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**Environment
Agency**

RIVER AVON SPECIAL AREA OF CONSERVATION NUTRIENT MANAGEMENT PLAN FOR PHOSPHORUS

FINAL VERSION

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Prepared by

DAVID TYLDESLEY AND ASSOCIATES

Dr Caroline Chapman (MCIEEM)
Sherwood House
144 Annesley Road
Hucknall
Nottingham
NG15 7DD

caroline@dt-a.co.uk



**David Tyldesley
& Associates**

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*Author

Dr Caroline Chapman (David Tyldesley & Associates).

*With Contributions from Steering Group Members

Orlando Venn, Doug Kite and Dianne Matthews (on behalf of Natural England)

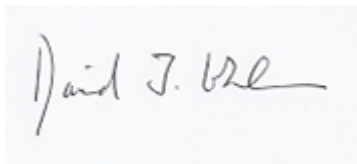
Giles Bryan (on behalf of the Environment Agency)

Jon Taylor (on behalf of Wiltshire Council)

Signatories



Nick Gupta
Wessex Area Manager
Environment Agency



David Whelon
Area 11 Manager
Natural England



Jon Taylor
Manager - Landscape and Design Team
Wiltshire

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River Avon Nutrient Management Plan for Phosphorus

Executive Summary

This Nutrient Management Plan is a measure to help to reduce and manage phosphorus levels in the River Avon Special Area of Conservation (SAC), in accordance with international obligations, principally in the EU Habitats, Wild Birds and Water Framework Directives. It will also help to facilitate development and change in the catchment of the river by ensuring that they do not add to the phosphorus load in the river in a way that might conflict with the conservation objectives for the SAC.

The Nutrient Management Plan has two primary objectives:

- 1. To achieve compliance with the requirements of the Habitats Directive; in particular:**
 - a. To establish the necessary conservation measures and implement appropriate steps to avoid deterioration within the River Avon SAC which might result from nutrient loading.**
 - b. To achieve the ambition reduction targets in the short term and the conservation objectives targets for phosphorus in the longer term to support the achievement of Favourable Conservation Status.**
 - c. To facilitate development within the catchment in a manner which is compliant with the requirements of the Habitats Regulations, whilst securing that existing consented activities do not adversely affect the integrity of the River Avon SAC.**
- 2. To achieve compliance with the Water Framework Directive through delivery of the 'protected area' standards.**

This NMP is concerned primarily with managing levels of phosphorus (a chemical within the river which is a nutrient causing a form of pollution and posing the most significant threat to the site's qualifying features). The effects of nitrogen and other pollutants are addressed in the Diffuse Water Pollution Plan¹ for the Avon catchment.

The primary sources of phosphorus into the river are from land management and agricultural activities (diffuse sources) and the treatment of sewage related to development (point sources). In considering how the objectives set out above can be met, this NMP considers action on all sources of phosphorus into the river.

The supporting technical report to this NMP (Annex 4) provides more detailed information concerning an emerging evidence base for a relatively high natural presence of phosphorus in the Avon catchment contained within the Upper Greensand underlying geology. It is increasingly likely that it will be necessary in the future to consider the appropriateness of current water quality targets for phosphorus and whether specific allowance should be made to deviate from them for certain stretches within the River Avon. This may result in the conservation objective targets being increased or decreased which, in turn, will alter the scale of phosphorus reduction required.

¹ Due for publication in July 2015

In light of this, the NMP objectives will initially seek to achieve 'ambition phosphorus reduction targets'. The NMP ambition reduction targets will be reviewed as soon as reasonably practicable in light of any improved understanding of baseline phosphorus loads, and within 5 years at the latest. The longer term objectives of this NMP are to achieve the conservation objectives targets for the SAC, which are also the 'protected area' standards necessary for compliance with the Water Framework Directive.

This NMP is comprised of this 'front-end' document and four supporting annexes. This front end document is aimed primarily at those involved with implementing the plan and key decision makers affected by it; it sets out 'why' the NMP is required and 'how' it will inform and influence decision making. This front-end document therefore provides important contextual information regarding the legislative background upon which the NMP has been developed and against which it might be scrutinised. It introduces the *types* of measures (but not limited to) which will be implemented and identifies how these measures will be prioritised but doesn't get into the measure specific detail concerning implementation and delivery.

The four annexes provide the important supplementary information regarding implementation and ongoing monitoring, together with important supporting technical analyses. Wider stakeholders affected by the NMP who want to understand more about what it might mean for them could find the detail they are looking for within these appendices.

The recommendations of the NMP are set out below. They are listed against key interest groups, with signposts to key sections of the plan (and its appendices) where appropriate.

Overarching Action affecting all stakeholders

1. Stakeholders across the Avon must work together to deliver ambition phosphorus reduction targets by 2021. These are challenging target water quality reductions which take into consideration current water quality and baseline (modelled background) water quality (refer Parts C and H, Annex 1 *Implementation Plan* and Annex 4 *Technical Report*).

Recommendations affecting farmers and land owners

2. In light of the reductions already delivered through recent improvements to point sources, efforts to achieve ambition targets should initially be focussed on the implementation of measures to reduce diffuse pollution across the whole of the Hampshire Avon; further action on point sources will be considered during the next round of the periodic review of the water industry in 2019 (PR19) in light of what can realistically be achieved through diffuse source reductions (refer Part C)
3. Work undertaken by CSF, in delivering the Countryside Stewardship scheme and work by other stakeholders, and projects for new funding should be co-ordinated and targeted according to diffuse pollution risk to deliver and maximise benefits to the water environment across the catchment. (refer C.2, Annex 1 *Implementation Plan* and Annex 4 *Technical Report*)

Recommendations affecting housing and development

4. Sewage Treatment Works should be allowed to accept further connections without the need for an appropriate assessment, where permit headroom remains and where further development will not compromise deliverability of this NMP (refer D.5).

5. Where the allocation of permit headroom is considered to compromise the deliverability of this NMP, phosphorus removal or offsetting will be required (refer D.6). For purpose of implementation, and to provide clarity to decision makers, it is assumed by the Steering Group that development connecting to mains drainage will not compromise the deliverability of the plan until monitoring or modelling of impact on river water quality results (refer Annex 3 *Evidence and Monitoring Plan*) suggest otherwise. Once monitoring / modelling results become available this situation will be kept under review, and decision makers should be aware that developer contributions *might* be required during the timeframe of the NMP in respect of development connecting to 'high risk' STWs listed in table D.6, if the Steering Group decide, on a risk based professional judgement decision and the results of monitoring / modelling, that further growth could compromise the deliverability of the NMP. Further detail regarding any such developer contributions will be provided within the Annex 2 *Supplementary Planning Document*.
6. Where a STW reaches its full permit headroom, or otherwise requires any form of variation, any requirement for a new permit or change in permit condition should be re-assessed in accordance with current permitting regulations and practice and will be subject to a full Habitats Regulations Assessment in light of best available scientific understanding of the catchment (refer D.7).
7. The screening criteria for discharges to groundwater and surface water should be locally refined in the light of evidence from the Avon catchment. Pending this refinement non-mains point source discharges which are screened out on the basis of the criteria in D.7.2 will normally be considered as 'insignificant', appropriate assessment will not be required for such development (refer D.7.2)
8. Non-mains point source discharges which trigger the screening criteria for significance, will require phosphorus removal or offsetting unless a risk assessment can identify the discharge will not result in an adverse effect on the integrity of the River Avon SAC, or the discharge is otherwise allowable under the 'interim approach' (refer D.7.3).
9. Where off-setting is required, the level of offsetting shall be determined by the P load (kg) that will enter surface waters from new development. Groundwater discharges to chalk aquifer may require a lower level of offsetting where the attenuation of phosphorus loads can be demonstrated. Offsetting for development which will compromise deliverability of this NMP will be provided through the use of developer contributions. Developer contributions must be targeted to measures which will directly offset the effects of new development and should not be used to deliver wider NMP obligations (refer H.3 and Annex 2 *Supplementary Planning Document*).

Recommendations affecting fish farms and cress farms

10. Fish Farms and Cress Farms should introduce all reasonable measures to improve nutrient efficiency and prevent pollution of downstream waters. This may include adjusting food types for fish to low N & P sources and, in water cress farms, providing more control in flow and quality when fertilizing the crop and potentially re-circulation of flows to ensure uptake of nutrients (refer C.1).

Recommendations affecting implementation and delivery

11. A full analysis of costs should be undertaken to inform decisions regarding the selection and implementation of measures, and to seek to ensure that those taken forward are the

'least onerous' to those affected (refer Part G and Annex 3 *Evidence and Monitoring Plan*).

12. Surface and groundwater quality across the Avon should continue to be sampled and analysed to refine our understanding of the spatial and temporal influence of Upper Greensand and Chalk mineralogy on surface and groundwater quality and in particular phosphorus concentrations (refer H4 and Annex 3 *Evidence and Monitoring Plan*).
13. If better local characterisation of natural / background concentrations is available for Upper Greensand Fed catchments, revised conservation objective standards for the Hampshire Avon should be developed, taking into account the ecology that would be expected in a naturally phosphorus rich environment such as the upper reaches of the Hampshire Avon. New evidence should trigger a review of current conservation objectives targets (refer H4 and Annex 3 *Evidence and Monitoring Plan*).
14. The framework of surveillance and investigation monitoring should be refined, incorporating that from research programmes, to improve knowledge on phosphorus concentrations and loads across the river system, to inform the targeting of measures on point and diffuse sources and to discern changes that arise with delivery of these measures (refer H4 and Annex 3 *Evidence and Monitoring Plan*).
15. The baseline improvement in water quality should be monitored against SIMCAT 2010/11 water quality and flow, and with reference to WFD reporting (refer H4 and Annex 3 *Evidence and Monitoring Plan*).
16. This NMP should be updated in line with WFD planning cycle and in light of new science, growth projections, water quality targets and information on natural / background concentrations (refer H4 and Annex 3 *Evidence and Monitoring Plan*).

