



Waterman Moylan
Engineering Consultants

Engineering Assessment Report

Proposed Adamstown Boulevard Phase 1 Development at Lucan,
Adamstown, South Dublin County Council.

April 2022

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This document has been prepared and checked in accordance with
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Comments

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1. Introduction

This report has been prepared by Waterman Moylan in support of the proposed Development of **Phase 1** of the **Adamstown Boulevard** located in the Adamstown Strategic Development Zone (ASDZ), Co. Dublin.

The Adamstown Boulevard Tile will consist of 2 No Phases. This report details the criteria used to design and detail the foul water drainage, stormwater drainage, water supply and road construction required to serve the proposed Phase 1 of the development. All designs have taken the development as a whole (Phases 1 and 2) into consideration.

A plan showing the Adamstown Strategic Development Zone is set out in Figure 1-1 below:-



Figure 1-1: Location of Adamstown Strategic Development Zone (ASDZ) Lands

1.1 Site Location and Description

The proposed development lands are located within the **Adamstown Boulevard** tile of the ASDZ. The Adamstown Boulevard site is approximately 13 km west of Dublin and 2.75 km south of Lucan Village.

The total area of the overall Adamstown Boulevard tile is approximately 14.6 hectares and comprises 2 Phases. The area of the subject lands, Adamstown Boulevard Phase 1, is approx. 10.14 Ha. The site is bound by the Aderrig Tile and Adamstown Way to the north and the future Adamstown Boulevard Phase 2 development to the east. Station Road bounds the site to the south, and farmlands border the west of the site.

An indication of the location of the Adamstown Boulevard tile within the ASDZ lands can be seen in Figure 1-2 below. Figure 1-2 further indicates the location of **Phase 1**. For the exact site location and site layout please refer to the accompanying architects' drawings.

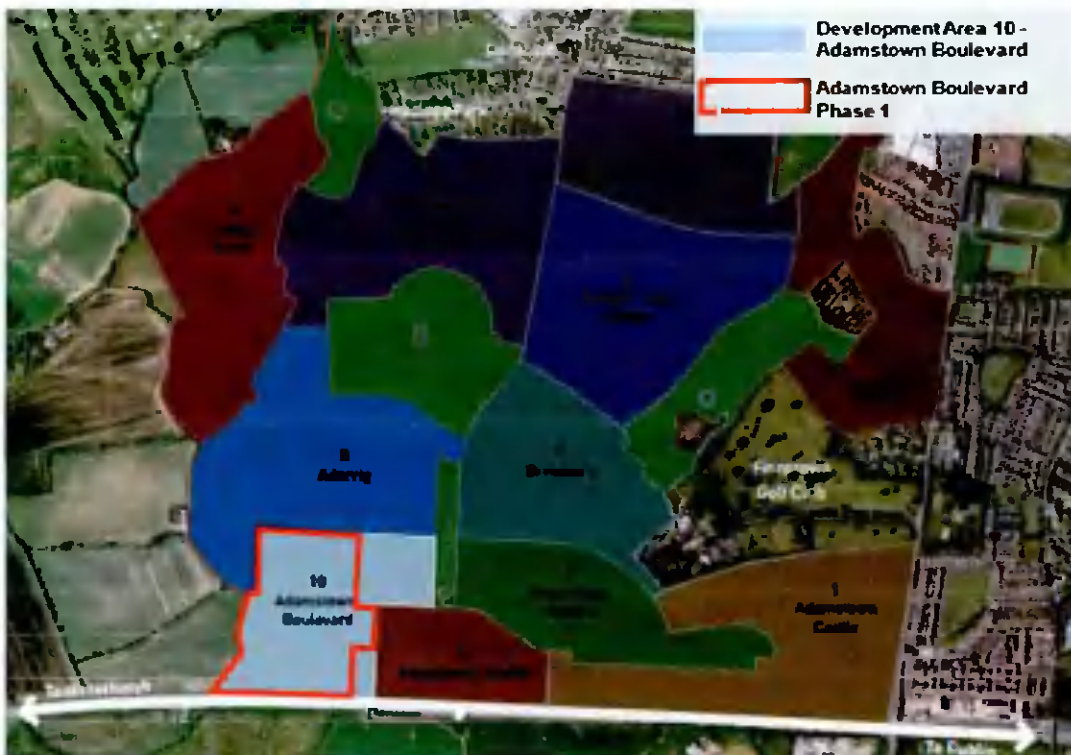


Figure 1-2: Adamstown Boulevard Phase 1 within Adamstown Boulevard tile of the ASDZ Lands

1.2 Existing Topography

The existing topography of the Adamstown Boulevard Phase 1 site is illustrated in Figure 1-3 below. An existing ditch traverses the site in the northwest corner of the lands. The site generally slopes from the south/southeast to the north with an overall elevation difference of 10m. A maximum ground elevation of 64.50m OD Malin exists within the south-eastern portion of the subject site, and a minimum ground elevation of 54.50m OD Malin exists on the north side of the site.

Temporary stockpiles of soil material exist on the subject land. The intent is to use these stockpiles where possible within the site.

The existing ground elevations table within Figure 1-3 shows the elevation intervals within the proposed subject site.

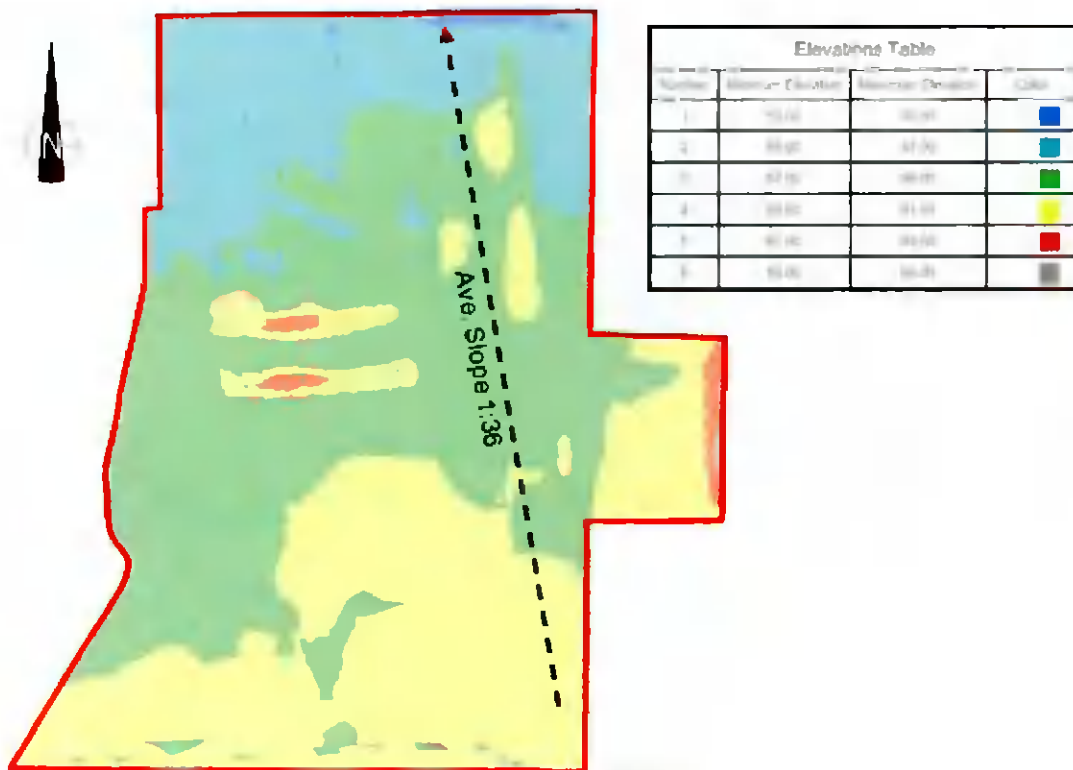


Figure 1-3: Survey Contours of Adamstown Boulevard Phase 1 Site

1.3 Proposed Development

The current application site (10.14ha) is located within Development Area 10 – Adamstown Boulevard of the Adamstown SDZ Planning Scheme, 2014, as amended.

