



## Appendix A1 - Surface Water Drainage Proforma for Category A and B Applications (see Appendix F for full descriptions)

This form should be used on planning applications which include any of the following:

- 10 or more dwellings
- Manufacture or retail with a floor space greater than 1000 sqm
- All development sites greater than 1 hectare

**Applicant Name**

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**Planning Application Name**

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**Development Address & Post Code**

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**Application Type (Please circle)**

**Outline**

**Full**

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**1. Existing Site**

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
1.1 Site location plan	Y	Y	
1.2 Detailed site layout plan at an identified scale with a north arrow (minimum scale 1:500)		Y	
1.3 Topographical survey of the site, including cross sections of any adjacent watercourses for an appropriate distance upstream and downstream of the proposed discharge point		Y	
1.4 Survey and assessment of Environmental Constraints (identified historic (designated and undesignated), ecological (designated sites, habitats and species) and tree constraints and landscape context.		Y	

## 2. Design Principles

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
2.1 Concept drainage strategy and masterplan demonstrating how SuDS have been incorporated into the site design and how the SuDS system complies with the SuDS Management Train	Y	Y	
2.2 Demonstration that a suitable route for disposal of surface water is feasible and that relevant 'in principle' permissions have been granted.	Y		
2.3 Plan of the proposed drainage system showing catchment areas including impermeable areas and phasing		Y	
2.4 Review of multiple benefits provided by the SuDS scheme using the <a href="#">BeST Tool</a> or another method as appropriate	Y	Y	
2.5 Development phasing plan demonstrating how the SuDS scheme will be implemented		Y	

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
2.6 Plan showing any existing drainage pathways on the site (including surface water flow paths, ditches, depressions and watercourses and historic drainage features such as drains, leats, water meadows, culverts etc.) and information as to how these are to be incorporated / managed within the wider SuDS scheme.	Y	Y	
2.7 Long sections and cross sections for the proposed SuDS system		Y	
2.8 Details of connections (including flow control devices) to watercourses, sewers, public surface water sewers and highway drains	Y	Y	
2.9 Results of ground investigations or desk top studies / permeability assessment, including infiltration testing where appropriate	Y*	Y	
2.10 Assessment of SuDS system water quality performance	Y	Y	
2.11 Landscape planting scheme where a vegetated SuDS scheme is proposed		Y	

### 3. Peak Flow Control

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
3.1 Details of pre and post development runoff rates for 100% and 1% Annual Exceedance Probability rainfall events sufficient to demonstrate that the proposed SuDS system should operate as designed	Y	Y	
3.2 Full design calculations to demonstrate conformity with the national non-statutory technical standards for SuDS and Local Standards		Y	

### 4. Volume Control

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
4.1 Details of pre and post development runoff volumes for 1% Annual Exceedance Probability rainfall events plus an allowance of 40% for climate change and up to a 10% increase in impermeable area to account for urban creep where applicable.	Y	Y	
4.2 Drawings showing location, dimensions and levels of emergency overflows provided for piped and storage features.		Y	

## 5 Flood Risk Within the Development

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
5.1 Details showing that the drainage is sufficient to accommodate a 3.3% Annual Exceedance Probability rainfall event		Y	
5.2 Details showing that flooding does not occur in a building or susceptible utility plant in a 1% Annual Exceedance Probability rainfall event including appropriate allowances for climate change and urban creep.		Y	
5.3 Details of exceedance flow routes designed to minimise flood risk to people and property. Flow routes should also account for any potential blockage of structures.		Y	
5.4 Details of gully spacing calculations for a 15 minute 1% AEP storm event when gullies will be the only means of removing surface water from the highway, to ensure exceedance does not flood vulnerable areas or contribute to flooding outside of the development.		Y	

