Appendix M

Consultation

Lancashire County Council

Andrew James
BDP
11 Ducie Street,
Manchester,
M1 2JB,

Phone: 0300 123 6780
Email: Suds@lancashire.gov.uk
Ref: FRM1362
Date: 04 March 2022

Dear Andrew James,

Thank you for requesting pre-application advice on flood risk and land drainage for the following location:

Reference:	FRM1362
Location:	Woodcock Estate, Lostock Hall, Farington, PR5 5XT
Coordinates:	E355020:N424899

These comments have been provided in accordance with the Terms and Conditions of this service and include written advice following our meeting on 4th March 2022. The comments have been composed based on the current extent of the knowledge of the Lead Local Flood Authority (LLFA), and with regard to background information submitted to and received by the LLFA on 05th December 2021. This includes:

- Site Context Plan
- Proposed Site Plan
- Existing Site Levels
- Existing Overland Flow Paths
- Proposed Exceedance Flow Paths
- HR Wallingford Greenfield Runoff Rate Estimation
- Micro Drainage Greenfield Runoff Volume
- Drainage Strategy General Arrangement Sheet 1 of 3
- Drainage Strategy General Arrangement Sheet 2 of 3
- Drainage Strategy General Arrangement Sheet 3 of 3

The Local Planning Authority is ultimately responsibility for approving, or otherwise, any surface water sustainable drainage strategy associated with the development proposal. It should not be assumed that an agreement with the LLFA automatically means that planning permission will be granted.

Details of the Meeting on 04th March 2022:

A pre-application MS Teams meeting was held between Elliot Burton (LCC - Lead Local Flood Authority), Ben Rogers (LCC – Lead Local Flood Authority), Emma Prideaux (LCC – Strategic Development), Chris Dyson (LCC - Strategic Development), Faiyaz Laly (LCC - Strategic Development), Susie Stephen (Barton Willmore), David Nicholls (BDP), Sam Godfrey (Eric Wright) and Elanna Herod on 4th March 2022. The following topics were chosen by the applicant to be discussed at the meeting:

1) LLFA advice on surface water flood risk, surface water flood mitigation and surface water exceedance.

2) LLFA advice on peak surface water flow rates, volumes and proposed runoff destinations.

3) LLFA advice on surface water sustainable drainage proposals.

1) LLFA advice on surface water flood risk, surface water flood mitigation and surface water exceedance

- A site-specific flood risk assessment is required as the development is greater than 1 hectare, as required by footnote 55 of paragraph 167 of the National Planning Policy Framework (NPPF). The LLFA wanted to highlight that the site is marginally within Flood zone 2, but that flood zones are for the Environment Agency to comment on (EA) as this relates to fluvial flooding. The LLFA only comment on Surface Water (SW) flood risk.

- The existing SW flood risk is surrounding the current land drainage infrastructure and topographic low points but generally the site it is at a very low risk of surface water flooding. The applicants confirmed that as part of the works these topographic low points will be levelled out in the creation of the cricket pitches and installing a sustainable drainage system to alleviate this flood risk.

- The LLFA advised that the applicant should aim to not build in any areas of high SW flood risk, and if this in unavoidable then sufficient mitigation measures are required to guarantee these areas are safe from SW flooding.

- The finished flood levels (FFL's) of any buildings should be set a minimum of +150mm above adjacent ground levels and the nearest cover level of the surface water sustainable drainage system in meters Above Ordnance Datum (m AOD), to avoid the creation of a hydraulic low points which could otherwise place those buildings at an increased risk of flooding over the lifetime of the development, i.e., during a blockage or exceedance event. This is applicable in the areas of very low risk of surface water flooding. In areas of higher risk of surface water flooding then the FFL's will need to be raised above the standard +150mm. The height of the FFL's in these areas can be determined by using the SW flood depths map from the EA website to determine the expected depths of surface water flooding in the areas at greater risk.

- Where the raised FFL's cannot be achieved, then additional evidence must be provided to demonstrate how those buildings will remain appropriately flood resistant and flood resilient over the lifetime of the development, satisfying the requirements of paragraph 167 of the NPPF. Failure to demonstrate this at the planning application stage will likely result in an objection from the LLFA.