River Avon Nutrient Management Plan for Phosphorus

A Introduction

This Nutrient Management Plan (NMP) is a measure to help to reduce and manage phosphorus levels in the River Avon Special Area of Conservation (SAC), in accordance with international obligations, principally in the EU Habitats, Wild Birds and Water Framework Directives. The effects of nitrogen and other pollutants are addressed in the Diffuse Water Pollution Plan² for the Avon catchment. This NMP will also help to facilitate development and change in the catchment of the river by ensuring that they do not add to the phosphorus load in the river in a way that might conflict with the conservation objectives for the SAC.

This NMP is comprised of this 'front-end' document and four supporting appendices. This front end document is aimed primarily at those involved with implementing the plan and key decision makers affected by it; it sets out 'why' the NMP is required and 'how' it will inform and influence decision making and is comprised of eight 'parts' A-G as set out below:

- information regarding the underlying legal provisions which require its preparation and with which it must comply (Part A);
- important contextual background including consideration of the review of consents work already undertaken by the Environment Agency (Part B);
- an overview of what the NMP can achieve and how it will achieve it (Part C);
- how the NMP will inform and influence decision making processes under the Habitats Regulations (Part D);
- how the NMP will inform and influence decision making processes for SSSIs (Part E);
- key roles and responsibilities (Part F);
- an introduction to cost effectiveness considerations (Part G);
- an outline of implementation and delivery considerations (Part H)

This front-end document therefore provides important contextual information regarding the legislative background upon which the NMP has been developed and against which it might be scrutinised. It introduces the *types* of measures (but not limited to) which will be implemented and identifies how these measures will be prioritised but doesn't get into the measure specific detail concerning delivery.

Four annexes provide the important supplementary information regarding implementation and ongoing monitoring, together with important supporting technical analyses. Wider stakeholders affected by the NMP who want to understand more about what it could mean for them might find the detail they are looking for within these appendices.

The annexes will be produced and agreed by the Steering Group with lead organisations and timescales for delivery as follows:

Annex	What it will cover?	Who will lead?	By when?
Annex 1 'Implementation Plan'	The detail regarding the delivery of measures including timing, location and responsibility for delivery.	Environment Agency	Consultation draft by end 2015

² Due for publication in July 2015

Annex 2 'Supplementary Planning Document'	The need for developer contributions and what form they might take.	Wiltshire Council	March 2016
Annex 3 'Evidence and Monitoring Plan'	Work relating to evidence requirements to underpin the selection of measures and monitoring to assess the implementation of such measures and the delivery of phosphorus reductions within the river.	Natural England	Consultation draft by end 2015
Annex 4 'Technical Report'	Detailed technical report setting out the modelling and monitoring data which underpin the plan and the measures which it will deliver	Environment Agency	Complete

Table A.1: The NMP Annexes

This introductory section (Part A) now looks at:

- Why the river is important;
- The need for the Nutrient Management Plan; and
- The legal provisions which require its preparation and with which it must comply;

A.1 The River Avon – why is your river important?

A.1.1 Ecology

The River Avon has been recognised as a site of European importance for nature conservation, and forms part of a European network of protected sites commonly referred to as Natura 2000. The Natura 2000 Network is composed of 26,400 sites, covering almost 18% of the EU territory, and aims to protect habitats and species of European interest that are rare or threatened. However it is not a system of strict nature reserves where all human activities are excluded. Its aim is to ensure that, within these Natura 2000 sites, human activities are undertaken in a way that still allows the site's 'conservation objectives' (see further B.4.1) to be achieved.

The **River Avon Special Area of Conservation (SAC)** is designated under the Habitats Directive³; lower reaches of the SAC also lie within the **Avon Valley Special Protection Area (SPA)** which is classified as a separate site under the Birds Directive⁴. They are both 'European Sites' or 'Natura 2000' sites and are protected by law in England under the Habitats Regulations (see further A3.1 below). In addition the **Avon Valley Ramsar site** includes the River Avon downstream of Fordingbridge; it is Government policy to afford a Ramsar site the same degree of protection as a European site under the Habitats Regulations⁵ and to treat a Ramsar site as a 'protected area' under the Water Framework Directive⁶.

The qualifying features for which the River Avon SAC is designated are as follows:

³ Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora.

⁴ Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).

⁵ Para 118 of the National Planning Policy Framework, March 2012

⁶ Para 10.31 of Defra River basin planning guidance, July 2014.

- Water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (rivers with floating vegetation often dominated by water-crowfoot);
- Desmoulin's whorl snail *Vertigo moulinsiana*;
- Sea lamprey *Petromyzon marinus*;
- Brook lamprey *Lampetra planeri*;
- Atlantic salmon *Salmo salar*;
- Bullhead *Cottus gobio*.

The qualifying features for which the Avon Valley SPA is classified are as follows.

- Bewick's swan (Non breeding) *Cygnus columbianus bewickii*;
- Gadwall (Non-breeding) *Anas strepera*.

The Avon Valley is listed as a Ramsar site against the following criteria:

- Ramsar criterion 1: The site shows a greater range of habitats than any other chalk river in Britain, including fen, mire, lowland wet grassland and small areas of woodland.
- Ramsar criterion 2: The site supports a diverse assemblage of wetland flora and fauna including several nationally-rare species.
- Ramsar criterion 6 – species/populations occurring at levels of international importance.
 - Qualifying Species/populations (as identified at designation) - Species with peak counts in winter:
 - Gadwall , *Anas strepera strepera*, NW Europe 537 individuals, representing an average of 3.1% of the GB population (5 year peak mean 1998/9-2002/3)
 - Species/populations identified subsequent to designation for possible future consideration under criterion 6 - Species with peak counts in winter:
 - Northern pintail , *Anas acuta*, NW Europe 715 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)
 - Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe 1142 individuals, representing an average of 3.2% of the population (5 year peak mean 1998/9-2002/3)

A.1.2 Public access and well being

Whilst the protection of the river for nature conservation is a legal obligation, there are other reasons why it is important to ensure that the River Avon is maintained as a healthy functioning ecosystem. There is a growing understanding of the importance of access to natural space to both physical and mental well being. The Natural England definition of natural space within the context of their Access to Nature Greenspace Standards⁷ is '*places where human control and activities are not intense so that a feeling of naturalness is allowed to dominate*'. The implementation of measures identified by the NMP will help ensure the ecological functioning of the river such that it can continue to deliver wider benefits through the public access associated with leisure and recreational activities.

A.1.3 Economic benefits

In 2013 the EU published a report entitled '*The Economic benefits of the Natura 2000 Network*'. According to this study, in addition to preserving biodiversity for future generations the Natura 2000 network provides a wide range of other important benefits to both society and the economy via the delivery of ecosystem services. The study estimates that the

⁷ 'Nature nearby – Accessible Natural Greenspace Guidance (NE 265), Natural England March 2010. Weblink - <http://publications.naturalengland.org.uk/publication/40004>

benefits that flow from Natura 2000 are of the order of €200-€300 billion/year. Cost benefit comparisons at case study sites demonstrated that net benefits were far higher than the costs associated with management of sites. By way of example the protection of all 300 Natura 2000 sites in Scotland was estimated to provide overall national welfare benefits seven times greater than the national costs, representing good value for money.

Of relevance to the River Avon SAC, water purification and provision are important ecosystem services that are provided by natural ecosystems. The report focused on four European cities and estimated that the average per capita benefits were between €14 and €45 per year for both water provision and purification. Flow at the bottom of the catchment provides drinking water for much of Bournemouth and Poole.

Furthermore the recreational activities which the river supports, such as the trout and salmon fisheries bring economic benefits which are dependent upon a healthy functioning ecosystem. The wider Avon catchment is also significant in terms of food production.

A.2 The need for the Nutrient Management Plan (NMP)

This Nutrient Management Plan (NMP) is first and foremost a management measure. Whilst the delivery of a management measure of this kind can be linked to wider obligations under both the Habitats and Water Framework Directives, the first clear *obligation* to produce this NMP came from the 'Review of Consents' (RoC) carried out by the Environment Agency (see section B3 below) under the provisions of the Habitats Regulations (see A3.1 below).

Impacts from non-permitted activities⁸ were outside the scope of this review which recognised that, in the case of the River Avon SAC, further action would be necessary to address outstanding water quality issues and ensure that permitted activities⁹ do not have adverse effects on the SAC. This NMP is concerned primarily with managing levels of phosphorus (a chemical within the river which is a nutrient causing a form of pollution and posing the most significant threat to the site's qualifying features). The effects of nitrogen and other pollutants are addressed in the Diffuse Water Pollution Plan¹⁰ for the Avon catchment.