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
5.5 Drawings identifying sources of water entering the site pre development	Y	Y	
5.6 Drawings demonstrating how surface water flows are routed through the site pre development i.e. existing channels and culverts	Y	Y	
5.7 Drawings demonstrating how surface water flows are routed through the site post development including opportunities for daylighting existing culverts	Y	Y	
5.8 Drawings identifying where surface water flows leave the site pre development	Y	Y	
5.9 Drawings identifying where surface water flows leave the site post development	Y	Y	
5.10 Plan demonstrating flooded areas for the 1% annual exceedance probability (AEP) (1 in 100 annual chance) storm, including the appropriate allowance for climate change and urban creep, when the system is at capacity and illustrating flow paths for design for exceedance		Y	
5.11 Plans showing the location of the Flood Zones associated with ordinary watercourses on the site	Y	Y	

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
5.12 Assessment of the impacts of high water levels in receiving watercourses on the operation of SuDS scheme		Y	
5.13 Copy of your Flood Risk Assessment (where required by the National Planning Policy Framework (NPPF))	Y	Y	

## 6. Structural Integrity

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
6.1 Technical specifications of drainage design components including design life		Y	
6.2 Loading calculations for drainage system components		Y	
6.3 Category 0 Approval for structures with a diameter greater than 900mm		Y	



## 7. Designing for Maintenance Considerations

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
7.1 Justification for use of pumps within a SuDS scheme where applicable	Y	Y	
7.2 Maintenance and Operation Manual for the SuDS Scheme at an appropriate level of detail. To include as a minimum responsible party and funding method	Y	Y	
7.3 Management plan and proposed contractual arrangements for the management of the drainage scheme over its lifetime	Y	Y	
7.4 Maintenance access arrangements for all proposed drainage systems	Y	Y	
7.5 Operational characteristics of any mechanical features including maintenance and energy requirements		Y	
7.6 Risk assessment demonstrating how the risk of blockages has been minimised		Y	
7.7 Assessment of residual flood risk in the event of pump failure based on parameters above.		Y	

## 8. Construction

Evidence Required	Required for Outline Planning	Required for Full Planning	Evidence Supplied
8.1 Construction drawings prepared by a suitably competent Engineer giving details of proposed elevations, dimensions, materials to be used and detailing how the proposed SuDS scheme will connect to an existing drainage system.		Y	
8.2 Plan for the management of construction impacts including any diversions, erosion control, phasing and maintenance period (pre adoption)		Y	
8.3 Construction Health and Safety Plan where appropriate. This should be in proportion to the risks involved in the project. Reference may be made to the HSE considering in particular open water, confined spaces and underground services		Y	
8.4 Details of any offsite works required, together with any necessary consents		Y	
8.4 Risk assessment which demonstrates how the construction methodology will minimise damage to existing assets.		Y	
8.6 Contingency plan which demonstrates how any damage to existing assets will be resolved.		Y	



## 9. Foul Drainage for Non Mains Connections

Non Mains Foul Connection	Evidence Supplied
9.1 Details and sizing of the existing package treatment plant or septic tank in accordance with 'British Water Flows and Loads 4'	
9.2 Details and sizing of the proposed Package treatment plan or septic tank in accordance with 'British Water Flows and Loads 4'	
9.3 Details of percolation tests and design of the drainage fields in accordance with The Building Regulation part H2'	
9.4 Evidence that package treatment plant discharge is to a watercourse that normally has flow throughout the year.	
9.5 Submission of the Foul Drainage Assessment Form (FDA1 Form).	

## 2. Design Principles

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### Local Standards

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#### **Local Standard A – Phased Development and Drainage Strategies**

*For phased developments, the LLFA will expect planning applications to be accompanied by a Drainage Strategy which takes a strategic approach to drainage provision across the entire site and incorporates adequate provision for SuDS within each phase.*

#### **Local Standard B – Pollution Prevention and Control**

*The LLFA will expect the SuDS to demonstrate how pollutants are prevented or controlled as part of the SuDS scheme. This should include consideration of the sensitivity of receiving waterbodies and particular attention should be given to the first 5mm of rainfall ('first flush' that mobilises the most pollutants).*

#### **Local Standard C – Conformity with the SuDS Management Train Principles**

*The LLFA will expect the SuDS design to demonstrate how the principles of the SuDS Management Train have been taken into account*

