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<b>REPORT TO:</b>	<b>ENVIRONMENTAL AND DEVELOPMENT SERVICES</b>	<b>AGENDA ITEM:</b>
<b>DATE OF MEETING:</b>	<b>29 SEPTEMBER 2016</b>	<b>CATEGORY: DELEGATED</b>
<b>REPORT FROM:</b>	<b>DIRECTOR OF COMMUNITY AND PLANNING</b>	<b>OPEN</b>
<b>MEMBERS' CONTACT POINT:</b>	Kevin Exley 01283 228717 <a href="mailto:kevin.exley@south-derbys.gov.uk">kevin.exley@south-derbys.gov.uk</a>	<b>DOC:</b>
<b>SUBJECT:</b>	<b>RIVER MEASE DEVELOPER CONTRIBUTION SCHEME 2</b>	<b>REF:</b>
<b>WARD(S) AFFECTED:</b>	<b>SEALES, REPTON</b>	<b>TERMS OF REFERENCE: EDS17</b>

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## **1.0 Recommendations**

1.1 That:

- Members consider the content and scope of the River Mease Developer Contribution Scheme 2 (DCS2) and the representations received through the consultation on the Draft DCS2.
- The River Mease Programme Board be informed that this Authority continues to endorse the principle of levying a charge at the rates set out in the DCS2 for new development which reflect the costs of mitigation to offset the impacts of new development consistent with Policy SD3 Aiv) (Sustainable Water Supply, Drainage and Sewerage Infrastructure) of the Adopted Local Plan Part 1.
- The Council publish the charging schedule on its website following adoption of the Scheme

## **2.0 Purpose of Report**

2.1 To explain why the Developer Contribution Scheme (DCS) has been updated and the process undertaken.

## **3.0 Executive Summary**

3.1 The River Mease is designated as a Special Area of Conservation (SAC) under the European Community (EC) Habitats Directive. Designated European wildlife sites have strong legal protection against harm from development such that the Council must not grant planning permission, unless any harmful effects on the site will be fully mitigated. It is currently considered that existing levels of phosphate in the river are a threat to the site's integrity and additional wastewater flows to wastewater treatment works (WWTWs) in the catchment could add additional phosphates into the SAC.

3.2 In order to facilitate continued development across the River Mease catchment in a way that will not lead to an increase in phosphate in the SAC, the developer contribution scheme has been updated to ensure that the contributions sought can

deliver actions necessary to fully mitigate the effects of increasing waste water discharges.

- 3.3 For South Derbyshire District Council (SDDC) developer contributions would apply to all new housing developments (market and affordable) seeking to connect to mains sewerage in the villages of Overseal, Netherseal, Lullington and Smisby and vary in cost as set out below, depending on the size of the house.

#### **4.0 Detail**

- 4.1 The River Mease was designated by the Secretary of State as a SAC under the EC Habitats Directive<sup>1</sup> on the 1<sup>st</sup> April 2005. The SAC is protected through the provisions of the Conservation of Habitats and Species Regulations 2010 (SI No. 490), commonly referred to as the Habitats Regulations.
- 4.2 Local planning authorities are 'competent authorities' under these regulations and must have regard to the requirements of the Habitats Directive in the exercise of any of their functions (regulation 9(5)), including the determination of planning applications.
- 4.3 Poor water quality, mainly due to high levels of phosphates (P), are identified as a threat to the ability of the river to support its internationally important features in a sustainable way (referred to as the 'integrity' of the SAC in the Regulations). In order to reduce the high level of phosphate a range of partner agencies including the Environment Agency, Natural England and Severn Trent Water are undertaking a range of actions in the River and wider catchment to improve water quality.
- 4.4 In particular Natural England and the Environment Agency published a Water Quality Management Plan (WQMP) for the River Mease in June 2011. The primary purpose of the WQMP is to 'reduce the levels of phosphate within the River Mease SAC, to enable the Conservation Objectives for the SAC to be met, and an adverse effect upon the SAC avoided'.
- 4.5 The WQMP includes a list of actions to reduce the levels of phosphate throughout the catchment and the River Mease SAC. One of the actions listed in the WQMP is to '*establish a developer contribution framework (now referred to as the Developer Contribution Scheme or the DCS), in accordance with planning obligations best practice*'. The purpose of the Developer Contribution Scheme (2) is to ensure that 'all new development with a net increase in wastewater to mains drainage will mitigate and compensate for nutrients entering the river, equivalent to the relative contribution of phosphate as a result of the development.
- 4.6 The DCS2 will replace the previous Developer Contribution Scheme which was adopted by this Authority in 2012. It is needed because the allowance for new development made under the DCS1<sup>2</sup> has been used up, mainly as a result of new development in Ashby de la Zouch and Measham, although some limited growth has taken place in South Derbyshire, mainly in Overseal.

