

# 2021

## Civil Engineering Report



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## Civil Engineering Report

### The Green Quarter

Proposed SHD at Cartronroy, Kilnafaddoge, Lissywollen and Ardnaglug, Athlone, Co. Westmeath

### Document Control Sheet

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## 1 Introduction

This report outlines the Civil Engineering deliverables completed for the planning application associated with “The Green Quarter”, a proposed Strategic Housing Development (SHD) at Cartrontro, Kilnafaddoge, Lissywollen and Ardnaglug (townlands), Athlone, Co. Westmeath.

The proposed development will consist of:

The construction of a mixed use residential development of 122 no. residential units with ancillary creche, 46 no. student apartments consisting of 283 bed spaces, and all associated site development works.

The proposed development makes provision for 60 no. dwelling houses comprising 38 no. 2-storey 3-bed townhouses, 7 no. 2-storey 4-bed townhouses, 7 no. 3-storey 4-bed townhouses, 6 no. 2 storey 4-bed semi-detached and 2 no. 2 storey 4-bed detached. The proposed development includes 62 no. apartments / duplexes to be provided as follows: Block R1 containing 38 no. apartments (16 no. 1 bed units and 22 no. 2 bed units) in a 3-6 storey building, and Block R2 containing 20 no. duplex units (10 no. 2 bed units and 10 no. 3 bed units) over 4 storeys with 4 no. apartments (4 no. 2 bed units) in one 5th storey feature area.

The proposed student accommodation makes provision for 283 no. bed spaces in 3 no. blocks to be provided as follows: Block S1 containing 18 apartments with 117 bed spaces over 5-6 storeys, Block S2 containing 16 apartments with 107 bed spaces over 6-7 storeys, and Block S3 containing 12 apartments with 59 bed spaces over 4-5 storeys.

The proposed development will provide for two new vehicular accesses as well as pedestrian entrances onto Lissywollen Avenue east-west access road (as permitted under An Bord Pleanála Reference ABP-309513-21). Minor modifications to ABP-309513-21 are proposed to cater for these access points, alterations to cycle/pedestrian paths, the removal of a central island to facilitate the south-eastern entrance, and provision of bus stop infrastructure.

Ancillary site works include public and communal open spaces, hard and soft landscaping, pedestrian / cycleways, car parking, cycle parking, bin storage, public lighting, solar panels, ESB substation and supporting distribution kiosks, and all other ancillary works above and below ground. The proposal includes pedestrian and cycle linkages onto the Old Rail Trail Greenway to the south and Blackberry Lane (L40061) to the west.

A general outline of the proposed development is provided in Figure 1.1 below.



Figure 1.1 – Proposed Architectural Site Layout

## 2 Design Codes & Standards

The civil engineering works presented in this report and the accompanying drawings have been designed in accordance with the following codes of practice and standards:

- “Irish Building Regulations Technical Guidance Documents” Department of the Environment and Local Government
- “Greater Dublin Strategic Drainage Study” published under the National Development Plan
- CIRIA Report “C697 – Sustainable Drainage Systems”
- Irish Water Code of Practices for Water and Wastewater Infrastructure
- EPA - Wastewater Treatment Manuals – Treatment Systems for Small Communities, Business, Leisure Centres and Hotels
- Guidance on the Authorisation of Discharges to Groundwater (EPA, 2011)
- EPA – Groundwater Protection Responses for On-site Wastewater Systems for Single Houses
- EPA - Guidance on the Authorisation of Discharges to Groundwater
- European Communities Environmental Objectives (Surface Water) Regulations, 2009
- DMURS - Design Manual for Urban Roads and Streets.

### 3 Site Location and Description

#### 3.1 General

The site is located on the east side of Athlone town and north of Athlone Technological University of the Shannon. The site is bound to the south by the Old Rail Trail greenway, to the southeast by Garrycastle Spar Shop and to the northeast, north and west by a local link road (permitted Lissywollen Avenue) and “Blackberry Lane”.

The site is undeveloped, greenfield and is currently used primarily for agricultural purposes. Vehicular access to the proposed development will be provided via the east-west link road (known as Lissywollen Avenue) permitted under An Bord Pleanála Reference 309513-21 which neighbours the proposed development to the west beyond blackberry lane.

The total developable site area is approximately 3.75 hectares. An approximate outline in red of the subject site is provided in figure 3.1 below.



Figure 3.1 – Aerial view of Proposed Site

This report should be read in conjunction with ORS Reports & Drawings:

### Reports

- 211\_035-ORS-XX-XX-RP-TR-7d-003 DMURS Compliance Statement

### Civil Drawings

- 211\_035-ORS-Z0-00-DR-C-400 Civil Services Layout
- 211\_035-ORS-Z0-ZZ-DR-C-401 Wastewater Longitudinal Sections
- 211\_035-ORS-XX-XX-DR-C-402 Typical Crate Attenuation Tank Layout and Section
- 211\_035-ORS-XX-XX-DR-C-403 Typical Surface Water Manhole Details
- 211\_035-ORS-Z0-00-DR-C-410 Proposed Diversion of WW & SW Sewers
- 211\_035-ORS-Z0-ZZ-DR-C-411 Proposed Diversion Long Sections
- 211\_035-ORS-Z0-00-DR-C-450 Proposed Watermain Layout
- 211\_035-ORS-Z0-00-DR-C-451 Proposed Surface Water Layout
- 211\_035-ORS-Z0-00-DR-C-452 Proposed Wastewater layout

### Traffic Drawings

- 211\_035-ORS-Z0-00-DR-TR-700 Traffic Layout
- 211\_035-ORS-Z0-00-DR-TR-701 Proposed Bus Stop and Raised Island at Student Entrance
- 211\_035-ORS-Z0-00-DR-TR-702 Traffic Details
- 211\_035-ORS-Z0-00-DR-TR-703 Taking in Charge
- 211\_035-ORS-Z0-00-DR-TR-704 Ev Charging Underground Structure

## 3.2 Site Topography

A topographical survey was carried out on the entire site in 2020. The site slopes gradually upwards from North to South with a level difference of approximately 2.5m between the northern boundary and southern boundary of the proposed development. There is also a slope across the site in an east to west direction with a level difference of approximately 5m.

To facilitate development, it will be necessary to conduct some localised cut and fill on the site particularly in the south of the site near the proposed student accommodation. The proposed levels on the site will allow the development to be serviced with gravity foul and surface water drainage systems. The proposed levels will also facilitate suitable internal road and footpath gradients as well as maintaining a manageable streetscape with gradually stepped unit floor levels.





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**Refer to the Roads Layout drawing number 211\_035-ORS-Z0-00-DR-TR-700 for details of existing and proposed levels.**

## 4 Water and Wastewater Services

### 4.1 Irish Water Correspondence

ORS have liaised with Irish Water in relation to the proposed water supply and wastewater connections for the development. A pre-connection enquiry was lodged with Irish Water in March 2021 and a confirmation of feasibility letter from Irish Water dated September 10<sup>th</sup>, 2021, confirmed that a water connection is feasible without any infrastructure upgrade and a wastewater connection is feasible subject to upgrades. A copy of the confirmation of feasibility letter from Irish Water is attached in Appendix A.

Existing water and wastewater infrastructure maps in the locality of the site have been sourced from Westmeath County Council Water Services Department and are attached in Appendix B.

As part of the preliminary design of the Watermain and Wastewater Drainage, ORS liaised with Irish Water during a design vetting process and obtained a statement of design acceptance from Irish Water for the development, a copy of this document is attached in Appendix A.

### 4.2 Water Supply

The proposed water supply for the development will connect to a proposed 200mm watermain which will be installed on the proposed link road (Lissywollen Avenue) to the east and north of the site. The proposed 200mm main will connect to the existing 315mm HDPE main in the R916 road to the east of the site. It is proposed to make two connections to the proposed 200mm main for the development. One connection point will be at the northern residential entrance to the site. The second connection will be made at the student accommodation entrance.