Phase 1 of the Adamstown Boulevard development seeks Permission for 257no. terraced and semi-detached housing units ranging from 2 to 3-storeys in height; open space is proposed including a Pocket Park, and also a Linear Park which stretches from Adamstown Way to Station Road; all associated ancillary site development and landscape works, including internal roads and services, ESB Sub-Stations, landscaping and boundary treatment works. Outline Permission is also being sought for 166no. apartment units in a block ranging from 6 to 9-storeys in height which will deliver a range of unit types. All on a site of c.10.14Ha (including lands for Outline Permission).

The development is accessed from roads already approved or under construction. The existing Adamstown Way (permitted under Reg Ref SDZ06A/5) bounds the site to the north and 3 No access points are proposed onto this road. The Station Road (permitted under Reg Ref. SDZ04A/1) bounds the site to the south and 3 No access points are proposed onto this road. 1 No access point to the east of the site is proposed for future use into Phase 2 of the Boulevard and 1 No access point to the west of the site for the potential future development of the open lands.

The site is served by existing infrastructure constructed under the ASDZ Strategic Drainage Scheme and the Overall Adamstown Watermain Network Scheme. The existing infrastructure includes wastewater drainage, stormwater drainage and watermains built within the existing roads around the subject site.

The proposed development will provide for roads, drainage (wastewater and stormwater), water supply and utilities to serve the above-mentioned dwellings.

The proposed development, Adamstown Boulevard Phase 1, is to be constructed as the first Phase of a two-phase process within the Adamstown Boulevard Tile, as indicated in Figure 1-4 below: -



Figure 1-4. Architects Site Layout showing Proposed Phasing of the Adamstown Boulevard

2. Foul Water Drainage

2.1 Proposed Foul Water Drainage – General

It is proposed to discharge foul water from the Adamstown Boulevard Phase 1 development directly to the existing foul water system. On the 25th November 2021, in response to a Pre-Connection Enquiry (PCE) submission, Irish Water confirmed (customer reference no. 9540800086) that the current capacity available within the system can facilitate the overall Adamstown Boulevard Tile, including both Phases 1 and 2. Refer to Appendix A for the Irish Water Confirmation of Feasibility Letter. This report will deal with the foul water proposals for the Adamstown Boulevard Phase 1 only.

2.2 Foul Water Drainage – Existing

Overview

The majority of ASDZ lands drains by gravity to the Tobermaclugg Pumping Station through a series of existing foul sewers ranging from 225mm to 900mm in diameter predominantly within the road network. Tobermaclugg Pumping Station was completed in 2008 and is located approx. 1.4km north of the site. The pumping station discharges the foul water from the majority of the SDZ lands (85%) including the subject site, to the 9B trunk sewer at Balgaddy, via twin rising mains and a gravity sewer. Refer to Figure 2-1 below, which shows the existing foul network.

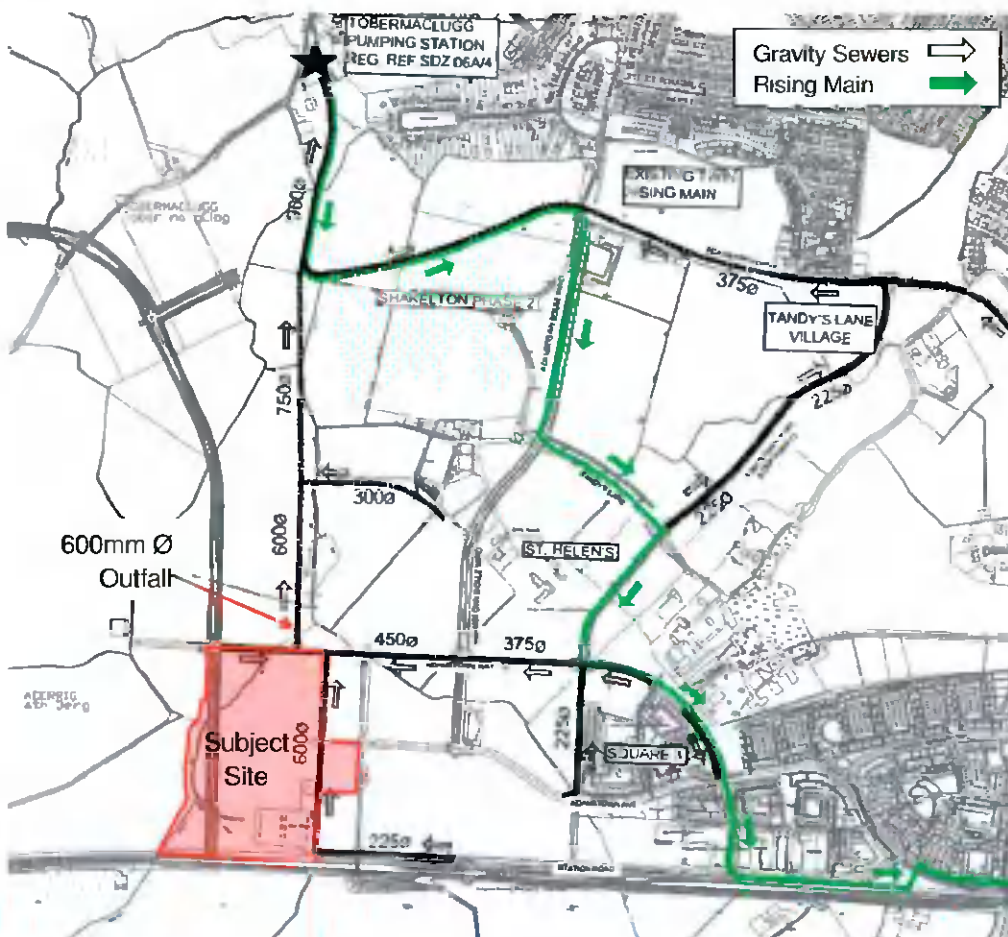


Figure 2-1: Existing Foul Water Sewer Network in the ASDZ

The existing foul sewers serving the Adamstown Boulevard tile have been constructed under the ASDZ Strategic Drainage Scheme. The network has been designed and constructed to accommodate the subject development.

The existing sewer network can be summarised as follows:

- An existing 600mm Ø trunk sewer located within Stream Road which drains from south to north, where it ultimately discharges to the Tobermaclugg Pumping Station in the northwest of the ASDZ lands.
- This foul sewer transverses west along Adamstown Way at the northern border of the site before continuing north between the Aderrig Phase 1 and 2 tiles, in the North South Link Road (also known as the Linear Park Road).

The majority of the existing services within the subject site are located within Stream Road, refer to Figure 2-2 for the location of these services in the proposed development.



Figure 2-2: Location of bulk existing services within Stream Road

2.3 Foul Water Drainage – Proposed

Connection Points

The majority of the foul water will be connected into the existing 600mm Ø foul water sewer which traverses the eastern boundary of the site from south to north. A portion of the site will drain into the existing 225mmØ foul water sewer in Adamstown Way. Refer to Figure 2-3 for an illustration of the foul water sewer connection point locations.