This Nutrient Management Plan has two primary objectives:

- 1. To achieve compliance with the requirements of the Habitats Directive; in particular:**
 - a. To establish the necessary conservation measures and implement appropriate steps to avoid deterioration within the River Avon SAC which might result from nutrient loading.**
 - b. To achieve the ambition reduction targets in the short term and the conservation objectives targets for phosphorus in the longer term to support the achievement of Favourable Conservation Status.**
 - c. To facilitate development within the catchment in a manner which is compliant with the requirements of the Habitats Regulations, whilst securing that existing consented activities do not adversely affect the integrity of the River Avon SAC.**
- 2. To achieve compliance with the Water Framework Directive through delivery of the 'protected area' standards.**

⁸ In this context a 'non-permitted activity' is one which is not currently subject to any form of regulation

⁹ In this context a 'permitted activity' is one which is subject to some form of authorisation / regulation

¹⁰ Due for publication in July 2015

A.3.1 The River Avon as a Special Area of Conservation (SAC) and a Special Protection Area (SPA) – The Habitats and Birds Directive & the Conservation of Habitats and Species Regulations 2010

The Conservation of Habitats and Species Regulations 2010 (which we now refer to as the Habitats Regulations) transpose the requirements of both the Habitats and Birds Directives into English law. The SAC designation and SPA classification place important duties and obligations upon decision makers. Those which are of most relevance to the development of the NMP are summarised briefly below.

- Article 2(2) of the Habitats Directive sets the high level objectives of the Directive and clarifies that:

‘Measures taken pursuant to this Directive shall be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest.’

The NMP’s objectives should tie in to the overarching aim to maintain or restore the River Avon SAC and contribute to the qualifying features achieving favourable conservation status.

- Article 6(1) of the Habitats Directive then states:

‘For special areas of conservation, Member States shall establish the necessary conservation measures involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans, and appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex 1 and the species in Annex II present on the sites’

EC guidance¹¹ states that *‘the implementation of Article 6(1) is not optional: the necessary conservation measures must be established for all SACs.’* Article 6(1) is therefore a general duty upon the UK as a Member State to implement necessary measures for all SACs. With reference specifically to a ‘management plan’ such as this one, whilst the Habitats Regulations refer to management *schemes* for European Marine Sites¹², there is no requirement within either the Directive or the Habitats Regulations to implement a ‘management plan’ for all SACs, simply an acknowledgement that the ‘necessary conservation measures’ might involve a management plan *‘if need be’*¹³.

In the case of the River Avon SAC, the Environment Agency and Natural England consider that the development of a NMP is both necessary and appropriate in order to establish the necessary conservation measures to contribute towards the achievement of favourable conservation status. Its development is therefore closely linked to obligations under Article 6(1).

- Article 6(2) continues:

‘Member States shall take appropriate steps to avoid, in the special areas of conservation, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of this Directive’

¹¹ Commission Note on *Establishing conservation measures for Natura 2000 sites*, September 2013.

¹² Refer Regulation 36

¹³ Refer Case C-508/04 *European Commission v Austria*

Article 6(2) is a direct obligation on Member States to take ‘appropriate steps’ to avoid deterioration. The Habitats Regulations do not set out supplementary provisions relating specifically to the ‘avoidance of deterioration’, but regulations 63-64 (the requirements to review the effects of outstanding consents) recognise that authorised/regulated activities which were given permission prior to the designation of the site, *might have ongoing negative residual effects* which *could* lead to deterioration of the site. Such *existing* consents are therefore subject to assessment, with a view to ensuring that they do not or will not have an adverse effect on the integrity of that site, and hence avoiding the deterioration of the site which may have otherwise arisen from existing activities that are regulated.

The NMP is concerned with avoiding deterioration, but its influence extends beyond effects from regulated activities to also include effects from diffuse and unregulated sources of pollution which were beyond the scope of the review of consents. As such the NMP is also linked to the Article 6(2) obligation to ‘avoid deterioration’.

- Articles 6(3) and (4) are not set out in full here, but they relate to *new* proposals and set out an assessment procedure, together with certain derogations, against which such new proposals need to be considered.

Regulations 61, 62, 65, 66, 101 and 102 of the Habitats Regulations provide specific supplementary provisions with regards to how such an assessment, commonly referred to as a Habitats Regulations Assessment (HRA), should be undertaken.

With regard to the development of the NMP, whilst it is a ‘plan’ for the purpose of Regulation 61, the NMP is entirely concerned with addressing phosphorus levels to enable the conservation objectives to be achieved. It is therefore directly connected with and necessary to the management of the River Avon SAC. As such, even though it is a ‘plan’, the NMP is exempt from the assessment provisions of the Habitats Regulations¹⁴.

Whilst the NMP itself is exempt from the Habitats Regulations Assessment process, it is a ‘plan’ which is relevant to both the River Avon SAC and the Avon Valley SPA; its implementation will facilitate development because it should be taken into account as part of any ‘in combination’ assessment that may need to be undertaken for a new ‘plan’ or ‘project’ under Article 6(3). The measures to be delivered through the NMP will influence the ‘*characteristics and specific environmental conditions of the site*’ against which assessments of plans and projects should be made¹⁵.

The development of the NMP is necessary to facilitate development within the catchment and should both inform and be influenced by the duties placed upon competent authorities in assessing new plans and projects under regulations 61 (plans and projects) and 102 (specific plans).

- In respect of the Avon Valley SPA, Article 7 of the Habitats Directive applies the obligations arising from Article 6(2), (3) and (4) to SPAs. Furthermore, Article 2 of the Birds Directive sets out a general duty that:

‘Member States shall take the requisite measures to maintain the population of the species referred to in Article 1 at a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements, or to adapt the population of these species to that level’.

¹⁴ Refer Regulation 61(1)b

¹⁵ Refer Case C 127/02 para 48 Waddenzee

Regulation 9A(1)-(3) and (8) of the Habitats Regulations place various obligations upon Natural England, the Environment Agency and local and other competent authorities to contribute to the achievements of specific objectives, set out in detail in the Regulations, relating to the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds and to avoid pollution or deterioration of the habitats of wild birds, whether in a SPA or not.

The development of the NMP is therefore also linked to the duties placed upon public bodies including Natural England, the Environment Agency and Local Planning Authorities to contribute to the achievement of regulation 9A objectives.

A.3.2 The River Avon as a SSSI – Wildlife and Countryside Act

This NMP is primarily concerned with the River Avon as a Special Area of Conservation (SAC), but there is a degree of overlap between the SAC boundary and the boundaries of Sites of Special Scientific Interest (SSSIs) notified by Natural England under the Wildlife and Countryside Act 1981 (as extensively amended). These mostly pre-dated the SAC designation. Where a SSSI lies wholly or partially within the boundary of a European site it is often referred to as a 'component SSSI' of the SAC (or SPA as may be appropriate). The River Avon System SSSI is by far the largest component SSSI of the River Avon SAC, but other component SSSIs of this SAC are the River Till SSSI, Jones's Mill SSSI and areas of Lower Woodford Water Meadows SSSI and Porton Meadows SSSI.

SSSIs are afforded separate protection under the Wildlife and Countryside Act 1981. Public bodies (referred to in the Act as 'section 28(G) authorities') have a duty to *'take reasonable steps, consistent with the proper exercise of the authority's functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is a SSSI'*. Furthermore, statutory undertakers (who are also 'section 28G authorities') have specific duties in relation to carrying out operations which are 'likely to damage' the features of a SSSI.

The development of the NMP is therefore also linked to the duties to take reasonable steps to further conserve and enhance the features of the component SSSIs of the SAC.

A.3.3 The River Avon as a water body – the Water Framework Directive

As a 'water body' the River Avon is also covered by the provisions of the Water Framework Directive. The Water Framework Directive requires member states to put in place River Basin Management Plans (RBMPs) which apply at a 'river basin district' level. The River Avon falls within the South West River Basin Management Plan.

In July 2014 Defra published its 'River Basin Planning Guidance' which states that *'The river basin planning process involves setting environmental objectives for all groundwater and surface waters (including estuaries and coastal waters) within the river basin district, and devising a programme of measures to meet those objectives'* and furthermore that *'An RBMP should be a strategic plan which gives everyone concerned with the river basin district a measure of certainty about the future of water management in that district. It will include objectives for each water body and a summary of the programme of measures necessary to reach those objectives'*.

Article 4 of the Water Framework Directive establishes several types of objective for the water environment, all of which must be met unless a specified exemption is applicable. For surface waters the objectives are set in relation to:

- The prevention of deterioration;
- The achievement of a particular class status; and
- Protected area objectives (where relevant).

The objectives of the Water Framework Directive are generally for all water bodies to achieve what is referred to as 'good ecological status'. As a special area of conservation however, the 'protected area objectives' are relevant to the River Avon and the Water Framework Directive¹⁶ and supporting Defra guidance is clear that where the targets in respect of achieving favourable conservation status under the Habitats Directive (those set out in the European site¹⁷ conservation objectives) are more stringent than those required to meet good ecological status under the Water Framework Directive *'the Agencies should apply the most stringent standard to the water body or part of water body that is a protected area'*. **The transposing regulations for the Water Framework Directive place a requirement upon 'public bodies' such that 'when exercising any functions affecting a river basin district, public bodies must have regard to the River Basin Management Plan and to any supplementary plans'**. The scope of the South West RBMP goes beyond the Avon and includes other river catchments within the district but, in delivering the conservation objectives targets for the River Avon SAC this NMP will 'have regard' to the RBMP and will contribute to the delivery of the 'protected area objectives' as set out within the South West RBMP.

