APPENDIX C: INFORMATION REQUIRED FOR OUTLINE PLANNING APPLICATIONS

The following information should be provided for every drainage strategy submitted to the LLFA for consideration as part of an **Outline Planning Application**.

PLANNING REF. 16/00472/OUT

Detail required for Outline Applications	Provided?
Non-Technical Summary Non-technical summary of the proposed drainage strategy.	See Note 49730/4001/TN002
Description of the type of development Description of the type of development proposed and where it will be located. Include whether it is new development, an extension to existing development or change of use etc. State the area of the development site itself, how much of the site is currently hard standing, the proposed area to be hard standing post-development, and any proposed areas of public open space. Note that in calculations proposed values of impermeable area should include a 10% allowance for Urban Creep, as taken from CIRIA C753 (version 6) paragraph 24.7.2.	Section 2
A location plan Location plan at an appropriate scale should be provided with the application, showing site outline and other adjacent land under the applicant's control.	Section 2
Plans Plans showing the existing site layout, its topography, any water features, and how the site currently drains. Plans should also be provided of the proposed layout if available and demonstration that the proposed drainage system and other mitigation measures are achievable and that adequate space has been made for water.	See Appendix TN002-A
Assessment of all flooding risks to the site This should include groundwater, overland surface water flows, sewer flooding, infrastructure flooding (from reservoirs/ponds/canals), watercourse flooding and the risk posed by the proposed development.	See Flood Risk Assessment
Explanation of how each of these flood risks will be mitigated This may require modelling of some sources where significant flood risk is shown on high level datasets. It might mean applying the sequential approach to the site by avoiding building on one part of the site where there is known flooding.	See Flood Risk Assessment
Explanation of how the drainage discharge hierarchy has been followed, providing evidence why any are inappropriate: • Firstly, to infiltration/soakaway • Secondly, to a watercourse or highway ditch (with permission) • Thirdly, to a surface water sewer or highway drain (with permission) • Lastly, to a combined sewer (with permission)	See Section 5
Evidence that the site has an agreed point of discharge - If a significant portion of surface water is to be infiltrated on site, provide a BRE365 infiltration assessment to prove that this will work effectively. At outline stage it may be acceptable to base infiltration values on typical values for the local geology, as long as an alternative drainage design and agreed point of discharge is provided should infiltration	TBC at detailed planning stage

Detail required for Outline Applications	Provided?
rates prove to be unsuitable. - If discharge is to an ordinary watercourse, evidence will need to be provided to ensure that the system can accept the proposed flows to an acceptable downstream point without increasing risk to others. If the watercourse is not within the boundary of the site, evidence will be required that the developer has a right to cross 3rd party land. - If discharge is to a surface water or combined sewer, or highways ditch or drain, letter of confirmation from the Water Company or responsible body will be required, stating their required discharge maximum rates and confirmation that there is adequate capacity in the existing system. This information is generally provided by going through the relevant water company's "Pre-Planning Service". This is a formal process that all developers are expected to go through to inform their planning applications. There is normally an associated cost for this service and a minimum timescale of 15 working days to obtain a response. The advice is then usually valid for a one year period. This process will provide assurance that there are no capacity issues with third party assets, as we as the LLFA are not able to make this type of assumption on behalf of a Water and Sewerage provider. - Thames Water: https://my.thameswater.co.uk/dynamic/cps/rde/xchg/corp/hs.xsl/18710.htm - Anglian Water: http://www.anglianwater.co.uk/developers/pre-planning-service-.aspx - Severn Trent Water: https://www.stwater.co.uk/developers/application-forms-and-guidance-notes/ (> application forms > Development enquiry application form)	
Calculations of current runoff from site • For greenfield sites, existing greenfield runoff rates and volumes can be produced through the UK SuDS website http://www.ukSuDS.com/, or by using the Institute of Hydrology IoH124 method. • If brownfield sites, clearly state the existing impermeable area and calculate the rates of runoff from the site. If a piped drainage system already exists within the site, the existing capacity of these pipes will need to be estimated.	Section 5 and Appendix TN002-B
Calculations of allowable runoff from site Clearly state the proposed impermeable areas for the site and how this compares to existing values. In all calculations, proposed values of impermeable area should include a 10% allowance for Urban Creep, as taken from CIRIA C753 (version 6) paragraph 24.7.2. The Modified Rational Method is considered acceptable only for initial design estimates (i.e. at Outline planning) or for very simple sites (i.e. Minor developments). • Greenfield sites should discharge at no greater than the current greenfield rate so that the site behaves like the original site across the range of events. • Brownfield sites are strongly encouraged to discharge at the greenfield rate wherever possible. As a minimum, brownfield sites should reduce the discharge by 40% to account for the impacts of climate change, from the existing site runoff OR from the original un-surcharged pipe-full capacity of the existing system, whichever is the lowest. • Developers have the option to limit discharge for all events to the QBAR flow rate; or install a complex discharge control which reflects the original discharge for run-off rates from the site across the range of storm events. E.g. QBAR, 3.3% (1in30), 1% (1in100), and provide Long Term Storage for all runoff volume greater than the greenfield volume (as set out in 'Calculation of Storage Volume' below). It is understood that some guidance recommends minimum discharge rates of 5 l/s, to minimise use of small orifice openings that could be at risk of blockages. However, appropriate	Section 5 and Appendix TN002-B

