

SABS Strategy Document for the Long House development, Coedkernew

This document is based on the requirements provided by Welsh Government for the sole purpose of submitting information to the SuDS Approving Body (SAB) in accordance with the legislation detailed on this form and other relevant items of primary and subordinate legislation.

The information in this document can be used to complete the pre-application form available from the respective SAB authorities web site.

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- 6. Initial Assessment of Flood Risk - *Low***

1. Applicant Details

Applicant Name and Address

Title and Name		Mr Neville Atherton
Company		
Suffix (unit/name/number)		The Long House
Address line 1		Blacksmiths Way
Address line 2		Coedkernew
Address line 3		
Town		Newport
County		Newport
Postcode		NP10 8TR
Phone number	Mobile	07726931160
	Works	
	Home	
e-mail address		

Agent Name and Address

Title and Name		Mr Jeffrey Tucker
Company		
Suffix (unit/name/number)		Bryn Derwen
Address line 1		Michaelston-y-Fedw
Address line 2		
Address line 3		
Town		Michaelston-y-Fedw
County		
Postcode		CF3 ^XT
Phone number	Mobile	07788 178552
	Works	
	Home	

e-mail address	
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Preferred contact	Applicant	Agent X
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2. Site Details

A general description of site location supported by a plan specifying the construction area and the extent of the drainage system should be submitted. Plans shall be at a scale of 1:2500. All plans should show the direction of North.

Name of proposed development	Long House development, Coedkernew
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Grid Reference (E/N)	Easting -3.047160	Northing 51.555415
Suffix (unit/name/number)	Long House	
Address line 1	Blacksmiths Way	
Address line 2	Coedkernew	
Address line 3	Marshfield	
Town	Newport	
County		
Postcode		

Description of proposed development	Housing Development within the grounds of an existing property
Total application site area (Ha)	0.23 Ha
Is the site currently developed i.e. Brownfield, or is it currently undeveloped i.e. Greenfield?	GREENFIELD
Existing land use	Lawn
Proposed land use	Housing development

3. Application

Has any prior advice been sought from the SuDS Approving Body (SAB) about this application?		Yes ☐	No ☒
If Yes, please complete the following information about the advice you were given. This will help the SAB to deal with this application more efficiently.			
Officer Name			
Reference		Date	DD MM YYYY
Details of pre-application advice received			

Does this application relate to any other SAB application already made?	Yes ☐	No ☒
If "Yes", please provide SAB Reference number		

Is this application part of a phased approach to development of the site, or one of multiple applications for the same site?	Yes ☐	No ☒
If "Yes", please provide brief details		

4. Environmental Impact Assessment (EiA) Statement

Does this application relate to a development that is the subject of an EiA application under the Town & Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017(1)?	Yes ☐	No ☒
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5. Compliance with Statutory National Standards for Sustainable Drainage Systems (SuDS)

All sustainable drainage systems **MUST** comply with the [Statutory National Standards for Sustainable Drainage Systems \(SuDS\) for Wales](#). You are advised to refer to the detailed text in the Standards that relate to the information required below. The Standards are re-produced, in the Guidance to assist in completing this application form.

Standard Principles

The Principles listed below will underpin the design of surface water management schemes to meet the Statutory National Standards. Where possible, please provide a brief summary in each of the boxes below relating to each of the bulleted Standard Principles and itemised Standards 1 to 6, showing how your proposed surface water drainage scheme complies with this statutory requirement.

Compliance with Standard Principles

My proposed surface water drainage scheme will comply in the following way/s:

The application will comply with the statutory standards, as it will dispose of surface water within the site boundaries using infiltration techniques.

Biodiversity will be achieved through selected planting and creating a modern hedgerow between the two houses being developed.

This hedgerow will also increase public amenity by providing an organic visual barrier between the two properties and encouraging wildlife

Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance should be listed below and all relevant material submitted.