- The drawings 'Existing Overland Flow Paths' and 'Proposed Exceedance Flow Paths' demonstrate that the surface water overland flow routes after development will mimic the existing flow paths which is acceptable in principle to the LLFA. The LLFA highlighted the need to see where the surface water will flow if the attenuation pond were to exceed during a blockage, system failure or extreme storm event.

- In an exceedance event, it appears that excess surface water will likely flow onto the highway (Farington Road) away from the development. Whilst this is acceptable to the LLFA, it is strongly recommended that the applicant contacts the Highway Authority to discuss the suitability of this option as this will potentially impact their asset. There cannot be any adverse effects on surface water flood risk to the existing people and properties as a direct result of this development.

2) LLFA advice on peak surface water flow rates, volumes and proposed runoff destinations

- The peak runoff rate from the development for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must not exceed the pre-development greenfield runoff rate for the corresponding rainfall event. The total runoff volume from the development in the 1 in 100 year, 6 hour rainfall event must also not exceed the pre-development greenfield runoff volume for the corresponding rainfall event. This is to demonstrate compliance with standards 2 and 4 of the DEFRA Technical Standards for Sustainable Drainage Systems.

- The proposed discharge rate of Qbar 58 l/s is acceptable in principle subject to the inclusion of how this discharge rate was calculated being included in the appendix of the drainage strategy, when submitted. The accepted methods of calculations by the LLFA are IH124, FEH statistical method and the REFH2 modelling method. The LLFA needs to be satisfied that this discharge rate includes any runoff from the development boundary that is not positively drained via the sustainable drainage system. If there are areas that runoff from the development boundary form non-drained areas one option is to discount any of these non-drained areas from the total site area when calculating the proposed discharge rate for the site.

- The proposed amount of surface water attenuation/storage provided needs to include all areas contributing to the sustainable drainage system. If there is surface water entering the sustainable drainage system from indirect runoff of the

undeveloped area, then this needs to be included in the attenuation/storage volumes.

- Infiltration testing should be carried out in accordance with BRE digest 365 or Fallen head permeability testing methodology and should be carried out where the infiltration SuDS components are going to be located. The CIRIA SuDS manual C753 states that $1x10^{-6}$ m/s is an acceptable infiltration rate to consider infiltration a viable option for managing surface water on site. This needs to be considered so the proposal is in accordance with the hierarchy of drainage options set out in paragraph 080 of the PPG. The results of the infiltration testing should be submitted as evidence to demonstrate that infiltration has been considered as required.

- The infiltration coefficient (if found to be acceptable after further testing) is then to be applied to the microdrainage calculations using the least favourable value from the three tests taken at each location. This is to ensure the storage volume required is still appropriate to handle the designed storm criteria as seen in the DEFRA Technical Standard for Sustainable Drainage Systems.

- Infiltration should be incorporated into the surface water sustainable drainage design wherever possible and used in addition to other SuDS components, for example, to deliver interception and source control. This can reduce the volume of runoff from the development, improve water quality and reduce on-site surface water storage requirements. Methods of interception and source control are expected to be incorporated into the surface water sustainable drainage strategy unless demonstrated to be unsuitable.

- The LLFA will require evidence that other surface water discharge destination from the Hierarchy of drainage options set out in paragraph 080 of the PPG have been explored and will require evidence as to why options higher up the hierarchy cannot be utilised. The LLFA notes that there is a nearby watercourse River Lostock that lies to the North West of the development site. This options should be considered as part of the drainage strategy, and if these are discounted then it needs to be demonstrated why this is not reasonably practicable within the drainage strategy.

3) LLFA advice on surface water sustainable drainage proposals

The proposed scale of development could present risks of flooding both on and off-site if surface water is not effectively managed over the lifetime of the development. Therefore, it's important that an appropriate surface water sustainable drainage strategy is submitted to and approved by the Local Planning Authority prior to the commencement of the development.

The surface water sustainable drainage strategy must comply with the requirements of the NPPF, the Planning Practice Guidance (PPG) and the Defra Technical Standards for Sustainable Drainage Systems. The strategy should also be accompanied by a Sustainable Drainage System (SuDS) pro-forma and a management and maintenance plan that details how each surface water sustainable drainage component will be managed and maintained over the lifetime of the development.

