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Author: Development Operations	Approver: TSA (MgF / AC)	
For further information contact: developmentoperations@scottishwater.co.uk		

Brief Description

The adoption and vesting of Sustainable urban Drainage Systems (SuDS), including the use of underground storage such as Geocellular Storage (GcS) systems, has grown significantly in recent years across the water industry. GcS typically consists of high-density plastic modular units arranged in a cellular or honeycomb structure. In most cases, attenuated flows are gradually released back into watercourses once conditions have subsided and peak flows have passed.

The use of underground storage (which provides no surface water treatment) shall only be permitted by specific agreement with Scottish Water. Where attenuation is required in excess of a 1-in-30 year storm event (including the allowances for urban creep and climate change) by the Local Authority, additional underground storage or attenuation shall not be permitted. Any additional storage shall be within low amenity open spaces and above ground level.

Given the increasing use of GcS systems, and the wide range of products available on the market, Scottish Water (SW) aims to provide clear guidance and highlight the relevant design requirements that shall be considered when selecting a system for surface water attenuation purposes. GcS shall not be used for 'offline storage'.

Consequences

SW has raised concerns regarding the long-term maintenance and reliability of GcS systems. Several existing installations have already been affected by inadequate design causing increased maintenance. This presents the risk to SW of reduced operational lifespan, increased maintenance costs and Customer disruption.

Action

This Technical Bulletin shall come into effect on **01/09/2026** and shall apply to all new submissions from that date.

Any deviation from an SW audited GcS product without prior written agreement from SW, shall result in the site being unable to progress to vesting.

All GcS designs shall follow the guidance published by the Construction Industry Research & Information Association (CIRIA) and, as a minimum, provide clear evidence that the proposed GcS system is suitable for its intended purpose. As of the date of this bulletin, there are two key documents with which any GcS design intended for vesting by SW and the designer shall provide evidence of such compliance:

- *The SuDS Manual* – Document Reference **C753**. **Please see The SuDS Manual, Chapter 21, p. 436 for further guidance.**
- *Structural and Geotechnical Design of Modular Geocellular Drainage Systems* – Document Reference **C737**

The below shall supplement the existing guidance contained in *Sewers for Scotland, Version 4* (SfS V4) – Clause 2.13 and be read in conjunction with the guidance in the above CIRIA Manuals.

GcS Selection - As part of the vesting, evidence shall be provided to demonstrate why GcS is an appropriate solution for attenuation at each site. The selection of the SuDS attenuation shall be shown to be appropriate for both flows and conditions anticipated on the site. **The specific product must be confirmed at audit stage, and any deviation or amendments must be agreed by SW prior to install.**

Product Data Sheets - A GcS Product Data Sheet shall be supplied for all proposed systems.

Design Life – SW Specification Requirement 1885 states that all civil structures shall offer 60-year design life. This shall apply to all Underground Storage Systems, including GcS. Compliance shall be demonstrated in the form of data sheets or in writing from the manufacturer and provided as part of the design acceptance and vesting processes.

Inlet & Sedimentation control - GcS shall be designed to prevent the risk of sediment ingress.

All GcS shall be designed with the minimum of an upstream silt trap.

SW encourage the inclusion of vegetated SuDS, upstream of the silt trap, to further minimise the risk of sedimentation within the GcS.

During the construction stage of GcS, groundwater and infiltration shall be managed to prevent silt entering the GcS. Prior to vesting, it shall be demonstrate that the GcS is clear with minimal silt ingress.

Defects Period - By utilising a GcS, an increased defects period shall be applied. The length of the defect period shall be based on the designer's control of the sedimentation risk.

5 years - For systems with upstream vegetated SuDS screening

10 years - For systems without upstream vegetated SuDS screening

Certification - All GcS systems to be vested/ adopted by SW shall be BBA certified, and a certificate of compliance shall be provided with the design.

Inspections - Pre-start meetings and during-construction reports are mandatory for all GCS installations. The unit must be inspected before it is buried and covered over. If a unit has been constructed without an inspection, the contractor may be required to expose the top of the unit to allow a visual inspection to take place on site.

Groundwater & Floatation - The anticipated level of the ground water table shall be evidenced in relation to the proposed formation level of the GcS system. If it is anticipated that the system is to be within the ground water table, flotation checks are required and shall be presented in the design documents.

Planting - Any planting around the GcS shall be selected with care, minimising the risk for root ingress. Please see Sewers for Scotland V4 Appendix XIII, page 241 for further information on tree planting restrictions.

Geometry of GcS - The proposed design shall be cuboid in shape; irregular shapes shall not be permitted.

Size - SW's preference is to have multiple smaller units opposed to one large unit. Note: this amendment does not replace clause 2.13.2(1) of SfS.

Storage Sizing – GcS shall **only** be sized to a 1:30 year event + 15% to account for the potential future loss of storage during the design life of the structure. (C753 Table 21.2)

Design considerations

- The invert level of the GCS shall be a maximum depth of 3m from the finished ground level
- The cover over the GCS shall be a minimum of 500mm with a max cover of 1000mm
- the GCS shall be located at least 5m from the nearest private land boundary and the nearest structure (above or below ground).

Vehicle Access – All access routes shall be sized to accommodate a rigid body tanker unit (32 tonne).

Access shall be provided adjacent to the GcS location ensuring that no vehicle can drive onto or within proximity that may impose loading onto the structure. A full swept path analysis must be submitted demonstrating the complete movement and manoeuvring path of the tanker. Dedicated off-street parking for the tanker must be provided, located within 20 meters of any silt traps or control manholes.

Reversing may be permitted for parking purposes only; this will be considered on a site-by-site basis. RAMS may be requested. The tanker must not be required to reverse more than the distance necessary to park in a straight line.

Surface Finish (2.9.8(1) and 2.10.7(1))

- Access to GcS should be constructed and designed for high-load applications (up to 40 tonnes). Cellular paving systems or solid surface finishes will be accepted provided they have been agreed with the local authority.
- Granular stone finishes and whin dust are not permitted.

Maintenance Requirements - GcS systems shall be capable of being jetted and inspected by CCTV. This is design specific and shall be reviewed on a site-by-site basis, with RAMS required using standard equipment (e.g., a 50 m jetting hose and crawler camera) Any man entry access covers within the GcS shall be securable to prevent unauthorised access to chambers and GcS systems.

Note 1: Underground storage **does not** provide water quality treatment and shall only be used in conjunction with SuDS techniques on all domestic and non-domestic development sites. The design shall fully comply with the Water Environment (Controlled Activities) (Scotland) Regulations 2011.

Note 2: By utilising GcS, **The Designer accepts that they are responsible for performing due diligence checks** of the designs obtained from suppliers/manufacturers, including but not limited to hydraulics, structural stability, buoyancy and infiltration.

Submissions effected

- ✓ All new Applications received after the date of this Bulletin
- ☐ Applications awaiting Technical Approval and all new submissions
- ☐ Applications with Technical Approval but not on site
- ☐ All Developments including those on site *e.g. H&S or WQ issues*

Circulation List

- ✓ Dev Serv Team
- ✓ Housing Developers
- ✓ Design Associates
- ✓ SLO's