Figure 2-3: Foul Water Sewer Connection Points

2.4 Proposed Foul Water – Calculations

Phase 1 and 2 will discharge into the existing foul water pipelines installed within the development, as outlined in Section 2.2 above. Connections onto the existing 600mmØ and 225mmØ foul water pipelines will be installed under the Phase 1 Adamstown Boulevard project.

The foul water drainage for the proposed development has been designed to ensure minimum cleansing velocities outlined in the “Irish Water Code of Practice for Wastewater Infrastructure” are achieved for all foul sewers. The peak foul flow is based on Irish Water recommended peak demand/flow factors which are provided in the Irish Water ‘Code of Practice for Wastewater Infrastructure’, Appendix D - Wastewater Flow Rates for Design. A peak flow factor of 6x the dry weather flow has been used.

The proposed foul water network was modelled in the Causeway FLOW software package.

Pipe capacities and velocities have been calculated using Colebrook-White formula with a roughness coefficient (Ks) of 1.5mm.

The estimated foul flows generated from the proposed Phase 1 Adamstown Boulevard development are as follows:-

Table 2-1: Calculation of proposed Foul Water Flow for Phase 1 Boulevard Development

Description	No of Units	Population per unit	PE	Flow (l/hd/day)	Infiltration Factor	Total Discharge (l/d)
Dwellings - Connection No.1	102	2.7	275	150	1.1	45,441
Dwellings - Connection No.2	155	2.7	418	150	1.1	69,052.5
Apartments	166	2.7	449	150	1.1	74,085
Totals						188,578.5

Calculation of Proposed Peak Foul Flow		
Total Daily Discharge (from Table 2.2 above)	188,578.5	l/d
Dry Weather Flow (DWF)	2.18	ℓ/s
Peak Foul Flow (=6 x DWF)	13.09	ℓ/s

The proposed internal foul network will consist of 150mm and 225mm diameter pipes laid at minimum gradients of 1:150 and 1:200 respectively. The 150mm diameter pipes laid at the required minimum gradient provide a capacity of 13 ℓ/s, whilst the 225mm diameter pipes laid at the required minimum gradient provide a capacity of 32 ℓ/s and therefore have adequate capacity to cater for the flows from the development.

Refer to Waterman Moylan drawing 21-074-P200 which accompanies this planning submission, and which shows the existing and proposed foul water drainage layout for the proposed development. The referenced drawings include information regarding the foul water network connection points for the future Phase 2 of the Adamstown Boulevard Tile also.

2.5 Foul Water – General

Proposed foul water sewers will be constructed strictly in accordance with Irish Water requirements. No private drainage will be located within public areas, and if they are, valid engineering reasoning will be given for this design. A design acceptance review will be undertaken with Irish Water after this submission to

SDCC, which will then be followed with a Connection Application to Irish Water after planning has been granted.

Private drains will be laid to comply with the requirements of the latest Building Regulations, and in accordance with the recommendations contained in the Technical Guidance Document Part H.

3. Stormwater Drainage

3.1 Introduction

The proposed stormwater drainage will be designed to comply with the requirements of the Greater Dublin Strategic Drainage Scheme (GSDS) and SDCC's recently published Sustainable Drainage Explanatory Design & Evaluation Guide (2022). Sustainable Urban Drainage strategies (SuDS) will be implemented to ensure runoff is treated to the standards outlined in the relevant documents. SuDS measures to be implemented include, bio-retention tree pits, waterbutts in back gardens, swales, and an extensively bio-diverse park area with rain gardens and a water feature.

Stormwater drains within the proposed private development area will be laid to comply with the requirements of the Building Regulations, and in accordance with the recommendations contained in the Technical Guidance Documents, Section H.

Stormwater sewers which will be taken into charge by South Dublin County Council will be laid strictly in accordance with South Dublin County Council requirements for taking in charge.

Meetings have taken place with SDCC Drainage (Mr Brian Harkin and Mr Ronan Toft) to discuss the design approach taken for the ASDZ and the previous agreed strategies implemented at the onset of the ASDZ development.

For further details on the ASDZ surface water strategy refer to the supplementary document which has been submitted as part of this application under a separate cover (see below).

"Adamstown Strategic Development Zone Stormwater Drainage Engineering Assessment Report - Consolidated Review of Strategic Stormwater Drainage via the Tobermaclugg Stream and Backstown Stream (Dec 2017)"

3.2 Stormwater Drainage - Existing

The site is located in the Tobermaclugg Tributary stormwater catchment area of the ASDZ lands. According to the ASDZ Planning Scheme 2014 Amendment (*Ref. No. 2.5.5*), the subject site's catchment drains to a large stormwater outfall (2.4mØ stormwater pipe) and 5000m³ attenuation pond to the north-east of Lucan Golf Course on the Backstown/Tobermaclugg Stream.

All surface water sewers will ultimately drain towards the Tobermaclugg stream (north-west) past the Tobermaclugg Pump Station. The Tobermaclugg Stream has been mostly culverted by a series of pipes ultimately draining into the constructed 2100mm/2400mm Ø surface water pipe through the Lucan Golf Course, permitted under previous permissions, along with an attenuation pond to the northeast of the Golf Course south of the Millstream Road/Dodsborough Road junction before discharging to the River Liffey via an existing culvert under the N4. See Figure 3-1 below for details.



Figure 3-1: Location of Backstown Stream and Old Confluence Point with Tobermaclugg Stream

The above existing stormwater sewers and attenuation area serving the Phase 1 and Phase 2 Adamstown Boulevard development have been constructed under the ASDZ Strategic Drainage Scheme. The network has been designed and constructed to accommodate the subject development.

The existing stormwater infrastructure serving the Adamstown Boulevard site includes: -

- 1350mm Ø stormwater main transversing the site from south to north in Stream Road;
- 450mm Ø stormwater pipe with Syphon structures on the northern half of the site (along Stream Road) to allow for a potential water feature;
- 900mm Ø stormwater pipe within Adamstown Way (north of the site); and,
- 525mm Ø stormwater main which transverses the site from south to north in Stream Road.

The 1350mm Ø pipe's purpose is to accommodate stormwater from the lands to the south of the Boulevard and hence will not be made use of for the subject site's stormwater discharge. It is proposed to discharge the site's stormwater runoff to the existing 525mm Ø and 900mm Ø pipes which upsize into a 1200mm Ø stormwater outfall within the Linear Park of the Aderrig Phase 1 development to the north.

Refer to Figure 3-2 for an illustration of the installed stormwater drainage infrastructure within the larger ASDZ lands. Waterman Moylan Drawing № 21-074-P200 submitted as part of this planning application shows the proposed stormwater network design to service the development internally.

