APPENDIX C

Surface Water Drainage Proposal Checklist

This 'Surface Water Drainage Proposals Checklist' has been designed to clearly define Arun District Council's and Chichester District Council's expectations and requirements for any surface water drainage proposals, submitted for appraisal by the council's Engineers, during the planning process.

Please be aware that it is in your interest to provide all of the requested information, as this will allow the council's Engineers to quickly and efficiently review your proposals. The omission of any requested information may lead to delays in the planning process.

This document will be of help to any applicant, or drainage consultant, preparing to submit a 'Discharge of Conditions Application' relating to surface water drainage conditions. Alternatively, it can also be used earlier in the planning process, if the applicant wishes to avoid pre-commencement conditions relating to surface water drainage. The Town and Country Planning Regulations now require pre-commencement conditions to have the prior agreement of the applicant regarding their wording and use. Therefore, if you wish to avoid pre-commencement conditions, in relation to surface water drainage, you will need to submit proposals that provide the information requested in this checklist and also align with the requirements of the following documents:

'Supplementary Requirements for Surface Water Drainage Proposals'. (Arun DC)
'Supplementary Requirements for Surface Water Drainage Proposals'. (Chichester DC)

By submitting all of the information requested by this checklist you will enable the council's Engineers to determine whether your proposals follow the hierarchy for sustainable drainage and will adequately drain the site.

Please be aware that it will be difficult for the council's Engineers to undertake a timely assessment of your application if you fail to provide any of the information requested.

Surface Water Drainage Proposal Checklist

Ground Investigation Results				
Results Required	**Results Provided?**			
Winter groundwater monitoring results (Please refer to guidance note 1 below)	**Yes**	X	**No**	
Period of winter groundwater monitoring Note 1	West: 01/10/11 - 01/03/12 East: 17/01/20 - 20/01/20			
Maximum recorded groundwater level	None recorded (borehole 4mbgl)		**mAOD** **mBGL**	
Winter infiltration test results Note 2	**Yes**	X	**No**	
Date of winter infiltration testing	01/03/2012			
Details of the location and depth of the infiltration testing Note 3	**Yes**	X	**No**	
Minimum infiltration rate Note 4	West: 4.49 x 10^-3 m/s East: 3.6 x 10^-4 m/s			

Guidance Notes

1. Groundwater monitoring should be undertaken during the wet winter months, (October to March) to enable the peak annual groundwater levels to be established. The extent of winter monitoring should be discussed with the council's Engineers.
2. Infiltration testing should be undertaken during the wet winter months, (October to March) and in line with BRE365, or a similar approved method. Tests should be repeated 3x, to replicate saturated ground conditions.
3. Infiltration testing should be undertaken at the location and depth of any proposed infiltration structures. This must be above the maximum recorded groundwater level in that vicinity.
4. The minimum infiltration rate obtained at the location and depth of the proposed infiltration structures should be used to inform the design of the structures.

Proposed Method of Surface Water Disposal				
Infiltration On-site, via soak-away structures	**Yes**	X	**No**	
If on-site infiltration is not to be used, has justification for this been provided? Note 5	**Yes**		**No**	
Attenuation (on-site) with a **restricted discharge to a watercourse** on, or adjacent to, the site	**Yes**		**No**	
Attenuation (on-site) with a **restricted discharge to a surface water sewer** on, or adjacent to, the site	**Yes**		**No**	
Attenuation (on-site) with a **restricted discharge to a foul water sewer** on, or adjacent to, the site	**Yes**		**No**	

Guidance Notes

5. If on-site infiltration is not being used to drain the site you will need to provide evidence that demonstrates on-site infiltration is unviable.

