

Development Proposals within the River Mease Catchment: Standing Advice for Local Planning Authorities (LPAs) - Third Issue Including Detailed Advice on Sustainable Urban Drainage Systems (SUDS)

INTRODUCTION:

1. Purpose

The purpose of the Standing Advice is to streamline the planning process to save time and money for developers, regulators and consultants. It allows Local Planning Authorities (LPAs) to decide whether or not they need to consult Natural England on planning applications within the River Mease catchment. This third issue replaces previous standing advice and contains further details on Sustainable Urban Drainage Systems (SUDS) provision.

2. The River Mease Site of Special Scientific Interest (SSSI) & Special Area of Conservation (SAC)

The River Mease is a relatively natural lowland clay river containing a diverse range of features including riffles, pools, slacks, vegetated channel margins and bankside tree cover which provide the conditions necessary to sustain nationally significant fish populations of spined loach *Cobitis taenia* and bullhead *Cottus gobio*. Other internationally important habitats and species reliant upon the river are its floating vegetation often dominated by water-crowfoot, white-clawed crayfish *Austropotamobius pallipes* and otter *Lutra Lutra*.

Under the [Conservation of Habitats and Species Regulations 2010 as amended](#) (the 'Habitats Regulations'), The River Mease is designated as a Special Area of Conservation (SAC), requiring the highest level of protection, appropriate management, enhancement and where necessary, restoration. Published in 2016, Natural England's River Mease SAC [Conservation Objectives and Supplementary Advice](#) provide a framework for helping stakeholders achieve this, and to inform the local decision-making process.

The SAC and SSSI incorporates the lower reaches of the Gilwiskaw Brook downstream of Packington village (which are steep and fast flowing) and the River Mease itself from its confluence with the Gilwiskaw Brook to its confluence with the River Trent. The site is also notified at a national level, under the Wildlife and Countryside Act (1981) as amended as the River Mease Site of Special Scientific Interest (SSSI).

Although generally improving, the River Mease SSSI/SAC still needs to improve in several ways in order to allow it to meet its conservation targets. Improvements need to be made in areas such as:

- Point source water pollution;
- Diffuse water pollution (including, but not limited to surface water run-off, road run-off, agricultural and urban run-off and siltation);
- Impacts of non-native invasive species;
- Artificial modifications to the river channel.

Levels of Orthophosphate in the river exceed the conservation limits of 0.04mg/l for the Gilwiskaw Brook and 0.05mg/l for the River Mease as agreed with the Environment Agency. Measures to address these existing effects are underway.

Development within the catchment of the River Mease SAC has the potential to further contribute to the poor water quality and siltation levels of the River Mease as a result of surface and foul water entering the River Mease and its tributaries / the water environment within the River Mease catchment. Local Planning Authorities (LPAs) must take this potential impact into account when determining planning applications in the catchment. Where necessary, appropriate mitigation

measures must be implemented to prevent harmful discharges entering the river catchment and these should be secured by planning conditions and enforced as necessary.

3. Roles & Responsibilities

The public body responsible for determining a planning application is defined as the ‘competent authority’ under the Habitats Regulations. Where a Local Planning Authority (LPA) is the ‘competent authority’ for a planning proposal, it must only grant planning permission where it can be demonstrated that any European wildlife site will not be adversely affected, adopting the precautionary principle where there are any doubts.

Where the development is within or likely to affect a nationally or internationally designated nature conservation site, Natural England should be formally consulted for its advice.

In the case of the River Mease SSSI/SAC, Natural England has developed the River Mease Standing Advice meaning that it is not necessary for local authorities to consult Natural England on development proposals within the River Mease catchment, unless there are issues that are not covered by our Standing Advice or the LPA is having difficulty applying it to a specific planning application.

4. Habitats Regulations Assessment (HRA)

Under regulations 61 and 62 of the Habitats Regulations the ‘competent authority’ must follow a series of steps and tests for plans or projects which could potentially affect a European site. These steps and tests are collectively referred to as the ‘Habitats Regulations Assessment’ process.