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<sup>1</sup> Council Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora

<sup>2</sup> Authorities signed up to DCS1 are SDDC , North West Leicestershire District Council (NWLDC) and Lichfield District Council

## The River Mease Developer Contribution Scheme 2

- 4.7 The DCS2 has been drafted on behalf of the River Mease Programme Board by Habitats Directive specialists DTA Ecology and is available to view (along with other background papers referred to at section 10 of this report) on the Councils website at: [http://www.south-derbys.gov.uk/planning\\_and\\_building\\_control/planning\\_permission/river\\_mease\\_dcs/default.asp](http://www.south-derbys.gov.uk/planning_and_building_control/planning_permission/river_mease_dcs/default.asp)
- 4.8 The DCS2 has been subject to a consultation undertaken by both SDDC and NWLDC. The consultation held by SDDC ran for a period of six weeks ending on Wednesday the 17<sup>th</sup> August. No responses were received. All developers recorded as active in the catchment in South Derbyshire in the past 3 years were consulted alongside affected Parish Councils and Councillors. The consultation was available for all to view on both the South Derbyshire and North West Leicestershire websites. North West Leicestershire District Council received a total of four representations on the scope and content of the DCS2. For information these are summarised as follows:

Table 1: Summary of responses received by North West Leicestershire to DCS2 Consultation

Name	Comments
Ashby de la Zouch Town Council	<p>The Town Council consider that a revised developer contribution scheme should not be implemented when the success of DCS 1 is still not known. Moreover they are concerned that additional housing growth will lead to increased phosphate levels in the SAC.</p> <p><b>Comment</b> The projects can only be delivered at the rate funding is delivered, so the works are inline with the rate at which development is taking place. The Environment Agency have indicated through their own monitoring that phosphate levels in the SAC are falling and have been since 2012 when the DCS was first adopted.</p>
Packington Parish Council	<p>Express concern that DCS funding is being used for non-mitigating actions including project management, education and culvert removal.</p> <p><b>Comment</b> The aim of the DCS is to ensure no impact on water quality. However the DCS does not work in isolation it forms part of a wider partnership approach which is working to deliver the River Mease Water Quality Management Plan and the Water Framework Directive which needs to achieve an improvement in water quality. The level of phosphates in the Mease have improved and this joint approach (to raise awareness and improve residents understanding of how our actions affect water quality) is having a positive impact on the river.</p>
Ashby Civic Society	<p>Are concerned that only £159,000 of the £640,000 required through the DCS1 has been collected. Suggest that although 2,500 homes approved in the catchment no mitigation has been delivered and phosphate levels have increased.</p> <p><b>Comment</b> The DCS1 window is not closed in respect of collecting payment of contributions. Funds are only collected once development</p>

	commences. The impact on the river does not occur until developments are occupied and so until that point the mitigation does not need to be delivered. Phosphate levels in the river are falling as previously set out
Measham Parish Council	Measham Parish Council has not objected to DCS2.

4.9 The above is a brief summary of the comments received back by NWLDC. Members wishing to consider the detailed submissions by stakeholders to NWLDC can view these via the weblink included in the background papers section of this report (see section Overview of Responses to Consultations). It is considered appropriate to make Members aware of all consultation responses received and the fact that no amendments have been proposed to the Draft DCS2 to reflect the responses received back.

4.10 The DCS2, if adopted in South Derbyshire, would apply to all new development served by wastewater treatment works in the villages of Overseal, Netherseal, Lullington and Smisby. DCS2 will not apply to new development connecting to the mains sewer in any other village or town within South Derbyshire. A map showing areas within the Mease Catchment is set out at appendix 1.