1. Drawing C7049-RVW-ZZ-ZZ-DR-S-00001

Standards 1 to 6

Compliance with Standard S1 - Surface water runoff destination

My proposed surface water drainage scheme will comply in the following way/s:

Rain water harvesting is not intended to be used as the cost per dwelling in terms

of installation, maintenance and useage would outweigh the benefit.

Soakaway tests have been undertaken on the site and it is possible to infiltrate the surface water.

The existing hard standing areas will continue to dispose of water with out alteration. This is via run off to the property soft landscaping toward the adjacent woodland area.

New hard standing areas will be constructed as porous and will directly infiltrate to the ground replicating the natural green water runoff whilst also providing filtration to cleanse the water.

Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance should be listed below and all relevant material submitted.

E.g. Drainage Strategy, Landscape Plan, destination priorities, detailed drainage design etc.

1. Drawing C7049-RVW-ZZ-ZZ-DR-S-00001

Compliance with Standard S2 - Surface water runoff hydraulic control

My proposed surface water drainage scheme will comply in the following way/s:

The new hardstanding areas will infiltrate directly to the ground replicating gree field run-off

The roof areas will discharge to infiltration tanks, which have been sized based upon the soakaway tests undertaken at the property and a 100 year storm plus a 30% allowance for climate change.

The roof areas will discharge directly to the infiltration tanks located in the gardens.

The impermeable area for House A is 106m²

The impermeable area for House B is 141m²

The Infiltration rate for House A is 4.79 x10⁻⁵

The Infiltration rate for House B is 1.09 x10⁻⁴

The infiltration tank size for House A is 2000 x 3500 x 800

The infiltration tank size for House B is 2000 x 3500 x 800

Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance should be listed below and all relevant material submitted.

(e.g. Drainage Strategy, Landscape Plan, Flood Consequences Assessment, detailed drainage design, hydraulic calculations, flow control etc.)

1. Drawing C7049-RVW-ZZ-ZZ-DR-S-00001
2. Soakaway Calculations

Compliance with Standard S3 – Water Quality

My proposed surface water drainage scheme will comply in the following way/s:

New hard standings will contain a filter medium which will capture pollutants before the water filters in to the sub soil

The roof areas will have a low pollutant potential and drain directly to the soakaways.

Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance should be listed below and all relevant material submitted.

E.g. Water Quality Strategy, treatment, contaminated land survey pollution prevention etc.

Compliance with Standard S4 – Amenity

My proposed surface water drainage scheme will comply in the following way/s:

This is not a public space however amenity will be provided by the planting of a new hedge between the properties

Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance should be listed below and all relevant material submitted.

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Compliance with Standard S5 – Biodiversity

My proposed surface water drainage scheme will comply in the following way/s:

Biodiversity in the area is already significant as two sides of the development front onto a wooded area. However, the planting of a new hedge between the properties will enhance the biodiversity within the site. is

Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance should be listed below and all relevant material submitted.

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Compliance with Standard S6 – Design of drainage for Construction and Maintenance and Structural Integrity

My proposed surface water drainage scheme will comply in the following way/s:

The Suds features will be designed on the basis of the principles within the SUDS manual.

Once a contractor is appointed a Construction maintenance plan will be provided.

Where possible, relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance should be listed below and all relevant material submitted.

E.g. Drainage Strategy, Landscape Plan, detailed drainage design
Construction Management Plan, Phasing Plan, SuDS Maintenance Plan etc.

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6. Initial Assessment of Flood Risk

Is the site within an area at risk of flooding? Refer to Natural Resources Wales Development Advice maps. (Natural Resources Wales / Development and flood risk)	Yes ☐	No ☒
If the proposed development is within the area at risk of flooding, you will need to consider whether it is appropriate to submit a flood consequences assessment. (Refer to Technical Advice Note 15 (TAN15)).		