The essential first step in determining a planning application within the River Mease catchment is to screen the proposal for any likely significant effects on the River Mease SAC. In accordance with case law, a HRA should consider an effect to be ‘likely’ if it ‘cannot be excluded on the basis of objective information’ and is ‘significant’ if it ‘undermines the conservation objectives’ of the site (referred to above). In plain English, the test asks whether the plan or project ‘may’ have a significant effect (i.e. there is a risk or a possibility of such an effect).

Where significant effects can’t be ruled out, the next step is a more detailed ecological assessment (an Appropriate Assessment) which must be carried out by the ‘competent authority’ in order to ascertain that the plan or project would have no adverse effect on the site’s integrity in view of the site’s conservation objectives. If such effects cannot be ruled out, permission may not be granted unless the additional tests given in Regulations 62 and 66 of the Habitats Regulations can be satisfied.

It is the responsibility of those applying for permission to provide such information as the competent authority may reasonably require to undertake its HRA.

When undertaking a Habitats Regulations Assessment, the precautionary principle applies. This means that if a plan or project *could* adversely affect a European site, the person doing the HRA has to have evidence to prove that it will not, before ruling out that likely effect. If there is uncertainty, then it is assumed that the likely effect will occur.

The Government has produced draft [core guidance](#) for competent authorities and developers to assist with them with the Habitats Regulations Assessment process.

NATURAL ENGLAND'S STANDING ADVICE:

1. Foul Water Drainage

Mains Drainage Solutions:

Natural England's preference for all development within the Mease catchment is for foul water drainage to be connected to the mains sewer, subject to capacity at the relevant sewage treatment works. LPAs do not have to consult Natural England in these circumstances on the understanding that the River Mease Developer Contribution Scheme will be implemented in full.

Non-Mains Drainage Solutions:

Where a non-mains drainage solution is proposed, the LPA should satisfy itself that the drainage solution proposed, whether a package treatment plant, septic tank or sealed cesspit, will not result in any harmful discharges of foul water from the application site into the River Mease or its tributaries. This will form an integral part of the Habitats Regulations Assessment (HRA). Effluent discharging from package treatment plants and septic tanks may contain high phosphate levels meaning that additional treatment measures may be required to ensure the discharge is of an appropriate quality before it enters the water environment.

All foul drainage solutions, except those which involve the disposal of foul water outside the River Mease catchment, are subject to the developer contribution scheme. The fee depends on the estimated discharge of phosphate into the River Mease as calculated by the LPA.

There is no requirement for the LPA to consult Natural England on non-mains drainage proposals where it is satisfied that there will be no harmful discharges into the River Mease or its tributaries, and where the River Mease Developer Contribution Scheme is applied at the appropriate rate.

If the development is relatively large we advise the LPA to seek confirmation from the Environment Agency that the foul water drainage solution proposed is technically fit for purpose.

2. Surface Water Drainage

Where practicable, our preference remains for surface water from new roofs, converted roofs, new hard surfacing etc. to be disposed of harmlessly on site in a sustainable way by means of a Sustainable Urban Drainage System (SuDS), incorporating a water quality treatment chain that is designed to address the specific contaminants expected to be generated by the proposed development in order to clean the water.

As part of the Habitats Regulations Assessment (HRA), the LPA should satisfy itself that the sustainable drainage scheme proposed will not result in any harmful discharges into the River Mease or its tributaries. Natural England does not need to be consulted where a sustainable drainage system is proposed which meets this criterion.

In considering if any proposed SUDS scheme is able to achieve the two functions of flood risk attenuation and protection of the water quality of the River Mease, the LPA should refer to the relevant Lead Local Flood Authority (LLFA) on flooding matters and should use the advice from Natural England in Annex A on water quality.

Maintenance of the sustainable drainage system proposed is essential to ensure that it continues to function as designed and constructed. The long-term monitoring and maintenance of the surface water drainage system must be secured by condition or legal agreement.

Where a sustainable drainage scheme is not practicable and discharge to mains is proposed, the LPA should ensure that Severn Trent Water has no objection to the proposal and adjust the applicant's contribution to the River Mease Developer Contribution Scheme (DCS) as appropriate.