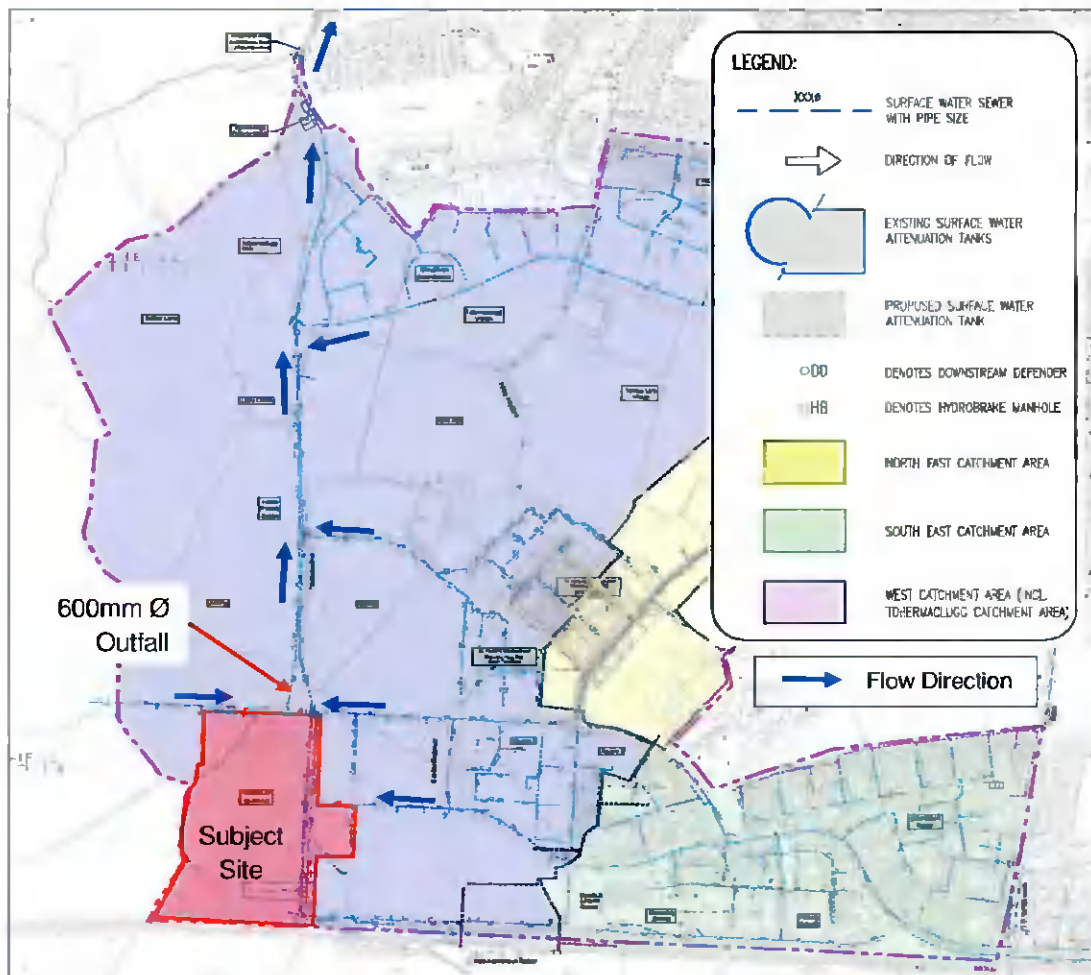


Figure 3-2: Existing Stormwater Drainage Installed within ASDZ

3.3 Stormwater Drainage – Proposed

3.3.1 General

According to the ASDZ planning scheme, it is proposed that Adamstown Boulevard (Phases 1 & 2) be drained to the existing 1200mm Ø culvert infrastructure on the north of the site in Linear Park Road, as discussed in Section 3.1.

The Adamstown Boulevard is proposed to include a man-made water feature through the site, from south to north, as per the SDCC Strategic Development Zone (SDZ) guidelines. The indicative layout of the proposed man-made water feature can be seen in Figure 3-3 (please note this layout is indicative only) taken from the SDCC “Adamstown Strategic Development Zone, Planning Scheme, 2.0 Proposal for Development” document.

The water feature will be restricted to a low flow of 100 ℓ/s and will be set back by 10m from the water feature’s edge to any dwelling as per SDCC’s request. Please refer to the Architects and Landscape Architects drawings submitted as part of this application for the final layouts and details of the proposed water feature.

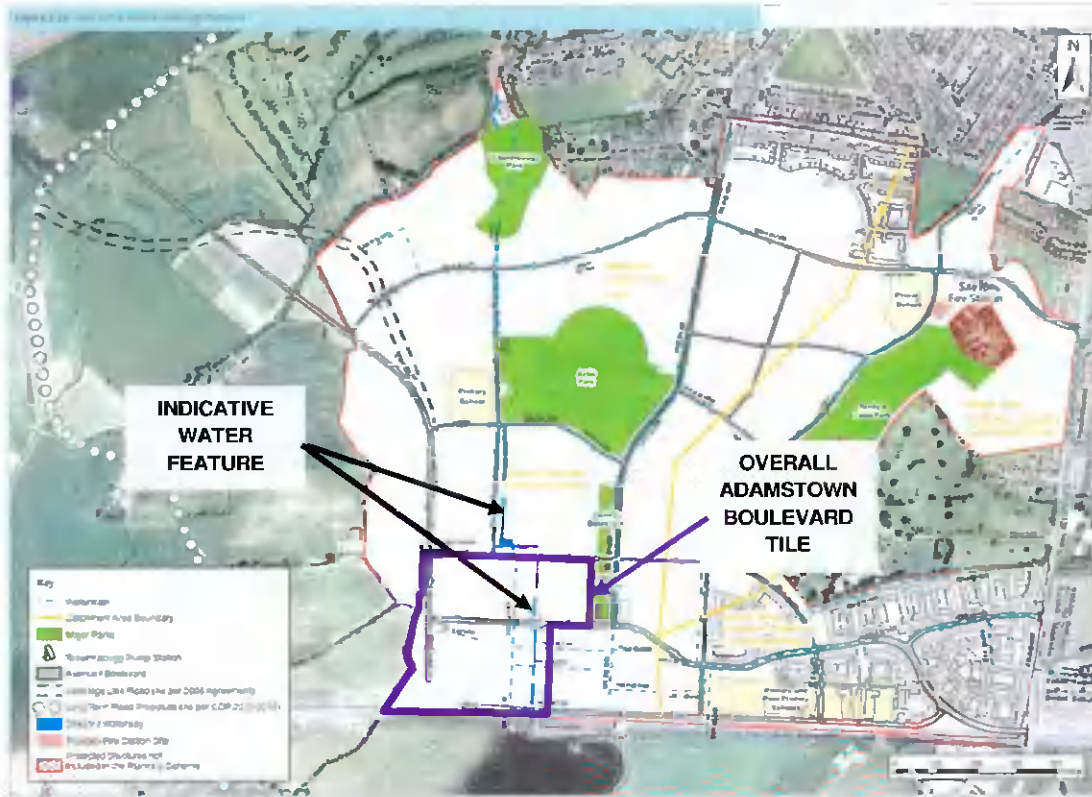


Figure 3-3: Indicative Layout of Proposed Water Feature within the SDZ

The total area used within the stormwater calculations for the overall Adamstown Boulevard site is 14.6Ha, and the area used within the stormwater calculations for Phase 1 is 10.14Ha, and for Phase 2 is 4.84Ha. The total impermeable area of the site is taken as 7.2 Ha which equates to 71% of the total site area.

The proposed sites stormwater drainage network has been separated into 3 no. catchments areas with differing outfall locations due to the existing ground contours and in an effort to maintain smaller diameter pipe sizes which will assist with the ease of future maintenance.

Downstream defenders are proposed within the storm water network to ensure the effective removal of hydrocarbons, sediments and other floatable debris within the network before discharging into the existing stormwater network.

Refer to Waterman Moylan drawings 20-108-P211 and 20-108-P212, which accompany this report, and which show the existing and proposed foul water and stormwater drainage network layout for the proposed development.