4.11 Contributions would be sought from new development on an equitable basis whereby different sized dwellings make different contributions relative to the scale of their potential impact on water quality in the river. Contributions would be as follows:

Size of dwelling	Average occupancy	DCS Contribution
1 bed	1.17	£228
2 bed	1.72	£335
3 bed	2.32	£453
4 bed +	3.24	£633

4.12 The contributions secured as a result of new development will be used to fund a range of measures to reduce phosphates in the SAC including:

- The installation of silt traps.
- Restoring the river to a more natural state and restoring and enhancing natural river function.
- phosphate removal from surface water run off (i.e. diffuse sources) from sites alongside the SAC.

4.13 In combination it is expected that the above actions will reduce the amount of phosphate generated from existing development in the catchment of the River Mease by 329g of Phosphate per day. This would be sufficient to allow around 1,800 homes without any further deterioration in water quality as a result of increased phosphate outputs associated with new development.

4.14 The total cost of delivering and managing the actions set out in the DCS2 will be £821,000. This is addition to the £640,000 already committed through the first development window. A full breakdown of how this money will be used is set out in Appendix 2 of the DCS2 (this is available to view on the Councils website at the address previously listed).

4.15 Going forward development levels in South Derbyshire are likely to be modest given the relatively small area falling within the River Mease catchment and the relative

lack of headroom at South Derbyshire WWTWs to accommodate significant further growth. Two allocations are proposed through the Part 2 Local Plan for development in Overseal and cumulatively these will deliver around 150 dwellings, although only the site at Acresford Road will make a contribution under DCS2 (the site at Valley Road having previously made a contribution under DCS1). As such development in South Derbyshire is likely to contribute only a small fraction of the overall funding for the scheme. However, it should be noted that the costs associated with the scheme are likely to be borne by applicants (paying the contribution itself and covering their own legal fees), and by the District Council (covering its own legal fees).

### **Implications of Not Adopting the Scheme**

- 4.16 In the absence of the DCS2 being adopted, in line with the requirements of the WQMP it is the Authority's understanding that the Environment Agency and Natural England will object to all new development connecting to the foul sewer on the grounds that it will have a significant impact on the SAC. In effect this will mean that the Authority would not be able to allow any new development to connect to mains sewers in Overseal, Netherseal, Lullington and Smisby unless it could demonstrate that the objections of Natural England and the Environment Agency were flawed.
- 4.17 This could push developers toward other methods of wastewater disposal, such as the use of cesspits and package treatment plants, which are likely to be more expensive than connection to the mains sewer for small developments even taking account of the proposed developer contribution.
- 4.18 The impact of non mains drainage schemes on the SAC is difficult for applicants to demonstrate to the level required to discharge the LPA's obligations under the Habitat Regulations and would place significant evidence and cost burdens on the applicant who, in most cases, will need to provide technical and specialist evidence sufficient to allow the Authority to discharge its duties under the Habitats Regulations. In addition, it would place significant additional cost and resource burdens on the LPA, in reviewing evidence presented, or employing technical specialists to review evidence, and prepare the necessary Habitat Regulations Assessments required by statute and ultimately could stymie future development in the Mease catchment.
- 4.19 In addition, a proliferation of off mains drainage systems would be contrary to the Council's Sustainable Drainage Policy (Policy SD3) included in the Adopted Local Plan Part 1 and could, in the long-term, lead to a further deterioration of water quality in the Mease and its headwaters as private systems tend to be less effective at removing nutrients (including phosphate) than large-scale treatment works and could undermine the long-term objectives to reduce phosphate level to that required to secure the long-term integrity of the SAC.

### **5.0 Financial Implications**

- 5.1 Adoption of the DCS2 will have reasonable administrative cost implications for the Council's Development Management Section but these will be absorbed.
- 5.2 The costs of not adopting the DCS2 would be significant in that specialist advice would be required for each planning application, and will be significantly higher than those arising from adopting it. .