Note to reader:

The terms 'status' and 'deterioration' are used in both the Water Framework Directive and the Habitats Directive, but it is important to recognise that they carry a different meaning in each case. In the context of the Water Framework Directive 'status' refers to an ecological *class* or range within which a water body can be categorised (i.e. good ecological status). Deterioration in status refers to a water body moving from one class to a lower one (i.e. from *good* ecological status to *moderate* ecological status). As a result a degree of water quality decline is permissible so long as that decline would not shift the water body into a different ecological class. It is therefore the case that the 'prevention of deterioration' obligation actually refers to ensuring that water bodies do not move from one class to another rather than ensuring that there is no actual decline in water quality.

Where the Habitats Directive is concerned, status is used in the context of 'conservation status' (refer B.4.2), referring to the sum of influences acting upon a habitat (or a species) that may affect its long term distribution, structure and function (or abundance of its populations). The overall objective of the Habitats Directive is to maintain or restore habitats and species at 'favourable conservation status' which is a state where the habitat or species is considered to be viable, stable and likely to exist for the foreseeable future. It is therefore the case that the 'avoidance of deterioration' duty of Article 6(2) refers to an absolute avoidance of decline, where such decline would compromise the ability of the Directive to achieve favourable conservation status for the habitats or species concerned.

In essence therefore, whilst both Directives allow for a degree of environmental change, the acceptable level of change may differ. What might be regarded as 'deterioration' under the Habitats Directive might not represent 'deterioration' under the Water Framework Directive.

¹⁶ Refer Article 4(2) by virtue of Article 11.3a and Annex VI

¹⁷ As previously defined in A.1.1

B Background to the River Avon Nutrient Management Plan

This section:

- looks at other Nutrient Management Plans
- discusses the challenge of defining phosphorus targets in the River Avon
- explains the ‘review of consents’ process undertaken by the Environment Agency and how it has influenced this plan
- considers other, related work undertaken to date

B.1 Nutrient Management Plans beyond the River Avon

The River Avon NMP is not the only NMP in England. Such plans are a strategic management measure which are best explained by reference to a key Environment Agency/Natural England paper entitled ‘*Advising on Growth and Water Quality in Natura 2000 sites and SSSIs: A Joint Environment Agency / Natural England Approach*’ (referred to as ‘The Joint EA/NE Paper’). This paper describes the principles on which both the Environment Agency and Natural England will provide advice to local authorities and developers and states that ‘*The aim of these principles is to maintain or achieve the level of protection required for Natura 2000 sites in light of growth, and to achieve water quality targets in the longer term*’. This paper refers to sites such as the River Avon as ‘sites with outstanding water quality issues post-Review of Consents’ (see B3 below) and states that a ‘management plan’ should be developed for these sites.

To date, ‘management plans’ as identified in this joint paper have been developed for the River Mease SAC, the River Wye SAC, and Poole Harbour SPA. In addition to this NMP for the River Avon, a ‘management plan’ is also under development for the River Clun SAC.

B.2 The challenge of defining phosphorus targets in the River Avon

Water quality targets for phosphorus in designated rivers are defined in a consistent manner across the UK through an approach set out in ‘*Common Standards Monitoring Guidance for Rivers*’¹⁸. This document states at section 4 that:

‘Where generic targets are provided... they should be applied at a site level unless:

- *There is a specific allowance made for deviating from generic values in the case of an individual attribute;*
- *Compliance with a generic target in an individual assessment unit (or part thereof) can be demonstrated to be technically infeasible, even in the long term, such that it is not a suitable management objective*

In the case of the latter, a target value should be set to approach the generic target as closely as possible.’

The current phosphorus targets for the River Avon, are set out in a document accompanying the formal conservation objectives referred to as ‘Supplementary Advice’¹⁹ (see B.4.1). They are derived from applying this Common Standards Monitoring guidance. The supporting technical report to this NMP (Annex 4) provides more detailed information concerning an

¹⁸ Common Standards Monitoring Guidance for Rivers, January 2014, JNCC. ISSN 1743-8160 (online)

¹⁹ European Site Conservation Objectives Supplementary Advice – River Avon Special Area of Conservation (SAC). Natural England *Currently Unpublished*.

emerging evidence base for a relatively high natural presence of phosphorus in the Avon catchment contained within the Upper Greensand underlying geology. This evidence is the subject of intense scrutiny by relevant specialists within both the Environment Agency and Natural England. It is likely that for certain stretches of the river Avon it will be necessary in the future to consider the appropriateness of current water quality targets for phosphorus in addressing adverse effects on characteristic biodiversity and whether alternative targets including those for phosphorus are required to address nutrient pressure.

The potential for the current targets to be amended is specifically referred to in the Conservation Objectives 'Supplementary Advice' issued by Natural England (refer B.4.1 below)

The NMP objectives over the next River Basin Management Plan (RBMP) period (until 2021) will seek to achieve 'interim progress goals' toward achievement of the SAC's conservation objectives. These are target phosphorus reductions along waterbodies across the catchment which take account of background water quality, observed current water quality²⁰ and the improvements in water quality needed. They are likely to be challenging, but achievable by 2021. The interim progress goals will be reviewed as soon as reasonably practicable in light of the consultation response to the draft updated RBMP (RBMP2), any improved understanding of phosphorus concentrations in the river, and will be included in the final RBMP2 in late 2015 through provisions for Protected Areas.

Action: Stakeholders across the Avon must work together to deliver ambition phosphorus reduction targets by 2021. These are challenging target water quality reductions which take into consideration current water quality and baseline (modelled background) water quality.

B.3 The Review of Consents –

B.3.1 Article 6(2)...The origin of the review obligations

The obligation for the Environment Agency to undertake a review of existing consents was a requirement of the Habitats Regulations²¹ as explained in A.3 above. The Habitats Directive does not specifically require such a 'review', but in drafting the Regulations the Government included a review of consents process in order to meet the requirements of Article 6(1) and (2).

B.3.2 Determining 'appropriate steps to avoid deterioration'

'Consented activities' are subject to some form of regulation or other control. Consequently ensuring that they are not causing, or posing a risk of, damage to a European site is an important and 'appropriate step to avoid deterioration'.

The review of consents could not fully satisfy the Article 6(2) obligation to 'avoid deterioration' for all sites, because, by definition, its scope was necessarily limited to activities which were consented. It was entirely foreseeable that 'deterioration' may also be

²⁰ Background water quality has been derived by modelling. It is a modelled quality that is likely to be near natural but due to gaps in current knowledge includes an uncertain component of anthropogenic influence and error margin in the functioning of the model.

²¹ Refer regulations 63-64

caused through sources or activities which were not consented and which would therefore be beyond the scope of such a review.

For many sites, further ‘appropriate steps to avoid deterioration’, beyond the review of consents, were required where such un-consented sources might contribute to (or even be the sole cause of) deterioration.

B.3.3 Existing activity v new activity... the effect of regulation 64

The review provisions effectively applied the regulation 61 procedures (which are drafted with a *new* plan or project in mind) to what were ongoing or *existing* activities or operations. In recognition of this important distinction, and the fact that these activities were *ongoing* (with associated physical infrastructure etc) rather than being *proposed*, the provisions of regulation 64 (‘consideration on review’) introduce a degree of flexibility not available to equivalent decisions being taken in respect of *new* plans or projects.

Having set out the regulation 61 procedures ‘with the appropriate modifications’ for a review process, regulation 64(3) then goes on to state that:

‘The decision, or the consent, permission or other authorisation, may be affirmed if it appears to the competent authority reviewing it that other action taken or to be taken by them, or another authority, will secure that the plan or project does not adversely affect the integrity of the site’.

This provision is important where consented activities *contribute* to an adverse effect on site integrity rather than being the sole cause of such an adverse effect. Under such a circumstance, the provisions of regulation 64(3) allow competent authorities to take a broader view of *potential* further action, beyond action on existing consents, whether taken by them or by another authority, which will secure that the consented activities do not adversely affect the integrity of the site.

To put it another way, it may not be an ‘appropriate step’, in seeking to avoid deterioration, to revoke or restrict existing *consented* activities without first having carefully considered whether there are measures which might reasonably be implemented to address other sources of deterioration, which may not currently be consented.

B.3.4 The outputs of the review and further action ‘to be taken’

In the case of the Review of Consents for the River Avon, the decision for the Warminster Sewage Treatment Works specifically relied upon the provision within regulation 64(3) referred to above. At the time of the review, the proposed permit modification was not considered to be sufficient to enable the Agency to conclude ‘no adverse effect on the integrity of the site alone or in-combination with other plans or projects’. The Agency nevertheless affirmed the modified consent because it appeared to them that ‘*other action taken or to be taken... will secure that the project does not adversely affect the integrity of the site*’. This NMP is the ‘other action’ to be taken. Its implementation will therefore satisfy the Agency’s remaining obligations under regulation 64(3).

