APPENDIX 12

Technical Summary of Dublin City Council Sustainable Drainage Design and Evaluation Guide (2021)

1.0 Introduction

The need for control of surface water run-off using more sustainable approaches has been recognised in Dublin since the 1990's. This led to the inclusion of Sustainable Drainage Systems (SuDS) policy within the Greater Dublin Strategic Drainage Strategy (GDSDS) (2005).

Since the GDSDS was first published, it has been commonplace for drainage schemes to include underground tanks or 'end of pipe' structures to hold surface water and restrict the rate of flow leaving the development. However, this simplistic approach does not accord with the original vision for SuDS as outlined by the GDSDS. Underground tanks offer no benefits in terms of improved water quality, nor do they make provision for amenity or biodiversity.

This Appendix provides a high-level summary of the 'key principles of SuDS design' which are further explained in Dublin City Council's Sustainable Drainage Design and Evaluation Guide (2021) [hereafter referred to as the SuDS Design Guide], which has been published as a standalone document.

The main objectives of the SuDS Design Guide are:

- To create a shared vision around SuDS for all involved in the planning, design and evaluation process.
- To enable the design of SuDS to meet Dublin City Council requirements.
- To ensure SuDS are maintainable now and in to the future.

This Appendix identifies a series of 'SuDS requirements' which will be considered in the assessment of planning applications.

Those submitting planning applications should consult this Appendix together with the SuDS Design Guide and Greater Dublin Regional Code of Practice for Drainage Works for guidance on how to comply with development plan policy SI22.

The integration of a predominantly nature-based SuDS approach will support many of the development plan's core policies.

This Appendix should be read in conjunction with:

Dublin City Council Development Plan (2022 – 2028)

- Chapter 3: Climate Action
- Chapter 9: Sustainable Environmental Infrastructure and Flood Risk
- Chapter 10: Green Infrastructure and Recreation
- Chapter 15: Development Standards, Section 15.6
- Appendix 11: Technical Summary of Dublin City Council Green and Blue Roof Guide (2021)
- Appendix 13: Dublin City Council Surface Water Management Guidance

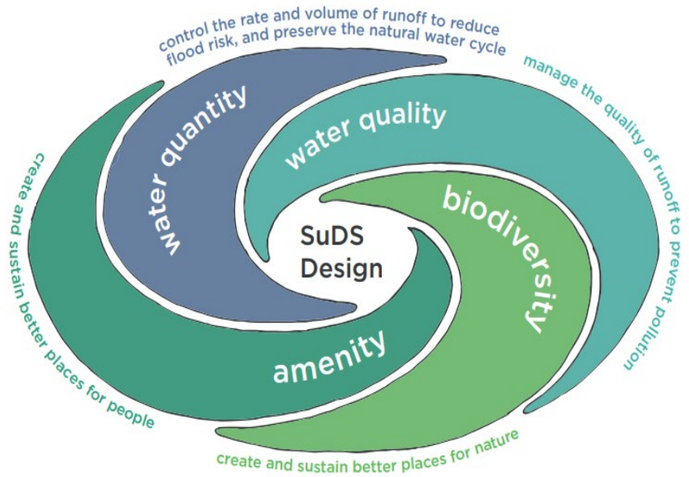
National Policy

- National Biodiversity Action Plan 2017– 2021

Dublin City Policy

- Draft Dublin City Biodiversity Action Plan 2021 – 2025
- Dublin City Parks Strategy 2019 – 2022
- Dublin City Climate Action Plan 2019 – 2024

1.1 What are SuDS?



The following definition for Sustainable Drainage Systems (SuDS) is based on the SuDS Manual 2015, which was published by the Construction Industry Research and Information Association (CIRIA):

"Sustainable Drainage or SuDS is a way of managing rainfall that minimises the negative impacts on the quantity and quality of runoff whilst maximising the benefits of amenity and biodiversity for people and the environment".

SuDS design should seek to manage rainfall run-off close to where it falls. Dublin City Council advocates the prioritisation of SuDS techniques that are situated at the surface, are nature-based and are integrated with the site layout.

There are four critical objectives that SuDS seek to meet:

- **Quantity:** managing flows and volumes to match the rainfall characteristics before development, in order to prevent flooding from outside the development, within the site and downstream of the development.
- **Quality:** preventing and treating pollution to ensure that clean water is available as soon as possible to provide amenity and biodiversity benefits within the development, as well as protecting watercourses, groundwater and the sea.
- **Biodiversity:** maximising the potential for wildlife through design and management of SuDS.
- **Amenity:** enhancing people's quality of life through an integrated design that provides useful and attractive multi-functional spaces.

