Design Assessment Checklists for Ponds/ Wetlands

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 a single pond/wetlands or groups of similar features with the same characteristics.

Table 1 Deemed to Comply Requirements: Ponds / Wetlands

Parameter	Deemed to comply requirements	
	Pond	Wetland
Length to width ratio	Between 3:1 and 5:1	>3:1
Maximum depth of permanent water	2m	2m
Maximum side slopes	1 in 3 (ideally at least 1 in 4 for habitat)	1 in 3 (ideally at least 1 in 4 for habitat)
Width of aquatic bench	>1m	>1m
Slope of aquatic bench	1 in 15	1 in 15
Maximum depth of aquatic bench	450mm	450mm
Width of safety bench	>3.5m	>3.5m
Slope of safety bench	Less than 1 in 15	Less than 1 in 15
Maximum rise in water level for 1 in 100 year event	1.5m	1.5m
Wetland mosaic – water depths/areas	N/A	Maximum 20% of water area >1m 30% if water area between 0.5m and 1m 50% of water area between 0m and 0.5m
For the 1 year, 30 min event meet the following requirement:		
Size of permanent pool	= treatment volume, V_t	= treatment volume, V_t
Maximum water velocity	N/A	<0.1m/s

Table 2 Design Assessment Checklist: Pond / Wetland

GENERAL INFORMATION			
Site ID			
Asset ID(s)			
Pond/wetland location(s) and co-ordinates		Drawing Reference(s)	
Date of assessment		Specification Reference(s)	
Primary function(s) of pond/wetland	Attenuation / Treatment		

Check	DtCR	Summary details (*See Note*)	Acceptable (Y/N)	Comments/ Remedial actions
DIMENSIONS (SuDS Manual Ref.)				
Length (m)	✓			
Maximum and minimum width – at	✓			

Check	DtCR	Summary details (*See Note*)	Acceptable (Y/N)	Comments/ Remedial actions
permanent water level (m)				
Length:maximum width ratio	✓			
Top surface area (m^2)				
Side slopes (1 in ?)	✓			
Depth of permanent water – maximum and minimum (m)	✓			
Freeboard (m)				
Aquatic bench width and slope (m, 1 in ?)	✓			
Safety bench width and slope (m, 1 in ?)	✓			
INFLOWS (SuDS Manual Ref.)				
Provide a description of the contributing catchment land use and its size (m^2).				
Does the design include suitable silt interception upstream of system?				
Does the design include: • A suitable inlet design? • Appropriate energy dissipation?				
OUTFALL ARRANGEMENTS (SuDS Manual Ref.)				
Provide details of any flow control systems, overflow arrangements and limiting discharge rate from pond/wetland				
Is a geomembrane required to prevent infiltration? If yes, give reason.				
Depth to maximum likely groundwater level (m)				
STORAGE (SuDS Manual Ref.)				
Design event return period (s) (years)				
Maximum rise in water level (s) for the design event (s) (mm)	✓			
Maximum water depth(s) at design event conditions (m)				
Maximum design storage volume (s) (m^3)				
Levels around the edge of the pond/wetland appropriate to contain design depths of				

Check	DtCR	Summary details (*See Note*)	Acceptable (Y/N)	Comments/ Remedial actions
water?				
WATER QUALITY TREATMENT (SuDS Manual Ref.)				
For the 1 year, 30 min event confirm: Permanent pool volume is sufficient for effective treatment Or Flow velocity is acceptable for effective treatment	✓ ✓			
LANDSCAPE/BIODIVERSITY (SuDS Manual Ref.)				
Is there sufficient treatment upstream of the pond to allow design amenity and biodiversity objectives to be delivered?				
Does the variation in permanent water depth have the potential to create bio diverse habitats?				
Does the design of the pond fulfil objectives of availability of different habitats including: • deep water • marginal • dry/damp • other				
A planting schedule is provided, showing species and planting preferences. Is the planting demonstrated appropriate for the habitat specified?				
Will plantings be established or rely on natural colonisation?				
Have locally appropriate native plant species been used?				
Indicate the number of different plant species used (not a mono-culture).				
Is the proposed pond/wetland planting appropriate to the location, and with respect to access and maintenance?				
Where relevant, confirm planting design				

Check	DtCR	Summary details (*See Note*)	Acceptable (Y/N)	Comments/ Remedial actions
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?				
CRITICAL MATERIALS/ PRODUCT SPECIFICATIONS				
Geomembrane				
Geotextile (non-woven)				
Topsoil				
Other (including proprietary systems)				
CONSTRUCTABILITY (SuDS Manual Ref.)				
Are there any identifiable construction risks? If yes, state and confirm acceptable risk management measures are proposed.				
MAINTAINABILITY (SuDS Manual Ref.)				
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.				
POND/WETLAND DESIGN ACCEPTABILITY (SuDS Manual Ref.)	**Summary details including any changes required**		**Acceptable (Y/N)**	**Date changes made**
Acceptable: Minor changes required: Major changes required / re-design:				

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