3.4 Stormwater Drainage - Calculations

The stormwater drainage design and calculations are shown for each of the catchments, below. Refer to Figure 3-4 which shows the layout of these catchment areas and the proposed outfall (connections) points. As previously discussed, no on-site attenuation is required for the proposed development according to SDCC, this is further discussed in Section 3.4.2.

3.4.1 Proposed Catchment Areas

Catchment 1

The northern portion of the site drains in a north easterly direction and will connect into a 525mm Ø stormwater sewer at the north-eastern corner of the site boundary. The proposed stormwater system will connect into a downstream defender before discharging into the existing network.

Catchment 1, with a total area of approx. 36,681 m², has an impermeable surface area of approx. 26,541 m². Catchment 1 can be seen in Figure 3-4, illustrated in green, with the outfall location depicted by a green arrow.

Catchment 2

The central portion of the site drains in a north easterly direction and will connect into the existing 525mm Ø stormwater pipe located in Stream Road, by connecting into an existing manhole constructed under the Stream Road.

Catchment 2, with a total area of approx. 11,789 m², has an impermeable surface area of approx. 8,211 m². Catchment 2 can be in Figure 3-4, illustrated in purple, with the outfall location depicted by a purple arrow.

Catchment 3

The southern portion of the site drains in a north easterly direction and will into the existing 525mm Ø stormwater pipe located in Stream Road by connecting into an existing manhole constructed under the Stream Road.

Catchment 3, with a total area of approx. 47,084m², has an impermeable surface area of approx. 37,058 m². Catchment 3 can be seen in Figure 3-4, illustrated in light blue, with the outfall location depicted by a light blue arrow.

3.4.2 No On-Site Attenuation

According to the Stormwater Drainage subsections 2.5.6 – 2.5.19 of the Adamstown Strategic Development Zone (ASDZ) Planning Scheme by South Dublin County Council (SDCC), 5000m³ of stormwater attenuation is proposed for the Tobermaclugg stormwater catchment area off site north of the Lucan Golf Course. The subject site is within the Tobermaclugg stormwater catchment. Attenuation of stormwater drainage on site within the ASDZ is only relevant within the North East Griffeen Tributary and South East Griffeen Tributary Catchment Areas. Therefore, no on site attenuation storage is required within the proposed development. however some additional on-site storage is proposed in the form of “grass swales”, “green roofs”, “water butts” and “bio retention tree pits” as discussed and reviewed with SDCC during pre-planning application meetings.

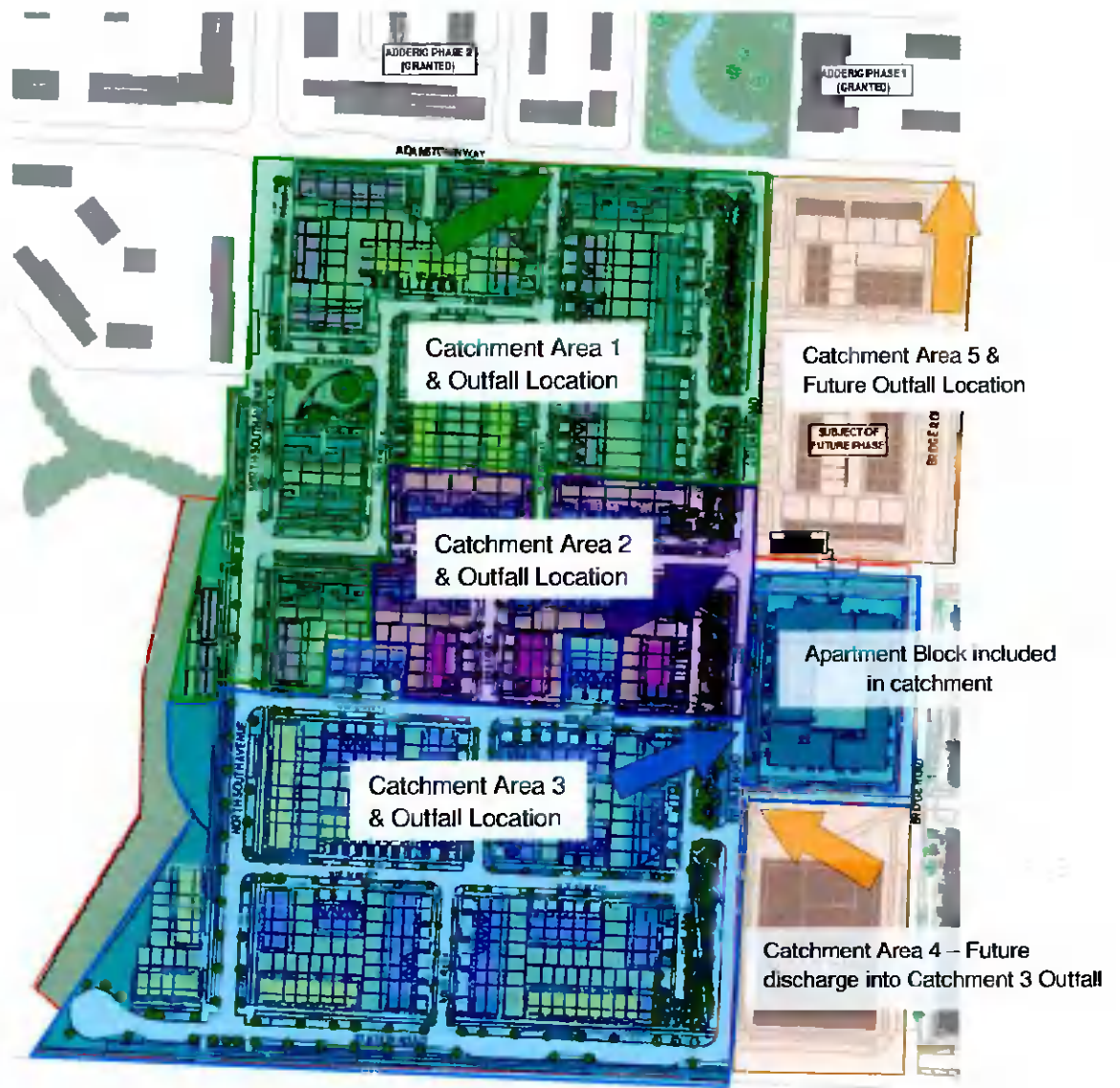


Figure 3-4: Adamstown Boulevard Phase 1 Stormwater Catchments Areas

3.5 SuDS Strategy

3.5.1 Storm Water Management Plan

It proposed to discharge the surface from the proposed development, via a series of SuDS features and downstream defender manholes, into the existing downstream stormwater system, as prescribed in the ASDZ scheme. The methodology involved in developing a Storm Water Management Plan for the subject site is based on recommendations in the Greater Dublin Strategic Drainage Study (GDSDS) and in the SuDS Manual and the recently published Sustainable Drainage Explanatory Design & Evaluation Guide (2022). It is proposed to incorporate a Storm Water Management Plan through the use of various SuDS techniques.

Based on three key elements, Water Quantity, Water Quality and Amenity, the targets of SuDS train concept have been implemented in the design. The SuDS train provides SuDS devices for each of the following:

- Source Control – Individual house or private property
- Site Control – Internal Roads within the development
- Regional Control – The entire development

The SuDS devices proposed throughout the subject application consist of the following:-

Source Control

- Permeable pavements:

Have **not been included** in the SuDS proposals for the development. Permeable pavements are alternative paving surfaces to standard finishes that allow stormwater run-off to filter through voids in the pavement surface into an underlying stone reservoir, where it is temporarily stored and/or infiltrated. Due to the poor soil infiltration of the site it is strongly recommended that permeable paving be avoided within this development, as has been done in surrounding Adamstown developments.