## **6.0 Corporate Implications**

- 6.1 Policy SD3 and BNE3 of the recently Adopted Part 1 Local Plan support the principle of improving water quality in the River including by means of an appropriate financial contribution tied to new development. Failure to identify and collect the necessary financial contributions to allow mitigation could undermine a number of the corporate objectives set out in the corporate plan including the delivery of sustainable housing and the requirement to enhance environmental standards.
- 6.2 Implementation of the scheme could lead to legal challenge by applicants unwilling to pay the developer contribution. However the River Mease Programme Board have commissioned a Habitats Regulations specialist, to draft the DCS2 and thereby reduce both likelihood of legal challenge, and the success of any challenge should this arise.
- 6.3 Failure to adopt the DCS2 could lead to a proliferation of non-mains drainage solutions in villages within the Mease Catchment. Determining the impact of such schemes can be complicated and could invite legal challenge from third parties where they disagree with the Planning Authorities assessment of the impact of development on the integrity of the SAC.

## **7.0 Community Implications**

- 7.1 If adopted, the DCS2 is likely to increase the cost of development for developers in relevant villages compared to other parts of South Derbyshire due to the requirement to pay the contribution. However, the scheme could remove much of the uncertainty and delay which surrounds many developments in the River Mease catchment and could actually reduce developer costs, as it would prevent the need for applicants to pursue non-mains drainage solutions to new development and to provide the Planning Authority with the technical information necessary to allow the Council to discharge its duties under the Habitat Regulations.

## **8.0 Conclusion**

- 8.1 The protection of the River Mease is clearly an important issue and the Council is working with partners to ensure that all mitigation for development is in place.

## **9.0 Background Papers**

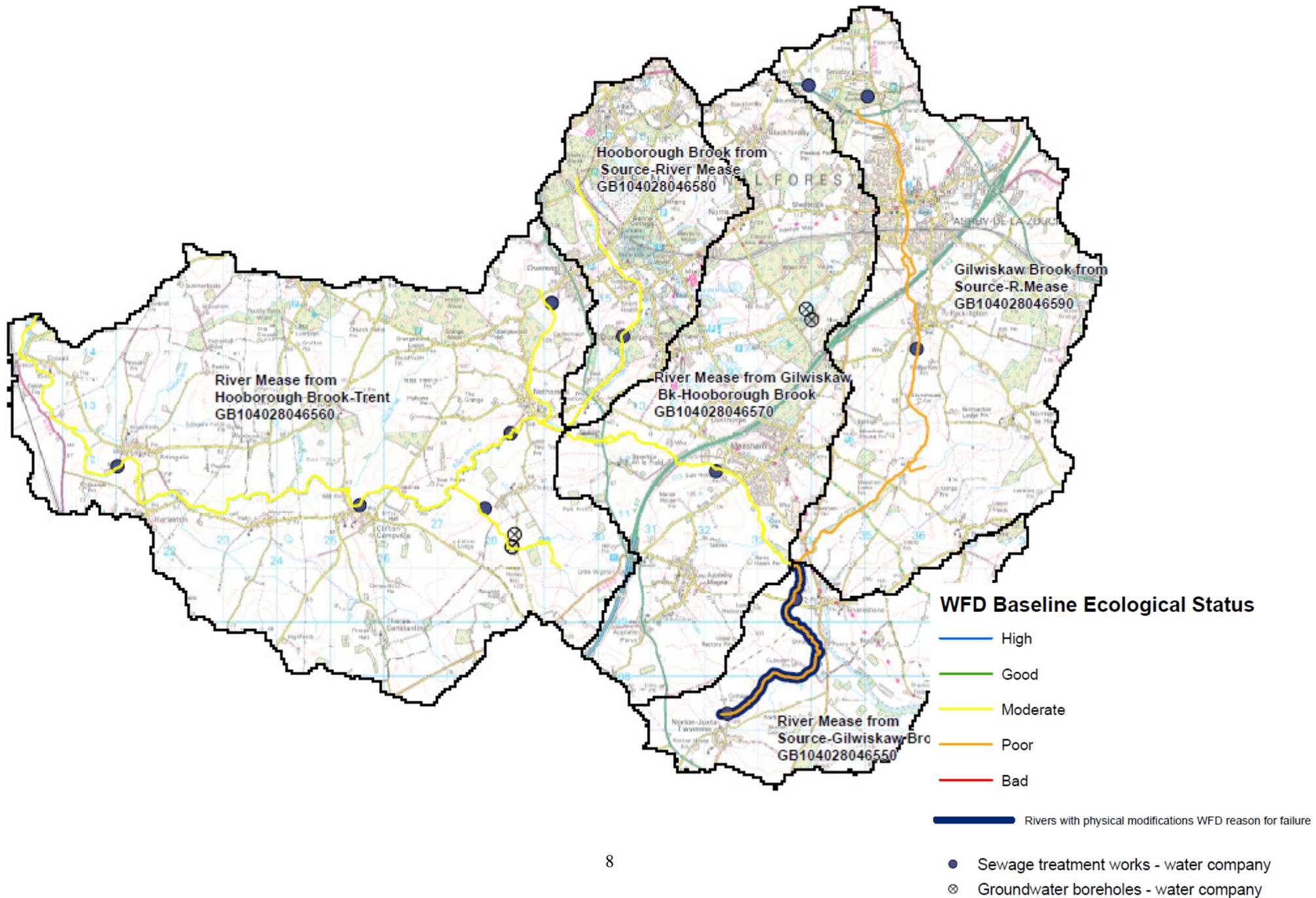
- 8.1 River Mease Water Quality Management Plan: Developer Contribution Scheme 2 (DCS2) (June 2016)
- 8.2 DCS2 Appendix 1 (June 2016)
- 8.3 Map of the River Mease Catchment
- 8.4 Link to Overview of Responses to Consultations published on NWLDC website at [https://www.nwleics.gov.uk/files/documents/dcs2\\_overview/BACKGROUND%20PAPERS%20-%20RIVER%20MEASE%20DCS2%20-%20AUGUST%202016.docx](https://www.nwleics.gov.uk/files/documents/dcs2_overview/BACKGROUND%20PAPERS%20-%20RIVER%20MEASE%20DCS2%20-%20AUGUST%202016.docx)
- 8.5 Responses to North West Leicestershire consultation published on NWLDC website at: [https://www.nwleics.gov.uk/files/documents/dcs2\\_responses/Developer%20Contribution%20Scheme%20%20Consultation%20Responses.pdf](https://www.nwleics.gov.uk/files/documents/dcs2_responses/Developer%20Contribution%20Scheme%20%20Consultation%20Responses.pdf)