Is the site located within an area susceptible to surface water flooding? Refer to NRW Surface Water Flood Maps.	Yes ☐	No ☒
Is the site located within an area susceptible to groundwater flooding?	Yes ☐	No ☒
Is there a watercourse (as defined under Section 72 Land Drainage Act 1991) located within 20m of the proposed development?	Yes ☐	No ☒

RVW Consulting 6 Neptune Court Ocean Way Cardiff CF24 5PJ	Project				Job Ref.	
	Long House, Coedkernew				Sheet no./rev.	
	Section				2	
	Calc. by	Date	Chk'd by	Date	App'd by	Date
	BP	11/03/2022			BP	16/03/2022

SOAKAWAY DESIGN HOUSE A

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.04

Design rainfall intensity

Location of catchment area; Cardiff
 Impermeable area drained to the system; $A = 106.0 \text{ m}^2$
 Return period; Period = **100** yr
 Ratio 60 min to 2 day rainfall of 5 yr return period; $r = 0.290$
 5-year return period rainfall of 60 minutes duration; $M5_{60\text{min}} = 19.0 \text{ mm}$
 Increase of rainfall intensity due to global warming; $p_{\text{climate}} = 30 \%$

Soakaway / infiltration trench details

Soakaway type; Rectangular
 Minimum depth of pit (below incoming invert); $d = 757 \text{ mm}$
 Width of pit; $w = 3500 \text{ mm}$
 Length of pit; $l = 2000 \text{ mm}$
 Percentage free volume; $V_{\text{free}} = 95 \%$
 Soil infiltration rate; $f = 47.9 \times 10^{-6} \text{ m/s}$
 Wetted area of pit 50% full; $a_{s50} = l \times d + w \times d = 4163551 \text{ mm}^2$

Table equations

Inflow (cl.3.3.1); $I = M100 \times A$
 Outflow (cl.3.3.2); $O = a_{s50} \times f \times D$
 Storage (cl.3.3.3); $S = I - O$

Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	100 year rainfall, M100 (mm)	Inflow (m³)	Outflow (m³)	Storage required (m³)
5;	0.34;	8.3;	1.87;	15.5;	1.65;	0.06;	1.59
10;	0.49;	12.0;	1.94;	23.3;	2.47;	0.12;	2.36
15;	0.59;	14.5;	1.98;	28.7;	3.04;	0.18;	2.86
30;	0.77;	18.9;	2.02;	38.3;	4.06;	0.36;	3.70
60;	1.00;	24.7;	2.01;	49.7;	5.27;	0.72;	4.55
120;	1.26;	31.0;	1.96;	60.9;	6.45;	1.44;	5.02
240;	1.59;	39.4;	1.90;	74.6;	7.91;	2.87;	5.03
360;	1.81;	44.8;	1.85;	82.9;	8.79;	4.31;	4.48
600;	2.16;	53.4;	1.79;	95.4;	10.11;	7.18;	2.93
1440;	2.93;	72.3;	1.66;	119.9;	12.71;	17.23;	0.00

Required storage volume; $S_{\text{req}} = 5.03 \text{ m}^3$

PASS - Soakaway storage volume

Time for emptying soakaway to half volume; $t_{s50} = S_{\text{req}} \times 0.5 / (a_{s50} \times f) = 3\text{hr } 30\text{min } 11\text{s}$

PASS - Soakaway discharge time less than or equal to 24 hours

RVW Consulting 6 Neptune Court Ocean Way Cardiff CF24 5PJ	Project				Job Ref.	
	Long House, Coedkernew				Sheet no./rev.	
	Roof Soakaway Design				3	
	Calc. by	Date	Chk'd by	Date	App'd by	Date
	BP	11/03/2022			BP	16/03/2022

Soakaway storage volume;

$$S_{act} = l \times d \times w \times V_{free} = 5.03 \text{ m}^3$$

Time for emptying soakaway to half volume;

PASS - Soakaway storage volume

$$t_{s50} = S_{req} \times 0.5 / (a_{s50} \times f); = 3\text{hr } 30\text{min } 11\text{s}$$