The anticipated water demand for the development, has been calculated in accordance with Irish Water – Code of Practice for Water Infrastructure. Given that the proposal is for a residential housing development, the water usage per person has been taken as 150 litres per day, the number of new dwellings is 122 (Houses/Apartments) and the average occupancy has been taken at 4 per dwelling (conservative). The student housing has been taken as 100 litres per day and 1 person per room. The Creche has accounted for 24 occupants at 90 litres per day. As calculated in Appendix C, the anticipated water demand for this development will be approximately 103.6 m<sup>3</sup>/day.

The watermain shall have a minimum cover of 900mm and shall be overlain with tape containing a tracer wire. The watermain shall also be located a minimum of 3m away from any structure as per Irish Water Code of Practice requirements. Air valves to BS5159 and sluice valves to BS5163 where required shall be installed on site. Where a main is terminating in a cul-de-sac, it will be terminated in loops in accordance with the requirements of Irish Water Code of Practice for Water Infrastructure. The proposed watermain network incorporates

sufficient fire hydrants to ensure that all residential units are within 46m of same as per BS750.

All watermain infrastructure shall be designed and constructed in accordance with Irish Water documents “Code of Practice for Water Infrastructure” and “Water Infrastructure Standard Details”.

**Please refer to ORS drawing no. 211\_035-ORS-Z0-00-DR-C-400 and 211\_035-ORS-Z0-00-DR-C-450 for details of the proposed water supply infrastructure.**

### 4.3 Wastewater Drainage

#### 4.3.1 Diversions

There is an existing 225mm diameter gravity wastewater drainage sewer running diagonally across the southern end of the proposed site. This sewer pipe is proposed to be diverted through the site (within public areas) and will connect to the existing drainage sewer downstream of the existing connection point. The existing wastewater drainage sewer crossing the site will therefore be made redundant and will be decommissioned and removed. As indicated in the Irish Water Confirmation of Feasibility Letter, this existing 225mm sewer at the south of the site has some constraints downstream and therefore it is proposed to only connect the three most southern residential apartment/student blocks to this line.

There is also an existing 300mm diameter gravity wastewater drainage sewer running diagonally across the northern end of the site. This sewer is proposed to be diverted between proposed housing units in the northwest of the site. The existing wastewater drainage sewer will therefore be made redundant and will be decommissioned and removed.

ORS engaged with Irish Water with regard to both proposed wastewater diversions and a confirmation of feasibility letter for both was provided by Irish Water dated 24<sup>th</sup> November 2021 and is attached in Appendix A.

**Please refer to ORS drawing no. 211\_035-ORS-Z0-00-DR-C-410 for details of the proposed wastewater drainage diversions.**

#### 4.3.2 Proposed WW Drainage

As part of this development, it is proposed to install new 150-225mm diameter gravity wastewater sewers within the internal roads of the development which serve all proposed residential houses and northernmost apartments/duplex units and student accommodation. This sewer network will discharge into the existing 300mm wastewater drainage sewer to the north of the site which will be diverted as outlined above.

The southernmost apartment unit (R1) and two southern student accommodation blocks (S1

and S2) are proposed to be connected to the diverted 225mm sewer traversing the south of the site

The proposed internal wastewater sewer will consist of a series of 150 – 225mm diameter sewers falling in ranges of between 1:60 and 1:200. 100mm diameter pipes will be provided between access junctions falling at a minimum grade of 1 in 60. All internal wastewater drainage will be separate to surface water drainage infrastructure in accordance with Irish Water standards. Proposed wastewater sewer loading calculations are attached in Appendix C. Proposed wastewater pipe calculations are attached in Appendix F.

The anticipated wastewater volume generated from the entire development has been calculated in accordance with Irish Water – Code of Practice for Wastewater Infrastructure. The water usage per person has been taken as 150 litres per day. The number of new dwellings is 122 and the occupancy has been taken at 4 per dwelling (conservative). The student housing has been taken as 100 litres per day and 1 person per room. The Creche has accounted for 24 occupants at 90 litres per day. Therefore, as calculated in Appendix C, the anticipated total daily flow for the development will be approximately 103.6 m<sup>3</sup>/day. This is translated to a Dry Weather Flow of 1.20/s or Peak Dry Weather Flow (6.0DWF) of 7.20/s.

All wastewater infrastructure shall be designed and constructed in accordance with Irish Water documents “Code of Practice for Wastewater Infrastructure” and “Wastewater Infrastructure Standard Details”.

**Please refer to ORS drawing no. 211\_035-ORS-Z0-00-DR-C-400 and 211\_035-ORS-Z0-00-DR-C-452 for details of the proposed wastewater drainage infrastructure.**

## 5 Surface Water Drainage

Existing water, wastewater and surface water infrastructure maps in the locality of the site have been sourced from Westmeath County Council Water Services Department and are attached in Appendix B.

Guidance for the design of the Surface Water network has been taken from the Greater Dublin Strategic Drainage Study (GSDSDS) and Sustainable Urban Drainage Systems (SUD's) as per standard practice. Please refer to Appendix C for Surface Water Design Calculations.

### 5.1 Diversion

An existing 1050mm diameter surface water gravity drainage pipe diagonally crosses the north of the site parallel to the existing wastewater drainage sewer which is proposed to be diverted as outlined in section 4.3.1 above. Similar to the wastewater sewer, it is proposed to divert this surface water drainage pipe between proposed housing units in the northwest of the site. The proposed surface water sewer diversion will run outside and parallel to the proposed diversion of the wastewater sewer.

**Please refer to ORS drawing no. 211\_035-ORS-Z0-00-DR-C-410 for details of the proposed surface water drainage diversion.**

### 5.2 Drainage Strategy

The proposed site will be served via below ground gravity pipework which predominantly runs below the proposed internal roads within the development. The surface water network will be fed via in road gullies and rainwater from building roofs via guttering and downpipes. The surface water network will be attenuated in the north of the site and flow controlled at greenfield runoff rates prior to outfall into the diverted 1050mm diameter surface water drainage sewer to the north.

Sustainable Urban Drainage Systems (SuDS) will be utilised throughout the site where practical to help mitigate the adverse effects of urban stormwater runoff on the environment by reducing runoff rates, volumes and frequencies and reducing pollutant concentrations in stormwater runoff. SuDS measures which have been incorporated in this scheme include the use of green roofs, rain gardens, permeable paving and attenuation systems which promote infiltration.

The site is divided into two main catchments. The first catchment includes runoff from all individual houses, block R2 apartment/duplexes, roads and paved areas directed into below ground drainage which outfalls to an attenuation system to the north of the site. The second catchment includes the collection of roof runoff from R1 apartment block and S1-S3 student accommodation blocks which will be collected locally and directed into rain gardens for treatment and infiltration.

### 5.2.1 Attenuation System – Catchment 1

As outlined above the runoff from all individual houses, block R2 apartment/duplexes, roads and paved areas will be directed into below ground drainage network which outfalls to an attenuation system to the north of the site.

A breakdown of the different land uses across the catchment 1 area of the site is included below in Table 5.1 below.

Description	Subject Development Areas (Ha)
Roofs (non green)	0.45
Green Roofs (Block R2)	0.066
Roads, paths and hard areas	0.96
Permeable Private Parking Bays and student parking	0.27
Green Areas – gardens and landscaping	2.00
<b>Total</b>	<b>3.75</b>

**Table 5.1 Catchment Land Uses/Areas**

This surface water catchment will have a gravity surface water drainage network which will outfall into a dedicated attenuation tank to the north of the site. The attenuation tank has been sized to store the runoff from a 1:30 year storm of critical duration below ground, with the additional storage required for a storm event greater than 1:30 and up to 1:100 year to be stored above ground within a depressed area (detention basin) in the public open space. The depressed area has been sized such that the maximum water level in the public open space for a 1:100 year storm event of critical duration will be 300mm in depth.

The proposed attenuation system will be a cellular block system such as Wavin Aquacell Core-R or similar approved (typical details are provided in Appendix E). This system is a modular system, with individual modules stacked together to provide the overall storage volume required. It is then wrapped in geotextile membrane to provide protection to the system, before being backfilled around and above with suitable granular fill material. The tank will be approximately 0.8m deep and will drain by gravity to the outfall point.

