	CATCHMENTS			
	1A	1B	1C	2
Site area (ha)	0.20	0.64	0.07	3.82
Total Effective runoff area (ha)	0.19	0.39	0.02	2.67
Discharge rates (l/s)	2	4.2	N/A	25.1

Table 5-6: Discharge rates generated by each catchment

Surface water run-off from catchment areas will be attenuated using a vortex flow control device (Hydrobrake or equivalent) within the proposed storage system.

5.8 Surface Water Storage

Catchment 1B&2 attenuation storage is provided in a detention basin and Catchment 1A and 1C in separate underground cellular storage systems (“Pluvial Cube” system or similar approved)

The detention basin is to be a vegetated depression with gently sloping banks (3H:1V). It will be normally dry and only fill temporarily in response to rainfall. Maximum water level is proposed to be 1.2m. A level access/maintenance bench will be provided around the perimeter of the basin. The basin will accommodate wetland planting within the basin and native planting/screening around the perimeter.

The cellular storage systems for 1A and 1C has been chosen as the there is insufficient space to accommodate an open Suds feature alongside the greenway and the Davnets Row respectively, due to the invert depth required and space constraints. The system is unlined which facilitates infiltration to ground replicating natural processes. For the 1A system the open space above the storage system can be used for soft landscaping to complement the Ulster Canal.

The total storage volume required has been calculated using the “Source Control Module” of “Microdrainage” as 73.5m3 ,196.6m3 and 16.9m3 for Catchment 1A , Catchment 1B+2 and Catchment 1C respectively, refer to Appendix B :for Windes attenuation calculations. The storage provided is 96m3, 200m3 and 19.8m3 for Catchment 1A , Catchment 1B+2 and Catchment 1C respectively.

The volume has been calculated based on drainage levels, ground levels, type of storage system and the allowable outflow rate. The water storage requirements are calculated with an allowance of 20% increase in rainfall rates due to climate change. Typical details and cross-sections of each proprietary attenuation system is provided on DBFL drawings 220084-RY-05-Z00-XXX-DR-DBFL-CE-5302and 220084-RY-05-Z00-XXX-DR-DBFL-CE-5304.

5.9 Suds

SuDS features will be integrated into the surface water drainage network for the proposed development, with the objective of controlling the quantity of surface water runoff, managing the quality of runoff to prevent pollution, and creating and sustaining local ecosystems.

The four main categories of benefits that can be achieved by SuDS are water quantity, quality, amenity, and biodiversity. SuDS features can take many forms both above and below ground and can include planting and proprietary / manufactured products.

SuDS features deliver high-quality drainage while supporting urban areas to cope better with severe rainfall now and in the future. They also counteract some of the impacts on the water cycle caused by increased urbanisation, such as reduced infiltration, which can result in diminished groundwater supplies. They are used in conjunction with traditional drainage systems, and the use of SuDS features are a requirement of the GDSDS (Greater Dublin Strategic Drainage Study).

The SuDs features proposed for the development include the following:

- Swales
- Check Dams
- Detention basins
- Underground cellular storage
- Hydrobrake' flow controls.
- Petrol Interceptors.

The proposed surface water drainage layout is detailed in DBFL drawing no 220084-RY-05-Z00-XXX-DR-DBFL-CE-1301 and 1302. The SUDs Typical details are shown on DBFL drawing 220084-RY-05-Z00-XXX-DR-DBFL-CE-5303.The combination of these elements forms a comprehensive surface water strategy for the road catchment area. It ensures efficient capture, conveyance, and management of surface water runoff, minimizing the risk of flooding and improving overall water quality within the infrastructure design.

5.10 Climate Change

Surface water calculations for the proposed development are based on Met Eireann rainfall values with rainfall intensities increased by a factor of 20% to allow for climate change, as required by the GDSDS. Refer to Appendix C : for the applicable Met Eireann Rainfall data

5.11 Pluvial Flooding Provision

The surface water network, attenuation storage and road levels are designed to accommodate a 100-year storm event within the subject site. A 20% climate change provision has been included. Finished road levels and manhole cover levels are set above the 100-year flood level by a minimum of 0.3m for protection. The TWL for the cellular storage and attenuation basin serving catchment 1A, Catchment 1B+2 and 1C respectively are 55.338m, 56.7m and 64.850m. The lowest proposed level within catchment 1A, Catchment 1B+2 and Catchment 1C is 55.680m, 57.971m and 65.310m, which provide a freeboard of 0.342m,1.271m and 0.46m respectively. Exceedance flow routes are along the road carriageway towards the Shambles River and away from sensitive receptors.

6 Wastewater

6.1 Existing Foul Water sewer

There is an existing 225mm DIA foul sewer main to the west of the subject site. This sewer main follows a north to south route along Dublin St North, and a west to east route along the Old Cross pedestrian link, connecting to the south of Sli Ogie Dhufaigh road and continuing westbound along Sli Ogie Dhufaigh and MdCarton road. Refer to Appendix E : for existing Irish Water foul sewer records.

6.2 Design Strategy

The general foul sewer strategy for the development aims to provide trunk foul sewer main along Quarry walk that will service both the civic office and future mixed-used development. This sewer main will discharge by gravity to the existing public 225mm diameter foul sewer located along Sli Ogie Ui Dhufaigh, South-West of the subject site. Refer to DBFL drawings 220084-RY-05-Z00-XXX-DR-DBFL-CE-1301 & 1302.

All main sewers up to the connection point will be minimum 225m DIA as per Irish water guidelines. Irish water Code of Practice indicates a 225mm sewer at 1 in 100 gradient will serve up to 330 units, proposed sewer gradients are in excess of this providing additional capacity.

6.3 Compliance with Irish Water Standards

The foul drainage network for the proposed development has been designed in accordance with the Irish Water requirements for the design of wastewater gravity sewers as set out in Appendix B of Irish Water Code of Practice.

7 Water supply

7.1 Existing Water Supply

There is an existing public 200mm DIA watermain. This pipe runs from Old Cross to St Davnets Hospital in a south to north direction through Roosky lands. Refer to Appendix E :for existing Irish watermain records.

7.2 Watermain Layout Strategy

The Roosky Lands development has water demand from the Civic Offices development and the intended future mixed-use development on the surrounding vacant lands.

A watermain diversion is required to facilitate the development of the Civic Offices. The diversion involves rerouting the existing watermain along Davnets Row and Quarry Walk, forming a trunk water main along Quarry Walk, which reconnects to the existing network north of the site. The planned diversion indicated on DBFL drawings 220084-RY-93-Z00-XXX-DR-DBFL-CE-1401 and 220084-RY-93-Z00-XXX-DR-DBFL-CE-3401. A Diversion application has been made to Irish Water for the watermain diversion.

The proposed layout consists of a 225mm DIA PE100 pipe with spurs for both the Civic offices and the future mixed-use development.

7.3 Fire Fighting

The proposed watermain layout, includes multiple fire hydrants along Quarry walk. These hydrants will serve the purpose of facilitating firefighting operations.

Hydrants shall comply with the requirements of BS 750:2012 and shall be installed in accordance with Irish Water's Code of Practice and Standard Details.

7.4 Compliance with Irish Water Standards

The water main layout and details are in accordance with Irish Water's Code of Practice and Standard Details. All valves, hydrant and metering fittings/details shall be in accordance with the requirements of Irish Water.