All rates

Drainage Design: Supporting Calculations						
	Calculations Required	Calculations Provided?				
Infiltration Structures	Half-drain time for 10 year event (plus climate change allowance)	Yes	X	No		
		45minutes (worse case)				
	Half-drain time for 100 year event (plus climate change allowance)	Yes	X	No		
		58minutes (worse case)				
	Calculations demonstrating that the 1 in 100 year event, plus climate change allowance can be accommodated on-site. Note 7	Yes	X	No		
	Lowest base level of infiltration structure	11.870mAOD 3.83mBGL				
	Has the design sought to provide treatment of potential contaminants? Ie. hydrocarbons.	Yes	X	No		
Attenuation and Subsequent Restricted Discharge	Pre-development run-off rate calculations	Yes		No		
		Mircrodrainage			l/s	
	Proposed discharge rate Note 6	Mircrodrainage			l/s	
	Calculations demonstrating that the 1 in 100 year event, plus climate change allowance can be accommodated on-site. Note 7	Yes	X	No		
	Has the design sought to provide treatment of potential contaminants? Ie. hydrocarbons.	Yes	X	No		
	If your proposed scheme incorporates any impermeable lined attenuation features we require calculations to demonstrate that appropriate resistance to floatation (due to groundwater levels) is catered for in the design	Yes		No	N/A	
	If you propose discharging into or altering an ordinary watercourse; have you sought Ordinary Watercourse/Land Drainage Consent? Note 8	Yes		No	N/A	
	If discharging to a watercourse, piped system or the sea, has the proposed drainage network been modelled against predicted top water levels for the 1 in 100 year storm event plus climate change allowance, within the existing system? Note 9	Yes		No	N/A	

Guidance Notes

6. Any proposed discharge rate must be less than, or equal to, the pre-development rate. Greenfield sites must use the mean flow rate (Qbar). Additionally, if you are developing a brownfield site, we expect you to provide fully detailed plans of the existing surface water drainage arrangements on site, including impermeable areas, gullies, outfalls, pipes & diameters, manholes, etc.
7. The appropriate factor of safety from the table below must be applied to your calculations to ensure your design is fully in accordance with CIRIA R156/ CIRIA C609.

Factor of Safety Table						
Size of Area to be Drained	Consequences of failure					
	No damage or inconvenience		Minor inconvenience, e.g. surface water on car park		Damage to buildings or structures or roads.	
	Cv=1.0	Cv=0.75	Cv=1.0	Cv=0.75	Cv=1.0	Cv=0.75
<100 m^2	1.5	2	2	3	10	13
100m^2 to 1000m^2	1.5	2	3	4	10	13
>1000m^2	1.5	2	5	6.5	10	13

8. Ordinary Watercourse/Land Drainage Consent will need to be sought, ideally in parallel with planning permission, if you propose discharging into, culverting or altering a watercourse.
9. Modelling is required to ensure that problems, such as surcharged outfalls, are addressed.

Plans/Drawings/Diagrams				
Required	**Provided?**			
Plan detailing the location of groundwater monitoring and infiltration testing	**Yes**	X	**No**	
Detailed drainage layout plan Note 10	**Yes**	X	**No**	
Construction detail plans Note 11	**Yes**	X	**No**	
Exceedance flow route plans Note 12	**Yes**		**No**	N/A
Impermeable area plan	**Yes**	X	**No**	
If ground levels are being raised ≥ 300mm above existing levels and is unavoidable, have fully detailed plans been provided, together with drainage proposals, to address any potential drainage related issues.	**Yes**		**No**	N/A
If any part of the development site is within recognised flood plain i.e. 1 in 100 & 1 in 200 year fluvial/tidal events, have plans been provided showing the extents, together with any proposals for ground raising/displacement within these areas. Note 13	**Yes**		**No**	N/A

Guidance Notes

10. Drainage layout plans should include:

- All surface water drainage pipes labelled with; diameters, pipe materials, falls and invert levels.
- All infiltrating and attenuating structures (including permeable paving) labelled with; dimensions, invert and cover levels.
- All manholes labelled with; cover levels, invert levels, cover types detailed.
- All silt traps clearly labelled with sump depths.
- Control structures with outflow rates and invert levels.
- Proposed/existing levels of any areas subject to ground raising, together with suitable measures/detailed drawings for the associated management of surface water runoff. Please note that ground raising should be avoided unless there are exceptional circumstances.

11. Site specific construction detail plans should be supplied if your proposed drainage scheme includes any of the following elements: pipe bed and surround; infiltrating structures; attenuating structures; manholes; catch-pits/silt traps; control devices; permeable paving; headwalls.
12. Unless specifically requested by the council's drainage engineers 'Exceedance Flow Route Plans' are only required for developments of more than 5 properties.
13. Product 4 'Detailed flood risk assessment mapping data' (available from the Environment Agency) must also be provided in support. Plans/details will be required to mitigate any unavoidable loss of flood plain/storage. Please also be aware that Environment Agency approval of such proposals will also be required.