Detail required for Outline Applications	Provided?
consideration of filtration features to remove suspended matter and suitable maintenance regimes should minimise this risk and therefore the minimum limit of 5l/s does not apply in Oxfordshire. • Due to the additional datasets that have been added to the Flood Estimation Handbook (FEH) since design rainfall events were developed originally in the Flood Studies Report (FSR) (NERC, 1975), rainfall depths obtained using FEH show significant differences from those obtained from FSR in some parts of the country. Within Oxfordshire, rainfall depths are often greater using more up to date FEH datasets than those using FSR, therefore for various storm events, greater run-off is produced and additional attenuation is likely to be required. As FEH rainfall data is more up to date, calculations should use FEH data for surface water drainage design, except where the critical storm duration is less than 60 minutes, as it is recognised that FEH data is less robust for short duration storms. If FEH rainfall data is not used as described above, then sensitivity testing to assess the implications of FEH rainfall must be provided. This should demonstrate that the development proposals remain safe and do not increase flood risk to third parties.	
A calculation of storage volume Volume of storage required on site for the 1% (1in100) plus climate change storm, in order to meet the controlled discharge rate or available infiltration rate. Where appropriate this should specify the volumes of both attenuation storage and Long Term storage. See also note above about use of FEH rainfall data. An estimation of storage (acceptable only for outline applications) can be produced through the UK SuDS website http://www.ukSuDS.com/, or using the WinDes Quick Storage Estimate tool.	Section 5 and Appendix TN002-C
Plans showing a logical location of storage within the proposed development Attenuation storage within areas at risk of flooding will not be acceptable.	Drawing 49760/4001/001 in Appendix TN002-C
Explanation of likely forms of SuDS for the site and reasons for the use of these features. If no SuDS methods are proposed then justification and evidence will need to be provided as to why they are not appropriate for the site.	See Section 5
Explanation of who will maintain the drainage system over the lifetime of the development and evidence that all elements of the drainage system will be fully accessible for maintenance without entering 3rd party land. Ideally, SuDS features should be located within public space.	TBC at detailed planning stage
Phasing An explanation of how the site will adequately consider flood risk at all stages of the development.	See Section 5 and Appendix TN002-C

SuDS Flows and Volumes - LLFA Technical Assessment Pro-forma

This form identifies the information required by Oxfordshire County Council LLFA to enable technical assessment of flows and volumes determined as part of drainage I SuDS *calculations.*

*Note : * means delete as appropriate; Numbers in brackets refer to accompanying notes.*

SITE DETAILS

1.1	Planning application reference	16/00472/OUT
1.2	Site name	Grundon Services Ltd. Merton Street, Banbury
1.3	Total application site area (1)	30,500 m² / 3.05 ha
1.4	Is the site located in a CDA or LFRZ	Y/N
1.5	Is the site located in a SPZ	Y/N

VOLUME AND FLOW DESIGN INPUTS

2.1	Site area which is positively drained by SuDS (2)	16,800 m²
2.2	Impermeable area drained pre development (3)	19,800 m²
2.3	Impermeable area drained post development (3)	16,800 m²
2.4	Additional impermeable area (2.3 minus 2.2)	-3,000 m²
2.5	Predevelopment use (4)	Greenfield / Brownfield / Mixed*
2.6	Method of discharge (5)	Infiltration / waterbody / storm sewer/ combined sewer*
2.7	Infiltration rate (where applicable)	NOT APPLICABLE m/hr
2.8	Influencing factors on infiltration	NOT APPLICABLE
2.9	Depth to highest known ground water table	NOT APPLICABLE .mAOD
2.10	Coefficient of runoff (Cv) (6)	0.9
2.11	Justification for Cv used	Extensive use of permeable pavements/proposals are apartments not houses
2.12	FEH rainfall data used (Note that FSR is no longer the preferred rainfall calculation method)	Y/N
2.13	Will storage be subject to surcharge by elevated water levels in watercourse/ sewer	Y/N
2.14	Invert level at outlet (invert level of final flow control)	VARIES .....mAOD
2.15	Design level used for surcharge water level at point of discharge (14)	89.16-90.08 mAOD

SuDS Flows and Volumes - LLFA Technical Assessment Pro-forma

CALCULATION OUTPUTS

Sections 3 and 4 refer to site where storage is provided by attenuation and I or partial infiltration. Where all flows are infiltrated to ground omit Sections 3 -5 and complete Section 6.