The geotextile wrapping on the attenuation tank will be permeable and will promote infiltration. A BRE 365 test was undertaken on the site at the location of the proposed attenuation tank and an infiltration rate of 0.0000206 m/sec was obtained at a depth of 2.5m below ground. No evidence of a water table was observed during the test. Infiltration from the attenuation tank has been conservatively ignored in the attenuation calculations however infiltration will occur, and this will further reduce runoff off site.

The attenuation storage calculations for a 1:30 and 1:100-year storm event of critical duration are attached in Appendix D. An additional storage allowance of 10% for climate change has been incorporated.

### 5.2.1.1 Flow Control and Bypass Interceptor

A flow control device will be fitted to the outlet manhole from the attenuation tank which will control outflow from the tank to greenfield runoff rates (5.0l/sec/ha). This device will be fitted to a 225mm diameter outlet pipe and will have a pull chord bypass. To allow maintenance, a penstock valve (or similar approved) will be installed on the inlet to the flow control manhole.

A non-return valve (NRV) will be provided on the outfall pipe prior to final discharge to the diverted surface water drainage network.

As surface water is to be collected from the roads and car parking areas with a low risk of spillage, a Class 1 Petrol/Oil Bypass Interceptor will be installed prior to discharge into the attenuation tank. All surface water shall be drained from impermeable areas through precast lockable gully traps.

### 5.2.2 Apartments R1 and Student Blocks S1, S2 & S3 – Catchment 2

Apartment Block R1 and Student Accommodation Blocks S1 to S3 will be provided with extensive green roofs to cover between approximately 50 and 80% of their flat roof areas. These green roof areas will provide interception storage and will significantly reduce the volume of runoff from these buildings. The surface water which does runoff the roofs of these buildings is proposed to be directed into local rain gardens (depressed areas) appropriately planted and landscaped locally.

Each rain garden is designed to contain the runoff from the 1:100 year storm above ground with a maximum depth of water of 300mm. Infiltration within these rain gardens will be facilitated through a mix of sand and topsoil in the base and sides of the depressions. A high level overflow will be provided from each rain garden into the piped surface water drainage system as a safety measure. A breakdown of the units' areas and volumes are outlined in table 5.2 below.

The infiltration rate adopted in the calculations for sizing the rain gardens was obtained from a BRE 365 test undertaken on the site.

Building	Roof Area m <sup>2</sup>	Green Roof (% of roof area)	Rain Garden Volume Required (S <sub>100</sub> ) m <sup>3</sup>	Rain Garden Volume Provided m <sup>3</sup>
<b>R1 Apartment Block</b>	739	80%	27	30
<b>S1&amp;S2 Student Blocks</b>	1412	50%	62	63
<b>S3 Student Block</b>	472	50%	18	21

Table 5.2 Rain Garden Volumes

### 5.2.3 Surface Water Pipes

All surface water pipes have been designed to achieve a minimum self-cleansing velocity of 0.75m/s. Please refer to appendix F for calculations sizing the surface water pipes proposed.

## 5.3 Compliance with Sustainable Urban Drainage Systems

To reduce and attenuate the flow, the proposed development has been designed in accordance with the principles of Sustainable Urban Drainage Systems (SUDS) as expressed in the recommendations of the Greater Dublin Strategic Drainage Study (GSDSDS).

The GSDSDS addresses the issue of sustainability by requiring designs to comply with a set of drainage criteria which aim to minimise the impact of urbanisation by replicating the runoff characteristics of a greenfield site. The criteria provide a consistent approach to addressing both rate and volume of run-off as well as ensuring the environment is protected from pollution that is washed off roads and buildings.

The requirements of SUDS are typically addressed by provision of the following:

- Interception storage.
- Treatment storage (not required if interception storage is provided).
- Attenuation storage.
- Long term storage (not required if growth factors are not applied to  $Q_{bar}$  when designing attenuation storage).

In the case of the subject site, interception storage will be provided, and growth factors will not be applied to the allowable discharge for the 100-year event. This means that both treatment storage and long-term storage (neither of which would be practical on this site) are not required. Attenuation storage is provided and is outlined in section 5.2.2 above.

Interception storage for the development will be provided by green roofs and permeable paving which are outlined below.

### 5.3.1 Green Roofs

Extensive green roofs are being provided on Apartment and Duplex buildings R1 and R2 and on Student Blocks S1, S2 and S3. These will provide ecological, aesthetic and amenity benefits and will help retain rainfall at source and reduce the volume of runoff and attenuate peak flows. Green roofs absorb the majority of rainfall they receive during ordinary rainfall events and will contribute to attenuation of flows for larger events. Refer to ORS Drawing No. 211\_035-ORS-XX-XX-DR-C-403 for details of the proposed extensive green roof build-up.



### 5.3.2 Permeable Paving

All private parking areas and the student accommodation parking areas will be constructed with permeable paving and will consist of selected paving blocks on a 50mm layer of 2/6.3mm laying course, on approved geotextile on a 100mm layer of 5/20mm upper sub-base on a min 250mm thick 10/63mm coarse graded stone.

The 250mm coarse graded aggregate layer in the permeable paving will provide an attenuation storage as well as the potential for infiltration to surrounding soils. Based on 30% voids in the material, the 250mm thick layer will provide 75 litres of storage per square metre of paving. This equates to approximately 1.875m<sup>3</sup> storage for every 2 parking spaces (generally 2 spaces per unit). As per recommendations of the GDSDS the first flush should be intercepted (i.e., the first 5 to 10mm of rainfall). Based on 10mm of rainfall on a terraced house and 2 parking bays (total 91m<sup>2</sup>) a total storage volume required would be 0.91m<sup>3</sup>. The volume of storage provided in two parking bays far exceeds the volume of storage required for interception.

Further to the above, based on the storage provided, the permeable paving would be capable of storing within the coarse aggregate layer, over 24mm of rainfall on a house with 63m<sup>2</sup> roof and two parking bays. There will be a perforated pipe connection from each house through the permeable paving subbase material and into the main surface drainage. The provision of the permeable paving to each parking bay will significantly delay and reduce the volume of flow to the main surface water drainage.

### 5.3.3 Catchpit Manholes

Catchpit manholes will be provided prior to discharge into the attenuation tank. The function of the catchpits is to collect silt and debris and prevent blockages thus reducing risk of flooding and maintenance of the system.

### 5.3.4 Attenuation

Attenuation and flow control will be adopted on the site to limit discharge rates from the site in compliance with SuDS. In addition to this infiltration will be encouraged from the attenuation tank into surround soils which will further reduce runoff off site. These are described in detail in section 5.2 of this report.

### 5.3.5 Rain Gardens

Rain gardens (depressed areas) appropriately planted and landscaped will be provided in three locations on the site to cater for the surface water runoff from Apartment Block R1 and



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Student Blocks S1, S2 and S3. These will cater for the runoff from a 1:100 year storm event meaning runoff will be treated at source adjacent to these buildings.

**Please refer to ORS drawing nos. 211\_035-ORS-Z0-00-DR-C-400, 211\_035-ORS-XX-XX-DR-C-402, 211\_035-ORS-XX-XX-DR-C-403 and 211\_035-ORS-Z0-00-DR-C-451 for details of the proposed surface water drainage for the development.**

## 6 Flood Risk

The Floodinfo.ie website was consulted for high level information on any potential flood risk on the site. The site is not in an area of defined flood risk under the OPW mapping and there is no indication of any likely past or future flood incidences in the vicinity of the site. Refer to figure 6.1 below.

The development will present no significant increase in risk of flooding either within the site or downstream of the site. Surface water runoff will be limited to greenfield runoff rates via flow control measures.

