10m depths of subsoil overlying a limestone bedrock. The permeability of the deep subsoil is very low as determined from on-site infiltration testing and indicated on EPA mapping.

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.

There are no EPA classified streams located within the development site although there are several drainage ditches along with OPW Channel C1/11 which tribute to the Broadmeadow River. The Broadmeadow River is over 750m North of the proposed development site and the extended low flow ditch drain network means that the potential impact from construction related activities is less than if the Broadmeadow were to have a shorter pathway to the source of possible contamination. The development construction is therefore likely in the worst-case scenario, to have a short-term, imperceptible negative effect on the Broadmeadow River water quality. It will still be necessary to ensure that the potential for contamination of water features from the proposed development is minimised and appropriate mitigation measures are adhered to.

The deep impermeable subsoils offer a buffer of protection to the locally important aquifer. Should no mitigation measures be provided poor construction practices could result in contamination of the soil and subsoil. Potential contaminants will permeate very slowly down through the subsoil pathway. The CLAY subsoil offers a degree of protection to the groundwater receptor, as the response time to eliminate contamination of the groundwater required will be less than if for example a GRAVEL type subsoil was to exist. It is imperative a construction and environmental management plan is implemented to ensure that any effect from spillages of fuels, oils, greases etc, are reduced. The construction stage of the proposed development is not likely to have any long-term negative effect on the local groundwater and surface water bodies, however mitigation measures must be adhered to.

### **Operational Phase**

The potential impact to the Broadmeadow River and to the local groundwater is expected to be slightly positive because of the completion of this development. This effect will also be permanent. The current land use is for agricultural purpose and likely to have been intensively farmed into the future. The nutrient loadings to the ditch drains which ultimately discharge to the River Broadmeadow will be much reduced as a result of this development thereby having a positive effect on the River Broadmeadow. The proposed design for the surface water drainage system includes for two petrol interceptors upstream of the outfall locations. Silt traps are included in road gullies.

Long-term maintenance of the full surface water drainage system is essential to ensure that runoff which diverts to the ditch drains at the outfall location is not contaminated. Poor maintenance of the stormwater drainage system over a long period of time will likely result in a long-term albeit imperceptible negative effect to the water quality of the River Broadmeadow. It is therefore imperative that an agreed, maintenance and monitoring schedule is agreed prior to construction taking place.

Elevated water tables may negatively affect the potential storage capacity of the attenuation devices should infiltration of ground waters to the attenuation device of storm drainage system occur. Measures to mitigate this potential scenario must be implemented.

The proposed development is unlikely to have any significant effect in increasing or decreasing the River Broadmeadow flood plain.

The generation of the additional loading to the wastewater loading to the Dunshaughlin WWTP will result in a large increase in loading over the ten-year period of construction and continuing operation of the proposed development. The Dunshaughlin WWTP discharges its tertiary treated effluent to the Skane River, which is a major tributary to the Boyne River. At current, the WWTP has adequate capacity to cater for the proposed loading. Refer to Irish Water letter confirming same in Appendix 8.1. In the event of exfiltration of foul waters from the foul sewer to the ground in a blockage, the effect is not considered to be significant due to the deep impermeable subsoils protecting the local aquifer along with the brief to temporary nature of such an event with a confined localised area of contamination. Recharge to the groundwater will be restricted as the development will replace some greenfield lands with areas of impermeable hard standing. Due to the impermeable nature of the soil,



recharge is expected to be <100mm per year in any case, and the effect is considered imperceptible and not significant.

## 8.6 POTENTIAL CUMULATIVE IMPACTS

The proposed development will not result in an increased negative impact to local waterbodies compared to the baselines status. At present the lands are used for agricultural purposes. There is likely to be a slightly positive impact to the downstream water quality should adequate management of the stormwater drainage system be maintained post construction. Intensive farming practices if not managed correctly can have a high impact on water quality with high nutrient loadings having long-term effects altering the ecology of a stream or river. The proposed development will be for residential purposes. It is not considered that this development will have a negative impact cumulatively, or in combination with other developments with regard to water quality.

Discharges to watercourses from the site will be controlled to greenfield runoff rates, thereby having no negative impact cumulatively, or in combination with other developments with regard to flood flow rates and river disturbance.