The review of consents was a one-off process which is now complete. The assessment undertaken for the review was based upon the consents operating at a fully consented flow and a worst case load (operating at a steady 70% of the maximum phosphorus limit which reflects realistic management practice to ensure permit conditions are not breached). The review decisions were therefore based upon a scenario whereby all available (or consented)

capacity at the works was taken up. Since the review decisions were finalised in 2010, the understanding of the '*characteristics and specific environmental conditions at the site*²² has continued to improve; particularly in respect of the phosphorus targets for SAC rivers being revised and, more recently, the potential influence of natural phosphorus levels in the underlying geology and especially the high levels recorded from the Upper Greensand geology and the associated uncertainty in setting appropriate phosphorus targets for parts of the River Avon SAC. Modelling used to inform the decisions in the review has also improved. Furthermore, the catchment-wide scope of the NMP and its potential to deliver further action, beyond that required as a result of the review, to secure the integrity of the SAC has been more fully recognised.

In light of the subsequent Environment Agency and Natural England Joint Paper²³ (referred to earlier in B.1), **all parties have now agreed that the NMP is equally relevant to the other decisions taken in the review in respect of all sewage treatment works which discharge into the catchment of the SAC (see further D.5 below).** The uptake of all available *post-review* consented headroom across the catchment is therefore now considered to be reliant on the NMP providing sufficient certainty that an adverse effect on integrity of the River Avon SAC, or damage to the River Avon SSSIs through additional phosphorus loading from proposed development, will be avoided by implementing the plan (taking into account reasonable timescales for phosphorus reduction)²⁴.

This is reflected in Wiltshire Council's Core Strategy which states at para 6.178, in relation to water quality, that '*Compliance with the appropriate targets will generally be attained through the Environmental Permitting regime, however where this is not possible, compliance may be achieved through the implementation of a long term Nutrient Management Plan (NMP).*

To be relied on in this manner, the NMP will need to provide sufficient reassurance that any deterioration in existing water quality from the uptake of the *post-review* consented headroom will not compromise the ability of the NMP to achieve the ambition targets in the period of River Basin Management Planning (phase 2), and any further reductions to achieve the site's conservation objectives over the longer term. This will involve the NMP clearly setting out the measures that need to be implemented, and by whom, and demonstrating they are feasible, viable and effective such that the desired improvements in water quality and subsequent achievement of the conservation objectives can be considered to be associated with a credible delivery mechanism and underpinned by a legally enforceable framework. The Annex 1 'Implementation Plan' provides this further detail. The manner in which the review decisions relate to the NMP in the context of decision making is considered further in section D below.

B.3.5 The 'least onerous' provision

An important further provision within the Habitats Regulations in relation to any reliance on regulation 64(3) is that regulation 64(4) goes onto state that:

'Where that object may be attained in a number of ways, the competent authority or authorities concerned must seek to ensure that the action taken is the least onerous to those affected'.

²² Refer Case C 127/02 para 48 *Waddenzee*

²³ '*Advising on Growth and Water Quality in Natura 2000 sites and SSSIs: A Joint Environment Agency / Natural England Approach*' July 2011.

²⁴ Refer para 4.3 of the Joint EA/NE Paper

This is important because action on consented activities cannot be avoided by the mere fact that 'other action' *could* be taken which would address a deterioration which consented activities *contribute* to. Regulation 64(3) has already specified that such 'other action' should be such that '*will secure*' that the consented activity does not have an adverse effect on the integrity of the site. This involves a degree of confidence in the action proposed. However, 64(4) goes a step further, to clarify that where this 'other action' can be implemented in a number of ways (i.e. there are various permutations which might deliver the same objective), the action taken should be the 'least onerous' to those affected.

This suggests that 'other action', proposed to be relied upon to affirm an existing consent (in the case of the River Avon, the measures set out in this NMP), should be weighed up alongside not only alternative measures related to un-consented activities, but also with regard to further action being taken on consented activities subject to review. Both are valid ways in which the object of securing that the plan or project subject to review does not adversely affect the integrity of the site may ultimately be attained.

For this reason the scope of the NMP covers 'diffuse' inputs from agriculture and the unsewered population together with large and small point sources, so that compliance is achieved through a suite of measures from all sources. The degree of action required on all sources should be based upon which measures are considered to be 'least onerous' to those affected; this will require a consideration of:

- Reductions already delivered through the review of consents;
- The magnitude of the benefits secured and the confidence with which they can be relied upon; and
- The effectiveness and cost of controls.

It is important to appreciate that the 'least onerous' duty upon any competent authorities involved is to 'seek to ensure' rather than to 'ensure'. Where the NMP is being relied upon to secure that existing sewage treatment works will not have an adverse effect on the integrity of the River Avon SAC, the obligation is upon the competent authorities involved in its implementation to do their best to ensure that the measures to be delivered are the 'least onerous' to those involved. Certainty regarding such matters is not therefore required by law, because being certain that any particular course of action would actually be the 'least onerous' would be very difficult and potentially open to extensive debate.

B.4 Related work undertaken to date

The development of this NMP has been informed by a suite of other work which is relevant to the River Avon, these are set out below and explained further in this section.

- European site conservation objectives;
- Article 17 reporting on favourable conservation status;
- Site level condition assessment for the component SSSIs; and
- River Basin Management Plan 2

B.4.1 European Site conservation objectives

The European Site Conservation Objectives for the River Avon SAC are published by Natural England. With regards to the qualifying features (set out in A1.1) the objectives are to:

Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.

Subject to natural change, to maintain or restore:

- *The extent and distribution of qualifying natural habitats and habitats of qualifying species;*
- *The structure and function (including typical species) of qualifying natural habitats and habitats of qualifying species;*
- *The supporting processes on which qualifying natural habitats and habitats of qualifying species rely;*
- *The populations of qualifying species;*
- *The distribution of qualifying species within the site.*

The European Site Conservation Objectives for the Avon Valley SPA, again with regard to the qualifying features listed in A1.1, are to:

Avoid the deterioration of the habitats of the qualifying features, and the significant disturbance of the qualifying features, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving the aims of the Birds Directive.

Subject to natural change, to maintain or restore:

- *The extent and distribution of the habitats of the qualifying features;*
- *The structure and function of the habitats of the qualifying features;*
- *The supporting processes on which the habitats of the qualifying features rely;*
- *The populations of the qualifying features;*
- *The distribution of the qualifying features within the site.*

The Conservation Objectives for the River Avon SAC are further supported by Natural England's 'Supplementary Advice'²⁵. The Supplementary Advice says of itself that:

'This advice should primarily be used to inform Habitats Regulations Assessments ('HRA') of proposed plans or projects that may affect the SAC, and to assist with the planning of measures necessary for the conservation or restoration of the site and its qualifying features.'

This advice 'aims to describe the wide range of ecological attributes that are most likely to contribute to a site's overall integrity'. Each of these 'attributes' has indicative 'targets' which outline the desired state or condition to be achieved. Of most relevance to this NMP is the supplementary advice relating to the attribute entitled 'Supporting Processes (on which the feature relies) – Water Quality' which states:

²⁵ European Site Conservation Objectives Supplementary Advice – River Avon Special Area of Conservation (SAC). Natural England *Currently Unpublished*

'The natural nutrient regime of the river should be restored and protected, with any anthropogenic enrichment above natural/background concentrations limited to levels at which adverse effects on characteristic biodiversity are unlikely.'

The supporting and/or explanatory notes then go on to say:

'...As a minimum, the nutrient levels should be reduced to values appropriate to the river's typology and nutrient character. These values are given in the site's FCT based on a best fit of the river system into the typologies as follows:

*Low altitude, low alkalinity headwaters (near natural nutrient character): 15ug/l
Dockens Water*

*Low altitude, high alkalinity headwaters (near natural nutrient character): 20 ug/l
River Till (winterbourne reach)*

*Low altitude, high alkalinity rivers (near natural nutrient character): 30ug/l
River Till (perennial reach)*

*Low altitude, high alkalinity, chalk or clay headwater (impacted in nutrient character):
40ug/l*

River Wylfe (upper part in headwater water body)

*Low altitude, high alkalinity, chalk or clay rivers (impacted in nutrient character):
50ug/l*

*River Avon, River Wylfe (headwater, middle and lower water bodies), River Nadder,
River Bourne*

Consideration needs to be given to locally refining the typology classification where the groundwater input to rivers is influenced by naturally occurring phosphorus in the Upper Greensand geology within the catchment. This is because groundwater in this geology can exceed the minimum targets for river phosphorus. The catchments involved feed the upper reaches of the Avon and Nadder and middle reaches of the Wylfe.

Ongoing investigation will aim to identify both the contribution to the total level of phosphorus in these reaches that originates from the Upper Greensand geology and also the interaction of factors that in near natural conditions may moderate the adverse effects of naturally high phosphorus in groundwater, such as low nitrogen levels, high flow velocity, shade, low water temperature and phosphorus storage and release from sediment on the floodplain. This will inform local refinement of requirements (on nutrients and other factors) that will limit the impact of nutrients to levels at which adverse effects on characteristic biodiversity are unlikely.'

B.4.2 Article 17 reporting on Favourable Conservation Status

Article 17 of the Habitats Directive requires the UK Government to submit a report to the European Commission on the implementation of measures taken under the Directive. This report concerns management measures as well as an evaluation of the impact of such measures on the 'conservation status' of the Annex 1 habitats and Annex 2 species (the habitats and species for which Special Areas of Conservation are designated).