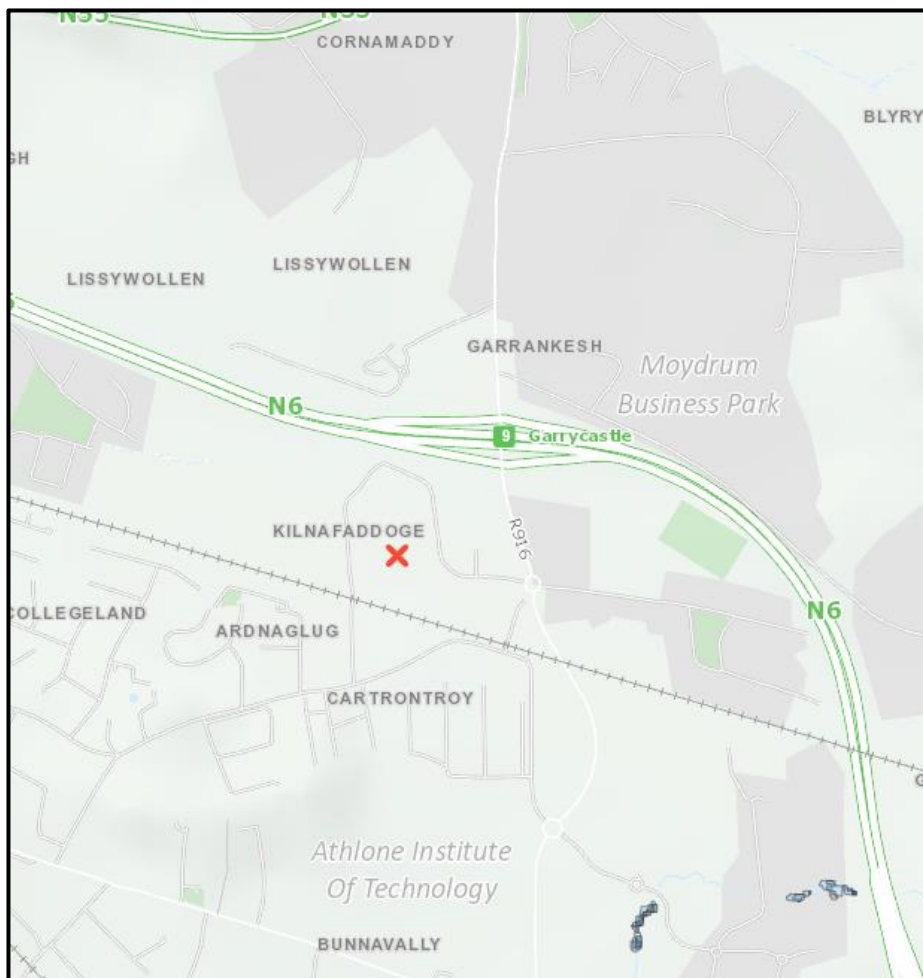


Figure 6.1 – Floodinfo Map – approximate site location marked with red X.

## 7 Service Vehicle Access

ORS have carried out a swept path analysis on the proposed site plan to confirm adequate access for service vehicles within the site. A refuse truck and a fire tender were modelled, and sufficient access is achieved. Fire tender access is designed in the park areas for fire access to the student housing and the residential apartments using 4m wide footpaths.

**Please refer to ORS drawing no. 211\_035-ORS-Z0-00-DR-TR-700 for details.**

## 8 Bus Stops

Two bus stops are proposed to be provided on Lissywollen Avenue to the east of the site. These are proposed to be on-site stops with bus cage road markings. ORS engaged with both Westmeath County Council Road Department and the National Transport Authority and agreed in principle the position, location and details of the proposed bus stops.

**Please refer to ORS drawing no. 211\_035-ORS-Z0-00-DR-TR-701 for details.**

## 9 DMURS Engineering Criteria

Guidance has been taken from DMURS for the engineering design of streets and footpaths within the development. Refer to ORS DMURS Compliance Report 211\_035-ORS-XX-XX-RP-TR-7d-003 for details.

## 10 Off Site Works agreed with Local Authority

In addition to the above specified works within the red-line boundary, Westmeath County Council are facilitating some offsite works to support the project for which the applicant has confirmed written consent. These include:

- Resurfacing Blackberry Lane along the western extent of the site. A special development contribution has been agreed with the applicant for such purposes.
- Facilitating works to complete connections to the Old Rail Trail Greenway, including
  - Completion of pedestrian/cycle path between Blocks R1 and S1 to the surfaced area of the greenway to the south, and;
  - Replacement of existing gated access between the greenway and Blackberry Lane (southwest of the site) with a revised arrangement with dedicated cycle/pedestrian access. Final works to be agreed with Westmeath County Council.

Supporting correspondence for the above agreed works outside the red-line boundary is attached in Appendix G.



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## Appendix A – Irish Water Correspondence

1. Confirmation of Feasibility Letter dated 10/09/2021
2. Statement of Design Acceptance dated 09/12/2021
3. Diversion Feasibility Confirmation date 24/11/2021

Stephen Grant  
 ORS  
 Block A  
 Marlinstown Business Park  
 Mullingar  
 Co. Westmeath

Uisce Éireann  
 Bosca OP 448  
 Oifig Sheachadta na  
 Cathrach Theas  
 Cathair Chorcaí

Irish Water  
 PO Box 448,  
 South City  
 Delivery Office,  
 Cork City.

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

10 September 2021

**Re: CDS21001725 pre-connection enquiry - Subject to contract | Contract denied**

**Connection for Student Accommodation and Housing Development at Lissywoolen, Athlone, Westmeath**

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Lissywoolen, Athlone, Westmeath (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated subject to the comments below.

SERVICE	<b>OUTCOME OF PRE-CONNECTION ENQUIRY</b> <b><u>THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.</u></b>
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible Subject to upgrades
<b>SITE SPECIFIC COMMENTS</b>	
Water Connection	<p>The Athlone Water Treatment Plant upgrade works currently underway will provide ample capacity for this proposed development. The existing 315mm HDPE watermain in the public road (R916) to the east of your development site can facilitate your water connection.</p> <p>This connection should also include a bulk meter, which will be linked up with telemetry online. On-site storage should also be provided as part of your development design (24-hour capacity at the Average Day/Peak Week demand rate, 12-hour refill time from 0% to 100%).</p>
Wastewater Connection	<p>There is sufficient capacity at the Athlone Wastewater Treatment Plant to facilitate this development. The existing 225mm and 300mm sewers traversing this development site can both facilitate connections.</p> <p>More of your proposed development should be connected to the existing 300mm sewer traversing the northern section of your site as there is more capacity in this sewer to facilitate the envisaged loading.</p>



Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

#### **General Notes:**

- 1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
- 2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
- 3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
- 4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at <https://www.water.ie/connections/get-connected/>
- 5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
- 6) Irish Water Connection Policy/ Charges can be found at <https://www.water.ie/connections/information/connection-charges/>
- 7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
- 8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
- 9) To access Irish Water Maps email [datarequests@water.ie](mailto:datarequests@water.ie)
- 10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Peter O'Halloran from the design team on 086 8824642 or email [PeOHalloran@water.ie](mailto:PeOHalloran@water.ie) For further information, visit **[www.water.ie/connections](http://www.water.ie/connections)**.

Yours sincerely,



**Yvonne Harris**

**Head of Customer Operations**



Stephen Grant

Block A  
Marlinstown Business Park  
Mullingar, Co. Westmeath

9 December 2021

Uisce Éireann  
Bosca OP 448  
Oifig Sheachadta na  
Cathrach Theas  
Cathair Chorcaí

Irish Water  
PO Box 448,  
South City  
Delivery Office,  
Cork City.

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

**Re: Design Submission for Lissywoolen, Athlone, Westmeath (the “Development”)  
(the “Design Submission”) / Connection Reference No: CDS21001725**

Dear Stephen Grant,

Many thanks for your recent Design Submission.

We have reviewed your proposal for the connection(s) at the Development. Based on the information provided, which included the documents outlined in Appendix A to this letter, Irish Water has no objection to your proposals.

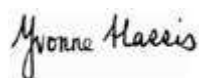
This letter does not constitute an offer, in whole or in part, to provide a connection to any Irish Water infrastructure. Before you can connect to our network you must sign a connection agreement with Irish Water. This can be applied for by completing the connection application form at [www.water.ie/connections](http://www.water.ie/connections). Irish Water’s current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities (CRU) ([https://www.cru.ie/document\\_group/irish-waters-water-charges-plan-2018/](https://www.cru.ie/document_group/irish-waters-water-charges-plan-2018/)).

