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By Development Control at 2:38 pm, Jan 14, 2013

Planning Department
North Lincolnshire Council
Civic Centre
Ashby Road
Scunthorpe
DN16 1AB

Our ref: AN/2012/116293/01-L01
Your ref: WD/2012/1429

Date: 14 January 2013

FAO William Hill

Dear Sir/Madam

Planning permission to erect an anaerobic digestion plant
Melton Ross Quarries, Barnetby, DN38 6AE

Thank you for referring the above application, on 18 December 2012.

Environment Agency position
In the absence of an acceptable Flood Risk Assessment/Drainage Strategy we **object** to the application as submitted.

Reasons
The application lies within Flood Zone 1 (low probability of flooding) but the site is over a hectare in size. The proposed scale of development may present risks of flooding on-site and/or off-site if surface water runoff is not effectively managed. The National Planning Policy Framework (NPPF) requires applicants for planning permission to submit an Flood Risk Assessment when development on this scale is proposed in such locations.

The submitted Drainage Statement does not contain enough information for us to recommend that surface water management details can be finalised via a planning condition.

Overcoming our objection
We require further calculations to establish the necessary volume of attenuation storage. It is also unclear where the surface water will actually be discharged to, i.e. to soakaway or some other location.

I attach a copy of our Surface Water Guidance Sheets for the applicant's attention: particular reference should be made to Sheet 2. The guidance is currently being updated due to the introduction of the National Planning Policy Framework: the main change will relate to the location of the climate change allowances which can be found in Table 5 of the NPPF Technical Guidance.

If an amended Drainage Statement is submitted to support this application, please re-consult us and we will provide further comments within 21 days.

If you are minded to approve the application contrary to this advice, we ask that you contact us to allow further discussion and/or representations from us.

Information for the applicant
This anaerobic digester will not be using waste materials and therefore should not in itself require an environmental permit. However, the digester will be located within an existing permitted site boundary so the existing permit no. EPR/BL8805IZ may need to be varied.

Should you require any additional information, or wish to discuss these matters further, please do not hesitate to contact Richard Kisby on the number below.

Yours faithfully

Laura Brackenbury
Team Leader Sustainable Places

Direct dial 01522 785888
Direct fax 01522 785040
Direct e-mail richard.kisby@environment-agency.gov.uk

End

Surface Water Guidance

Sheet 1: Sustainable Drainage Systems (SUDS)

Surface water run-off should be controlled as near to its source as possible through a sustainable drainage approach to surface water management (SUDS). SUDS are an approach to managing surface water run-off which seeks to mimic natural drainage systems and retain water on or near the site as opposed to traditional drainage approaches which involve piping water off site as quickly as possible. SUDS involve a range of techniques including soakaways, infiltration trenches, permeable pavements, grassed swales, ponds and wetlands. SUDS offer significant advantages over conventional piped drainage systems in reducing flood risk by attenuating the rate and quantity of surface water run-off from a site, promoting groundwater recharge, and improving water quality and amenity.

The variety of SUDS techniques available means that virtually any development should be able to include a scheme based around these principles. This should not be a piecemeal use of a few techniques. A fully integrated system is essential.

Some SUDS options could require significant land take so it is essential that they are considered early on in the design process. SUDS solutions are also available for high density urban environments where space is at a minimum. It can be difficult to incorporate some options once the detailed development design is underway.

Figure 1 shows the SUDS management train which demonstrates managing water at source and provides a hierarchy of techniques for improving quality and quantity. Techniques closer to source are preferable.