Site Control

- Water butts:

It is proposed to provide water butts for the individual dwellings for external gardening and wash down use only, which will ensure interception at source. A water butt is a structure or barrel with the purpose of collecting stormwater runoff from a unit's roof through the downpipes on the perimeter walls. The water butts used for the proposed development have a capacity of approximately 200 litres each, the quantum of water butts will match the number of units within the proposed development.

- Bio-retention tree pits:

These tree pits are engineered pits that allow for the drainage through and retention of water within the tree pit below the root ball. In some cases, the tree pit is retained by a pre-cast concrete structure. In others, a polymer-based support structure within the root zone of the tree is used, which can also provide for additional aeration. Aeration of the subsoil and overflow drainage pipework within the pit is provided or an adjacent road gully, downstream of the inlet to the tree pit is used. Discussions with the Landscape architect has taken place to incorporate "bio retention" tree pits, however only certain species of trees realistically survive with saturated root base. Therefore, bio retention tree pits can be incorporated where agreement is reached with

SDCC Parks and Drainage departments and the proposed landscaping strategy during the detailed design process for those areas that will be taken in charge and maintained by the Council, to ensure that the selected planting strategy is in accordance with their requirements. Where trees are incorporated, the tree pit details need to comply with the Irish Water Code of Practice.

- Swales:

A swale is a grassed depression, usually lined in direction with the road that collects runoff, both treating and providing a level of infiltration. Swales can be planted and be managed as wet or dry swales. Dry swales would be more appropriate for the proposed layout of the site.

The location of a swales on access roads within the site appropriate considering their location adjacent to green or landscaped areas.

Regional Control

- Downstream defenders:

The Defenders will remove sediment and pollutants/hydrocarbons from the storm water before discharge to the existing stormwater network. The defenders will be located at strategic points on the outfall to stormwater sewers.

The downstream defenders will be installed at the downstream positions of the Adamstown Boulevard stormwater network catchment, catering for both Phase 1 and 2 of the development, as proposed in this report before connecting into the existing stormwater system.

Downstream defenders will be included within the design to ensure appropriate treatment of the stormwater before discharging into the existing public stormwater network. These downstream defenders are 1.8m and 2.55m in size, with treatment flow rate capacities of 85 ℓ/s and 171 ℓ/s respectively, and hydraulic capacities of 270 ℓ/s and 542 ℓ/s respectively.

3.5.2 Water Quality

"Downstream Defender" units are located at the point of discharge from each sub catchment to the sewer that drains to the existing storm water network. These units improve the quality of the water being discharged into the pipe network leading to the Stream and protect against the 'first flush' pollutants of a rainfall event. The "Downstream Defender" is an advanced hydrodynamic vortex separator designed to remove sediment, floatables, hydrocarbons and associated pollutants from storm water.

This "Downstream Defender" meets the requirements of a class 1 or 2 separator and removes material suspended within the water column. The device is installed into a concrete manhole and is made from co-polymer polypropylene, which will not corrode and has no moving parts. A "Downstream Defender" is positioned to allow for easy access and is maintained using a simple gully sucker to remove the oils and sediments by means of the access points provided. (See Appendix B for Downstream Defender details).

3.5.3 Stormwater Discharge

Site Characteristics

The site characteristics for the Adamstown Boulevard tile used in calculating the volume of attenuation required to cater for the development, off-site, within the 5000m³ attenuation pond north of the site can be seen in Table 3-1.

Table 3-1: Adamstown Boulevard Site Characteristics

Characteristic	Adamstown Boulevard
SAAR – mm	996
Soil Type	2*
SOIL Index	0.3*
Total Site Area	14.6Ha
Climate Change	20%

The outflow limits from the Adamstown Boulevard Tile to the Backstown Stream are calculated in accordance with the Institute of Hydrology report No 124 "Flood Estimation for Small Catchments" for sites less than 50 Ha, where:

$$Q_{bar} = 0.00108(\text{Area})^{0.89} \times (\text{SAAR})^{1.17} \times (\text{SOIL})^{2.17}$$

$$\text{Greenfield Run-off} = Q_{bar} \times (\text{"n-year" factor})$$

$$\text{Allowable Discharge} = \text{Greenfield Run-off} \times \text{Area}$$

Where:

- Area = Site area in km² (Or 50 hectares if the site is less than 50 Hectares)
- SAAR = Standard Annual Average Rainfall, taken from Met Eireann 1981-2010 Annual Average Rainfall Grid
- SOIL = Runoff constant (Varies between 0.1 and 0.53: Given as 0.3 for a Type 2 soil)
 - ⇒ $Q_{bar_{rural}} = 0.00108(0.5)^{0.89} \times (996)^{1.17} \times (0.3)^{2.17}$
 - ⇒ $Q_{bar_{rural}} = 137.67 \text{ } \ell/\text{s}$ (For a 50-hectare site)
 - ⇒ $Q_{bar_{rural}} = 2.75 \text{ } \ell/\text{s}/\text{Ha}$

Therefore, the permitted outflow from the 5000m³ attenuation pond to the north of the Lucan Golf Course to the Backstown Stream for the Adamstown Boulevard Tile has been calculated as follows:

$$\Rightarrow 10.14 \times 2.75 = 27.89 \text{ } \ell/\text{s}$$

3.6 Network Design

The proposed internal stormwater drainage system was designed and modelled within the Causeway FLOW software package. The sizing and gradients of the stormwater sewers were based on a storm return period (N) of 5 years. Pipe capacities and velocities have been calculated using a roughness coefficient (Ks) of 0.6mm.

A minimum stormwater pipe size of 225mm will be used throughout the development, with pipe sizes ranging from 225mm to 525mm in diameter.

3.7 Flood Risk Assessment

A site-specific Flood Risk Assessment has been carried out for the proposed development and accompanies this planning submission under a separate cover.

4. Water Supply

4.1 Water Supply – Existing

It is proposed to connect the **Adamstown Boulevard** site into the water network by connecting into the 300mm \varnothing (ID), 250mm \varnothing (ID) (for Phase 2), and 150mm \varnothing (ID), existing public watermain located along the Adamstown Way Road on the north of the development and to the west of the site. There is an existing 600mm \varnothing bulk watermain traversing the site in the central road, Adamstown Avenue.

The connection will be made into the existing watermain Tees along this boundary in accordance with the **Overall ASDZ Watermain Network Strategy** agreed with SDCC as reflected on PHMcC Drawing 821/06/001 Rev E "Proposed Network and DMA Design". (See below the Boulevard DMA (District Metered Area) AD3, AD4 and AD5 extracted from the PHMcCarthy Dwg. 821/06/001 Draft Rev E).

The water design strategy for the development has taken into account the global design for the whole Adamstown Boulevard tile as the Phase 2 works will tie-into Phase 1. Figure 4-1 below highlights the Adamstown Boulevard boundary, which contains Phases 1 & 2, in relation to the Overall ASDZ Watermain Network Strategy.

