

# Design Assessment Checklist: Infiltration / Detention Basin

## Objectives

This checklist can be used by the organisation approving the drainage scheme (drainage approving body) to help assess submissions for drainage approval.

This checklist is aimed at providing a consistent assessment process and ensuring that designs meet the key design requirements set out in the SuDS Manual (CIRIA C697). The design guidance in the Manual provides details that support the implementation of this checklist so that designs and compliance assessment can be delivered effectively. **Appropriate page references are provided in the checklist.**

This checklist should form part of a suite of documents required for a submission for drainage approval, including (but not limited to):

- A Scheme Design Assessment;
- Detailed Infiltration Assessment (where infiltration components are proposed);
- A Scheme Health and Safety Risk Assessment (if required);
- A Scheme Construction Method Statement;
- A Scheme Maintenance Plan.

It can be used as a checklist by organisations responsible for the approval and adoption of SuDS to support their assessment of schemes, or it can be used as part of the required submissions from the developer. It can also help designers ensure that they have provided all relevant information to the drainage approving body in their submissions for approval.

The checklist allows simple designs to be assessed against the “Deemed to comply” requirements in Table 1. Deemed to comply requirements (DtCR) are a set of standard design principles that avoid the need for complicated design calculations, modelling or other justification. The requirements are taken from the SuDS Manual. If the design varies from the Deemed to comply requirements, the variations should be explained and justified at the appropriate points in the checklist with a reference to supporting evidence.

The checklist can be used for an infiltration / detention basin or groups of such basins with the same characteristics.

**Table 1 Deemed to Comply Requirements: Basin**

Basin Parameter	Deemed to comply requirements	
	Infiltration	Detention
Length:width ratio	N/A	> 2:1
Side slope	Side slope < 1 in 3	Side slope < 1 in 3
Longitudinal slope	Bed slope < 1 in 40	Bed slope < 1 in 40
Maximum water depth for 1 in 100 year event	1m	1 m
Permeability of topsoil	> Permeability of underlying soils	N/A
For the 1 year 30 minute event meet one or more of following requirements: Average residence time in basin Or Velocity	N/A	> 10 minutes  < 0.3m/s

**Table 2 Design Assessment Checklist: Basin**

General information			
Site ID			
Asset ID(s)			
Basin location(s) and co-ordinates		Drawing Reference(s)	
Date of assessment		Specification Reference(s)	
Primary function(s) of basin:	Attenuation / Infiltration / Treatment / Other dual use (specify)		

Check	DtCR	Summary details (See Note)	Acceptable (Y/N)	Comments/ Remedial actions
<b>DIMENSIONS (SuDS Manual Ref.)</b>				
Length (m)	✓			
Width – at top and at base (m)	✓			
Top surface area (m <sup>2</sup> )				
Side slope (1 in ?)	✓			
Depth – maximum and minimum (m)				
Freeboard (m)				
Longitudinal slope (1 in ?)	✓			

Check	DtCR	Summary details (See Note)	Acceptable (Y/N)	Comments/ Remedial actions
<b>INFLOWS (SuDS Manual Ref.)</b>				
Provide a description of the contributing catchment land use and its size (m <sup>2</sup> ).				
Does the design include suitable silt interception upstream of system, where required?				
Where required, does the design include: <ul style="list-style-type: none"> <li>Suitable flow spreading?</li> <li>Appropriate energy dissipation?</li> </ul>				
<b>OUTFALL ARRANGEMENTS (SuDS Manual Ref.)</b>				
Provide details of any flow control systems, overflow arrangements and limiting discharge rate(s) from the basin.				
Is the basin designed to allow infiltration? If yes, attach Infiltration Assessment.				
Does the design include infiltration trenches or blankets beneath the base to promote improved infiltration?				
Is a geomembrane required to prevent infiltration? If yes, give reason.				
Depth to maximum likely groundwater level (m)				
Is topsoil of sufficient permeability to allow infiltration or underdrainage (where required)?	✓			
<b>STORAGE (SuDS Manual Ref.)</b>				
Design return period(s) (years)				
Maximum design water depth(s) and level(s)	✓			
Maximum design storage volume(s) (m <sup>3</sup> ) Note: It would be unusual for this volume to exceed 10,000 m <sup>3</sup> . If it does, the design may have to comply with the Reservoirs Act (as amended by the FWMA). Checks should be made of the design to confirm suitability of such a				

Check	DtCR	Summary details (See Note)	Acceptable (Y/N)	Comments/ Remedial actions
large volume.				
Levels around the edge of the pond/wetland appropriate to contain design depths of water?				
<b>WATER QUALITY TREATMENT (SuDS Manual Ref.)</b>				
For the 1 year, 30 min event confirm: Average residence time in detention basin is acceptable for effective treatment	✓			
Or Maximum velocity is acceptable for effective treatment	✓			
<b>LANDSCAPE/BIODIVERSITY (SuDS Manual Ref.)</b>				
Does the proposed planting have potential to create bio diverse habitats?				
Have native plant species been used? (Note if ornamental species are proposed, give reasons and describe measures that prevent their migration to natural water bodies.)				
Is the proposed planting appropriate to the location, visually, relative to gradient, water depths etc. and with respect to access and maintenance?				
Where relevant, confirm planting design does not adversely impact highway visibility and safety requirements (check with highway authority).				
Is the proposed top soil profile suitable to sustain the proposed plant species and as permeable as the filter bed?				
<b>CRITICAL MATERIALS/ PRODUCT SPECIFICATIONS</b>				
Geomembrane				
Geotextile (non-woven)				
Topsoil				
Other (including proprietary systems)				

Check	DtCR	Summary details (See Note)	Acceptable (Y/N)	Comments/ Remedial actions
<b>CONSTRUCTABILITY (SuDS Manual Ref.)</b>				
Are there any identifiable construction risks? If yes, state and confirm acceptable risk management measures are proposed.				
<b>MAINTAINABILITY (SuDS Manual Ref.)</b>				
Confirm that access for maintenance is acceptable and summarise details.				
Are there specific features that are likely to pose maintenance difficulties? If yes, identify mitigation measures required.				
<b>BASIN DESIGN ACCEPTABILITY (SuDS Manual Ref.)</b>		<b>Summary details including any changes required</b>	<b>Acceptable (Y/N)</b>	<b>Date changes made</b>
Acceptable:				
Minor changes required:				
Major changes required / re-design:				

Note: Input range if applied to > 1 basin. If there is a DtCR (as indicated) confirm whether or not this is met and provide details of any variations.