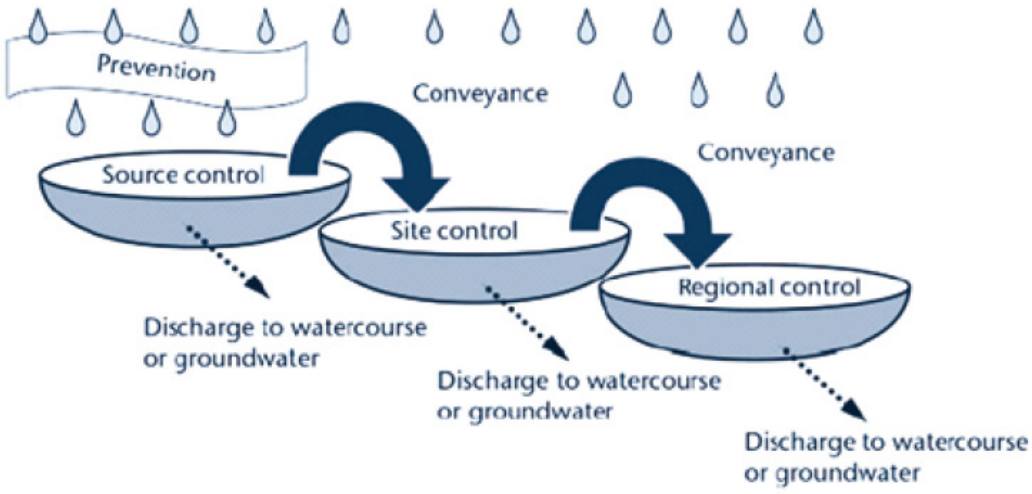

Figure 1 SUDS Management Train (Source: Environment Agency, *Sustainable Drainage Systems (SUDS)*. [WWW] http://publications.environment-agency.gov.uk/pdf/GEHO0308BNST-e-e.pdf?lang=_e (03/09/2009)).

Figure 2 shows the SUDS hierarchy with the most sustainable solutions at the top of the table. These meet all 3 of the SUDS criteria.

	SUDS technique	Flood Reduction	Pollution Reduction	Landscape & Wildlife Benefit
Most Sustainable	**Living roofs**	✔	✔	✔
↑	**Basins and ponds** - Constructed wetlands - Balancing ponds - Detention basins - Retention ponds	✔	✔	✔
↓	**Filter strips and swales**	✔	✔	✔
	Infiltration devices - soakaways - infiltration trenches and basins	✔	✔	✔
	Permeable surfaces and filter drains - gravelled areas - solid paving blocks - porous paviors	✔	✔	
Least Sustainable	**Tanked systems** - over-sized pipes/tanks - storms cells	✔		

Figure 2 SUDS Hierarchy. (Source: Environment Agency Thames Region, 2006, *SUDS A Practical Guide*).

Further Information

- Planning Policy Statement 25: Development and Flood Risk and the accompanying Practice Guide.
- CIRIA 523 (SUDS Best Practice Manual)
- CIRIA 609 (SUDS – hydraulic, structural and water quality advice)
- CIRIA 697 (SUDS Manual)
- CIRIA R156 (Infiltration Drainage – Manual of Good Practice)
- Sustainable Drainage Systems (SUDS) – Environment Agency (see www.environment-agency.gov.uk/suds for details)

Floods and Water Management Act

The Floods and Water Management Bill become legislation in April 2010. It will require developers to include sustainable drainage, where practicable, in new developments. These should be built to standards which reduce flood risk and improve water quality.

The use of sustainable drainage systems will be encouraged by removing the right to connect surface water run-off to public sewers. A SUDS approving body will become responsible for approving, adopting and maintaining new sustainable drainage systems where they affect more than one property. This will generally be the local authority/county council.

*Calls to 0870 numbers – Weekday Daytime calls to 0870 numbers cost 8p, plus up to 6p per minute from BT Weekend Unlimited. Mobile and other providers' charges may vary.

Surface Water Guidance

Sheet 2: Planning Application Guidance

For development on sites of 1 hectare or greater, regardless of flood zone, the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water runoff should be incorporated in a Flood Risk Assessment (FRA).

An application for Outline planning permission should include details of 1 workable solution for managing surface water (this may alter at the detailed application stage). Applications for Full permission should also refer to Surface Water Guidance Sheet 3 for what information will be required to discharge a condition.

The following is a list of the information needed for the Environment Agency to recommend a surface water drainage condition. This is intended only as a starting point. It is critical to contact your local Development & Flood Risk team to discuss any further – particularly local – flood risk issues.