You the Customer (including any designers/contractors or other related parties appointed by you) is entirely responsible for the design and construction of all water and/or wastewater infrastructure within the Development which is necessary to facilitate connection(s) from the boundary of the Development to Irish Water’s network(s) (the “**Self-Lay Works**”), as reflected in your Design Submission. Acceptance of the Design Submission by Irish Water does not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

If you have any further questions, please contact your Irish Water representative:

Name: Peter O'Halloran  
Phone: 094 90 43319  
Email: [PeOHalloran@water.ie](mailto:PeOHalloran@water.ie)

Yours sincerely,



**Yvonne Harris**  
**Head of Customer Operations**

## Appendix A

### Document Title & Revision

- [Civil Services layout DWG: 201\_035-ORS-ZO-00-DR-C-400 Rev P02 ]
- [Proposed Watermain layout DWG: 201\_035-ORS-ZO-00-DR-C-450 Rev P01]
- [Proposed Waste Water layout DWG: 201\_035-ORS-ZO-00-DR-C-452 Rev P01]

### Standard Details/Code of Practice Exemption:

**NOT USED**

For further information, visit [www.water.ie/connections](http://www.water.ie/connections)

Notwithstanding any matters listed above, the Customer (including any appointed designers/contractors, etc.) is entirely responsible for the design and construction of the Self-Lay Works. Acceptance of the Design Submission by Irish Water will not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

Mr. Stephen Grant,  
ORS,  
Block A,  
Marlinstown Office Park,  
Mullingar,  
Co. Westmeath

**Uisce Éireann**  
Bosca OP 448  
Oifig Sheachadta na  
Cathrach Theas  
Cathair Chorcaí

**Irish Water**  
PO Box 448,  
South City  
Delivery Office,  
Cork City.

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

24 November 2021

Dear Mr. Grant,

**Re: Irish Water Diversion reference DIV21236. Proposed development at Lissywollen, Athlone, Co Westmeath. Subject to contract / Contract denied**

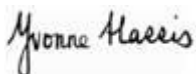
Irish Water has reviewed your enquiry in relation to diversions of Irish Water's 300mm and 225mm wastewater sewers as part of the above proposed development, as indicated on drawing numbers 211\_035-ORS-Z0-00-DR-C-410-P01 and 211\_035-ORS-Z0-ZZ-DR-C-411-P01.

Based upon the details you have provided with your enquiry and as assessed by Irish Water, we wish to advise you that, subject to detailed design being agreed and valid agreements being put in place, the proposal can be facilitated.

You are advised that this correspondence does not constitute an agreement in whole or in part to build near any Irish Water infrastructure and is provided subject to an associated Diversion Agreement being executed and a Deed of Easement being provided to Irish Water, prior to the commencement of any related construction activities. Please engage with Irish Water again in relation to this matter at such time planning permission has been granted for the proposed development.

If you have any further questions, please contact Brendan Kearney from the Diversions team on 0871016233 or email [brkearney@water.ie](mailto:brkearney@water.ie). For further information, visit <https://www.water.ie/connections/developer-services/diversion-and-build-over/>.

Yours sincerely,



**Yvonne Harris**

**Head of Customer Operations**

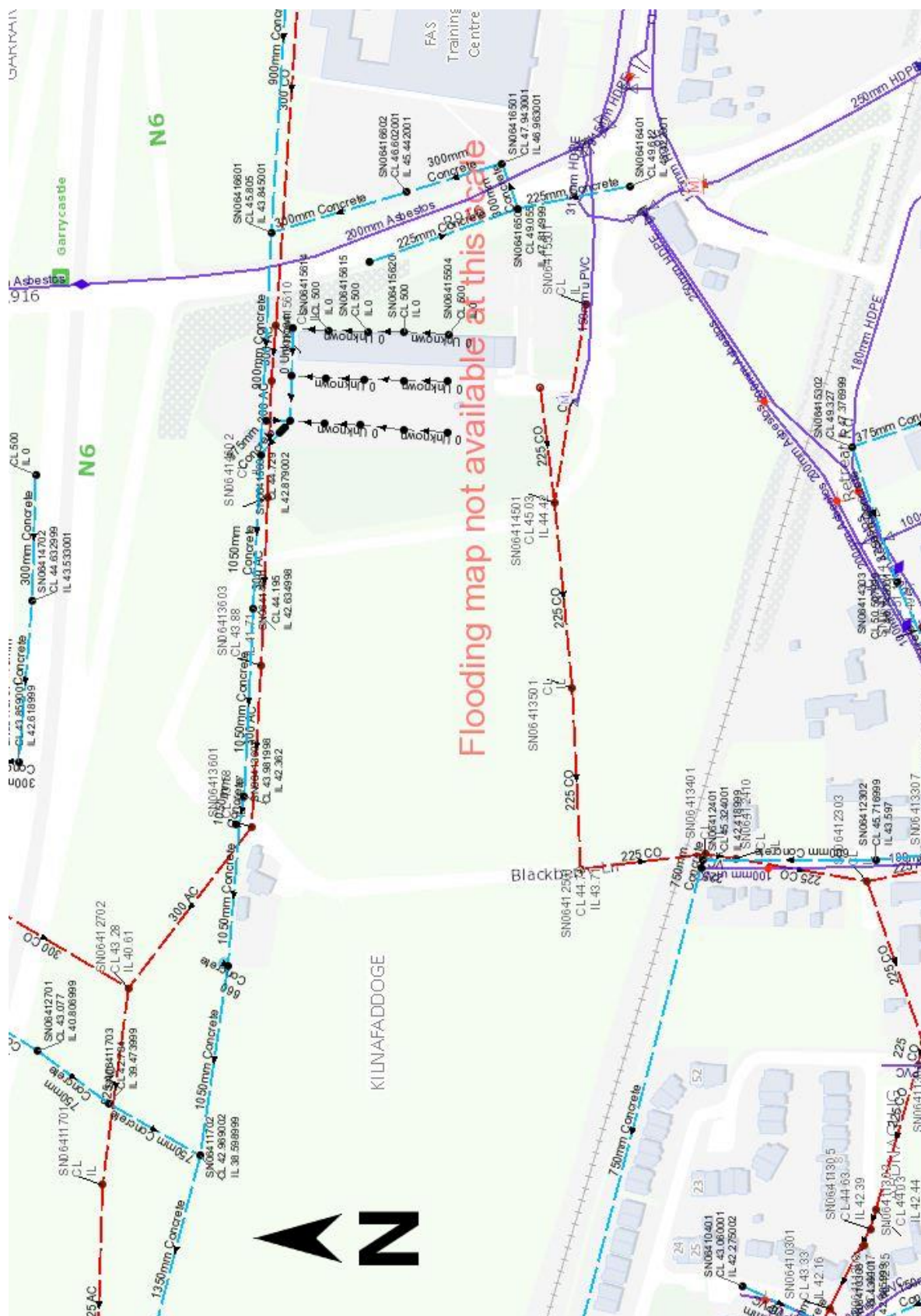


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## Appendix B – Existing Services Infrastructure Maps





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## Appendix C – Water and Wastewater Demand Calculations



**PROPOSED WATER DEMAND CALCULATIONS**

ORS Ref:

**211\_035**

**CLIENT:** Avenir Homes Ltd.  
**PROJECT DESCRIPTION:** Proposed SHD at Cartrontrouy, Kilnafaddoge, Lissywollen and Ardnaglug, Athlone  
**DRAWING REFERENCE:** 211\_035-ORS-Z0-00-DR-C-400 and 211\_035-ORS-Z0-00-DR-C-450

<i>Unit Type:</i>	<i>Number of:</i>	<i>Flow (l/day/person):</i>	<i>Persons per Dwelling:</i>	<i>Total Flow (l/day)</i>
Residential - Houses & Apartments	122	150	4	73200
Residential - Student Housing Beds	283	100	1	28300
Commercial - Creche (Staff and Children)	1	90	24	2160