At a habitat level (rather than a site level) Favourable Conservation Status is defined by reference to four parameters; 'range', 'area', 'structure and function' and 'future prospects'. The agreed method for the evaluation of conservation status assesses each of these parameters separately and then combines these assessments to give an overall assessment of 'conservation status'. A similar approach is adopted for species features, but the four parameters used are modified accordingly to 'range', 'population', 'habitat for the species'

and 'future prospects'. A summary of the information contained in the 3rd UK Habitats Directive report (submitted in 2013) in relation to the habitats and species across the UK for which the River Avon SAC is designated is set out in Table B.1 below.

Qualifying Habitat Feature	Range	Area	Specific structures and functions	Future Prospects	Overall Assessment
Water courses of plain to montane levels with <i>Ranunculus</i>	Favourable	Inadequate (stable)	Bad (improving)	Inadequate (improving)	Bad (improving)
Qualifying Species Feature	Range	Population	Habitat for the species	Future Prospects	Overall Assessment
Brook Lamprey	Favourable	Unknown	Favourable	Favourable	Favourable
Bullhead	Favourable	Unknown	Favourable	Unknown	Unknown
Desmoulin's whorl snail	Favourable	Bad (declining)	Inadequate (declining)	Bad (declining)	Bad (declining)
River lamprey	Favourable	Inadequate (stable)	Favourable	Inadequate (improving)	Inadequate (improving)
Atlantic Salmon	Favourable	Inadequate (stable)	Favourable	Inadequate (declining)	Inadequate (stable)
Sea lamprey	Favourable	Unknown	Unknown	Unknown	Unknown

Table B1: Summary of the favourable conservation status 'Article 17' reporting for the features of the River Avon SAC

The Article 17 reports also list the main pressures and threats which are considered to be affecting each feature; those which are listed as of high importance are summarised below:

Qualifying Feature	Main pressures (P) and threats (T) of 'high' importance
Water courses of plain to montane levels with <i>Ranunculus</i>	Pollution to surface waters (P&T) Invasive non-native species (P&T) Human induced changes in hydraulic conditions (P&T) Renewable abiotic energy use (T only)
Brook lamprey	Pollution to surface waters (P&T) Human induced changes in hydraulic conditions (P&T) Other ecosystem modifications (P&T) Changes in abiotic conditions (T only)
Bullhead	Pollution to surface waters (P&T) Human induced changes in hydraulic conditions (P&T)
Desmoulin's whorl snail	Human induced changes in hydraulic conditions (P&T) Abiotic (slow) natural processes (P&T)
River lamprey	Pollution to surface waters (P&T) Human induced changes in hydraulic conditions (P&T) Other ecosystem modifications (P&T)
Atlantic Salmon	Marine and Freshwater Aquaculture (P only) Pollution to surface waters (P&T) Human induced changes in hydraulic conditions (P&T) Other ecosystem modifications (P only) Changes in abiotic conditions (P&T) Changes in biotic conditions (P only) Fishing and harvesting aquatic resources (T only)
Sea lamprey	Pollution to surface waters (P only) Human induced changes in hydraulic conditions (P&T) Other ecosystem modifications (P&T)

Table B2: Main pressures and threats referred to as of 'high' importance affecting the features of the River Avon as set out in the Article 17 report

It is important to note that the Article 17 report relates to a 'feature level assessment' in respect of the distribution of the feature across the UK. As such, whilst this information is of some relevance to the development of a *site specific* NMP, it is not an indication of the conservation status of each feature within the River Avon SAC, at a site level (although the Avon SAC is one of the most extensive riverine SACs in the UK and makes a relatively large contribution to the overall UK status of some features). However the information does demonstrate that 'pollution to surface waters' is not just a *site level* pressure / threat to the habitats and species for which the River Avon SAC has been designated, but is a genuine concern to the conservation status of these features across the UK SAC network. This makes effective site level action all the more important; a failure to take appropriate steps on the basis that the features are sufficiently well represented elsewhere is not only contrary to the duty set out in Article 6(2) but also incorrect when looking at the most recent conservation status for the features overall. Furthermore 'pollution to surface waters' is not listed as a concern for only one of the features but is relevant to all but one of the European qualifying features.

B.4.3 Site level condition assessment of the component SSSIs

A more accurate *site level* picture is provided by the condition assessment monitoring undertaken by Natural England at a SSSI level. Condition assessment monitoring and reporting is undertaken on a six yearly cycle and the most recent assessment in respect of water quality is dated 2014²⁶. Within the SAC, water quality monitoring is undertaken within units 1-12, 34 and 35 of the River Avon Systems SSSI (the other units being terrestrial) and within units 1-2 of the River Till SSSI. Of most relevance to this NMP, all units within the River Avon Systems SSSI are reported as failing to achieve the 'compliance with phosphorus target' attribute. The reporting for the two assessment units on the River Till SSSI shows that unit 1 as a 'pass' for this target and unit 2 was not assessed.

It is therefore clear that the high levels of phosphorus within the River Avon SAC, which this NMP is seeking to address, are a cause of unfavourable condition at a SSSI level which will prevent the site from making a full contribution to the achievement of favourable conservation status for each of the qualifying features of the SAC.

B.4.4 River Basin Management Plan

As set out in A.3.3 above River Basin Management Plans are requirements of the Water Framework Directive and set out measures to improve water in rivers, lakes, estuaries, coasts and in groundwater. There are 10 river basin districts in England and Wales and the River Avon catchment falls within the South West River Basin Management Plan. In exercising their functions, public bodies should have regard to the River Basin Management Plan and any supplementary plans. As such, all public bodies must assist in delivering measures to address phosphorus enrichment of the Hampshire Avon in order to meet obligations under the European Water Framework Directive.

The first and current version of the South West RBMP was published in 2009 and the Water Framework Directive involves a six yearly planning cycle such that the current RBMP is under review with a view to publishing what is commonly referred to as the updated 'RBMP2' in 2015. Of relevance to this NMP, the principles of river basin management planning set out in recent Defra guidance²⁷ include:

²⁶ Information provided by Natural England, full 2014 condition assessment report currently incomplete and unpublished.

²⁷ River basin planning guidance, Defra, July 2014

- Encourage active involvement of a broad cross-section of stakeholders and enable the exchange of knowledge (including information and data) between regulators, planners, stakeholders and the research community.
- Work in partnership with other public bodies
- Integrate and streamline plans and processes
- Seek to be even handed across different sectors of society and sectors of water industry.

It is clear therefore that stakeholder engagement and integration with other initiatives is central to the RBMP process and it is therefore of benefit to both work streams for the NMP to seek to contribute towards the delivery of RBMP2 and vice versa. This will minimise the potential for duplication of effort and ensure credibility at an organisational level in terms of stakeholder engagement which will inevitably involve a degree of overlap.

The Water Framework Directive also requires member states to 'make judgments about the most cost effective combination of measures in respect of water uses to be included in the programme of measures'. As part of the RBMP2 planning process the Environment Agency will need to use cost effectiveness analyses to determine the combination of measures which will achieve the objectives at the lowest cost. It is therefore appropriate for such work to inform any analysis of costs undertaken for the measures to be delivered through this NMP and vice versa.

C What the Nutrient Management Plan can do

C.1 A summary of the measures proposed

C.1.1 Introduction

The Technical Annex 4 to this NMP sets out the detail concerning the selection of measures to be delivered to achieve the objectives of the NMP. Readers wanting to understand the technical basis against which the measures have been selected should refer to section 3 of Annex 4 entitled 'solutions to deliver outcomes'.

This section of the NMP provides a concise summary of the measures which have been identified in a manner which is intended to be clear, transparent and less technical. The Measures set out in the Technical Annex are presented under the following three headings:

- a) Point source options (refer 3.1 in technical annex)
- b) Diffuse source options (refer 3.2 in technical annex)
- c) Combined point and diffuse measures (refer 3.3 in technical annex)

Recommendations:

In light of the reductions already delivered through recent improvements to point sources, efforts to achieve ambition targets should initially be focussed on the implementation of measures to reduce diffuse pollution. With the exception of improvements already included in PR14, further action on point sources will be considered during the next round of the periodic review of the water industry in 2019 (PR19) in light of what can realistically be achieved through diffuse source reductions.

Fish Farms and Cress Farms should introduce all reasonable measures to improve nutrient efficiency and prevent pollution of downstream waters. This may include adjusting food types for fish to low N & P sources and, in water cress farms, providing more control in flow and quality when fertilizing the crop and potentially re-circulation of flows to ensure uptake of nutrients

The Annex 1 'Implementation Plan' sets out the necessary detail regarding the delivery of measures across the catchment. The broad *types* of practical measures / action that would reduce the amount of phosphorus entering the river which are considered within the technical annex, and proposed in this NMP, include but should not be limited to:

Diffuse measures

- Fence off rivers and streams from livestock
- Do not apply P fertiliser to high P index soils
- Integrated fertiliser and manure nutrient supply
- Loosed compacted soil layers in grassland fields
- Do not apply fertiliser to high risk areas
- Increase the capacity of farm manure (slurry) stores to improve timing of slurry applications
- Move feeders at regular intervals
- Reduce field stocking rates when soils are wet