1) Demonstrate how SUDS options have been considered. Refer to the SUDS management train and hierarchy and justify the chosen method(s) of surface water disposal (see Surface Water Guidance Sheet 1).

2) Areas of permeable and impermeable land for both the existing site and the proposed development to be used to assess the change in surface water runoff. The site characteristics such as how surface water management is functioning on the site at present should be investigated.

3) Consideration should be given to sub-catchments which may exist on the site. Calculations for greenfield runoff rates for individual watercourses should be based on the proposed area of impermeable land within its sub-catchment. It may be possible to divert water to a different sub-catchment only if the greenfield runoff rate for that watercourse is not exceeded.

4) Establish the permitted discharge rate in accordance with the following information:

Undeveloped (Greenfield) Sites

- Written confirmation of the discharge rate as agreed by the receiving drainage body (i.e. Water Company or the Internal Drainage Board).
- For discharge into a Main River or an Ordinary Watercourse outside of the Internal Drainage Board District the discharge rate will be based on the calculated pre-development (greenfield) runoff rate for the site and for a simple control structure will be based on the QBAR rate. This should be agreed in discussions with the Environment Agency.
- See the Appendix for the methods which can be used to calculate greenfield runoff.
- If complex controls are to be used for control of discharge rates calculations for the greenfield runoff rate should be provided for the 1, 30 and 100 year return periods. The methodology in the EA/Defra

document “Preliminary Rainfall Runoff Management for Development (W5-074/A/TR1) should be used as the basis for calculations.

Previously Developed (Brownfield) Sites

- Brownfield sites are strongly encouraged to discharge at the original pre-development (greenfield) rate where possible. If not, a significant reduction in the current rate of discharge should be achieved and agreed with the relevant Drainage Body.

5) If discharging into an Ordinary Watercourse outside an IDB area an assessment of the offsite flow should be made. Further information will be required as to whether the watercourse will be able to convey the proposed discharge rate and volume if it is known to be sensitive to increased discharge or has a history of flooding problems.

6) If proposing to discharge to soakaways then percolation tests should be submitted in accordance with BRE Digest 365 or CIRIA guidance R156.

7) An assessment of the volume of attenuation storage that would be required on site. This should be based on the 100 year critical storm duration with climate change for the site (see Annex B table B.2 of PPS 25 for appropriate climate change allowances) and the allowable discharge rate. FSR (Flood Studies Report) rainfall data should be used for storm durations less than 1 hour and FEH (Flood Estimation Handbook) rainfall data should be used for storm durations greater than 1 hour when identifying the critical storm duration. The method of attenuation should be identified and located on a plan of the site.

8) An assessment of the need for Long Term Storage. This will address the additional **volume** of runoff generated by the development. See the EA/Defra document “Preliminary Rainfall Runoff Management for Development” (W5-074/A/TR1) for further information. The need for this provision will vary between sites so contact the relevant Development and Flood Risk Team for advice before commencing the assessment.

Contact can be made with the local Environment Agency Development and Flood Risk team on 08708 506 506*.

It may be necessary to apply for a Flood Defence Consent for the construction of certain works which can also be discussed with the local team on the above number. Please also see www.environment-agency.gov.uk for further details.

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Further Information

- Planning Policy Statement 25: Development and Flood Risk and the accompanying Practice Guide.
- R&D Technical Report W5-074/A/TR/1 Revision D, Preliminary rainfall runoff management for developments.
- BRE Digest 365 (Soakaway Design)
- CIRIA 523 (SUDS Best Practice Manual)
- CIRIA 609 (SUDS – hydraulic, structural and water quality advice)
- CIRIA 697 (SUDS Manual)
- CIRIA R156 (Infiltration Drainage – Manual of Good Practice)