**Residential**

	<b>Total Flow (l/day):</b>	101500	<b>Total Flow (m<sup>3</sup>/day):</b>	101.5
	<i>Average Hour Water Demand</i>		<b>1.17</b>	<i>l/s</i>
	<i>Peak Hour Water Demand (Average Hour Water Demand x 5)</i>		<b>5.87</b>	<i>l/s</i>

**Commercial**

	<b>Total Flow (l/day):</b>	2160	<b>Total Flow (m<sup>3</sup>/day):</b>	2.16
	<i>Average Hour Water Demand</i>		<b>0.03</b>	<i>l/s</i>
	<i>Peak Hour Water Demand (Average Hour Water Demand x 5)</i>		<b>0.13</b>	<i>l/s</i>



**PROPOSED FOUL SEWER DESIGN CALCULATIONS**

ORS Ref:

**211\_035**

**CLIENT:**  
**PROJECT DESCRIPTION:**  
**DRAWING REFERENCE:**

**Avenir Homes Ltd.**  
**Proposed SHD at Cartronroy, Kilnafaddoge, Lissywollen and Ardnaglug, Athlone**  
**211\_035-ORS-Z0-00-DR-C-400 and 211\_035-ORS-Z0-00-DR-C-452**

<i>Unit Type:</i>	<i>Number of:</i>	<i>Flow (l/day/person):</i>	<i>BOD (g/day/person)</i>	<i>Persons</i>	<i>Total Flow (l/day)</i>	<i>BOD (g/day/person)</i>	<i>P.E.</i>
Residential - Houses & Apartments	122	150	60	488	73200	29280	488
Residential - Student Housing Beds	283	100	60	283	28300	16980	283
Commercial - Creche (Staff and Children)	1	90	60	24	2160	1440	24
<b>Total Residential</b>					101500	46260	771
<b>Total Residential - Student Housing</b>					2160	16980	283
<b>Residential Total Flow per day</b>						<b>101500.00</b>	<i>litres/day</i>
<b>Residential Dry Weather Flow (DWF)</b>						<b>1.17</b>	<i>litres/second</i>
<b>Peak Dry Weather Flow</b>						<b>7.05</b>	<i>l/s @ 6 x DWF</i>
<b>Commercial Total Flow per day</b>						<b>2160.00</b>	<i>litres/day</i>
<b>Hotel Dry Weather Flow (DWF)</b>						<b>0.03</b>	<i>litres/second</i>
<b>Peak Dry Weather Flow</b>						<b>0.15</b>	<i>l/s @ 6 x DWF</i>





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## Appendix D – Surface Water Attenuation Calculations



## ATTENUATION CALCULATIONS

ORS Ref:

211\_035

**CLIENT:** Avenir Homes Ltd.  
**PROJECT DESCRIPTION:** Proposed SHD at Cartronroy, Kilnafaddoge, Lissywollen and Ardnaglug, Athlone  
**DRAWING REFERENCE:** 211\_035-ORS-Z0-00-DR-C-400 & 211\_035-ORS-Z0-00-DR-C-451

M560 (mm)	14.50	M52d (mm)	52.40	M560/M52d	0.28	LOCATION	Athlone	SAAR (mm)	970.9
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Duration	RETURN PERIOD (Years)							
	0.5	1	2	5	10	20	30	100
15 (mins)	4.1,	5.6,	6.4,	8.9,	10.8,	12.8,	14.20	19.00
30 (mins)	5.5,	7.3,	8.3,	11.3,	13.6,	16.2,	17.80	23.50
1 (hour)	7.2,	9.6,	10.7,	14.5,	17.3,	20.3,	22.30	29.00
2 (hours)	9.6,	12.5,	13.9,	18.5,	21.9,	25.6,	27.90	35.90
4 (hours)	12.6,	16.2,	18.1,	23.7,	27.8,	32.1,	34.90	44.40
6 (hours)	14.9,	19.0,	21.0,	27.4,	31.9,	36.8,	39.80	50.30
12 (hours)	19.7,	24.8,	27.3,	35.0,	40.4,	46.2,	49.90	62.10
1 (day)	26.00	32.30	35.40	44.70	51.30	58.20	62.50	76.90
2 (day)	32.3,	39.2,	42.6,	52.4,	59.2,	66.2,	70.50	84.80

Return Period (Years)	30	Duration (hours)	Duration (mins)	Rainfall (mm)	Rainfall (m <sup>3</sup> /ha)	Total Contribut. Area (ha)	Proposed Run-off (m <sup>3</sup> )	Allowable Outflow (m <sup>3</sup> )	Storage (m <sup>3</sup> )
Allowable Outflow (l/s/ha)	5.00	0.25	15	14.20	142	1.6265	231	16.88	214
Total Site Area (ha)	3.75	0.5	30	17.80	178	1.6265	290	33.75	256
Impermeable Area (ha)	1.545	1	60	22.30	223	1.6265	363	67.50	295
Total Allowable outfall (l/s)	18.75	2	120	27.90	279	1.6265	454	135.00	319
95% Impermeable Area (ha)	1.391	4	240	34.90	349	1.6265	568	270.00	298
Total Green Roof (ha)	0.06	6	360	39.80	398	1.6265	647	405.00	242
60% Green Roof Area (ha)	0.036	12	720	49.90	499	1.6265	812	810.00	2
Total Green Area (ha)	2	24	1440	62.50	625	1.6265	1017	1620.00	-603
10% Green Area (ha)	0.2	48	2880	70.50	705	1.6265	1147	3240.00	-2093
Total Contributing Area (ha)	1.627								

Total Storage (m <sup>3</sup> )	319
Total Storage (m <sup>3</sup> ) incl. 10% Climate Change allowance	351



## ATTENUATION CALCULATIONS

ORS Ref:

211\_035

**CLIENT:** Avenir Homes Ltd.  
**PROJECT DESCRIPTION:** Proposed SHD at Cartronroy, Kilnafaddoge, Lissywollen and Ardnaglug, Athlone  
**DRAWING REFERENCE:** 211\_035-ORS-Z0-00-DR-C-400 & 211\_035-ORS-Z0-00-DR-C-451

M560 (mm)	14.50	M52d (mm)	52.40	M560/M52d	0.28	LOCATION	Athlone	SAAR (mm)	970.9
-----------	-------	-----------	-------	-----------	------	----------	---------	-----------	-------

Duration	RETURN PERIOD (Years)							
	0.5	1	2	5	10	20	30	100
15 (mins)	4.1,	5.6,	6.4,	8.9,	10.8,	12.8,	14.20	19.00
30 (mins)	5.5,	7.3,	8.3,	11.3,	13.6,	16.2,	17.80	23.50
1 (hour)	7.2,	9.6,	10.7,	14.5,	17.3,	20.3,	22.30	29.00
2 (hours)	9.6,	12.5,	13.9,	18.5,	21.9,	25.6,	27.90	35.90
4 (hours)	12.6,	16.2,	18.1,	23.7,	27.8,	32.1,	34.90	44.40
6 (hours)	14.9,	19.0,	21.0,	27.4,	31.9,	36.8,	39.80	50.30
12 (hours)	19.7,	24.8,	27.3,	35.0,	40.4,	46.2,	49.90	62.10
1 (day)	26.00	32.30	35.40	44.70	51.30	58.20	62.50	76.90
2 (day)	32.3,	39.2,	42.6,	52.4,	59.2,	66.2,	70.50	84.80