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The water may go into the treatment works with low phosphate but it will discharge to the river at the concentration that the treatment works is licensed to. The developer's contribution will be calculated by multiplying the volume of water added to the treatment works by the concentration of phosphate for the receiving treatment work's discharge permit as calculated by the LPA. Natural England does not have to be consulted where these circumstances apply.

Where there is a risk of surface water runoff into the River Mease from the application site, either during construction or operation, pollution prevention measures should be introduced to prevent substances such as petrol, oil, suspended sediments or bankside material from entering the River Mease or its tributaries. These measures could include oil traps or petrol interceptors which are common practice within the River Mease catchment. Refer to [CIRIA Guidance](#) on SuDS treatment trains. There is no requirement to consult Natural England on applications in close proximity to the River Mease or its tributaries provided that pollution prevention measures of this kind are secured by condition or legal agreement.

3. Construction Method Statements

There may be circumstances where the construction work associated with a development proposal could have a potential impact on the River Mease SAC/SSSI where a condition to the following effect would be in order:

- A Construction Method Statement explaining the measures in place to protect the River Mease and its tributaries from any harmful discharges during construction should be submitted and approved by the LPA before any work takes place.

The LPA should satisfy itself that the CMS would prevent any harmful discharges into the River Mease or its tributaries as part of its Habitats Regulations Assessment (HRA). If the LPA is satisfied, Natural England does not need to be consulted.

4. Protected Species

Local Planning Authorities are obliged to assess all planning applications for impacts on protected species using Natural England's [Standing Advice](#). It is not necessary for local authorities to consult Natural England on protected species issues (even if the species are European Protected Species, such as bats and dormice) as they should refer to the standing advice above.

If there are specific questions on issues that are not covered by our Standing Advice for European Protected Species or there is difficulty applying it to any given application, please forward your enquiry to consultations@naturalengland.org.uk. Natural England will only provide bespoke advice on protected species where they form part of the notification of a SSSI/SAC or in exceptional circumstances.

If there are European Protected Species on site, Natural England offers a separate Pre-submission Screening Service (PPS) for planning proposals that will require a mitigation licence. More about this service can be found [here](#).

5. Priority habitats and species

Priority habitats and Species are of particular importance for nature conservation and included in the England Biodiversity List published under section 41 of the Natural Environment and Rural Communities Act 2006. Most priority habitats will be mapped either as **Sites of Special Scientific Interest**, on the [Magic](#) website or as **Local Wildlife Sites**.

List of priority habitats and species can be found [here](#)¹. Natural England does not routinely hold species data, such data should be collected when impacts on priority habitats or species is considered likely. Consideration should also be given to the potential environmental value of brownfield sites, often found in urban areas and former industrial land, further information including links to the open mosaic habitats inventory can be found [here](#).

6. Ancient woodland and veteran trees

You should consider any impacts on ancient woodland and veteran trees in line with paragraph 118 of the NPPF. Natural England maintains the Ancient Woodland [Inventory](#) which can help identify ancient woodland. Natural England and the Forest Commission have produced [standing advice](#) for planning authorities in relation to ancient woodland and veteran trees. It should be taken into account by planning authorities when determining relevant planning applications. Natural England will only provide bespoke advice on ancient woodland/veteran trees where they form part of a SSSI or in exceptional circumstances.

7. Best and Most Versatile (BMV) Agricultural Land & Soils

Soil is a finite resource that fulfils many important functions and services for society. It is a growing medium for food, timber and other crops, a store for carbon and water, a reservoir of biodiversity and a buffer against pollution.

For all new developments, priority should be given to areas of poorer quality agricultural land in preference to that of a higher quality in line with National Planning Policy Framework para 112. For more information, see our publication [Agricultural Land Classification: protecting the best and most versatile agricultural land](#)².

Local planning authorities are responsible for ensuring that they have sufficient detailed agricultural land classification (ALC) information to apply the requirements of the NPPF, regardless of whether the proposed development is sufficiently large to consult Natural England. Further information is contained in Natural England's [Technical Information Note 049](#). Agricultural Land Classification information is available on the [Magic](#) website on the [Data.Gov.uk](#) website.