## **8.0 Appendices**

- 9.1 Appendix 1 - Map of the River Mease Catchment and location of wastewater treatments works

9.2 Appendix 2 - Measures to be funded through the Developer Contributions Scheme 2 (DCS2)

Appendix 1: Map of the River Mease Catchment and location of wastewater treatments works



## Appendix 2:

### ***Measures to be funded through the Developer Contributions Scheme 2 (DCS2)***

**FINAL VERSION (June 2016)**

The need for DCS2 has been identified in response to the development allocations within the North West Leicestershire District Council Local Plan, which is currently being finalised. The Local Plan was subject to assessment under the Habitats Regulations<sup>1</sup> and the Developer Contribution Scheme was identified as a key mechanism to provide NWLDC with the necessary confidence that development allocated within the catchment of the river will not be likely to have a significant effect on the River Mease SAC.

The HRA of the Local Plan identified the need for DCS2 to deliver mitigation to facilitate the delivery of 1826 dwellings. On the basis of the estimated P loadings to the river from receiving works provided in E&F of DCS2, an estimate of phosphate contributions from these dwellings represents an increased loading of **329g P/day**.

Of critical importance to the development of DCS2, is an agreement which has been reached since the development and implementation of DCS1. Following recent discussions between Natural England, the Environment Agency and Severn Trent Water, the following statement has been issued.

*Severn Trent, Environment Agency and Natural England have assessed the options to meet the SAC conservation objectives in relation to flow and phosphate, and agree that pumping sewage effluent from Packington and Measham sewage works out of the Mease catchment is the most effective long term solution.*

*The primary reason to move flow out of the River Mease catchment would be to ensure the SAC flow targets are met. In addition this will also remove phosphate for which the River Mease is currently failing to meet the SAC target.*

*All parties are committed to working together to progress the development of an appropriate scheme with a view to it being included in the next round of the asset management planning process for scrutiny within the 2019 Periodic Review.*

*It is fully accepted by all parties that implementation of such a solution will take time and would be subject to appropriate scrutiny by OFWAT in respect of the necessary investment costs by Severn Trent Water being passed onto their customers.*

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<sup>1</sup> Shadow Habitats Regulations Assessment to inform the HRA of the Local Development Plan, DTA Ecology June 2016.