2.0 Integrating SuDS into New Development

Dublin City Council expect the designer to consider SuDS at the earliest point in scheme design.

SuDS designs will explore opportunities for: sustainable reuse of rainfall (see policy SI6); recharge of aquifers; interception and evapotranspiration of surface water; and, direct discharge to open channel watercourses, thus reducing the pressure on the piped drainage network.

SuDS structures should be integrated into the fabric of a development using the available landscape spaces as well as the construction profile of buildings. Consideration of existing site topography, landscape resources and how the site is used is vital in determining the most appropriate SuDS measures in a scheme.

Areas that store surface water during regular rainfall events, except ponds or wetlands, shall not normally be included in the calculation of open space provision. However, where SuDS proposals enhance biodiversity and amenity value and would be readily available for use in most weather conditions, a portion of the SuDS area could be incorporated as part of the communal or public open space provision. Dublin City Council want to promote a high standard of multi-functional spaces and developments in accordance with other policies in this plan. The proportion of SuDS which would be allowable as part the public open space allocation would be decided on a case-by-case basis by the planning authority. The following points will be considered in determining the areal extent of SuDS which serve as multifunctional space and/ or contribute to the public open space allocation:

- That sufficient open space remains available (except in response to extreme rainfall events) to allow for passive and active recreation including organised sport, informal play or active recreational use.
- How often a particular feature would hold surface water.
- The duration that feature would hold surface water.
- Period between rainfall ending and the area being available for use.
- Whether the SuDS features could be deemed to be providing an open space benefit even when holding surface water (for example, ponds and wetlands).

3.0 SuDS Requirements

The following SuDS requirements will apply to all developments reviewed by Dublin City Council as part of the planning process:

3.1 SuDS Requirement 1 - Runoff Destination

The following methods of utilising or releasing rainfall run-off from development are set out in order of preference:

i. Use surface water run-off as a resource.

ii. Provide interception of rainfall through the use of nature based SuDS approaches.

iii. Where appropriate, infiltrate run-off into the ground.

iv. Discharge to an open surface water drainage system.

v. Discharge to a piped surface water drainage system.

vi. Discharge to a combined sewer.

Discharging run-off from a site may utilise one or more means of discharge. Full advantage should be taken of each method of discharge on the list in turn, prior to considering the next sequential option.

3.2 SuDS Requirement 2 - Hydraulic Control

Hydraulic criteria are as set out in the GDSDS and Regional Drainage Code of Practice.

Surface run-off from new development will be restricted to 2 l/s/ha for the 1 in 100 year rainfall event (with allowance for climate change and urban creep[61]) where surface water leaving the site:

- poses a pollution risk to the environment arising from (overflow from a combined sewer to a receiving watercourse);
- has the potential to impact upon property or infrastructure (where property or infrastructure is identified as being at flood risk from a 1 in 100 year flood / rainfall event).

61 Urban creep is defined as the loss of permeable surfaces within urban areas creating increased run-off which contributes to flooding. Typical examples of urban creep include building extensions or paving over front gardens for car parking spaces.

In all other instances, the following criterion tabled below shall apply.

Table 1: SuDS Requirements

Criterion	Sub-criterion	Return Period (Years)	Design Objective
Criterion 1 River Water Quality Protection	1.1	<1	Interception storage of at least 5mm, and preferably 10mm, of rainfall where run-off to the receiving water can be prevented.
Criterion 2 River Regime Protection	2.1	1	Discharge rate equal to 1-year greenfield site peak runoff rate or 2 l/s/ha, whichever is the greater site critical duration storm to be used to assess attenuation storage volume.
	2.2	100	Discharge rate equal to 1 in 100 year greenfield site peak run-off rate. Site critical duration storm to be used to assess attenuation storage volume.
Criterion 3 Level of Service (Flooding) for the Site.	3.1	30	No flooding on site except where specifically planned flooding is approved. Summer design storm of 15 or 30 minutes are normally critical.
	3.2	100	No internal property flooding. Planned flood routing and temporary flood storage accommodated on site for short high intensity storms. Site critical duration events.
	3.3	100	No internal property flooding. Floor levels at least 500mm above maximum river level and adjacent on-site storage retention.
	3.4	100	No flooding of adjacent urban areas. Overland flooding managed within the development.
Criterion 4 River Flood Protection (Criterion 4.1, or 4.2 or 4.3 to be applied)	4.1	100	"Long-term" floodwater accommodated on site for development run-off volume which is in excess of the greenfield run-off volume. Temporary flood storage drained by infiltration on a designated flooding area brought into operation by extreme events only. 100 year, 6 hour duration storm to be used for assessment of the additional volume of run-off.
	4.2	100	Infiltration storage provided equal in volume to "long term" storage. Usually designed to operate for all events. 100year, 6-hour duration storm to be used for assessment of the additional volume of run-off.
	4.3	100	Maximum discharge rate of QBAR or 2 l/s/ha, whichever is the greater, for all attenuation storage where separate "long term" storage cannot be provided.