Appendix

Development size	Method
0 – 50 ha	The Institute of Hydrology Report 124 Flood Estimation for Small Catchments (1994) is to be used to determine peak green field run-off rates. Where developments are smaller than 50 ha, the analysis for determining the peak greenfield discharge rate should use 50 ha in the formula and linearly interpolate the flow rate value based on the ratio of the development to 50 ha. FSSR 2 and 14 regional growth curve factors are to be used to calculate the greenfield peak flow rates for 1, 30 and 100 year return periods.
50 ha – 200 ha	IH Report 124 will be used to calculate greenfield peak flow rates. Regional growth factors to be applied.
Above 200 ha	IH Report 124 can be used for developments that are much larger than 200 ha. However, for schemes of this size it is recommended that the Flood Estimation Handbook (FEH) should be applied. Both the statistical approach and the unit hydrograph approach should be used to calculate peak flow rates. The unit hydrograph method will also provide the volume of greenfield run-off. However, where FEH is not considered appropriate for the calculation of greenfield run-off for the development site, for whatever reasons, IH 124 should be used.

Figure 1 Tools to be used for calculation of greenfield runoff criteria (Source: DEFRA / ENVIRONMENT AGENCY, 2005. *Preliminary rainfall runoff management for developments R&D Technical Report W5-074/A/TR/1,* Revision D. Bristol: Environment Agency).

Surface Water Guidance

Sheet 3: Discharge of Surface Water Condition

The following list of information represents the likely minimum requirements of the Environment Agency in order to recommend the LPA discharge a surface water drainage condition. Resubmission of information from the initial planning permission is likely to be required. This is not an exhaustive list and further information may be requested to support the application. Information to discharge a condition should be submitted as one package in a Drainage Strategy rather than in piecemeal submissions.

1) Demonstrate how SUDS options have been considered. Refer to the SUDS management train and hierarchy and justify the chosen method of surface water disposal (see Surface Water Guidance Sheet 1).

2) Areas of permeable and impermeable land for both the existing site and the proposed development to be used to assess the change in surface water runoff. The site characteristics such as how surface water management is functioning on the site at present should be investigated.

3) Establish the permitted discharge rate in accordance with the following information:

Undeveloped (Greenfield) Sites

- Written confirmation of the discharge rate as agreed by the receiving drainage body (i.e. Water Company or the Internal Drainage Board).
- For discharge into a Main River or an Ordinary Watercourse outside of the Internal Drainage Board District the discharge rate will be based on the calculated pre-development (greenfield) runoff rate for the site. For a simple control structure this will be based on the QBAR rate. This should be agreed in discussions with the Environment Agency.
- See the Appendix for the methods which can be used to calculate greenfield runoff.
- If complex controls are to be used for control of discharge rates calculations for the greenfield runoff rate should be provided for the 1, 30 and 100 year return periods. The methodology in the EA/Defra document “Preliminary Rainfall Runoff Management for Development (W5-074/A/TR1)” should be used as the basis for calculations.

Previously Developed (Brownfield) Sites

- Brownfield sites are strongly encouraged to discharge at the original pre-development (greenfield) rate where possible. If not, a significant reduction in the current rate of discharge should be achieved and agreed with the relevant Drainage Body.

4) If discharging into an Ordinary Watercourse outside an IDB area make an assessment of the route which the water will take when leaving the site. Further information may need to be provided on whether the watercourse will

be able to convey the proposed discharge rate and volume if it is known to be sensitive to increased discharge or has had past flooding problems.

5) Discharge into any watercourse will need to consider whether the velocity of the discharge causes any erosion impacts on the channel. Effects on erosion downstream of the discharge point should also be considered.

6) If proposing to discharge to soakaways percolation tests should be submitted in accordance with BRE Digest 365 or CIRIA guidance R156.

7) An assessment of the volume of attenuation storage that would be required on site. This should be based on the 100 year critical storm duration with climate change for the site (see Annex B table B.2 of PPS 25 for appropriate climate change allowances) and the allowable discharge rate. FSR (Flood Studies Report) rainfall data should be used for storm durations less than 1 hour and FEH (Flood Estimation Handbook) rainfall data should be used for storm durations greater than 1 hour when identifying the critical storm duration. The method of attenuation should be identified and located on a plan of the site.