The Proposed Drainage Strategy drawing provides a conceptual surface water sustainable drainage strategy for the site. This confirms that the surface water runoff will flow overland and be collected by a series of filter drains, permeable paving areas and conveyance pipes before entering the surface water attenuation pond. The surface water will then enter the 750Ø culvert to the North of the development. Surface water runoff from the site will be restricted to the pre-development greenfield runoff rate, with attenuation storage provided within the surface water sustainable drainage design to ensure surface water is safely managed up to and including the 1 in 100-year rainfall event, plus an additional 40% allowance for climate change.

The LLFA has reviewed the details set out within the Proposed Drainage Strategy and has the following observations to make:

- When designing the surface water sustainable drainage system, it's important to consider the potential impact of a surcharged outfall on the performance of the drainage network. A free-flowing outfall should not be assumed unless there is clear and robust evidence to demonstrate that a free-flowing outfall can be achieved.

- It's also important to consider how surface water runoff will be managed within any non-drained areas of the site, for example roadside verges and areas of public open space. This is to ensure the surface water sustainable drainage system is sufficiently sized to accommodate all surface water runoff generated on the site, including direct runoff from any non-drained areas that could potentially contribute to the surface water sustainable drainage system.

- An additional allowance must be included within the surface water sustainable drainage design to allow for the future effects of climate change (40%) and urban creep (10% or maximum potential percentage increase). Failure to do so could result in the surface water sustainable drainage system being overwhelmed over the lifetime of the development, leading to a potential increased risk of surface water flooding both on and off site. The urban creep is to be added to the impermeable area or the additional flow of the microdrainage calculations to account for future conversion of permeable areas into to impermeable area.

- The LFFA notes from the surface water flow paths document that surface water is likely to be entering the site from the higher areas to the Southeast of the proposed development. These flows need to be accounted for in the storage estimations or the LLFA needs details on how the surface water flows entering the site from outside the red edge boundary is going to be managed. These details will need to be included in the drainage strategy

- The LLFA strongly recommends that source control measures are utilised in the drainage strategy. Interception SuDS components deal with the first 5mm of rainfall at source reducing the amount of surface water entering the sustainable drainage system. Whilst the cricket pitches and green spaces will provide interception, SuDS components such as water butts and rainwater harvesting techniques could be utilised to provide this effect along with being able to utilise this water for irrigation purposes throughout the development.

- Land drainage consent is required for much of the proposed works, and this is separate to the planning process. Land drainage consent will be required for the abandoning of the land drainage ditch running through the centre of site from south to north, culverting of the drainage ditch to the East of the development, connecting this culvert into the drainage ditch.

  You should contact the Flood Risk Management Team at Lancashire County Council to obtain Ordinary Watercourse Consent. Information on the application process and relevant forms can be found here:

  https://www.lancashire.gov.uk/flooding/drains-and-sewers/alterations-to-a-watercourse/

- The LLFA requires more detailed information on the foul sewer connecting into surface water drainage system. In particular, the LLFA will require detailed information on flow rates, volumes, and water quality. As additional volumes of water will be added to the surface water drainage system, these extra volumes from the treatment plant needs to be accounted for in the Sustainable drainage System, for example in the volume of the attenuation pond.

  Paragraph 020 of the PPG states that "Where a connection to a public sewage treatment plant is not feasible (in terms of cost and/or practicality) a package sewage treatment plant can be considered. This could either be adopted in due course by the sewerage company or owned and operated by a sewerage undertaker appointed under a new appointment or variation. The package sewage treatment plant must comply with the general binding rules, or a permit will be required. A package sewage treatment plant must be used if the treated effluent is being discharged to surface water.

  Septic tanks or package sewage treatment plants may only be considered if it can be clearly demonstrated by the applicant that discharging into a public sewer is not feasible (taking into account cost and/or practicability and whether the package treatment plant poses a risk to a designated site) in accordance with Approved Document H of the Building Regulations 2010. Septic tanks must not discharge effluent to surface water and must comply with the general binding rules, or a permit will be required."

- The LLFA will require robust evidence to demonstrate why pumping is necessary, and evidence demonstrating that other options to provide a gravity connection have been explored within the sustainable drainage strategy. Failure to provide this will likely result in an objection at the planning stage. The LLFA raised the following question for the applicant to consider on this matter: Could a gravity connection be possible if more upstream attenuation areas were provided, allowing for a shallower attenuation pond? Is there an option for multiple catchments with different discharge points? Is it possible to discharge surface water to a different destination via a gravity connection?