- Do not spread FYM to fields at high-risk times
- Re-site gateways away from high-risk areas
- Transport manure to neighbouring farms
- Construct bridges for livestock crossing rivers/streams
- Change from a slurry to solid manure handling system
- Avoid spreading fertiliser to fields at high risk times
- Establish in-field grass buffer strips
- Reduce dietary N and P intakes
- Use a fertiliser recommendation system
- Do not apply manure to high risk areas
- Adopt recognised soil management plan
- Site solid manure heaps away from watercourses/field drains
- Reduce overall stocking rates on livestock farms
- Adopt reduced cultivation systems
- Manage overwinter tramlines
- Store solid manure heaps on concrete and collect effluent
- Cultivate land for crops in spring rather than autumn
- Cultivate and drill across the slope
- Incorporate manure into the soil
- Farm track management
- Establish cover crops in autumn
- Establish riparian buffer strips
- Reduce fertiliser application rates
- Reduce the length of the grazing day/grazing season
- Manure spreader calibration
- Cover solid manure stores with sheeting
- Install covers on slurry stores
- Minimise the volume of dirty water produced
- Use fertiliser placement technologies
- Convert arable land to unfertilised grass
- Establish permanent woodlands

Point source measures

- Impose tighter phosphorus limits on sewage treatment works where technically feasible
- Tighten permit conditions at cress and fish farms to require best farming practice and reduce phosphorus loading

C.1.2 Short term proposals to achieve the interim ambition targets on phosphorus reduction

In the short term (by 2021) the measures delivered through this NMP are intended to achieve the agreed 'ambition reduction targets' primarily through action on diffuse sources and, where necessary, through further point source measures. Any point source improvements to a water company asset would be implemented under AMP7 (2020-25). These ambition reduction targets have been set for 13 water bodies' across the Avon catchment as set out in table C.1 below. The table also shows the overall load reductions (the amount of phosphorus in kg/yr that will need to be removed from the system) that will be required to deliver the ambition target improvements in water quality (i.e. the reduction in the phosphorus concentration within the water body concerned).

Water body	Ambition target reduction (ug/l)	Total Load reduction (kg/yr)
Dockens Water	-15	-16
Hampshire Avon (Lower)	-20	-9312
Nadder (lower)	-10	-1421
Nadder (upper)	-20	-417
Hampshire Avon (Upper) u/s Nine Mile	-20	-1318
Hampshire Avon (Upper) d/s Nine mile	-10	-1003
Hampshire Avon (West)	-40	-733
Bourne	-10	-191
Hampshire Avon East and Woodborough Stream	-20	-555
Nadder Middle	-20	-1270
Wylie (lower)	-10	-744
Wylie (headwaters)	-30	-630
Wylie (Middle)	-10	-588

Table C.1: Ambition target reductions which have been set for the NMP and total load reductions necessary to deliver them.

The Technical Annex 4 presents the results of various modelled 'scenarios' which model measures which could be taken to deliver the ambition target reductions for each particular water body. The way that the models are run presents the results on the basis of river 'catchments' or 'sub catchments' and the key question with which the NMP is concerned, in the short term, is whether these scenarios are realistically capable of delivering the ambition target reductions.

The first step in considering how these scenarios can be interpreted is to understand how each 'catchment' or 'sub catchment' relates to the 'water bodies' of the river for which the ambition target reductions have been set. Table C.2 below shows which corresponding water body is referred to by the catchment or sub catchment modelling results.

Ambition targets 'water bodies'	Ambition target reduction	Modelled scenario 'catchment' or 'sub catchment'
Dockens Water	-15	Not included in analysis
Hampshire Avon (Lower)	-20	Lower Avon
Nadder (lower)	-10	Nadder
Nadder (upper)	-20	Nadder Upper
Hampshire Avon (Upper) u/s Nine Mile	-20	Upper Avon
Hampshire Avon (Upper) d/s Nine mile	-20*	Upper Avon
Hampshire Avon (West)	-40	Upavon West
Bourne	-10	Bourne
Hampshire Avon East and Woodborough Stream	-20	Upavon East
Nadder Middle	-20	Nadder middle
Wylye (lower)	-10	Wylye
Wylye (headwaters)	-30	Wylye headwaters
Wylye (Middle)	-10	Wylye middle

Table C.2: Matching the ambition target 'stretch' to the modelled scenario 'catchment' or 'sub catchment'. * the ambition target set for this stretch is -10 however, for modelling purposes, the target for the whole of the Hampshire Avon (Upper) was set to -20 (refer Technical Annex 4 for further explanation)

In considering how the NMP can be regarded as 'fit for purpose' as discussed in C.3 below, it is appropriate to consider each water body in turn and the extent to which the modelled scenarios are able to deliver the necessary reductions. The technical Annex 4 has modelled various scenarios, but nine key 'scenarios' are listed below (where STW = sewage treatment works). 'PIT' / 'SIMCAT' refer to different modelling approaches to source apportionment. The SIMCAT model assigns all sources as either 'point' or 'non-point' but doesn't include any further analysis of the 'non-point sources', it is based on averaged concentration and flow across the Avon so it can miss 'non-average' issues. The PIT model is different and tries to calculate where the diffuse load might have come from. There are differences in the modelled outputs and both are presented for purpose of transparency and comparison.

- A. Phosphorus reductions from STW operating at 500ug/l at 2030
- B. Phosphorus reductions from STW operating at 200ug/l at 2030
- C. Fish farm and watercress farm 25% reductions
- D. Fish farm and watercress farm 50% reductions
- E. Fish farm and watercress farm 75% reductions
- F. Diffuse reductions by EA Catchment Sensitive Farming 'current' measures based on PIT
- G. Diffuse reductions by EA Catchment Sensitive Farming 'optimum' measures based on PIT
- H. Diffuse reductions by EA Catchment Sensitive Farming 'current' measures based on SIMCAT
- I. Diffuse reductions by EA Catchment Sensitive Farming 'optimum' measures based on SIMCAT

From this point on, for ease of reading, the scenarios are referred to simply as A, B or C etc. Taking each water body in turn, the following table sets out the proportion of the ambition target which is modelled as being delivered by each scenario. Many of the scenarios deliver significantly greater reductions than those necessary to deliver the ambition targets, but there is significant variation across the water bodies. This variation reflects the different land uses and pressures within each water body; a scenario which delivers the greatest benefits to one water body may deliver far less for another.

Water body	% achievement of ambition reductions for each scenario								
	Point source scenarios					Diffuse scenarios			
	A	B	C**	D**	E**	F	G	H	I
Dockens Water	-	-	-	-	-	-	-	-	-
Hampshire Avon (Lower)	-4	64	17	35	52	34	129	11	42
Nadder (lower)	-13	64	19	38	58	114	360	47	148
Nadder (upper)	2	7	8	17	45	157	293	-	-
Hampshire Avon (Upper) u/s Nine Mile	-18	29	14	27	41	47	140	27	82
Hampshire Avon (Upper) d/s Nine mile*	-18	29	14	27	41	47	140	27	82
Hampshire Avon (West)	9.4	18	0	0	0	26	82	26	82
Bourne	458	644	0	0	0	308	528	25	42
Hampshire Avon East and Woodborough Stream	17	57	46	93	139	68	113	93	154
Nadder Middle	-8	9	11	21	32	58	122	-	-
Wylye (lower)	-10	107	19	39	58	70	432	11	69
Wylye (headwaters)	12	102	21	41	62	30	83	-	-
Wylye (Middle)	7	128	24	49	73	70	332	-	-

Table C.3 Percentage achievement of the ambition target reductions set for each water body for each scenario.

*for 'Hampshire Avon (upper) d/s of Nine mile' the modelling used -20 as the ambition target reduction, even though the agreed target is -10 (refer further to technical annex 4).

** Reductions from fish and cress farms should be treated with caution due to uncertainties with the modelling work. It is anticipated that the figures quoted over estimate the reductions that might realistically be achieved²⁸.

	= deterioration from current (due to proposed growth and current over-achievement against existing permit)
	= 0-25% of ambition target reduction achieved
	= 25-50% of ambition target reduction achieved
	= 50-75% of ambition target reduction achieved
	= 75-100% of ambition target reduction achieved
	= ambition target reduction exceeded

Table C.3 presents a simple visual representation of the *potential* reductions which could be achieved for each water body from each scenario. It is relevant to note that there is a scenario for each water body which could 'alone' deliver the ambition target reductions. This provides confidence, taking account of the uncertainties associated with the modelling (which are greater for diffuse source scenarios than those for point sources) that a combination of the measures identified can reasonably be expected to deliver the necessary reductions.

Considering each scenario in turn the analysis suggests that scenarios A and C would deliver the least benefits overall, whilst scenarios B and G provide the greatest reductions. Likewise, looking at each water body in turn, it is clear that securing the commitments to diffuse reduction measures from a high proportion of land owners is going to be more influential to the achievement of the NMPs objectives within certain catchments (e.g. the Hampshire Avon (West)) than in other catchments (such as the Bourne).

Whilst a *combination* of measures might reasonably be expected to deliver the necessary reductions, as set out in C.1.1, in light of the reductions already delivered through improvements to point sources, the primary aim of this NMP is to achieve the ambition target reductions through the delivery of measures on diffuse sources. With the exception of scheduled improvements to East Knoyle and All Cannings STWs it is not expected that further measures to address point sources will be delivered before 2019. The achievement of the ambition targets by 2021 is therefore heavily reliant on measures being secured and implemented from diffuse sources. Whilst there are regulatory tools available to the Environment Agency in relation to diffuse sources, there is generally a higher degree of

²⁸ Pers comm - Advice from EA dated 7th October 2014

uncertainty associated with such measures due to the preferred voluntary nature of such initiatives. The Environment Agency would only seek to utilise regulatory powers where voluntary approaches fail to deliver the necessary engagement from land owners and any particular land owner is considered to be causing pollution. In addition, due to the nature of some of the diffuse measures, there is likely to be an element of lag between when diffuse measures are implemented and when they deliver measurable improvements in water quality within the river. There are two types of 'lag' which will be relevant to the implementation of the NMP measure. The first is referred to as 'natural lag' and reflects the time between the implementation of a given measures and actual reductions being recorded within the river. There is very little which can be done to minimise the effects of 'natural lag'. The second is 'implementation lag', over which Steering Group members can exert a degree of influence, implementation lag refers to the time between a measure being identified as necessary and the measure actually being implemented on the ground.