8) An assessment of the need for Long Term Storage. This will address the additional **volume** of runoff generated by the development. See the EA/Defra document "Preliminary Rainfall Runoff Management for Development" (W5-074/A/TR1) for further information. The need for this provision will vary between sites so contact the relevant Development and Flood Risk Team for advice before commencing the assessment.

9) Fully labelled network diagram showing all dimensions (pipe numbers, gradients, sizes, locations, manhole details etc.) of every element of the proposed drainage system (pipes, swales, storage areas, ponds, etc). A hard copy of the network details should also be submitted.

10) Calculations to show the performance of the system:
    - FSR rainfall data should be used for storm durations less than 1 hour and FEH rainfall data should be used for storm durations greater than 1 hour.
    - Calculations for the 30 year rainfall event identifying the critical storm duration for the network considering a range of summer and winter storm durations from 15 minutes up to the 10080 minute (7 day) duration. No above ground flooding should occur for this event.
    - Calculations for the 100 year rainfall event including an allowance for climate change - increase on peak rainfall intensity (see Annex B table B.2 of PPS 25 for appropriate climate change allowances). This should identify the critical storm duration for the network considering a range of summer and winter storm durations from 15 minutes up to the 10080 minute (7 day) duration.
    - Some short term above ground flooding may be permitted for the 100 year event with climate change. Floodwater should be managed to be safe and not enter any buildings or disrupt emergency access routes. The volumes, depths, velocity and extent should be mapped on a topographical plan of the site. If flooding is extensive the hazard should be considered in line with guidance from the EA/Defra document 'Flood Risk Assessment Guidance for New Development (FD 2320/TR2) table 13.1.

- Details of any online or offline control structures to be used such as complex controls or vortex flow controls or attenuation ponds.
- Consideration of a surcharged outfall. The standard default setting of many surface water computer modelling programmes assumes a freely discharging outfall. Careful consideration is required and evidence provided to demonstrate that this assumption is correct. In many circumstances an outfall maybe surcharged affecting its hydraulic capacity and impacting on the surface water network. A surcharged outfall is likely to occur if discharging into a watercourse or surface water network near capacity. In these scenarios and with the absence of supporting information to the contrary it is expected the surface water calculations will assume a surcharged outfall.
- It is important that the above calculations and input data are submitted as a hard copy.
- If computer modelling software has been used suitable model files must be submitted on a CD in order to accurately assess the modelled information.

11) If any land raising is proposed on site the surface water strategy should consider the effect this could have on runoff leaving the site and affecting third parties. The most appropriate solution(s) to prevent this will need to be assessed.

12) Details of the party/parties responsible for the long term management of every element of the proposed drainage system.

13) Summary report to include:
    - The methodology applied in the calculations for the scheme. This should include the global variables and any assumptions used.
    - An explanation of how the system operates.
    - An assessment of the route which the water will take when leaving the site and whether the receiving watercourse or sewer network will be able to convey the proposed discharge.

In order that any pertinent – particularly local – issues are addressed, it is important that contact is made with the local Environment Agency Development and Flood Risk team to discuss your proposals. Please call 08708 506 506*.

It may be necessary to apply for a Flood Defence Consent for the construction of certain works which can also be discussed with the local team on the above number. Please also see www.environment-agency.gov.uk for further details.

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Further Information

- Planning Policy Statement 25: Development and Flood Risk and the accompanying Practice Guide.
- R&D Technical Report W5-074/A/TR/1, Preliminary rainfall runoff management for developments – refer to the most up to date Revision.
- R&D Technical Report FD 2320/TR2, Flood Risk Assessment Guidance for New Development.
- BRE Digest 365 (Soakaway Design)
- CIRIA 523 (SUDS Best Practice Manual)
- CIRIA 609 (SUDS – hydraulic, structural and water quality advice)
- CIRIA 697 (SUDS Manual)
- CIRIA R156 (Infiltration Drainage – Manual of Good Practice)