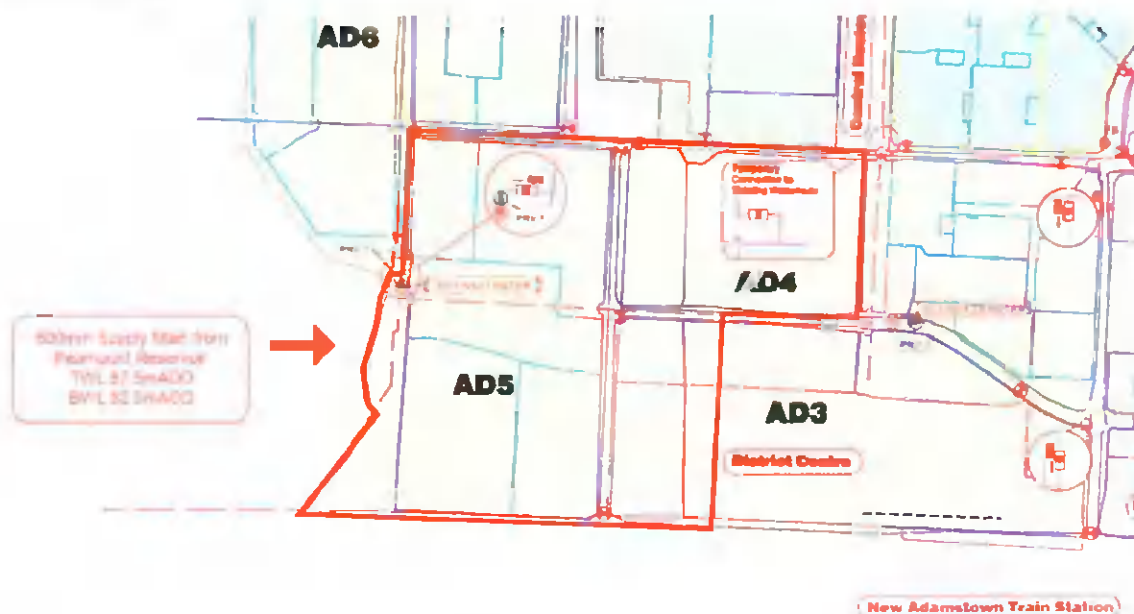


Figure 4-1: Extract from PHMcCarthy Water Schematic Drawing with Adamstown Boulevard Boundary

4.2 Water Supply – Proposed

The proposed development (Boulevard Ph1 located within DMA's AD3, AD4 and AD5) watermain network design follows the approved watermain masterplan as shown on PHMcC Drawing 821/06/01 Draft Rev E "Proposed Network and DMA Design."

As mentioned the Phase 1 site will have 2 No proposed connections into the existing watermain supply network via an existing 300mm \varnothing and 150mm \varnothing watermain tee-off as shown in the accompanying proposed watermain layout prepared by Waterman Moylan and submitted as part of this application under a separate cover.

The proposed 150mm Ø will loop around the peripheral of the subject site along all four boundaries as illustrated in the watermain network strategy within Figure 4-1. Internal loop networks will feed the housing units via a 100mm Ø (ID) pipeline. Each internal loop will consist of a maximum of 40 units, as per "Irish Water Code of Practice for Water Infrastructure".

A district area meter (DMA), AD5, will be installed on the western edge of the development Tee-ing off the WSA bulk meter, installed off the 300mm Ø (OD) watermain which is currently installed under the Celbridge Link Road Project.

Refer to Waterman Moylan Drawings 21-074-P310 and 21-074-P311 which accompany this report, and which show the existing and proposed watermain network layout for the proposed development.

On 25 November 2021, in response to a Pre-Connection enquiry submission, Irish Water confirmed that the housing units within Adamstown AD3, AD4 and AD5, can be connected to the Irish Water Network. Refer to Appendix A for the Irish Water Confirmation of Feasibility Letter.

All water supply details shall be in accordance with Irish Water requirements and Code of Practice.

4.3 Water Demand Calculation

Water demand has been calculated based on 2.7 average occupancy factor per residential unit with a per capita wastewater flow of 150 litres per person per day along with an average day/peak week demand factor 1.25 for average daily domestic demand. A peak week demand multiplier of 5 has been used, as per Section 3.7.2 of the Irish Water Code of Practice for Water Infrastructure.

Water calculations providing details of the anticipated water consumption for the proposed Phase 1 development are illustrated in Table 4-1 below.

Table 4-1: Total Water Demand for Phase 1.

Description	No. of Units	Population per Unit	PE	Flow l/h/day	Total Demand (l/d)
Proposed	423	2.7	1142	150	171,315
Total					171,315
Calculation of Proposed Peak Water Demand					
Total Daily Demand (from Table 4.1)				171,315	ℓ/d
Average Daily Demand (x1.25)				2.48	ℓ/s
Peak Demand (x5)				12.39	ℓ/s

5. Roads

5.1 Roads – Existing and Proposed

In line with the Design Manual for Urban Roads and Streets (DMURS), and the recommended widths for side streets and back streets in the ASDZ planning scheme, the proposed internal site roads are generally 5.5m wide with a 2.2m wide footpath to cater for the minimum offsets of Irish Water services from other services within footpaths. Carriageways within the 'home zones'/shared surface areas are generally 4.5m wide with a 1.5m wide services strip/pedestrian refuge/buffer on one side of the carriageway.

Crossing points are located along desire lines at various points within the development such that unimpeded pedestrian movement is facilitated. The layout of the proposed development and associated internal road network is indicated on Waterman Moylan drawings 21-074-P110 to 21-074-P111 which accompany this report.

Proposed radii at junctions are as per DMURS recommendations but have been increased in some areas on instruction by SDCC Roads and have been addressed by **WS Atkins Ireland Limited**.

WS Atkins Ireland Limited are the consulting engineers who have designed the roads and engaged with SDCC Roads department throughout the pre-planning process. Refer to the reports and drawings issued as part of this application provided by Atkins for further roads details. .

5.2 Roads – Traffic and Parking

Extensive traffic analysis was undertaken as part of the overall ASDZ Planning Scheme by *Atkins*. The proposed development is in accordance with their assessment in relation to the masterplan of the planning scheme as part of this application.

See details and drawings provided by *Atkins* consulting engineers who have advised the architect on the layout, location of raised tables and distribution of parking spaces and the location of the disabled spaces.

5.3 Roads - Site Access and Sightlines

The proposed development is directly accessed at seven points:

- 4 No access points on the north from **Adamstown Way**;
- 3 No access points on the east from **Stream Road**;
- 3 No access points on the south from **Station Road**;

The access points for the Phase 1 development are reflected with red arrows show in Figure 5-1.