- It's clear that surface water is intended to be managed through a combination of permeable paving, conveyance pipes, filter drains, and an attenuation pond. The LLFA encourages the developer to reconsider their approach to managing surface water by maximising the use of other SuDS components in the surface water sustainable drainage design. The LLFA prefers the daylighting of water, instead of conveying water underground in pipes where it cannot be observed. Utilising conveyance SuDS components such as swales, channels and rills could not only manage surface water quantity but provide water quality, amenity and biodiversity benefits too.

  Other SuDS components can offer significant advantages over conventional piped drainage systems in reducing flood risk, absorbing diffuse pollutants and promoting groundwater recharge. Swales, reed beds and seasonally flooded grasslands are also particularly attractive features within public open space. The wide variety of available SuDS components means that virtually any development should be able to include a scheme based around these principles and provide multiple benefits, which also reduce costs and maintenance needs.

- The LLFA requires further evidence to be provided at the planning application stage to demonstrate the suitability of the conceptual surface water sustainable drainage strategy, at least in principle. This includes:

  a) A plan identifying the areas contributing to the surface water sustainable drainage system, including surface water flows from outside the curtilage as necessary;

  b) Flood water exceedance routes in accordance with Defra Technical Standards for Sustainable Drainage Systems;

  c) The LLFA will need to see evidence that the layout can accommodate the amount of surface water attenuation/storage required. A microdrainage quick storage estimate is appropriate at outline or full application stage, along with a drainage drawing demonstrating the required storage is achievable within the site layout.

  d) The LLFA will need to see the full set of microdrainage simulation calculations (for the following rainfall events: 1 in 1 year, 1 in 30 year, 1 in 100 year +40% climate change allowance and allowance for urban creep) at some stage, but this can be secured through the inclusion of a suitably worded pre-commencement planning condition if not provided upfront.

3) Construction Phase Enabling Works:

It's critical that flood risk is appropriately managed during the construction phase(s) of the development. Compaction of the soil is likely to speed up the run-off rate whilst the site is cleared and the permanent drainage systems and/or attenuation systems are constructed and brought into use.

You will be expected to identify the flood risk associated with this phase of the development and provide details of how surface water will be managed during construction, including any mitigation.

If these details cannot be provided upfront, then they can otherwise be secured through the inclusion of a suitably worded pre-commencement planning condition.

4) Management and Maintenance plan:

The LLFA expects that the management and maintenance of the sustainable drainage system has been considered at the earliest stages of the proposal. This ensure that flood risks from development to the future users of the land and neighbouring land are minimised, together with those risks to controlled waters, property and ecological systems, and to ensure that the sustainable drainage system is subsequently maintained pursuant to the requirements of Paragraph 169 of the National Planning Policy Framework.

If these details cannot be provided upfront, then they can otherwise be secured through the inclusion of a suitably worded pre-commencement planning condition.

What this response does not cover:

This response does not cover highway drainage, matters pertaining to highway adoption (s38 Highways Act 1980) and/or off-site highway works (s278 Highways Act 1980). Should you intend to install any sustainable drainage components under or within close proximity to a public road network (existing or proposed), then you will need to separately discuss the suitability of those components with the local highway authority.

You will also need to discuss the suitability of any overland flow routes and/or flood water exceedance with the local highway authority should they have the potential to impact the public highway network and/or public highway drainage infrastructure (either existing or proposed).

I trust you will find this response helpful.

Yours faithfully,

Elliot Burton
Lead Local Flood Authority

Foul Drainage Assessment Form (FDA)

Please note: You should only use this form for planning related queries. You cannot use it to apply for an Environmental Permit but you may submit a copy of the information you have provided for planning purposes in support of your Environmental Permit application. Further information on how to apply for an environmental permit and general binding rules applicable to small discharges of domestic sewage effluent is available on the gov.uk website.

APPLICANT DETAILS
Name Andrew James
Address BDP, 11 Ducie St, Manchester M1 2JB
Telephone No 07854 263 010
e-mail andy.james.t3@bdp.com

We will use the information you provide on this form to establish whether non-mains drainage, either a new system or connection to an existing system, would be acceptable. It is important that you provide full and accurate information. Failure to do this will delay the processing of your application.

You must provide evidence that a connection to the public sewer is not feasible.