## ***'Short term' measures***

### **Installation of silt traps**

Phosphorous release from silt can/will occur under anoxic and anaerobic conditions. In rivers, such conditions tend not to exist in thin layers of mobile silt, but tend to develop if significant silt accumulations are formed in slow moving sections of the river.

Road run off, especially where roadsides are being eroded, and the decomposition of organic matter are often the more important sources of phosphate release in rivers.

The use of silt traps can reduce total phosphorous in a river, as a consequence of removing silt holding phosphorous that has the potential to become soluble phosphorus downstream. The size of the reduction may be dependent upon the nature of the silt captured, but the more organic material capture the better.

Silt traps are normally constructed with a 'wetland' i.e. a water holding pond, planted up, with the actual silt trap structure at the end letting water out. The removal rate therefore increases when the phosphorous taken up by the wetland is considered.

Work on the River Eye with the installation of silt traps has resulted in a total phosphorous removal rate in the region of 50%. This concurs with research work undertaken by Lancaster University where it has been determined that phosphorous removal efficiencies of well designed sediment traps are likewise around 50%.

A good level of monitoring and maintenance is required for silt traps, both to remove silt captured and also to harvest the wetland plants at the end of the growing season to prevent die back and return of phosphorous to the river. The amount of phosphorous removed by harvested wetland plants can be quantified as 1 gram of phosphate per 5 kilograms of plant material such as reeds. On a precautionary basis, it is estimated that the installation of silt traps will remove 25% of total phosphorous.

**DCS2 funds will deliver silt traps to remove 329g P/day based on flow and average phosphate levels at that location. Three potential locations have been identified by the Technical Group.**

## ***The need for long term measures in DCS2?***

Silt traps start to remove phosphorous as soon as they are installed and will therefore deliver phosphorous reductions immediately, allowing development to come forwards. The approach taken in DCS1 recognised that the ongoing management and maintenance requirements associated with silt traps meant that, they are not considered to be sustainable in terms of delivering benefits over the lifetime of the development. As such, in DCS1 silt traps were not considered to be sustainable in the longer term, and they were regarded as a 'short term' measure. A key component of DCS1, in recognition of this, was the requirement to ALSO deliver additional longer term sustainable phosphorous removal measures, which can effectively *replace* the reductions which will be achieved through use of the any 'short term' silt traps. These were to be delivered in parallel with the short term silt trap measures. DCS1 assumes that once the long term measures are sufficiently established to provide phosphate removal benefits to the river any 'short term' silt trap measures will no longer be required and it is envisaged that any such silt traps will then be removed.

The agreement reached by Severn Trent Water, the Environment Agency and Natural England in respect of the commitment to work together to progress the development of a suitable scheme for *pumping sewage effluent from Packington and Measham sewage works out of the Mease catchment* represents material information which is highly relevant to the drafting of DCS2. Approved schemes are subsequently assigned to a programme of works for delivery between 2020-2025. As such, in respect of the impacts associated with development which connects to Packington and Measham treatment works, measures to offset the impacts associated with increase phosphate loading to the River Mease SAC no longer need to be scrutinised in light of the 'lifetime of the development'. Instead measures need to be sufficient to offset effects that might arise pre-2025 (or earlier if a scheme is scheduled for delivery within the programme of works before 2025). Of the 1,826 dwelling assigned to DCS2, 1,288 connect to either the Packington or Measham sewage treatment works. It would not be appropriate for developer contributions to deliver 'long term' measures in respect of such development as the impacts to the SAC will only exert an effect in the short term (pre 2025).

The decision to pump flows to Packington and Measham out of catchment will not however provide any benefits in respect of flows to other works within the catchment. As such it is still appropriate for DCS2 to also deliver 'long term measures'. Long term measures are required in respect of the dwellings which are anticipated to connect to the other, smaller works within the catchment. It is not known at this time which works the 'windfall' allocations might connect to. On a precautionary basis therefore, it is assumed that all the windfall development connects to one of these smaller works. **On the basis of the figures provided in table F.2 in the DCS long term measures are therefore required in respect of the delivery of 538 dwellings which are associated with a contribution of 89g P/day.**

## ***'Long term' measures***

There are various measures which would result in longer term reductions in phosphate levels within the river. DCS1 is delivering all the necessary long term measures through the implementation of actions identified in the River Mease Restoration Plan; work along seven reaches is being funded.