Guidance on soil protection is available in the Defra [Construction Code of Practice for the Sustainable Use of Soils on Construction Sites](#), and we recommend its use in the design and construction of development, including any planning conditions. Should the development proceed, developers should use an appropriately experienced soil specialist to advise on, and supervise soil handling, including identifying when soils are dry enough to be handled and how to make the best use of soils on site.

8. Green Infrastructure Provision/Biodiversity Enhancements

LPAs should consider the opportunities for green infrastructure provision both inside and outside the River Mease catchment. Multi-functional green infrastructure can perform a range of functions including improved flood risk management, provision of accessible green space, climate change adaptation and biodiversity enhancement. Evidence and advice on green infrastructure, including the economic benefits of GI can be found on the Natural Environment page of the [National Planning Practice Guidance portal](#). Detailed guidance on SuDS and green infrastructure including case studies can be found on the [Susdrain website](#). Here is a [good example](#). Further case studies can be found [here](#).

The provision of natural greenspace is an integral part of the creation of sustainable communities. One important function of Green Infrastructure (GI) is the provision of new opportunities for access

¹<http://webarchive.nationalarchives.gov.uk/20140711133551/http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx>

² <http://publications.naturalengland.org.uk/publication/35012>

to open space. Natural England's 'standards for accessible natural greenspace' (ANGSt) can be used to ensure new and existing housing has appropriate access to nature. More information can be found in Natural England's publication '[Nature Nearby, Accessible Greenspace Guidance \(March 2010\)](#)'. The CABE Space Guidance '[Start with the Park \(2005\)](#)' outlines the importance of green infrastructure provision as an integral part of development, with consideration being given to the context of local landscape character and contribution to the wider GI network.

All planning applications should be assessed to see if they provide opportunities to incorporate features into the design which are beneficial to wildlife, such as roosting opportunities for bats or the installation of bird nest boxes. The LPA should consider securing measures to enhance the biodiversity of any development site for which it is minded to grant planning permission. This is in accordance with Paragraph 118 of the NPPF. Additionally, we would draw your attention to Section 40 of the Natural Environment and Rural Communities Act (2006) which states that '*Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity*'. Section 40(3) of the same Act also states that '*conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat*'.

9. Environmental enhancement

Development provides opportunities to contribute to and enhance biodiversity and the local environment, as outlined in paragraph 109 and 118 of the NPPF. We advise you to consider what existing environmental features on and around the site can be retained or enhanced or what new features could be incorporated into the development proposal. Examples might include:

- Providing a new footpath through the new development to link into existing rights of way.
- Restoring a neglected hedgerow.
- Creating a new pond as an attractive feature on the site.
- Planting trees characteristic to the local area to make a positive contribution to the local landscape.
- Using native plants in landscaping schemes for better nectar and seed sources for bees and birds.
- Incorporating swift boxes or bat boxes into the design of new buildings.
- Designing lighting to encourage wildlife.
- Adding a green roof to new buildings.

You could also consider how the proposed development can contribute to the wider environment and help implement elements of any Landscape, Green Infrastructure or Biodiversity Strategy in place in your area. For example:

- Links to existing greenspace and/or opportunities to enhance and improve access.
- Identifying opportunities for new greenspace and managing existing (and new) public spaces to be more wildlife friendly (e.g. by sowing wild flower strips).
- Planting additional street trees.
- Identifying any improvements to the existing public right of way network or using the opportunity of new development to extend the network to create missing links.
- Restoring neglected environmental features (e.g. coppicing a prominent hedge that is in poor condition or clearing away an eyesore).

10. Access and Recreation

Natural England encourages any proposal to incorporate measures to help improve people's access to the natural environment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways should be considered. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of

wider green infrastructure. Relevant aspects of local authority green infrastructure strategies should be delivered where appropriate.

11. Rights of Way, Access land, Coastal access and National Trails

Paragraph 75 of the NPPF highlights the important of public rights of way and access. Development should consider potential impacts on access land, common land, rights of way and coastal access routes in the vicinity of the development. Consideration should also be given to the potential impacts on the any nearby National Trails. The National Trails website www.nationaltrail.co.uk provides information including contact details for the National Trail Officer. Appropriate mitigation measures should be incorporated for any adverse impacts.