Return Period (Years)	100	Duration (hours)	Duration (mins)	Rainfall (mm)	Rainfall (m <sup>3</sup> /ha)	Total Contribut. Area (ha)	Proposed Run-off (m <sup>3</sup> )	Allowable Outflow (m <sup>3</sup> )	Storage (m <sup>3</sup> )
Allowable Outflow (l/s/ha)	5.00	0.25	15	19.00	190	1.6301	310	16.88	293
Total Site Area (ha)	3.75	0.5	30	23.50	235	1.6301	383	33.75	349
Impermeable Area (ha)	1.545	1	60	29.00	290	1.6301	473	67.50	405
Total Allowable outfall (l/s)	18.75	2	120	35.90	359	1.6301	585	135.00	450
95% Impermeable Area (ha)	1.391	4	240	44.40	444	1.6301	724	270.00	454
Total Green Roof (ha)	0.066	6	360	50.30	503	1.6301	820	405.00	415
60% Green Roof Area (ha)	0.04	12	720	62.10	621	1.6301	1012	810.00	202
Total Green Area (ha)	2	24	1440	76.90	769	1.6301	1254	1620.00	-366
10% Green Area (ha)	0.2	48	2880	84.80	848	1.6301	1382	3240.00	-1858
Total Contributing Area (ha)	1.63								

Total Storage (m <sup>3</sup> )	454
Total Storage (m3) incl. 10% Climate Change allowance	499



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## Appendix E – Typical Attenuation Tank System

# AquaCell Core-R

## Application

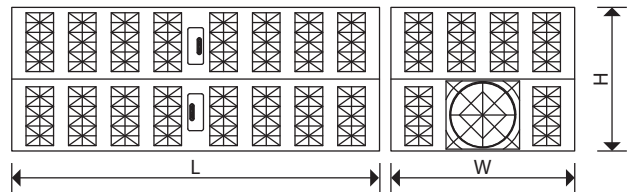
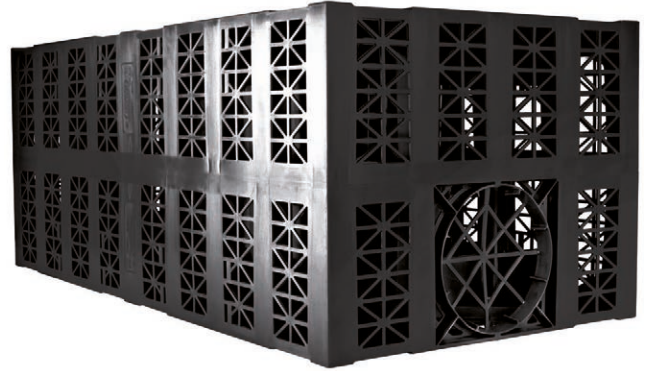
AquaCell Core-R has been designed for use in deep applications, subject to regular and heavy traffic loadings, e.g. cars and HGV's. AquaCell Core-R can also be used for deep soakaways and landscaped applications.

Typically for use down to depths of 6.68m in landscaped areas (6.43m trafficked by cars) to the base of the units from ground level, in best soil conditions.

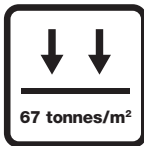
Trafficking by heavy construction plant on site, including mechanical equipment, must be avoided until the minimum cover depth of 1.11 metres is in place.

## Features and benefits

- ⦿ Suitable for regular and heavy traffic loadings
- ⦿ Proven vertical loading capacity of: 66.9 tonnes/m<sup>2</sup> (669 kN/m<sup>2</sup>)
- ⦿ Proven lateral loading capacity of: 12.3 tonnes/m<sup>2</sup> (123kN/m<sup>2</sup>)
- ⦿ BBA approved – Certificate No 03/4018
- ⦿ Ideal for all types of shallow and deep projects including major attenuation and infiltration schemes



Nominal size (mm)	Part number	Dimensions (mm)		
		W	H	L
160	6LB150	500	400	1000



## Maximum installation depths – to base of units (m)<sup>1</sup>

Typical soil type	Soil weight kN/m <sup>3</sup>	Angle of internal friction $\phi$ (degrees) <sup>2,3</sup>	Landscaped areas	Vehicle mass <9 tonnes <sup>4,5</sup>	Vehicle mass <44 tonnes
Over-consolidated stiff clay	20	24	3.85	3.61	3.36
Silty sandy clay	19	26	4.35	4.09	3.83
Loose sand and gravel	18	30	5.34	5.06	4.78
Medium dense sand and gravel	19	34	5.94	5.68	5.41
Dense sand and gravel	20	38	6.68	6.43	6.18

- (1) Without groundwater present below base of units – AquaCell Core-R may be used where groundwater is present, contact Wavin for technical advice.
- (2) Loosening of dense sand or softening of clay by water can occur during installation. The designer should allow for any such likely effects when choosing an appropriate value of  $\phi$ .
- (3) The design is very sensitive to small changes in the assumed value of  $\phi$ , therefore, it should be confirmed by a chartered geotechnical engineer. In clay soils, it may be possible to utilise cohesion in some cases.
- (4) Applicable for car parks or other areas trafficked only by cars or occasional refuse collection trucks or similar vehicles (typically one per week).
- (5) This category should be used when considering landscaped areas that may be trafficked by ride on mowers.

Assumptions made: ⦿ Ground surface is horizontal  
 ⦿ Shear planes or other weaknesses are not present within the structure of the soil.

Source: BBA



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## Appendix F – Surface Water and Wastewater Pipe Calculations



**Proposed Foul Drainage: BS 8005**

ORS REF: 211\_035

CLIENT: AVENIR HOMES LTD.  
 PROJECT DESCRIPTION: Proposed SHD at Cartrontrouy, Kilnafaddoge, Lissywollen and Ardnaglug, Athlone  
 DRAWING REFERENCE: 211\_035-ORS-Z0-00-DR-C-400

Assumed Foul Discharge Per Resident	200	Litres/Head/Day
Minimum Self Cleansing Velocity	0.75	l/s
Assumed Occupancy	4	Persons/House
Surface Roughness	1.5	

PIPE RUN:		Total No. of Houses (Cumulative)	Dry Weather Flow	Peak Flow	Diameter	Gradient	Capacity	Velocity	Check
MH ID 1	MH ID 2		(l/s)	(l/s)	(mm)	(1 in)	(l/s)	(m/s)	
F6.1	F6	9	0.08	0.5	150	100	15.47	0.88	Pass
F6	F5	19	0.18	1.1	150	100	15.47	0.88	Pass
F5	F4	35	0.32	1.9	225	100	45.63	1.15	Pass
F4	F3	38	0.35	2.1	225	100	45.63	1.15	Pass
F12	F11	10	0.09	0.6	150	100	15.47	0.88	Pass
F11.2	F11.1	16	0.15	0.9	150	100	15.47	0.88	Pass
F11.1	F11	20	0.19	1.1	150	100	15.47	0.88	Pass
F11	F10	30	0.28	1.7	225	100	45.63	1.15	Pass
F10	F3	37	0.34	2.1	375	200	125.04	1.13	Pass
F3	F2	75	0.69	4.2	225	200	32.19	0.81	Pass
F2.1	F2	3	0.03	0.2	150	100	15.47	0.88	Pass
F51.2	F51.1	56	0.52	3.1	225	200	32.19	0.81	Pass
F51.1	F50	56	0.13	0.8	225	200	32.19	0.81	Pass



**SURFACE WATER DESIGN CALCULATIONS**

ORS Ref:

**211\_035**

CLIENT:  
PROJECT DESCRIPTION:  
DRAWING REFERENCE:

**AVENIR HOMES LTD.**  
**Proposed SHD at Cartronroy, Kilnafaddoge, Lissywollen and Ardnaglug, Athlone**  
**211\_035-ORS-Z0-00-DR-C-400**