With regards the measures for DCS2, **Two reaches identified by the Technical Group include projects that could take place in the very near future as necessary landowner liaison is already underway.** These schemes are therefore considered to be 'secure' and can be funded by developer contributions.

## River Restoration Plan Schemes

Restoring a river to a more natural state clearly has significant benefits for river biodiversity and water quality. A river's ability to function as a diverse ecosystem, including its ability to 'clean' itself through its management of silt and nutrients in a sustainable way is highly dependent on a naturally functioning river channel and connectivity to its vital floodplain.

The River Mease River Restoration Plan, prepared by Natural England and the Environment Agency, sets out a vision for the SAC that addresses past modifications; restoring and enhancing natural river function which in turn will improve water quality and the river ecosystem. The plan sets out a long list of specific restoration proposals, with estimated costs. The plan refers to the Developer Contributions Scheme as one of the potential funding mechanisms.

The floodplain has the potential to take up phosphorous from the river. A properly functioning floodplain, typically supporting woodland or wet grassland habitats, slows down surface water input and therefore reduces sediment and the phosphorous it carries being brought into the river via surface water, and also allows the river to undertake the natural process of sediment deposition onto the floodplain in flood situations. Furthermore, taking floodplain land out of agricultural production removes the input of phosphate rich fertilisers or organic matter from that land. Re-profiling of river banks contributes to the reconnection of the river to its floodplain by enabling flood water to spill into the floodplain where modified banks have prevented this in the past.

As explained above for silt traps, wetland creation, if properly managed provides plant material to take up phosphorous. Likewise, riparian planting will also take up nutrients. Weir removal brings back the river's ability to properly manage its silt, and therefore phosphorous within that silt, and prevents the retention of phosphorous laden silt behind weir structures.

Whilst all actions to restore a more natural river function will contribute to the river's ability to manage and reduce nutrients, in proposing projects to be funded by the developer contributions scheme those that have more direct and clear links to phosphorous removal have been identified. Projects within the plan are divided into reaches, and there are 22 reach projects where the action will result in a clear phosphorous reduction.

Whilst the scientific justification for the fact that phosphorous will be removed is considered to be robust, the scheme specific uncertainties mean that exact figures for the amount of phosphorous that will be removed by each project cannot be provided. However the Technical Group have agreed a precautionary approach to estimating the removal of phosphate that might be associated with each 'stretch'.

**Precautionary calculations of total phosphorous removal for river restoration projects:**

**a) P removal during flood conditions:**

Average total phosphorous concentration in the River Mease = 0.32mg/l

Average flow in the River Mease, based on 5 sample locations provided by EA = 0.5 m<sup>3</sup> per second

= 43200m<sup>3</sup> per day

=43200000 litres per day

X 0.32 to get the mg of P per day = 13824000 mg P per day = 13824 g P per day

25% of P removed = 3456 g P, but as this is only 10% of the time then

10% of 3456 = 345.6 g P per day, on average.

If we divide this by the 22 reaches where phosphorous removing projects are proposed, then

= 16 g P per day per reach

**b) Phosphorous removal through amelioration of surface water input**

From above calculation the river carries 13824 g P per day. Diffuse sources contribute an average of 11.7% of the overall load<sup>[1]</sup>.

The measures delivered through the Restoration Plan are carried out on land adjacent to the SAC itself. The phosphorous load within the SAC associated with surface water run-off will be derived from two sources: i) the tributaries joining the river along the length of the SAC and ii) directly from land adjacent to the SAC itself. The Restoration Plan measures will only reduce surface water phosphorous load from land adjacent to the SAC itself (source ii). On a precautionary basis it is estimated that the delivery of the Restoration Plan measures along the length of the SAC itself will reduce the diffuse phosphorous load by 20%.