12. Landscape Character

Paragraph 109 of the National Planning Policy Framework (NPPF) highlights the need to protect and enhance valued landscapes through the planning system. This application may present opportunities to protect and enhance locally valued landscapes. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed. You may want to consider whether any local landscape features or characteristics (such as ponds, woodland or dry stone walls) could be incorporated into the development in order to respect and enhance local landscape character and distinctiveness, in line with any local landscape character assessments. Where the impacts of development are likely to be significant, a Landscape & Visual Impact Assessment should be provided with the proposal to inform decision making. We refer you to the [Landscape Institute](#) Guidelines for Landscape and Visual Impact Assessment for further guidance.

13. Local Issues

We would expect the Local Planning Authority (LPA) to assess and consider the potential impacts of development on the following when determining planning applications:

- local sites (biodiversity and geodiversity)
- local landscape character
- local or national biodiversity priority habitats and species.

Natural England does not hold locally specific information relating to the above but they remain material considerations in the determination of all planning applications and we recommend that you seek further information from the appropriate bodies (which may include the local Wildlife Trust) in order to ensure the LPA has sufficient information to fully understand the impact of the proposal before it determines the application. A more comprehensive list of local groups can be found at [Wildlife and Countryside link](#).

14. Biodiversity duty

LPAs have a [duty](#) to have regard to conserving biodiversity as part of their decision making. Conserving biodiversity can also include restoration or enhancement to a population or habitat. Further information is available [here](#).

15. Discretionary Advice Service (DAS)

Natural England has introduced a Discretionary Advice Service (DAS) so that we can work with applicants, developers and consultants on a chargeable basis to take appropriate account of

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environmental considerations at an early stage in order to improve the quality of applications before they are submitted.

We believe this could help to save time and money for the applicant, the LPA & Natural England, whilst also securing good outcomes for the natural environment. The advice could take the form of a meeting, a telephone conversation or written advice depending on the nature of the proposal. The advice is offered on a cost recovery basis with standard tariffs for the services requested.

To take advantage of this service, the first step is for the applicant to fill out a simple '[Request Form](#)' and email it to consultations@naturalengland.org.uk. Further information about the service and tariffs can be found on the [gov.uk website](#).

It is strongly recommended that potential applicants in the River Mease catchment are pointed in the direction of DAS at the pre-application stage so that any potential issues can be addressed before the planning application is submitted, thereby avoiding any obstacles towards progress further down the line.

Please note that our pre-application advice is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course.

ANNEX A - NATURAL ENGLAND'S SUSTAINABLE URBAN DRAINAGE SYSTEM (SUDS) STANDING ADVICE

A1. General Principles for SuDS Proposals in the River Mease Catchment

Guidance on sustainable drainage systems, including the design criteria, can be found in the [CIRIA SuDS Manual \(2015\) C753](#). The expectation is that the level of provision will be as described for the highest level of environmental protection outlined within the guidance. For discharge to any waterbody within the River Mease catchment the 'high' waterbody sensitivity should be selected. Most housing developments should include at least 3 treatment trains which are designed to improve water quality. The number of treatment trains will be higher for industrial developments.

Maintenance of the sustainable drainage system proposed is essential to ensure that it continues to function as designed and constructed. The long-term monitoring and maintenance of the surface water drainage system should be secured by condition or legal agreement.

A2. Types and Sources of Surface Water Pollution

There are many different sources of surface water pollution.

Industrial and agricultural activities deposit pollutants in the atmosphere which can be absorbed in rain water, deposited on and absorbed by hard surfaces and transported to the nearest watercourse. The same applies to vehicle emissions. Traffic can also deposit pollutants, including leaks and spillages of fuel, engine oil and other harmful substances, on roads and car park surfaces. Car and lorry tyres pick up and spread harmful materials, including animal waste, from roads and other hard surfaces. Even seemingly innocent activities such as car washing can result in harmful deposits of oil, cleaning materials and dirty water finding their way into watercourses.

