

S104 SuDS Technical Appraisal Form

Bio-retention

Version 1 (October 22)

Proposed Section 104 Development at
UU Reference –

Section 1 - Information required for SuDS assessment

Note: any item selected as 'not submitted' will need to be provided to support and progress the application to Technical Acceptance.

Section 1 Information required	Submitted	Not submitted	N/A	Designer Tick to highlight where information noted as 'not submitted' has now been provided
<ul style="list-style-type: none"> SuDS component(s) drawing / included on S104 Agreement Plan <small>See UU S104 SuDS guidance document, comment 1 for further information</small> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Sectional Drawing(s) 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Completed CIRIA SuDS checklist <small>See C753 The SuDS Manual Appendix B: Bio-retention</small> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Completed CIRIA SuDS health and safety checklist <small>See C753 The SuDS Manual Appendix B: SuDS health and safety risk assessment checklist</small> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> SuDS Component(s) Management & Maintenance document 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Maintenance inspection plan <small>This must include access details for inspection and all maintenance requirements including machinery.</small> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Bio-retention sizing calculation <small>See UU S104 SuDS guidance document, comment 4 for further information</small> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> SuDS hydraulic assessment information <small>See UU S104 SuDS guidance document, comment 5 for further information</small> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Flood route plan for any exceedance flows from the SuDS Component 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> 1:20 sectional catch pit manhole details 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Landscape plan and planting schedule <small>See UU S104 SuDS Landscape & Planting guidance document for further information</small> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Simple Index Approach (SIA) Assessment / Mitigation Indices for Water Quality (applicable for mixed use /commercial sites only) <small>See chapter 26.7.1 of CIRIA C753 for guidance</small> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Flood Risk Assessment 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Site Investigation containing geotechnical information 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> Topographical survey <small>This drawing must be a full topographical survey of the existing site, with contour to record levels at 500mm intervals as a minimum for large greenfield sites. For small/urban/very flat sites, closer level differences may be required along with spot levels for onsite surface features and changes of level.</small> 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> S104 SuDS Technical Appraisal Form: Infiltration viability (only required if trench allows for infiltration) 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 2 – High level SuDS comments

Comment number	Engineer General comments	Yes	No	TBC	Designers response comments If marked 'NO' or 'TBC', please amend the design or provide justification and mitigation of risks?
1	The component is adequately distanced from any adjacent structures/features (i.e. existing sewers, pumping station, retaining walls etc.) and does not pose a risk in relation to flooding, pollution or slope stability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	The topography, shape & location is suitable for the components <small>See UU S104 SuDS guidance document, comment 2 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	Maintenance access is acceptable for the SuDS component(s) and responsibilities detailed in management and maintenance plan (i.e. adopting body / management company) <small>See UU S104 SuDS guidance document, comment 2 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	The component is outside any area of significant flood risk <small>See UU S104 SuDS guidance document, comment 3 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Section 3 – Design requirements Note: any points marked as ‘No’ or ‘TBC’ will require amendments to the design / drawings.

Bio-retention

For full design requirements, please refer to Chapter 18 of CIRIA 753.

Hydraulics (Chapter 18.4), Maintenance (Chapter 32) & Health and safety (Chapter 36)	Yes	No	TBC	N/A	(Designer) Tick to confirm addressed with resubmission
SuDS assessment acceptable	<input type="checkbox"/>	<input type="checkbox"/>			
Bio-retention sizing is acceptable <small>See UU S104 SuDS guidance document, comment 4 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The component is represented correctly in the hydraulic model <small>See UU S104 SuDS guidance document, comment 5 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inflow velocities acceptable <small>See UU S104 SuDS guidance document, comment 5 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suitable head loss' applied in the model <small>See UU S104 SuDS guidance document, comment 5 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perforated pipes sufficiently sized for design event flows (2yr event) <small>See UU S104 SuDS guidance document, comment 5 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depth of temporary storage acceptable <small>See UU S104 SuDS guidance document, comment 5 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flow control outlet diameter acceptable <small>See UU S104 SuDS guidance document, comment 5 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inlet discharge level acceptable <small>Must freely in 2yr event, or the surcharge risks justified</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximum water level acceptable <small>Must be at least 500mm below the lowest FFL of any adjacent properties</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drain down time acceptable <small>See UU S104 SuDS guidance document, comment 5 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The flood routing for exceedance flow is acceptable <small>See UU S104 SuDS guidance document, comment 5 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slope gradients acceptable <small>See UU S104 SuDS guidance document, comment 6 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effective pre-treatment has been provided <small>See UU S104 SuDS guidance document, comment 7 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Erosion protection / energy dissipation measures acceptable <small>See UU S104 SuDS guidance document, comment 8 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inlet and outlet connection details acceptable <small>See UU S104 SuDS guidance document, comment 9 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overflow / underdrain design acceptable <small>See UU S104 SuDS guidance document, comment 10 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Construction layers acceptable <small>See UU S104 SuDS guidance document, comment 11 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Planting and vegetation proposals are acceptable <small>See UU S104 SuDS Landscape & Planting guidance document for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The base of the component is set 1m above groundwater levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Liner specification is acceptable <small>See UU S104 SuDS guidance document, comment 12 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 4 – Drawing requirements

S104 Agreement Plan and Land Registry Plan requirements	Yes	No	TBC	N/A	(Designer) Tick to confirm addressed with resubmission
Both drawings contain all relevant component information?	<input type="checkbox"/>	<input type="checkbox"/>			
Component offered for adoption is coloured purple	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A 2m easement is be applied from the top of the embankment and around the full perimeter of the component, coloured in yellow and dimensioned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The following requirements are relevant to the S104 Agreement Plan only;					
Bio-retention component type noted correctly (i.e. bio-retention swale, anaerobic system or infiltration)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dimensions shown (length at longest point in addition to the width at widest point, both at the bottom and top of the component)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The area of the component (m ²), max water depth (m) and storage volume (m ³) are noted on the drawing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The inlet level and outlet level are to be clearly noted, in addition to the top of bank level and bed level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Component area (m ²) and depth (m) matches the hydraulic model	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Base & side slope gradients labelled, clearly falling to the outlet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Borehole locations shown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Full design detail shown <small>See UU S104 SuDS guidance document, comment 13 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Erosion protection measures detailed at inlet points	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ancillaries are clearly identified (i.e. catch pit manholes and flow control manholes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sectional view drawing	Yes	No			
Maximum water levels for the following storm events; 2, 30, 100 & 100+cc year events, For sites with Pumping Stations, the 200 year water level also needs to be noted to confirm compliance with Design & Construction Guidance (D5.1.2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The inlet level and outlet level are to be clearly noted, in addition to the top of bank level and bed level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slope gradients shown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Erosion protection measures detailed at inlet points	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Full design detail shown including materials <small>See UU S104 SuDS guidance document, comment 13 for further information</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>