Other than in very exceptional circumstances, we will not allow the use of non-mains drainage as part of your Planning or Building Regulation application unless you can prove that a connection to the public sewer is not feasible. We do not consider non-mains drainage systems to be environmentally acceptable in locations where it is feasible to connect to a public sewer. Please note that a lack of capacity in, or other operating problems with, the public sewer are not valid reasons to use a non-mains drainage system where it is otherwise feasible to connect to a public sewer.

Where connection to the public sewer is feasible, you may need to get the agreement of either the owners of any land through which the drainage will run or, if you intend to connect via an existing private drain, the owner of that private drain.

The National Planning Practice Guidance and Building Regulations Approved Document H give a hierarchy of drainage options that must be considered and discounted in the following order:

1 Connection to the public sewer
2 Package sewage treatment plant (which can be offered to the Sewerage Undertaker for adoption)
3 Septic Tank
4 If none of the above are feasible a cesspool

You must respond to all the following questions. If you wish to submit additional information please do so, marked clearly “Additional Information”. **In some cases you will be required to provide further information in order to demonstrate that any non-mains foul drainage system proposed is acceptable.**

Feasibility of mains foul sewer connection	YES	NO
Have you provided a written explanation of why it is not feasible to connect to the public foul sewer with this form? Nearest public sewer is circa 400m away which would require a connection through third party land, across the A582 Farington Road and across the River Lostock. Whilst a connection would be technically feasible the cost of doing so would be prohibitive, particularly given this is serving a single property	X	
Is the distance from your site to the closest connection point to the public foul sewer less than the number of properties to be built on the site multiplied by 30m? *(see Guidance Note 2)* As above, public sewer is crica 400m away and the development comprises a single property.		X
Does your proposal form part of a phased development or planned development of a wider area? *If YES, please provide further details including references of any planning permissions already granted.*		X

Non-mains connection

Please provide a plan with dimensions that clearly shows the location of the whole system in relation to the proposed development and the position of the key elements e.g. septic tank, drainage fields and points of discharge.

1. Existing system	YES	NO
Do you intend to use an existing non-mains foul drainage system?		X
If YES, does the system already have an Environmental Permit issued by the Environment Agency? *(In the case of a cesspool write N/A)* If YES, please provide Environmental Permit reference number……		

2. Discharge	YES	NO
Do you propose to use a package treatment plant?	X	
Do you propose to use a septic tank?		X
Do you propose to use a cesspool? *If YES go to Q4*		X
Have you considered having your system adopted by the sewerage undertaker? *(see Guidance Note 7).*	X	
Will all, or any part of, the discharge go to a drainage field or soakaway*? (see Guidance Note 3)* - this includes systems that combine a drainage field with a high level overflow to watercourse *If YES go to Q3.*		
Do you intend to use a system that discharges solely to watercourse? *(see Guidance Note 3) If YES go to Q9.*	X	

3. Water abstraction	YES	NO
Do you receive your water from the public mains supply?	X	
If not, where do you get your water supply from?		

4. Cesspools *(For methods other than cesspools write N/A)*	YES	NO
Have you provided written justification for the use of a cesspool in preference to more sustainable methods of foul drainage disposal? *(see Guidance Note 4)*	N/A	

5. Drainage field design *(For cesspools write N/A)*	YES	NO
Will the system discharge to a drainage field designed and constructed in accordance with British Standard BS6297:2007?		X

If not, why not? Treated effluent will discharge into an on-site attenuation pond which subsequently discharges to an ordinary watercourse which connects to the River Lostock downstream		
Will the discharge from the system be located in a Source Protection Zone 1 (SPZ1)?		X

6. Ground Conditions *(For cesspools write N/A)*	**YES**	**NO**
6a. Have you submitted a copy of the percolation test results with this form *(see Guidance Note 6)?* 6b. If NO please explain the justification for not undertaking or submitting these tests. Tests have been undertaken and will be provided in due course. Infiltration rate is poor and considered unsuitable for soakaways.		X
6c. Is any part of the system in land which is marshy, water logged or subject to flooding?		X
6d. Will the soakaway be located on artificially raised, made-up ground or ground likely to be contaminated? *If YES please provide details as additional information.*		N/A
6e. Have you submitted the results of a trial hole at the site to establish that the proposed drainage field will be above any standing groundwater *(see Guidance Note 6)?*		N/A

7. Available Land	**YES**	**NO**
Is the application site plus any available area for a soakaway less than 0.025 hectares (250m^2)?		X