## 8.7 DO NOTHING IMPACT

The subject lands are used for agricultural purposes. Continuing use of the lands for agricultural purposes is likely to have a long term slightly negative impact on the water quality of surface water and groundwater bodies. Runoff carrying nutrients from the spreading of manure or slurry contribute to a poor surface water quality within the catchment. The subsoil of the subject lands has a low permeability indicating high runoff rates, with an increase risk to water quality downstream of the site.

Overall the 'Do Nothing' impact can be considered slightly negative with regard to the poor water status of the Broadmeadow River should lands remain in their current use as agricultural lands. As this is the baseline status however, the 'Do Nothing' impact can be considered neutral for this development.

## 8.8 REMEDIAL AND MITIGATION MEASURES

### Construction Phase

Proposed mitigation measures are outlined below to address the potential significant adverse effects the proposed development may incur upon the receiving water environment:

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- Groundwater levels are to be monitored prior to construction at the proposed locations of attenuation devices. The attenuation devices proposed are Concrete Tanks. A water tight tank system is required to prevent groundwater entering the drainage network.
- A construction and environmental management plan is to be implemented prior to construction. The plan must be agreed with the local authority prior to development.
- Concrete mixing facilities should be located on an impermeable surface in a designated area.
- The ditch drain flowing into the site from the business park to the west must be diverted as specified by Joseph O'Reilly Consulting Engineers, drainage proposals.
- Stockpiled soil mounds should be kept a minimum distance of 20m from any ditch drain to reduce to the risk of contaminated runoff entering the stream networks. On completion of works, any excess soil must either be landscaped into the development or removed off-site.
- Control measures to ensure continuous monitoring in relation to spillages of hazardous substances, fuels, oils must be detailed in the construction and environmental management

plan including remedial actions in the event of spillages of hazardous substances, fuels, oils & grease during the construction phase of works.

- Fuels, Oils, Chemicals, Hazardous Substances, etc., must be stored in a suitably designated, banded area to reduce the potential extent of contamination should accidental spillages occur.
- 'Wheel Wash' systems must be provided for vehicles to reduce quantities of soil deposits on the local road network.
- The storm water drainage system is to be constructed as designed in accordance with Sustainable Urban Drainage System principles and as per Greater Dublin Strategic Drainage Study (GSDSDS) guidelines. The greenfield runoff rates must not be exceeded. The proposed design includes for attenuation of surface water and petrol interceptors, reducing potential contaminants from entering the receiving environment. The construction of the drainage system as per Joseph O'Reilly Consulting Engineer's design, is integral to mitigating the risk of surface water flooding and poor water quality entering the receiving environment.

### Operational Phase

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- An operation and maintenance manual should be provided by the contractor upon completion of the construction phase.
- The operation and maintenance manual should detail all operational and maintenance aspects of the foul water and surface water drainage systems and is to be agreed with Meath County Council prior to its implementation. This includes inspecting and maintaining the petrol interceptors, Hydrobrakes, attenuation devices, etc.
- Ensure all mitigation measures in the Site-Specific Flood Risk Assessment are implemented.
- Connection to the foul sewer will be gradual over-time. Capacity of Irish Water's wastewater treatment plant to accept the loading from the development must be assessed on an ongoing basis through-out the construction of the development. Connections must be agreed with Irish Water prior to connecting to the foul sewer network.

## 8.9 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

### Construction Phase

Implementation of all mitigation measures outline above will minimise potential adverse impacts of the construction phase to the water environment. If mitigation measures are adhered to, it is predicted that the construction phase will not have any significant temporary negative impacts on the water environment.

### Operational Phase

Implementation of the mitigation measures outlined above will minimise potential adverse impacts of the operation phase to the water environment. It is predicted that the operation phase is likely to have an imperceptible positive effect on the water environment. The change of land use from intensive agricultural farming reduces the risk of high nutrient loadings and potential pathogens to the receiving water environment.

## 8.10 MONITORING

- Surface water drainage works should be overseen by Meath County Council relative departments.
- Foul sewer construction works will be monitored by Irish Water connections department.