#### **Local Standard O – Multiple Benefits**

*The LLFA will expect the SuDS design to demonstrate, where appropriate, how environmental site constraints have been considered and how the features design will provide multiple benefits e.g. landscape enhancement, biodiversity, recreation, amenity, leisure and the enhancement of historical features.*

#### **Local Standard Q – Connection to Highway Drainage Network**

*A connection to the existing highway drainage network will not be permitted unless the system downstream of the connection is put up for adoption by STW up to the point where this interacts with the existing public network or where it discharges to a surface water outfall or a connection to the existing highway drainage network will not be permitted until model evidence has been submitted to show that any connection will not cause flooding to the public highway.*

*Any costs associated with this process including design fees, the physical upgrading of the highway drain to an adoptable standard, or those associated with the fee for adoption will be borne by the applicant.*



### **Local Standard R – Network Modelling Software Requirements**

*The design this should be submitted in MicroDrainage (.mdx) format.*

#### **Design Parameters**

*The rainfall data must be based on the most up to date FEH*

*The maximum rainfall intensity should be set to 100*

*The volumetric runoff coefficient should always be 1.0*

#### **Simulation Parameters**

*The Areal Reduction Factor should always be set to 1*

*The MADD Factor must be set to 0*

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## **3. Peak Flow Control**

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### **Applicable National Standards**

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**S2** *For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 100% Annual Exceedance Probability rainfall event and the 1% Annual Exceedance Probability rainfall event should never exceed the peak greenfield runoff rate for the same event.*

**S3** *For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 100% Annual Exceedance Probability rainfall event and the 1% Annual Exceedance Probability rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.*

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### 3. Volume Control

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#### Applicable National Standards

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**S4** Where reasonably practicable, for greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1% Annual Exceedance Probability, 6 hour rainfall event should never exceed the greenfield runoff volume for the same event.

**S5** Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1% Annual Exceedance Probability, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.

**S6** Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer or surface water body in accordance with S4 or S5 above, the runoff volume must be discharged at a rate that does not adversely affect flood risk.

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#### Local Standards

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##### **Local Standard E – Climate Change**

The LLFA will expect SuDS design to include an allowance for a 40%\* increase in rainfall for a 1% Annual Exceedance Probability rainfall event in order to accommodate the 2016 Upper End climate change predictions. (\*note that guidance may be subject to change and therefore the most up to date information should be referenced / clarification sought from the LLFA)

##### **Local Standard F – Urban Creep**

The LLFA will expect the SuDS design to include an allowance for an increase in impermeable area to accommodate urban creep as set out in the SuDS Handbook.

##### **Local Standard G – Emergency Overflows**

The LLFA will expect an emergency overflow to be provided for piped and storage features above the predicted water level in a 1% Annual Exceedance Probability rainfall event, with an allowance for climate change

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### **Local Standard H – Freeboard Levels**

*The LLFA will expect all surface water storage ponds to provide a 300mm freeboard above the predicted water level arising from a 1% Annual Exceedance Probability rainfall event inclusive of an allowance for climate change. Care must be taken to ensure that excavations do not take place below the ground water level.*

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## **5. Flood Risk Within the Development**

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### **Applicable National Standards**

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**S7** *The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 3.3% Annual Exceedance Probability rainfall event.*

**S8** *The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1% Annual Exceedance Probability rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development.*

**S9** *The design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of a 1% Annual Exceedance Probability rainfall event are managed in exceedance routes that minimise the risks to people and property.*

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### **Local Standards**

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#### **Local Standard D – Exceedance Flows**

*The LLFA will expect exceedance flows, originating from both within and outside of the development site, must be directed through areas where the risks to both people and property are minimised.*

It should be demonstrated that exceedance flows up to the 1% Annual Exceedance Probability (AEP) plus climate change will not result in the surface water flooding of more vulnerable areas within the development site or contribute to surface water flooding of any area outside of the development site.

Exceedance flow paths should be provided to ensure that any such flows are managed on site. The discharge of any such flows across the adjacent land would not be permitted and would mean that the surface water drainage system is not being used.