PASS - Soakaway discharge time less than or equal to 24 hours

RVW Consulting 6 Neptune Court Ocean Way Cardiff CF24 5PJ	Project				Job Ref.	
	Long House, Coedkernew				Sheet no./rev.	
	Section				4	
	Calc. by	Date	Chk'd by	Date	App'd by	Date
	BP	11/03/2022			BP	16/03/2022
Roof Soakaway Design						

SOAKAWAY DESIGN HOUSE B

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.04

Design rainfall intensity

Location of catchment area; Cardiff
 Impermeable area drained to the system; $A = 141.0 \text{ m}^2$
 Return period; Period = **100** yr
 Ratio 60 min to 2 day rainfall of 5 yr return period; $r = 0.290$
 5- year return period rainfall of 60 minutes duration; $M5_{60\text{min}} = 19.0 \text{ mm}$
 Increase of rainfall intensity due to global warming; $p_{\text{climate}} = 30 \%$

Soakaway / infiltration trench details

Soakaway type; Rectangular
 Minimum depth of pit (below incoming invert); $d = 795 \text{ mm}$
 Width of pit; $w = 3500 \text{ mm}$
 Length of pit; $l = 2000 \text{ mm}$
 Percentage free volume; $V_{\text{free}} = 95 \%$
 Soil infiltration rate; $f = 109. \times 10^{-6} \text{ m/s}$
 Wetted area of pit 50% full; $a_{s50} = l \times d + w \times d = 4373678 \text{ mm}^2$

Table equations

Inflow (cl.3.3.1); $I = M100 \times A$
 Outflow (cl.3.3.2); $O = a_{s50} \times f \times D$
 Storage (cl.3.3.3); $S = I - O$

Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	100 year rainfall, M100 (mm)	Inflow (m³)	Outflow (m³)	Storage required (m³)
5;	0.34;	8.3;	1.87;	15.5;	2.19;	0.14;	2.05
10;	0.49;	12.0;	1.94;	23.3;	3.29;	0.29;	3.01
15;	0.59;	14.5;	1.98;	28.7;	4.05;	0.43;	3.62
30;	0.77;	18.9;	2.02;	38.3;	5.40;	0.86;	4.54
60;	1.00;	24.7;	2.01;	49.7;	7.00;	1.72;	5.29
120;	1.26;	31.0;	1.96;	60.9;	8.59;	3.43;	5.15
240;	1.59;	39.4;	1.90;	74.6;	10.52;	6.86;	3.65
360;	1.81;	44.8;	1.85;	82.9;	11.69;	10.30;	1.40
600;	2.16;	53.4;	1.79;	95.4;	13.44;	17.16;	0.00
1440;	2.93;	72.3;	1.66;	119.9;	16.90;	41.19;	0.00

Required storage volume; $S_{\text{req}} = 5.29 \text{ m}^3$

PASS - Soakaway storage volume

Time for emptying soakaway to half volume; $t_{s50} = S_{\text{req}} \times 0.5 / (a_{s50} \times f) = 1\text{hr } 32\text{min } 29\text{s}$

PASS - Soakaway discharge time less than or equal to 24 hours

RVW Consulting 6 Neptune Court Ocean Way Cardiff CF24 5PJ	Project				Job Ref.	
	Long House, Coedkernew				Sheet no./rev.	
	Section				5	
	Roof Soakaway Design					
	Calc. by	Date	Chk'd by	Date	App'd by	Date
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Soakaway storage volume;

$$S_{act} = l \times d \times w \times V_{free} = \mathbf{5.29}$$

Time for emptying soakaway to half volume;

PASS - Soakaway storage volume

$$t_{s50} = S_{req} \times 0.5 / (a_{s50} \times f); = 1\text{hr } 32\text{min } 29\text{s}$$

PASS - Soakaway discharge time less than or equal to 24 hours