8. Siting of drainage field/soakaway discharge from a septic tank or package treatment plant or other secondary treatment. *You may need to make local enquiries to get a full answer to these questions*. As above, intention is to discharge treated effluent to an on-site attenuation pond to provide secondary treatment before discharging to an ordinary watercourse.	**YES**	**NO**
Will it be at least **10m** from a watercourse, permeable drain or land drain?	N/A	
Will it be at least **50m** from any point of abstraction from the ground for a drinking water supply (e.g. well, borehole or spring)? *This includes your own or a neighbour's supply.*	N/A	
Will the discharge be within a groundwater Source Protection Zone 1? *If yes, you will need to apply for an environmental permit*	N/A	
Are there any drainage fields/soakaways within **50m**? *This includes any foul drainage discharge system (other than the subject of this application) or surface water soakaway on either your own or a neighbour's property.*	N/A	
Will it be at least **15m** from any building?	N/A	
Will there be any water supply pipes or underground services within the disposal system, other than those required by the system? *(For cesspools write N/A)*	N/A	
Will there be any access roads, driveways or paved areas within the disposal area? *(For cesspools write N/A)*	N/A	

9. Siting of treatment plant, septic tank or cesspool	**YES**	**NO**
Is it at least **7m** from the habitable part of a building?	X	
Will there be vehicular access for emptying within **30m?**	X	
Can the plant, tank or cesspool be maintained or emptied without the contents being taken through a dwelling or place of work?	X	

10.Expected flow

Please estimate the total flow in litres per day *(see Guidance Note 5).*	***TBC***

11. General Binding Rules for Small Sewage Discharges	**YES**	**NO**
Does the system meet the requirements of the General Binding Rules for small sewage discharges?	TBC	

TBC pending confirmation of daily foul discharge volume		

12. Maintenance

How do you propose to maintain the system?

We will discuss with United Utilities the potential to have the foul treatment facility adopted. However, it is likel that it will operated/ maintained privately by the on-site facilities management team.

13. Declaration

I declare that the above information is factually correct.

Name	Signature	Date
Andrew James		05.12.21

GUIDANCE NOTES:

1) This form is for use with *the National Planning Practice Guidance, British Standard BS6297:2007 and Building Regulations Approved Document H*. It is intended to help Local Planning Authorities establish basic information about your non-mains drainage system and decide whether you need to submit a more detailed site assessment. If a detailed site assessment is requested but not submitted, your planning application might be refused.

2) Where the distance from a site to the closest point of connection to the foul sewer is less than the number of properties that are proposed to be built on that site multiplied by 30m an Environmental Permit will be required and an applicant will need to demonstrate as part of any application for such a permit why connection to the public foul sewer is not feasible.

Number of domestic properties served by the sewage treatment system [ ] x 30 metres = Answer [ ] metres

3) In addition to Planning Permission and Building Regulation approval **you may also require an Environmental Permit from the Environment Agency (EA). Please note that the granting of Planning Permission or Building Regulation approval does not guarantee the granting of an Environmental Permit. Upon receipt of a correctly filled in application form the EA will carry out an assessment. It can take up to 4 months before the Agency is in a position to decide whether to grant a permit or not**.

4) The use of cesspools is an option of last resort as set out in the non-mains drainage hierarchy of preference in Building Regulations Approved Document H. In principle, a properly constructed and maintained cesspool, being essentially a holding tank with no discharges, should not lead to environmental, amenity or public health problems. However, in practice, it is known that such problems occur as a result of frequent overflows due to poor maintenance, irregular emptying, lack of suitable vehicular access for emptying and even through inadequate capacity. In addition to this the requirement for frequent emptying is usually carried out by a contractor involving road transport with associated environmental costs. For these reasons, the use of cesspools will not normally be considered to be a long-term foul

sewage disposal solution. In view of the environmental risks associated with their use, any proposal to use cesspools must be fully justified to the Local Planning Authority

5) Package treatment plants and septic tanks should be designed and sized according to the advice given in the current edition of Flows and Loads, published by British Water. Volumes for larger systems should be calculated based on expected flows arising from the development.