Storm Frequency (Once In/)	<b>2</b>	Time of Entry (mins)	<b>5</b>	Surface Roughness (mm)	<b>0.6</b>
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RUN:		LENGTH	FALL	GRADIENT		IMP. AREAS (ha)			CUM. AREA	PIPE DIA	VELOCITY	CAPACITY	TIME OF FLOW	TIME OF CONC.	RAINFALL RATE	FLOW	EXCESS CAP.	Check
		(m)	(m)	1 IN	%	ROADS	OTHER	TOTAL	(ha)	(mm)	(m/s)	l/s	(mins)	(mins)	(mm/hr)	(l/s)	(l/s)	
S16	S15	66.000	0.330	200	0.005	0.09	0.089	0.179	0.179	225	0.921	37	1.19	6.19	63.209	31	5	Ok
S15	S14	71.700	0.359	200	0.005	0.09	0.123	0.213	0.392	300	1.108	78	1.08	7.27	57.295	62	16	Ok
S14	S13	22.100	0.111	200	0.005	0.035	0.0093	0.0443	0.4363	300	1.108	78	0.33	7.61	55.739	68	11	Ok
S13	S6	57.000	0.285	200	0.005	0.0306	0.0675	0.0981	0.5344	375	1.278	141	0.74	8.35	52.613	78	63	Ok
S9.2	S9.1	40.000	0.400	100	0.010	0.052	0.034	0.086	0.086	225	1.307	52	0.51	5.51	67.859	16	36	Ok
S9.1	S9	8.000	0.080	100	0.010	0	0	0	0.086	225	1.307	52	0.10	5.61	67.111	16	36	Ok
S10.2	S10.1	30.500	0.305	100	0.010	0.029	0.01	0.039	0.039	225	1.307	52	0.39	6.00	64.442	7	45	Ok
S10.1	S10	22.200	0.222	100	0.010	0.031	0.012	0.043	0.082	225	1.307	52	0.28	6.28	62.661	14	38	Ok
S9	S8	55.600	0.185	300	0.003	0.021	0.035	0.056	0.168	375	1.041	115	0.89	0.89	182.571	85	30	Ok
S8	S7	57.000	0.190	300	0.003	0.04	0.0545	0.0945	0.2625	375	1.041	115	0.91	1.80	128.565	94	21	Ok
S7.2	S7.1	49.900	0.250	200	0.005	0.0376	0.036	0.0736	0.0736	225	0.921	37	0.90	5.90	65.087	13	23	Ok
S7.1	S7	35.400	0.177	200	0.005	0.0273	0.03	0.0573	0.1309	225	0.921	37	0.64	5.64	66.904	24	12	Ok
S7	S6	23.000	0.115	200	0.005	0.016	0.007	0.023	0.4164	375	1.278	141	0.30	2.10	118.318	137	4	Ok
S6	S6.1	17.900	0.060	300	0.003	0.016	0	0.016	0.9508	450	1.169	186	0.26	6.16	63.434	168	18	Ok





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## Appendix G – Local Authority Correspondence for offsite works

## Mark Cunningham

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**From:** Patrick Nally <pnally@westmeathcoco.ie>  
**Sent:** 18 November 2021 20:06  
**To:** Mark Cunningham  
**Cc:** Paula Hanlon  
**Subject:** RE: Resurfacing Of The Blackberry Lane At Cartronroy, Kilnafaddoge and Lissywollen (townlands), Athlone, Co. Westmeath.

Mark

The proposal is acceptable to Westmeath County Council.

Please indicate your willingness in this regard when making your submission & we will reflect it in our reports also.

Regards



**Patrick Nally | Senior Executive Engineer (District Engineer) | Municipal District of Athlone Moate, Westmeath County Council, Civic Centre, Church Street, Athlone, Co. Westmeath, N37 P2T5 | 📞 Office 090 6442150 | 📠 090 6479020 |**

✉ [pnally@westmeathcoco.ie](mailto:pnally@westmeathcoco.ie) | [www.westmeathcoco.ie](http://www.westmeathcoco.ie)

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**From:** Mark Cunningham <Mark@cunninghamdp.ie>  
**Sent:** Friday 12 November 2021 11:30  
**To:** Patrick Nally <pnally@westmeathcoco.ie>  
**Cc:** Mark Cunningham <Mark@cunninghamdp.ie>  
**Subject:** Re: Resurfacing Of The Blackberry Lane At Cartronroy, Kilnafaddoge and Lissywollen (townlands), Athlone, Co. Westmeath.

**⚠ CAUTION:** This email originated from outside Westmeath County Councils email system. **DO NOT CLICK** links, or open attachments, unless you recognise the sender and know the content is safe.

Dear Pat

I refer to the above and to our telephone conversation of this morning and I now attach a costing report for the proposed resurfacing of The Black Berry Lane for your consideration.

Please note that I hereby confirm that I am prepared to accept the stated amount of €29,078 as a condition of planning in the form of a special development contribution for the resurfacing of The Black Berry Lane in the event of a successful grant of planning permission.

Please let me know if this is acceptable amount is acceptable to The Local Authority at your convenience.

Kind regards.

## Mark Cunningham

---

**From:** Mark Cunningham  
**Sent:** 12 November 2021 11:30  
**To:** Patrick Nally  
**Cc:** Mark Cunningham  
**Subject:** Re: Resurfacing Of The Blackberry Lane At Cartronroy, Kilnafaddoge and Lissywollen (townlands), Athlone, Co. Westmeath.  
**Attachments:** Blackberry Lane, Athlone, Co Westmeath - Resurfacing Works.pdf

Dear Pat

I refer to the above and to our telephone conversation of this morning and I now attach a costing report for the proposed resurfacing of The Black Berry Lane for your consideration.

Please note that I hereby confirm that I am prepared to accept the stated amount of €29,078 as a condition of planning in the form of a special development contribution for the resurfacing of The Black Berry Lane in the event of a successful grant of planning permission.

Please let me know if this is acceptable amount is acceptable to The Local Authority at your convenience.

Kind regards.

Mark Cunningham

Mark Cunningham BEng, MSc, CEng, MIEI.

Chartered Engineer & Assigned Certifier



CUNNINGHAM DESIGN & PLANNING

Block C

N4 Axis Centre

Longford

Mr. Mark Cunningham  
CUNNINGHAM DESIGN & PLANNING  
Block C  
N4 Axis Centre  
Longford  
Co. Longford.

11<sup>th</sup> November 2021

Dear Mark,

**Re: Resurfacing Works to Blackberry Lane at Cartrontroty, Kilnafaddoge and Lissywollen (Townlands), Athlone, Co Westmeath**

We refer to the above project and the requirement for the resurfacing of the existing road surface to Blackberry Lane.

In this regard we outline below the budget costs involved in the resurfacing exercise.

**Scope of Works**

Extent of works to Blackberry Lane as per attached site plan in Appendix 1 and the shaded in 'orange'; the overall length measures 264m; the finished road surface width is to be 4m wide, meaning the overall surface area is 1,056m<sup>2</sup>

The proposed works are to include the planing out of the existing road surfaces (the current road surface condition is as shown in the photo's contained within Appendix 1).

**Proposed Specification**

Plane out existing road surface to achieve required levels		Item		€3,500.00
Suction sweep		Item		€750.00
Granular material; clause 804 to carriageway; 150mm thick	264	m2	€4.00	€1,056.00
Regulating macadam (approximate quantity - to be confirmed)	50	t	€90.00	€4,500.00
Apply cationic tack coat (between courses)	528	m2	€1.50	€792.00
Supply & lay dense bitumen macadam 170mm base course	264	m2	€26.00	€6,864.00
Supply & lay dense bitumen macadam 60mm binder course	264	m2	€30.00	€7,920.00
Supply & lay dense bitumen macadam (40mm wearing course)	264	m2	€14.00	€3,696.00
			<b>Total</b>	<b>€29,078.00</b>

Note: the above costs do not take into account any Traffic management, removal of existing shrubs, hedges, roots and the like. All surfacing materials to be laid by machine i.e. hand lay costs are excluded.

Your Sincerely,

KEVIN CAMPBELL  
QUANTITY SURVEYOR

**McKenna**  
Construction Consultants

T:+353(043)3341311

W:

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





## *APPENDIX 1*

RESURFACING OF BLACKBERRY LANE AT CARTRONTROY,  
KILNAFADDOGE AND LISSYWOLLEN (TOWNLANDS),  
ATHLONE, CO WESTMEATH



LENGTH OF BLACKBERRY LANE AS SHADED  7264m  
 SURFACE AREA OF SAME (4m WIDE) 1,056 SQUARE METERS

Proposed Work to be Performed  
 at the Site of the Blackberry Lane  
 Station to Improve the Station  
 Platform to Enhance the Quality of the Station