Soil erosion can increase the likelihood of harmful pollutants entering watercourses through runoff. Where there is a risk of surface water runoff into the River Mease from the application site, pollution prevention measures should be introduced to prevent substances such as petrol, oil, suspended sediments or bankside material from entering the River Mease or its tributaries. These measures could include oil traps or petrol interceptors which are common practice within the River Mease catchment. Refer to [CIRIA Guidance](#) on SuDS treatment trains.

In view of the multiple sources of surface water pollution, the list of potential pollutants is equally lengthy, including any combination of the following - phosphates, nitrates, sulphates, chlorides, heavy metals, hydrocarbons, glycols, alcohols, oils, salts, detergents, herbicides, insecticides, fungicides, organic matter, bacteria, viruses, particulates, sediment and various other chemicals. The potential harm to any sensitive watercourse, the River Mease included, from any combination of these pollutants is considerable.

A3. Design Criteria for SuDS

Sustainable urban drainage systems should fulfil the following design criteria. They must help to manage water quantity and control water quality and should be designed to provide an amenity and support biodiversity.

Water Quantity: Use surface water as a resource, support the management of flood risk, protect the morphology and ecology of the receiving water bodies, drain the site effectively and build flexibility into the system to cope with future change.

Water Quality: Support the management of water quality in receiving surface and groundwater, create resilience to adapt to future change. The core interest of Natural England in the River Mease will be pollution management of waters emanating from a SuDS into the SAC receptor site. It is important to remember that this will include discharges into water bodies that enter the SAC itself further downstream.

Amenity: Sustainable drainage systems should act as an amenity by enhancing visual character, providing multi-functionality and supporting community development.

Biodiversity: Protect and enhance habitats and species, contribute to the delivery of biodiversity objectives, contribute to habitat connectivity, create diverse, self-sustaining and resilient ecosystems.

LPAs should consider the incorporation of SUDS features into the green infrastructure provision of all developments.

A4. Sustainable Drainage Systems

There are various types of sustainable drainage system with different characteristics and functions.

Rainwater harvesting systems capture rainwater for use within buildings such as toilet flushing.

Pervious surface systems such as green roofs or permeable paving permit water percolation to reduce surface water runoff. The water can be stored in sub-surface storage or treatment tanks.

Infiltration systems allow the harmless disposal of water into the ground. Temporary storage can be created to retain the water for slow release into the ground.

Conveyance systems such as swales can be used to channel runoff into storage systems, often controlling the flow rate and volume of water dispersed.

Storage systems can be used to store water and control flows. They can be used for attenuation, i.e. slow release. Some storage systems such as ponds, wetlands and detention basins can be used to provide water treatment before release into the water environment.

Pre-treatment systems such as filter strips, dry swales, detention basins, sediment sumps, oil separators and petrol interceptors can be used to remove silt, sediment & debris from surface water before it travels to the next treatment train.

Treatment systems are specifically designed to purify the water of pollutants to prevent the contamination of rivers and watercourses.

A5. SuDS Treatment Trains

A well-designed surface water management strategy is likely to consist of a combination of the sustainable drainage systems listed above and SuDS treatment trains. Pervious surface systems such as green roofs or permeable paving can reduce and steady the flow of surface water runoff. A conveyance system using filter strips or filter swales can be used to guide surface water to a storage or infiltration system. Storage systems can be used to store water and control flows. They can be used for attenuation, i.e. slow release. Some storage systems such as ponds, wetlands and detention basins can be used to provide water treatment before release into the water environment. Filter strips, dry swales, detention basins, sediment sumps, oil separators and petrol interceptors can be used to remove silt, sediment & debris from surface water before it finds its way to a watercourse or retention basin.

The suitability of any surface water drainage system will depend on the size and type of development. It follows that the SuDS design should reflect these considerations. As a rule, the larger the development and the closer to the River Mease and its tributaries, the greater the number and scale of treatment trains required to prevent any harmful discharges into the catchment. The permeability and topography of the land also need to be taken into consideration. Refer to [CIRIA Guidance](#) on SuDS treatment trains.