*When considering exceedance routes, particular attention should be paid to*

- i. The position of walls, bunds and other obstructions that may direct water but must not cause ponding*
- ii. The location and form of buildings (e.g. terraces and linked detached properties) that must not impede flows or cause ponding*
- iii. The finished floor levels relative to surrounding ground*

#### **Local Standard I – Watercourse Floodplains**

*The LLFA will expect the floodplains of ordinary watercourses to be mapped to an appropriate level of detail considering the nature of the application (i.e. detailed flood modelling should be undertaken to support full planning applications). The layout of the development will then take a sequential approach, siting the least vulnerable parts of that development in the highest flood risk areas.*

#### **Local Standard J – Retention of Natural Drainage Features**

*The LLFA will expect natural drainage features on a site should be maintained and enhanced. Culverting of open watercourses will not normally be permitted except where essential to allow highways and / or other infrastructure to cross. In such cases culverts should be designed in accordance with CIRIA's Culvert design and operation guide, (C689).*

*Where a culverted watercourse crosses a development site, it should be reverted back to open channel. In such a case the natural conditions deemed to have existed prior to the culverting taking place should be re-instated.*

#### **Local Standard K – Impact of Downstream Water Levels**

*If high water levels within a receiving watercourse into which a SuDS scheme discharges are anticipated, the LLFA will expect that they will not adversely affect the function of that SuDS system.*



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## 6. Structural Integrity

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### Applicable National Standards

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**S10** Components must be designed to ensure structural integrity of the drainage system and any adjacent structures or infrastructure under anticipated loading conditions over the design life of the development taking into account the requirement for reasonable levels of maintenance.

**S11** The materials, including products, components, fittings or naturally occurring materials, which are specified by the designer must be of a suitable nature and quality for their intended use.

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## 7. Designing for Maintenance Considerations

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### Applicable National Standards

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**S12** Pumping should only be used to facilitate drainage for those parts of the site where it is not reasonably practicable to drain water by gravity. See local Standard N

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### Local Standards

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#### **Local Standard L – Maintenance Requirements**

The LLFA will expect SuDS to be designed so that they are easy to maintain. Proper use of the SuDS management train, including surface features, is one way to achieve this.

The developer must set out who will maintain the system, how the maintenance will be funded and provide a maintenance and operation manual.

#### **Local Standard M – Minimising the Risk of Blockages**

The LLFA will expect the SuDS design to minimise the risk of blockage as far as is reasonably possible e.g. by using suitable pipe sizes and making underground assets as visible and accessible as possible.

#### **Local Standard N – Use of Pumped Systems**

Shropshire Council do not permit the use of surface water pumps on new development.

Development should always be directed to areas where a gravity connection to a suitable outfall can be provided. Areas that cannot be drained by gravity should remain as Public Open Space. Any proposed foul pumping stations should be built to an adoptable standard and put up for adoption by STW.

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## 8. Construction

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### Applicable National Standards

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**S13** *The mode of construction of any communication with an existing sewer or drainage system must be such that the making of the communication would not be prejudicial to the structural integrity and functionality of the sewerage or drainage system.*

**S14** *Damage to the drainage system resulting from associated construction activities must be minimised and must be rectified before the drainage system is considered to be completed.*

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## 9. Foul Drainage for Non Mains Connections

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### Local Standards

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#### **Local Standard P – Disposal of Foul Water**

*The proposed method of foul water sewage disposal should be identified and submitted for approval, along with details of any agreements with the local water authority and the foul water drainage system should comply with the Building Regulations H2.*

*If main foul sewer is not available for connection, full details and sizing of the proposed septic tank/ package sewage treatment plant including percolation tests for the drainage field soakaways should be submitted for approval including the Foul Drainage Assessment Form (FDA1 Form). British Water 'Flows and Loads: 4' should be used to determine the number of persons for the proposed development and the sizing of the septic tank/ package sewage treatment plant and drainage fields should be designed to cater for correct number of persons and in accordance with the Building Regulations H2. These documents should also be used if other form of treatment on site is proposed*

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