Diffuse P load = 11.7% of 13824 = 1520 g P per day

20% of diffuse load = 304 g P per day

If we divide this by the 22 reaches where phosphorous removal projects are proposed, then

= 14 g P per day per reach

**Overall phosphorous removal**

Combining the figures (a) and (b) above, the overall phosphorous removal from the delivery of the River Restoration Plan measures is:

**16 + 14 = 30 g P per day per reach**

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<sup>[1]</sup> Source: Environment Agency Review of Consents, River Mease SAC Stage 4 Site Action Plan

## Restoration of the disused coal pits

The disused coal pits off Sweptstone Road to the south east of Measham are within a stretch of the river not included in the River Restoration Plan. The site is located between stretches GIL005 and GIL006 and is currently the subject of detailed restoration proposals. These proposals relate to the restoration of the disused pits themselves and do not include works along the riverbanks intended to *restore* the healthy functioning of river. The landowner (UK Coal) has however agreed to DCS funding being used to include additional appropriate restoration measures along the river to be delivered alongside the restoration of the disused pits. This scheme delivers equivalent benefits to those identified for a typical stretch within the river restoration plan and is assumed to deliver a reduction of **30 g P per day**.

## ***COSTINGS***

Measures have been identified in respect of offsetting the impacts associated with 329g phosphate. In view of the agreement to pump flows for Packington and Measham out of catchment 'short term' measures are required in respect of the full 329g phosphate. Long term measures are required to offset the impacts associated with flow directed to other, smaller works within the catchment in respect of 89g phosphate.

**Overall costs for the measures to be delivered within the first phase of the second development window to remove at least 329g/day in the short and 89g/day in the long term are detailed in Table 1 below.**

**Table 1: Measures to remove at least 329g P / day in the short term and 89g/day in the long term**

<b>P reduction and Monitoring Actions</b>					
<b>Action</b>	<b>Estimated P reduction (mg P/day)</b>	<b>Implementation &amp; maintenance Costs (£)</b>	<b>Monitoring approach</b>	<b>Monitoring cost (£)</b>	<b>Overall Costs (£)</b>
<b>SHORT TERM MEASURES</b>					
<p><b>Two silt traps projects at locations identified by Technical Group</b></p> <p>Costings based per trap</p> <ul style="list-style-type: none"> <li>a) Land drainage specialist to survey sites, design and oversee works</li> <li>b) Ground works</li> <li>c) Trap checks and maintenance (e.g. clean outs)</li> <li>d) Potential removal at 2031?</li> </ul>	<p>228g from location A</p> <p>100g from location B</p>	<p><u>Per trap costs</u></p> <ul style="list-style-type: none"> <li>a) £10k</li> <li>b) £15k</li> <li>c) £20</li> <li>d) £5k</li> </ul>	<p>Monitoring of water quality entering and exiting the trap, and potentially also take sediment samples entering and exiting. This will verify extent of P reduction and inform future silt trap projects</p>	<p><u>Per trap costs</u></p> <p>£30k (up to 2031)</p>	<p>£80k per trap (up to 2031)</p> <p>traps for the DCS2 development window</p> <p><b>TOTAL= £160k</b></p>

**LONG TERM MEASURES**

<p><b>River restoration projects</b> Specific in river projects (at stretches MEA001 and GIL004) to increase natural cleaning capacity of the river, in accordance with the river Restoration Plan. see river Restoration Plan for details</p>	60g	£22K min to £33k max for each reach	tbc		Assume maximum cost of £66k for both reaches and pro rata 66K monitoring <b>TOTAL = 132K</b>
<p><b>Long term measure – Restoration of river stretch alongside disused coal pits</b> Specific in river projects to increase natural cleaning capacity of the river, equivalent to those delivered through the river Restoration Plan.</p>	30g	£20k min -30k max	tbc	100K To cover all projects	Assume maximum cost of £30k and pro rata 34K monitoring <b>TOTAL = 64K</b>
<p><b>Consultancy fees for design and oversight of the necessary work</b></p>	Implements measures above	£80K	n/a	n/a	<b>£80K</b>

Management Actions					
<b>Project officer</b> - staff cost (to cover the Plan period to 2031)	Implements measures above	£25k per year (to 2025) then 15K per year to 2031	Project Officer reports to the Programme Board	none	£25k/annum for 10 years = £250K Plus 15K per annum for 5 years = £75K <b>TOTAL = 325K</b>
<b>Project officer's implementation budget</b> - 3 x main campaigns over DCS2 period (one every five years)		20K per campaign	Project officer to provide feedback and a measure of effectiveness of campaigns as part of role, so no additional costs	none	3 campaigns at 20K each = <b>£60K</b>
Overall Costs					
<b>Delivery of All Measures</b>	<b>329 g/day (short term) and 89 g/day (long term)</b>				<b>£821K</b>