

NOTE:
Any development on the proposed site will require Sustainable Urban Drainage Systems (SUDS) to manage surface water runoff. The type of SUDS measures will depend on local ground conditions and topography.

SOURCES OF SURFACE WATER RUNOFF
Surface water runoff which could affect or be affected by the proposed development can be considered in two broad categories as follows:
1. Surface water which is generated from outside the development site boundaries and which can flow towards the development site; and
2. Surface water which is generated from within the boundaries of the development site.

Surface water runoff generated from outside the site boundaries on higher land can flow towards the site, enter the site and increase the flooding risk to proposed developments. Such flows will either need to be safely routed through the development site or intercepted at the site boundary and directed to a suitable sink without affecting any properties within the development site and without increasing the risk to properties outside the site boundaries.

Surface water runoff generated within the site will need to be managed within the site drainage system. There are two parts to surface water runoff generated from within the site boundaries; those generated from hard standing areas (i.e. roofs, driveways, roads, paved areas, etc.) and those generated from soft landscaped areas.

Surface water generated from hardstanding areas is collected within the development drainage system and attenuated. Any discharges made to watercourses are limited to the greenfield runoff rate.

Surface water generated from soft landscaped areas either infiltrates into the ground or flows onto roads and enters the site drainage system.

SUDS OBJECTIVES AND GUIDANCE
Sustainable Drainage Systems (SUDS) are storm water drainage systems that are designed to replicate natural drainage systems. The three main objectives of implementing SUDS on a development site are to:
• minimize the quantity/ volume of run off;
• maximize the quality of run off;
• maximize amenity and biodiversity opportunities.

The following guidance documents are used in the design of SUDS systems for development;
• Greater Dublin Strategic Drainage Study (2005)
• CIRIA SUDS Manual 2015 (Latest)
• BRE Digest 365 2016
• Individual Local Authority Guidance if available

In order to enable a SuDS design to be undertaken an understanding of the ground conditions on the site and an estimation of the storm water runoff from the proposed development is required. A detailed site investigation to determine the infiltration capacity of the soils within the development area is therefore recommended.

AMENITY & BIODIVERSITY PROCESS
SuDS systems provide opportunities to create attractive landscaping features which offer a variety of amenity, biodiversity and recreational benefits.
The following are the main SUDS components offering aesthetic, amenity and ecological benefits;
• Tree Pits
• Bioretention Areas

PROPOSED SUDS STRATEGY
MANAGEMENT TRAIN
In order to replicate the natural drainage system and to achieve the objectives outlined above, a SUDS 'Management Train' is recommended. The SUDS Management Train is a hierarchy of SUDS techniques which should be implemented in series to achieve the following aims:
• Source Control – control runoff at or close to the source thereof;
• Site Control – manage surface water within the development site;

Various SUDS components have different capabilities that are more suited to certain stages of the Management Train outlined above. The principle of the Management Train is that wherever possible, surface water should be managed locally in small, sub-catchments rather than being conveyed to and managed in large systems further down the catchments.