A6. HOW TO ASSESS THE EFFICACY OF SUDS PROPOSALS

A6.1. Key Factors to be Taken into Account

- a) Water quality issues within the River Mease SAC/SSSI and the potential risk factors
- b) Potential sources of surface water pollution from the proposed development
- c) Water pathways from the development site to the River Mease SAC/SSSI, known as the “hazard pathway”
- d) Suitability of the proposed surface water treatment train
- e) The residual impacts of the proposal once the above factors have been taken into account

A6.2. Water Quality Issues in the River Mease SAC/SSSI & the Potential Risk Factors

The River Mease currently suffers from the effects of point source and diffuse water pollution which includes, but is not limited to, surface water run-off, road run-off, agricultural run-off and run-off from the urban environment. Levels of phosphates (p) in the river exceed the recognised conservation limits of 0.04mg/l for the Gilwiskaw Brook and 0.05mg/l for the River Mease as agreed with the Environment Agency. Heavy metals are also currently exceeding environmental standards (EQS) and probable likely effect (PEL). Any development proposal within close proximity of the River Mease or its tributaries could have likely significant effects on the River Mease SAC/SSSI which need to be ruled out or mitigated before planning permission is granted.

A6.3. Potential Sources of Surface Water Pollution from the Proposed Development

The pollution hazards might include any combination of the following - phosphates, nitrates, sulphates, chlorides, heavy metals, hydrocarbons, glycols, alcohols, oils, salts, detergents, herbicides, insecticides, fungicides, organic matter, bacteria, viruses, particulates, sediment and various other chemicals. The potential sources of water pollution range from surface water run-off to road run-off, agricultural run-off and run-off from the urban environment.

A6.4. Hazard Pathway: Water Pathways from the Development Site to the River Mease SAC/SSSI

These might include roads, hard standing, service areas including petrol stations, industrial areas, lorry parks, car parks, gardens, amenity areas etc. Only hazards with a pathway to the River Mease SSSI/SAC need to be mitigated by the SuDS treatment train.

A6.5. Suitability of the Proposed Surface Water Treatment Train

Treatment Train suitability will be affected by the:

- Number of required components in the Train;
- Type of development;
- Suitability of Train components to manage SuDS identified water quality hazards (for example, types of organic contaminants and/or heavy metals etc – different hazards may need specific treatment.

General guidance on these factors is to be found in the [CIRIA Guidance](#) on SuDS treatment trains. Extracts are added below.

| Source of Surface Water Pollution | Number of Treatment Train Components Required |
|---|--|
| Roofs only | 1 |
| Residential roads, parking areas, commercial zones. | 3 |
| Refuse collection areas, industrial areas, loading bays, lorry parks, main highways | 4 |

A6.6. SuDS Components to Deal with Specific Pollutants

Most SuDS components cope with some pollutants better than others. The following are some general rules of thumb.

Hydrocarbons (Oils, fats, greases, lubricants, tyre and rubber residues, fuels and organic solvents etc.) - Such contaminants can be derived from runoff coming from major roads, industrial areas, hard standings, bus stations, in fact anywhere that experiences significant levels of vehicle movement or could be used to store and/or process such chemicals. In most cases, the risk these chemicals pose to the River Mease is highly significant and a SuDS treatment train would need to incorporate features that either remove or contain the risk. This is usually achieved by the use of physical traps and barriers, but such mechanisms require regular maintenance and the physical removal and appropriate permitted disposal of pollutant liquors etc.

Particulates and Particulate Bound Pollutants such as Faecal Indicator Organisms -

If well designed and maintained, most SuDS systems can be expected to cope with particulate matter and pollutants that readily bind with particulates. These include organic pollutants that may be derived from the transfer of animal wastes to surface waters. Other particulates may be sediments and/or residues derived from industrial processes.

Heavy Metals - Heavy metals such as Cadmium, Copper, Lead, Zinc, Chromium and Nickel are significant contaminants from roads. The higher the traffic levels, the higher the likely risk of heavy metal contaminants in any runoff. It may be possible to treat low levels of heavy metal contamination effectively using specially designed filter strips and drains incorporating the use of weathered gravels capable of absorbing metal ions into exposed clay minerals. However, such techniques alone are unlikely to deal with high concentrations of contaminants or high rates of runoff which are likely to require the use of Retention Ponds and/or Constructed Wetlands to trap heavy metals for periodic sediment removal.