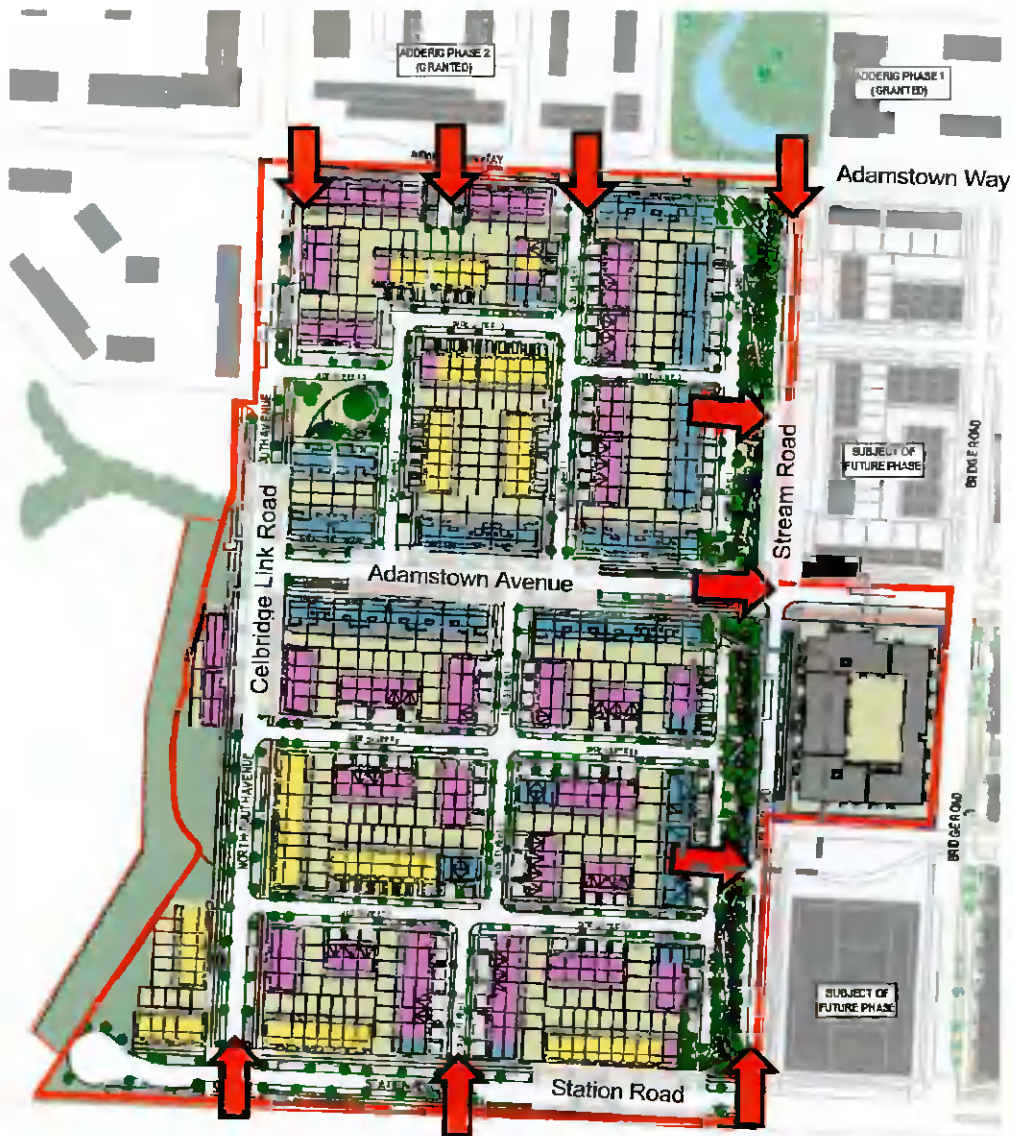


Figure 5-1: Road Access Points for Adamstown Boulevard Phase 1

APPENDICES

A. Irish Water Confirmation of Feasibility Letter

Penelope Ingle

Block S
Eastpoint Business Park
Alfie Bryne Road, Dublin 3
Co. Dublin
D03H3F4

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

25 November 2021

Re: CDS21006565 pre-connection enquiry - Subject to contract | Contract denied

Connection for Multi/Mixed Use Development of 865 unit(s) at Boulevard Tile, Adamstown, Dublin

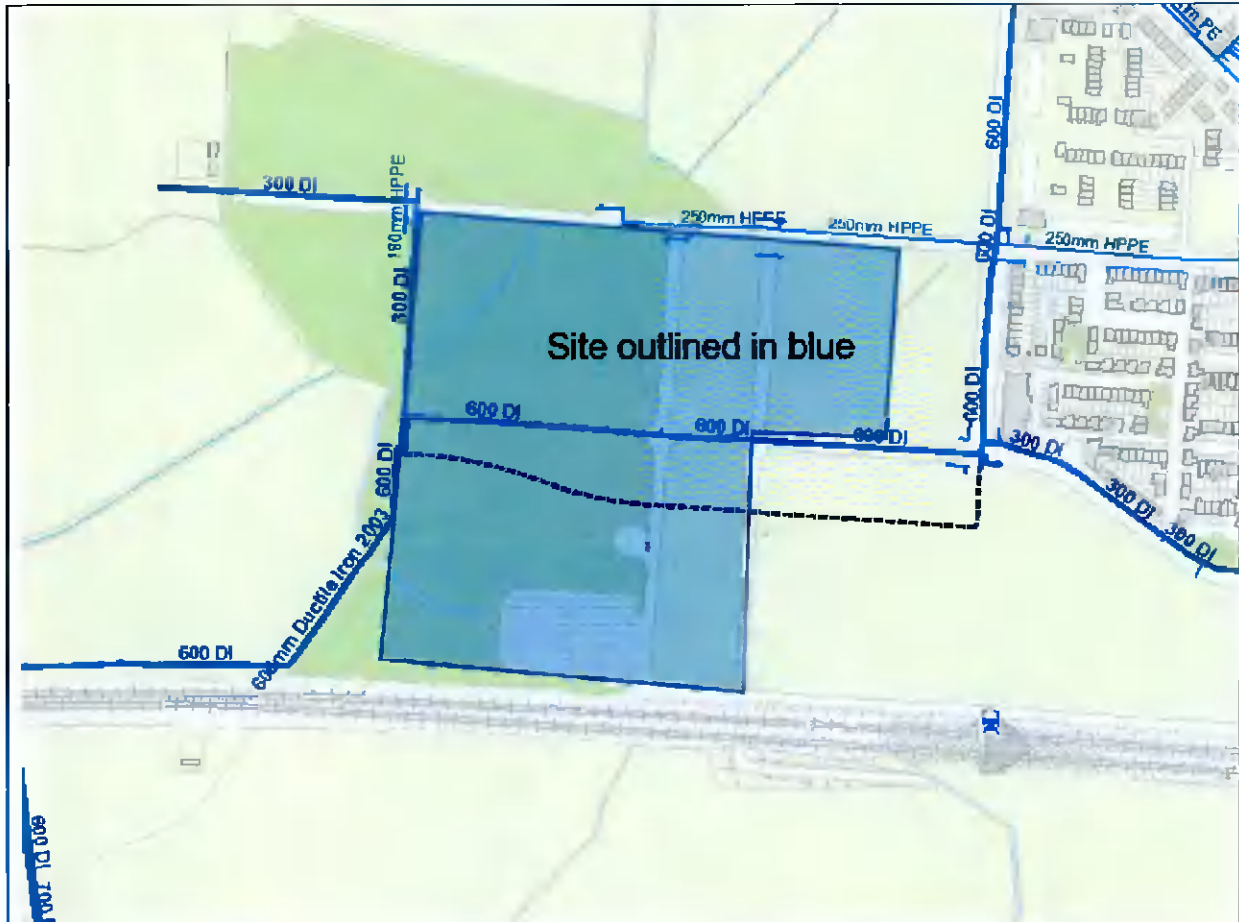
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Boulevard Tile, Adamstown, Dublin (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 at this moment in time.

SERVICE	OUTCOME OF PRE-CONNECTION ENQUIRY <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>
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	The connection is feasible, connection shall be an approx. 20m of new 200mm ID main connecting to the existing 600mm ID main, DMA meter to be added at connection stage.
Wastewater Connection	The connection is feasible, there is sufficient capacity in the 600mm sewer, the internal 225mm may require upsizing, this will be discussed at connection stage.

The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.

The map included below outlines the current Irish Water infrastructure adjacent to your site:





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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.

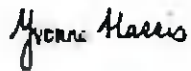
General Notes:

- 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
- 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 Paul Lowry from the design team on 018230377 or email paulowr@water.ie For further information, visit www.water.ie/connections.

Yours sincerely,



Yvonne Harris

Head of Customer Operations

UK and Ireland Office Locations