- Water supply construction works will be monitored by Irish Water connections department.
- Execution of the construction and environmental management plan during the construction phase must be monitored by the local authority.
- Execution of the operation and maintenance requirement outlined in the operation and maintenance manual for the development must be monitored by the local authority.

### **8.11 REINSTATEMENT**

Stockpiled topsoil and subsoil is to be reused for landscaping within the site or to be removed off site upon completion of the construction phase of works.

The ditch drain flowing into the site from the business park to the west must be diverted as specified within 'The Water, Wastewater Service and Surfacewater Management Design Report' by Joseph O'Reilly Consulting Engineers.

### **8.12 INTERACTIONS**

The design team has had regular contact with Joseph O'Reilly Consulting Engineers. The water environment also interacts with the Appropriate Assessment Screening Report carried out for the proposed development.

### **8.13 DIFFICULTIES ENCOUNTERED IN COMPILING**

No particular difficulties were encountered in completing this section.

### **8.14 REFERENCES**

Joseph O'Reilly Consulting Engineer Report, Proposed Storm, Foul & Watermain Services For Possible Future Development.  
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.  
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Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003).  
Development Management Guidelines (DoEHLG, 2007).  
Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DoECLG, March 2013).

**APPENDIX 8.1- PRE- CONNECTION AGREEMENT WITH IRISH WATER**

Joesph O'Reilly  
JOR Consultants  
Unit 1  
St. Therese's Place,  
Flower Hill,  
Navan,  
Co. Meath

Letter Ref: CUSTO180157



**Uisce Éireann**  
Bosca OP 860  
Oifig Sheachadta  
na Cathrach Theas  
Cathair Chorcaí

**Irish Water**  
PO Box 860  
South City  
Delivery Office  
Cork City

[www.water.ie](http://www.water.ie)

14/02/2018

Dear Sir/Madam,

**Re: 3522128496 pre-connection enquiry – Subject to contract |  
Contract denied  
Water and wastewater connections for 844 residential units at  
Willows, Dunshaughlin, Co. Meath**

Irish Water has reviewed your pre-connection enquiry in relation to water and wastewater connections at **Willows, Dunshaughlin, Co. Meath** (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on the capacity currently available as assessed by Irish Water, we wish to advise you that, subject to a valid connection agreement being put in place and the conditions listed below, your proposed connection to the Irish Water network can be facilitated.

#### Strategic Housing Development

Irish Water notes that the scale of this development dictates that it is subject to the Strategic Housing Development planning process. Therefore:

- A. In advance of submitting your full application to An Bord Pleanála for assessment, you must have reviewed this development with Irish Water and received a Statement of Design Acceptance in relation to the layout of water and wastewater services.
- B. You are advised that this correspondence does not constitute an offer in whole or in part to provide a connection to any Irish Water infrastructure and is provided subject to a connection agreement being signed and appropriate connection fee paid at a later date.
- C. In advance of submitting this development to An Bord Pleanála for full assessment, the Developer is required to have entered into a Project Works Services Agreement to deliver an investigation to confirm the available capacity in the water network and to determine the full extent of any upgrades which may be required to be completed to Irish Water infrastructure.

**Wastewater:** There is adequate capacity in the local wastewater network to cater for this development. There is adequate capacity in wastewater treatment plant to cater for this development.

**Water:** Irish Water's GIS shows a reduction in watermain size from 200mm DI to 100mm DI size for 4 meters on the R147 local to the proposed development. An investigation is required to determine if this break exists. The developer shall pay for this investigation and shall pay for the upsizing of the 4 meters of 100mm to 200mm DI watermain. There is adequate capacity in the water treatment plant to cater for this development.

A connection agreement can be applied for by completing the connection application form available at **[www.water.ie/connections](http://www.water.ie/connections)**. Irish Water's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Energy Regulation.

Should you wish to have any of the above progressed by Irish Water or if you have any further questions, please contact Pat O'Neill from the design team on 018925250 or email [patoneil@water.ie](mailto:patoneil@water.ie) For further information, visit **[www.water.ie/connections](http://www.water.ie/connections)**

Yours sincerely,

**Maria O'Dwyer**

**Connections and Developer Services**