Soluble Pollutants (Nitrates and Phosphates) - Some SuDS components can be reasonably effective at coping with N and P pollutants. However, there is less evidence of this when it comes to the levels of sensitivity that many Water Dependent Designated Sites (WDDS), such as the Mease. In the Mease catchment local planning authorities should examine in detail how these pollutants will be dealt with by a sustainable surface water drainage system. Where there is any doubt about the efficacy of the SuDS arrangements, it may be appropriate to consider the use of specific Constructed Wetlands (which have a higher N and P coping capability but may require significant land take and maintenance and be more expensive than more usual SuDS components). Specialist advice will be required in such circumstances.

Salts (such as road salt run off) - SuDS struggle to mitigate highly soluble pollutants like salts. Salt laden runoff is likely to require specific SuDS to contain such runoff and deal with by retention and evaporation or regular physical removal and authorised disposal.

A7. SuDS Assessment: Worked Example

| | |
|--|--|
| <p>5-Step SuDS Assessment: the LPA has been consulted on a development proposal for a small housing development consisting of 8 dwellings on agricultural land on the outskirts of Measham, Leicestershire. The development site is less than 50 metres from the River Mease SSSI/SAC. The foul water drainage is to be connected to the existing mains sewer serving an existing residential development nearby. A sustainable drainage system (SuDS) is proposed for the disposal of surface water from the development site.</p> | |
| Step 1 | <p>List the Water Dependent Designated Sites (WDDS) risk factors</p> <p>The River Mease SSSI/SAC is currently failing to meet water quality targets necessary to achieve favourable condition and favourable conservation status. It has high phosphate levels and remains at risk from sedimentation, heavy metals and PAH.</p> |
| Step 2 | <p>For each risk factor, identify any related development generated potential hazards</p> <p>As well as new roofs, the proposal includes vehicle hard standing and new gardens. The pollution hazards include suspended solids, phosphate (bound to soils from car tyres etc.), heavy metals and hydrocarbons. Runoff of fertilisers from new lawns poses an additional pollution risk.</p> |
| Step 3 | <p>Undertake a simple spatial analysis of potential hazards generated by the development and identify the SuDS “hazard pathway” (how the SuDS could connect the hazard to the site thus incurring a risk)</p> <p>The development site is located within 50 metres of the River Mease. There are new roofs, gardens and new hard standing areas from which harmful discharges of surface water can be transported to the River Mease. At a minimum 3 treatment components are required given the sensitivity of the River Mease, the proximity of the development site and the nature and scale of the development proposal.</p> |
| Step 4 | <p>For identified relevant “hazard pathways”, review the suitability of the SuDS Treatment Chain components for dealing with identified hazards</p> <p>The proposed SuDS arrangements include a rainwater harvesting system to capture rainwater for toilet flushing in the new dwellings, oil separators and petrol interceptors to remove silt, sediment & debris from surface water and a retention pond to which the surface water will be directed by means of dry swales. The water will then be treated to remove pollutants and prevent any risk of harmful discharges into the River Mease.</p> |
| Step 5 | <p>Identify any Residual Risk Impacts where Treatment Chain does not look as if it will manage risk impacts sufficiently</p> <p>The SuDS treatment train has been specifically designed to avoid the risk of harmful discharges into the River Mease given the scale and nature of the development and its proximity to the River Mease. In theory, the measures proposed should be capable of dealing with the potential hazards generated by the new development provided each component is properly maintained.</p> |
| Conclusions: | <p>The proposed treatment train would appear to be suitable for the development proposal provided that each component is properly monitored and maintained. The LPA do not need to consult NE</p> |

A8. SuDS Case Studies: Useful Links

Urban Best Practice Showcase - <http://urbanwater-eco.services/showcase/>

Delivering SuDS not duds in residential areas -
http://www.susdrain.org/files/resources/Presentations/reuka_gunasekara_170608_.pdf