3.0 Defining rate of runoff from the site

3.2 Max. discharge for 1 in 1 year rainfall ....1.5....l/s/ha, ...5.0....l/s for the site

3.2 Max. discharge for Qmed rainfall ....1.8....l/s/ha, ...5.0....l/s for the site

3.3 Max. discharge for 1 in 30 year rainfall ....3.6....l/s/ha, ...5.0....l/s for the site

3.4 Max. discharge for 1 in 100 year rainfall ....4.7....l/s/ha, ...5.0....l/s for the site

3.5 Max. discharge for 1 in 100 year plus 40%CC ....4.7....l/s/ha, ...5.2....l/s for the site

4.0 Attenuation storage to manage peak runoff rates from the site

4.1 Storage - 1 in 1 year ....311....m^3 .....m^3/m^2 (of developed impermeable area)

4.2 Storage -1in 30 year (7 ....824....m^3 .....m^3/m^2

4.3 Storage -1in 100 year (8) 1,146 m^3 .....m^3/m^2

4.4 Storage - 1 in 100 year plus 40%CC (9) 1,600 m^3 .....m^3/m^2

5.0 Controlling volume of runoff from the site

5.1 Pre development runoff volume(10) ....2,320.... m^3 for the site

5.2 Post development runoff volume ~~(unmitigated)~~ (10) ....456.3.... m^3 for the site Post dev less than pre-dev & equivalent greenfield volume
Equivalent Greenfield Runoff Volume 623.9m3

5.3 Volume to be controlled/does not leave site (5.2-5.1)..... m^3 for the site

5.4 Volume control provided by

Interception losses(11)	N/A m3
Rain harvesting(12)	N/A ...m3
Infiltration (even at very low rates)	N/A ...m3
Separate area designated as long term storage(13)	N/A m3

5.5 Total volume control (sum of inputs for 5.4) NOT APPLICABLE m3 (15)

6.0 Site storage volumes (full infiltration only) NOT APPLICABLE

6.1 Storage - 1in 30 year (7 .....m^3 .....m^3/m^2 (of developed impermeable area)

6.2 Storage - 1 in 100 year plus CC (9 .....m3 .....m3/m2

SuDS Flows and Volumes - LLFA Technical Assessment Pro-forma

Notes

1. All area with the proposed application site boundary to be included.
2. The site area which is positively drained includes all green areas which drain to the SuDS system and area of surface SuDS features. It excludes large open green spaces which do not drain to the SuDS system.
3. Impermeable area should be measured pre and post development. Impermeable surfaces includes, roofs, pavements, driveways and paths where runoff is conveyed to the drainage system.
4. Predevelopment use may impact on the allowable discharge rate. The LLFA will seek for reduction in flow rates to GF status in all instances. The design statement and drawings explain/ demonstrate how flows will be managed from the site.
5. Runoff may be discharge via one or a number of means.
6. Sewers for Adoption 6th Edition recommends a Cv of 100% when designing drainage for impermeable area (assumes no loss of runoff from impermeable surfaces) and 0% for permeable areas. Where lower Cv's are used the application should justify the selection of Cv.
7. Storage for the 1 in 30 year must be fully contained within the SuDS components. Note that standing water within SuDS components such as ponds, basins and swales is not classified as flooding. Storage should be calculated for the critical duration rainfall event.
8. Runoff generated from rainfall events up to the 1 in 100 year will not be allowed to leave the site in an uncontrolled way. Temporary flooding of specified areas to shallow depths (150-300mm) may be permitted in agreement with the LLFA.
9. Climate change is specified as 40% increase to rainfall intensity, unless otherwise agreed with the LLFA / EA.
10. To be determined using the 100 year return period 6 hour duration rainfall event.
11. Where Source Control is provided Interception losses will occur. An allowance of 5mm rainfall depth can be subtracted from the net inflow to the storage calculation where interception losses are demonstrated. The Applicant should demonstrate use of subcatchments and source control techniques.
12. Please refer to Rain harvesting BS for guidance on available storage.
13. Flow diverted to Long term storage areas should be infiltrated to the ground, or where this is not possible, discharged to the receiving water at slow flow rates (maximum 2 l/s/ha). LT storage would not be allowed to empty directly back into attenuation storage and would be expected to drain away over 5-10 days. Typically LT storage may be provided on multi-functional open space or sacrificial car parking areas.
14. Careful consideration should be used for calculations where flow control / storage is likely to be influenced by surcharged sewer or peak levels within a watercourse. Storm sewers are designed for pipe full capacity for 1 in 1 to 1 in 5 year return period. Beyond this, the pipe network will usually be in conditions of surcharge. Where information cannot be gathered from Thames Water, engineering judgement should be used to evaluate potential impact (using sensitivity analysis for example).
15. In controlling the volume of runoff the total volume from mitigation measures should be greater than or equal to the additional volume generated.

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