3.3 SuDS Requirement 3 - Water Quality

SuDS designs will demonstrate sufficient number of SuDS techniques which are sufficiently sized to manage and remove pollution, to provide protection of groundwater, surface waters and sensitive coastal waters. The SuDS design will demonstrate that water is suitably cleansed prior to entry to SuDS components that are intended for amenity use and biodiversity benefit. Preference should be given to SuDS techniques which generate interception losses.

7.0 Assessing Results

In determining the suitability of a daylight and sunlight report, the planning authority note the sentiment within BR 209 that the results presented should be interpreted with flexibility. Whilst results may be interpreted with some flexibility depending on site specific circumstances, it is the intended outcome of this guide that all reports and assessments submitted use the same methodology and metrics. This will offer direct comparability for the planning authority across any given proposal that is reviewed.

When reviewing the suitability of results, the planning authority will apply rationale and reason on a case-by-case basis. For example, it stands to reason that a high-density apartment development in the city centre will have a different expectation from an apartment development in the suburbs, and the same logic applies for a new residential development on a green field site. It also stands to reason that the levels of daylight and sunlight availability will vary in line with both the site coverage, development height and density.

Notwithstanding this, it is noted that both BS 8206-2 and BS EN 17037 present **minimum** values for residential developments, rather than best practice values. This is very clearly laid out in clause 5.6 of BS 8206-2 and clause NA.2 of BS EN 17037. These minimum values will not produce spaces that are well daylit or be considered predominantly daylit. The planning authority also acknowledge that national policy aligns with the understanding that these values are minimum provisions. In this regard, there will be a general presumption against schemes where units fall below these minimum standards and it is the expectation of the planning authority that a significant proportion of units should exceed the minimum standard in order to ensure high quality sustainable developments.

In exceptional circumstances, for example on a tightly configured urban site, where these minimum criteria cannot be achieved, the applicant should very clearly identify this and put forward a clear and robust rationale for compensatory measures applied to mitigate any shortfall in the minimum standards. From here, the planning authority will apply an exercise in discretion and balance that considers the wider impact of the development beyond matters relating to daylight and sunlight.

8.0 Independent Verification of Reports

To provide greater confidence in results and to ensure a level playing field for all applicants, the planning authority may, from time to time, commission an independent review or verification of the submitted report. Where required, this will be funded by the applicant. Independent reviews or verification are likely to be required where there is ambiguity in the submitted report or the methods, metrics, results or analysis presented could be called into question.

9.0 Other Relevant Factors

Where adverse impacts of reflected sunlight are possible, either through reflected glare or through reflected irradiance, the planning authority may request that an assessment and report addressing these matters is provided. Guidance on completing assessments is available within BR IP 3/87.

Rights to light is not covered in this guide or under the planning process. The planning authority note that the granting of any planning permission does not override a legal right to light.

10.0 References

[1] EN 17037:2018, Daylight in Buildings, ICS 91.160.01, European Committee for Standardisation, CEN-CENELES, Brussels (2018).

[2] The High Court of Ireland, Judicial Review, Atlantic Diamond Limited and An Bord Pleanála and EWR Innovation Park Limited, Judgement of Humphreys J. delivered on Friday the 14th day of May 2021, (available www.courts.ie) (2021).

[3] Boyce, PR, Humans Factors in Lighting, ISBN 9781439874882, CRC Press (2014).

[4] Knoop et al, Daylight: What makes the difference? Lighting Research and Technology, DOI - https://doi.org/10.1177/1477153519869758 (2019)

[5] Littlefair P, Site Layout Planning for Daylight and Sunlight, A guide to good practice, BR 209, ISBN 978-1-84806-178-1, BRE (2011).

[6] British Standards Institute, BS 8206-2:2008 Lighting for Buildings – Part 2: Code of Practice for Daylighting, ICS 91.060.50; 91.160.10, BSI (2008).