6) You should refer to Building Regulations Approved Document H2 with regard to the general requirements for construction of non mains sewerage systems. **Sections 1.33 to 1.38** deal with the test requirements for trial holes and percolation tests and for convenience the text of these sections is repeated below:

1.33 A trial hole should be dug to determine the position of the standing groundwater table. The trial hole should be a minimum of 1m^2 in area and 2m deep, or a minimum of 1.5m below the invert of the proposed drainage field pipework. The ground water table should not rise to within 1m of the invert level of the proposed effluent distribution pipes. If the test is carried out in summer, the likely winter groundwater levels should be considered. A percolation test should then be carried out to assess the further suitability of the proposed area.

1.34 Percolation test method – A hole 300mm square should be excavated to a depth 300mm below the proposed invert level of the effluent distribution pipe. Where deep drains are necessary the hole should conform to this shape at the bottom, but may be enlarged above the 300mm level to enable safe excavation to be carried out. Where deep excavations are necessary a modified test procedure may be adopted using a 300mm earth auger. Bore the test hole vertically to the appropriate depth taking care to remove all loose debris.

1.35 Fill the 300mm square section of the hole to a depth of at least 300mm with water and allow it to seep away overnight.

1.36 Next day, refill the test section with water to a depth of at least 300mm and observe the time, in seconds, for the water to seep away from 75% full to 25% full level (i.e. a depth of 150mm). Divide this time by 150mm. The answer gives the average time in seconds (Vp) required for the water to drop 1mm.

1.37 The test should be carried out at least three times with at least two trial holes. The average figure from the tests should be taken. The test should not be carried out during abnormal weather conditions such as heavy rain, severe frost or drought.

1.38 Drainage field disposal should only be used when percolation tests indicate average values of V_p of between 12 and 100 and the preliminary site assessment report and trial hole tests have been favourable. This minimum value ensures that untreated effluent cannot percolate too rapidly into groundwater. Where V_p is outside these limits effective treatment is unlikely to take place in a drainage field. However, provided that an alternative form of secondary treatment is provided to treat the effluent from the septic tanks, it may still be possible to discharge the treated effluent to a soakaway.

N.B. When determining whether a discharge may be made under statutory General Binding Rules one of the requirements is that any drainage field must be designed and constructed in accordance with BS6297:2007. This specifies that the minimum percolation rate under that standard is 15s/mm and any discharge made to ground where the percolation rate is less than 15s/mm is subject to the granting of an Environmental Permit.

7) Developers may requisition a sewer from the Sewerage Undertaker to connect their development to the public sewer. Should this not be feasible on the grounds of cost and practicability, on site treatment in the form of package plants and their associated sewers (if constructed to an acceptable standard) can be offered to the sewerage undertaker for adoption. This approach is in support of advice from the Government contained in the National Planning Practice Guidance Developers are urged to discuss their requirements with the Sewerage Undertaker at the earliest possible opportunity.

8) Glossary

Package treatment plant
A package treatment plant is a system which offers varying degrees of biological sewage treatment and involves the production of an effluent which can be disposed of to ground via a drainage field or direct to a watercourse. There are many varieties of package treatment plant but all involve settling the solids before and/or after a biological treatment stage and almost all use electricity. Package treatment plants usually treat sewage to a higher standard than septic tanks but are vulnerable in the event of power failures and require more regular servicing and maintenance to ensure that they work effectively. The type of system chosen should be appropriate to the type of development proposed and take account of variations in flow and periods of inactivity, for example where the system will serve holiday accommodation where occupation and maintenance may be more irregular.

Septic tank
A septic tank is a two or three chamber system, which retains sewage from a property for sufficient time to allow the solids to form into sludge at the base of the tank, where it is partially broken down. The remaining liquid in the tank then drains from the tank by means of an outlet pipe.

Effluent from a septic tank is normally disposed of to ground via a drainage field and receives further treatment in the soils surrounding that drainage field, so that it does not generate a pollution risk to surface waters or groundwater resources (underground water). The most commonly used form of drainage field is a subsurface irrigation area, comprising a herringbone pattern of interconnecting dispersal pipes laid in shallow, shingle filled trenches. The dispersal pipes within the drainage field should be located at as shallow a depth as possible, usually within 1 metre of the ground surface. A septic tank typically needs to be desludged at least once a year in order to ensure that it continues to work effectively.

Cesspool
A cesspool is a covered watertight tank used for receiving and storing sewage and has no outlet. It relies on road transport for the removal of raw sewage and is therefore the least sustainable option for sewage disposal. It is essential that a cesspool is, and remains, impervious to the ingress of groundwater or surface water.