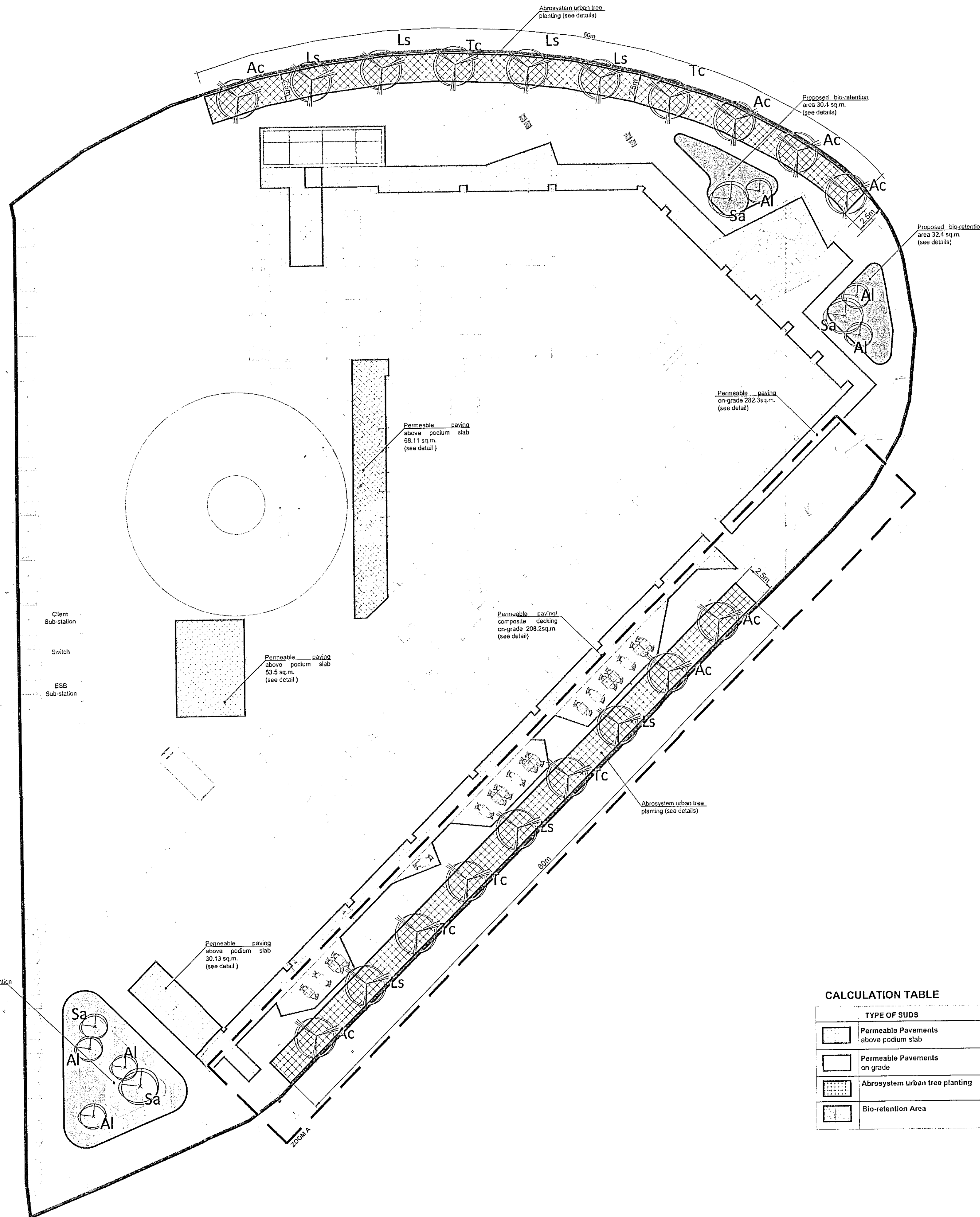
The proposed site for the development is a gently sloping catchments falling to a stream to the south. Due to its suitable topography, without the presence of any steep slopes or overland features, a wide variety of SUDS measures can easily be incorporated in each sub-catchments to suit the layout and localised ground conditions.

SOURCE CONTROL
ARBORSYSTEM URBAN TREE PLANTING SYSTEM
These porous systems allow water, air and nutrients to reach the tree roots and thereby use evapotranspiration process to reduce storm water runoff. They are designed to take water from adjacent impermeable or landscaped areas.

PERMEABLE PAVEMENTS
Permeable pavements allow rainwater infiltrate through the surface and into the underlying layers where it subsequently infiltrates to the ground and/or is collected and conveyed to the drainage network. Permeable block paving is most suitable for areas with light traffic loads, whereas porous asphaltic surfaces can be used for higher traffic loads. The pavement generally caters for rainwater which lands directly on its surface but in certain cases, can accept runoff from other impermeable areas.

SITE CONTROL
BIO-RETENTION AREA/ RAIN GARDENS
Bioretention areas or "rain gardens" are small planted areas with stormwater controls that collect and treat stormwater runoff. The runoff is treated using soils and vegetation in shallow landscaped basins to remove pollutants. Treated runoff can be collected and conveyed further downstream and/or allowed to infiltrate into the subsoil. Part of the runoff volume is reduced by evapotranspiration from the plants/ Trees.

- LEGEND**
- BOUNDARY TREATMENT**
- Site Boundary Line
 - Permeable Pavements on-grade
 - Permeable Pavements above podium slab
 - Bioretention Area
 - Arborsystem urban tree planting



CALCULATION TABLE

TYPE OF SUDS	CAPACITY
Permeable Pavements above podium slab	151.7 sq.m.
Permeable Pavements on grade	490.5 sq.m.
Arborsystem urban tree planting	80,625 cub.m.
Bio-retention Area	166.8 sq.m.

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C 130/03/23 | SUDS | IPS | JG
REV DATE | REVISION | DRAWN | CHECKED

CLIENT
WINMAR DEVELOPMENTS ULC.

PROJECT TITLE
Liffey Valley Hotel, Dublin 22

PROJECT ARCHITECT

EMD Architects

SHEET TITLE
Sustainable Urban Drainage System

SHEET NO.
22193_LiffeyValley_FI_C_SUDS

SHEET SIZE
A1

SCALE
1/200

REVISION
C

STAGE
Further Information

DATE
March 2023