It is therefore the case that careful monitoring is going to be critical if the ambition targets are to be achieved by 2021. Further detail regarding monitoring is provided in the Annex 3 'Evidence and Monitoring Plan'. **Where commitments to diffuse measures have not been secured at appropriate levels to provide confidence that the targets will be met, further action on point sources will need to be considered. Where commitments to diffuse measures have been secured, but not yet fully implemented at appropriate levels to meet the targets, further action on point sources will need to be considered in light of the level of confidence that the implementation of the secured measures will deliver the necessary reductions and the timescales involved.** The potential for further action on point sources, should the diffuse source reductions not deliver sufficient improvements, means that the achievement of the ambition targets, whilst challenging, can be regarded as associated with a credible delivery mechanism and underpinned by a legally enforceable framework.

C.1.3 Longer term proposals - to achieve the conservation objectives

The longer term objective of this NMP, to achieve the conservation objectives phosphorus targets across the SAC, is complicated by the current uncertainties over the extent to which the emerging evidence for relatively high natural levels of phosphorus within the Upper Greensand will influence the current targets. The reductions to secure the longer term conservation objectives targets are set out in table C.4 below, together with how this reduction corresponds to the original short term ambition target reductions (ATR). Whilst there are uncertainties inherent in such an extrapolation, by presenting the reductions in terms of a 'multiple' of the original ambition target reductions the results from the modelling scenarios can give an *indication* of how credible it is, at this stage, to regard the delivery of these longer term objectives as being reasonably foreseeable. The water bodies where the current conservation objective targets are potentially more significantly affected by the high natural levels of phosphorus in the Upper Greensand are highlighted yellow.

Ambition targets 'water bodies'	Cons obj (CO) target (ortho P ug/l)	Current water quality (ug/l)	Reductions to secure CO target(ug/l)	Reductions to secure CO as multiple of ATR
Dockens Water	15	29	-14	0.93
Hampshire Avon (Lower)	50	69-104	-19-54	0.95-2.7
Nadder (lower)	50	72-91	-22-41	2.2-4.1
Nadder (upper)	No data	-	-	-
Hampshire Avon (Upper) u/s Nine Mile	50	129	-79	3.95
Hampshire Avon (Upper) d/s Nine mile	50	70-98	-20-48	1-2.4*

Hampshire Avon (West)	50	243-299	-193-249	4.8-6.2
Bourne	40	57	-17	1.7
Hampshire Avon East and Woodborough Stream	50	150-280	-100-230	5-11.5
Nadder Middle	50	120	-70	3.5
Wylfe (lower)	50	64-73	-14-23	1.4-2.3
Wylfe (headwaters)	40	84-113	-44-73	1.5-2.4
Wylfe (Middle)	50	90-155	-40-105	4-10.5

Table C.4 – Reductions to secure the conservation objectives targets as a multiple of the original ambition target reductions. * For modelling purposes, the modelled ATR for Hampshire Avon d/s of nine mile is double that of the original ATR. This figure therefore reflects the multiple of the modelled ATR rather than the original target

The conservation objectives targets for Dockens Water might be met by delivery of the short term ambition target reductions and no further action is necessary for this water body. When the remaining water bodies, with targets which are not potentially affected by the upper greensand are considered, it is clear that the further reductions which would be required to achieve the current conservation objectives targets are potentially realistically achievable. The results of the modelling work presented in table C.3 above show that the short term ambition target reductions are exceeded (often significantly) by delivery of a combination of the modelled scenarios.

By way of example, delivery of scenarios B, E and G would represent a potential ‘best case’ scenario outcome for the catchment whereby sewage treatments works were subject to a limit of 200ug/L, fish farms and cress farms reduced their contributions by 75% and the optimum Catchment Sensitive Farming (CSF) was delivered on diffuse sources. The reductions that can be secured through scenario B can be regarded as reliable because the sewage treatment works are subject to a current consent and there is a mechanism through which the funding for necessary improvements might be secured (see further F.2 below). There are uncertainties however in the *actual* reductions which will be secured by CSF measures and the delivery of the scenario G ‘optimum’ reductions; it could reasonably be argued therefore that the ‘CSF current’ represented in scenario F presents more ‘realistic’ reductions. Furthermore the securing of a 75% reduction from watercress and fish farms carries a significant degree of uncertainty (recent observed loads suggest the model has over-estimated the possible reductions) and a 25% reduction might be regarded as more realistic. A ‘worst case’ scenario outcome might therefore be represented by delivery of scenarios B, C & F.

Ambition targets ‘water bodies’	Reductions to secure CO target	Reductions to secure CO as multiple of ATR	‘Best case’ scenarios B, E and G as multiple of modelled ATR	‘Worst case’ scenarios B, C and F as multiple of modelled ATR
Hampshire Avon (Lower)	19-54	0.95-2.7	2.45	1.2
Nadder (lower)	22-41	2.2-4.1	4.8	2
Nadder (upper)	No data	-	-	-
Hampshire Avon (Upper) d/s Nine mile	20-48	1-2.4*	2.1	0.9
Bourne	17	1.7	11.7	9.5
Wylfe (lower)	14-23	1.4-2.3	6	2

Table C.5 An assessment of best case and worst case delivery scenarios against the reductions required to achieve the conservation objectives targets for water bodies not affected by the upper greensand.* For modelling purposes, the modelled ATR for Hampshire Avon d/s of nine mile was double that originally set. This figure therefore reflects the multiple of the modelled ATR rather than the original target.

Table C.5 above shows the reductions to be delivered to achieve the conservation objectives targets as a multiple of the original ambition target reductions. These are compared against

the reductions that might be secured through the delivery of a 'best case' and 'worst case' combination of the modelled scenarios which, to facilitate comparison, have also been presented as a multiple of the original ambition target reductions.

The table shows that, taking account of the uncertainties inherent in the modelling work presented in the Technical Annex 4, it remains credible for the delivery of the conservation objective targets in the longer term to be regarded as associated with an appropriate delivery mechanism and underpinned by a legally enforceable framework.

The *full* achievement of the more uncertain modelled CSF 'optimum' measures are not necessary to deliver the necessary reductions for the conservation objective targets in water bodies where the targets can be regarded as being appropriate. Whilst the 'worst case' scenario results do not deliver the necessary reductions for the upper range value of the water bodies, they do deliver sufficient reductions for the Bourne and arguably the Wylde (lower). This provides sufficient reassurance that the reductions which can reasonably be relied upon (which will most likely deliver benefits somewhere between the 'best case' and 'worst case' scenarios) could realistically achieve the conservation objectives targets for the SAC.

The conservation objectives targets on the water bodies not included in the analysis above are subject to scrutiny by specialists at the Environment Agency and Natural England. Until further information is available there is limited value in speculating as to whether the measures set out in this NMP will be able to deliver the necessary reductions, or not.

In the context of delivering the conservation objectives phosphorus targets for the SAC in the longer term, it needs to be acknowledged that the NMP measures currently identified are concerned with meeting the short term ambition target reductions on certain nominated stretches within the SAC. All water bodies except the River Till are included. This is because, as explained in section B.4.3 above, the most recent condition assessment for the Till (Hampshire Avon) water body (units 1 and 2) show a pass for phosphorus on unit 2, with no data being available for unit 1. This water body is therefore not currently considered as a priority for phosphorus reduction measures and it is not considered likely that a lack of current action here will compromise the achievement of the conservation objectives for the SAC in the longer term. However this assessment might be revised as the monitoring point is based near the bottom of the water body with limited data further upstream. The NMP is subject to review in 2019 and, should information come to light which suggests that further measures might be necessary in respect of the Till water body then these will be progressed as a priority by the Steering Group.

C.2 A 'pathway' for achieving the NMP goals

A key aspect upon which delivery is dependent is delivering the right level of agricultural advice and guidance to achieve the level of phosphorus reduction required. This relies on maximising the efficiency and effectiveness of the advice being provided by existing partners and **securing the appropriate resources** to facilitate the implementation of the measures set out within this NMP.

"Wessex Area Diffuse Pollution Reduction Plan; Increasing Nutrient & Soil Management Efficiency Improving Farm Profitability and the Environment" sets out how partners delivering advice across Wessex will work together to maximise the efficiency of their work; minimising duplication and working in an agreed prioritised way. Resources and effort will initially be focused on the largest farms, farming the most vulnerable land to soil erosion, phosphorus and where appropriate nitrogen leaching. Under the prioritisation process outlined in this document, the Hampshire Avon is the highest priority catchment in Wessex to focus

resources. Catchment vulnerability mapping has identified the intrinsic risk within the catchment to soil erosion (a major source of phosphorus) and vulnerability of leaching [a further route for nutrient (mainly nitrogen) leaching] as seen in Figure C.1 below.

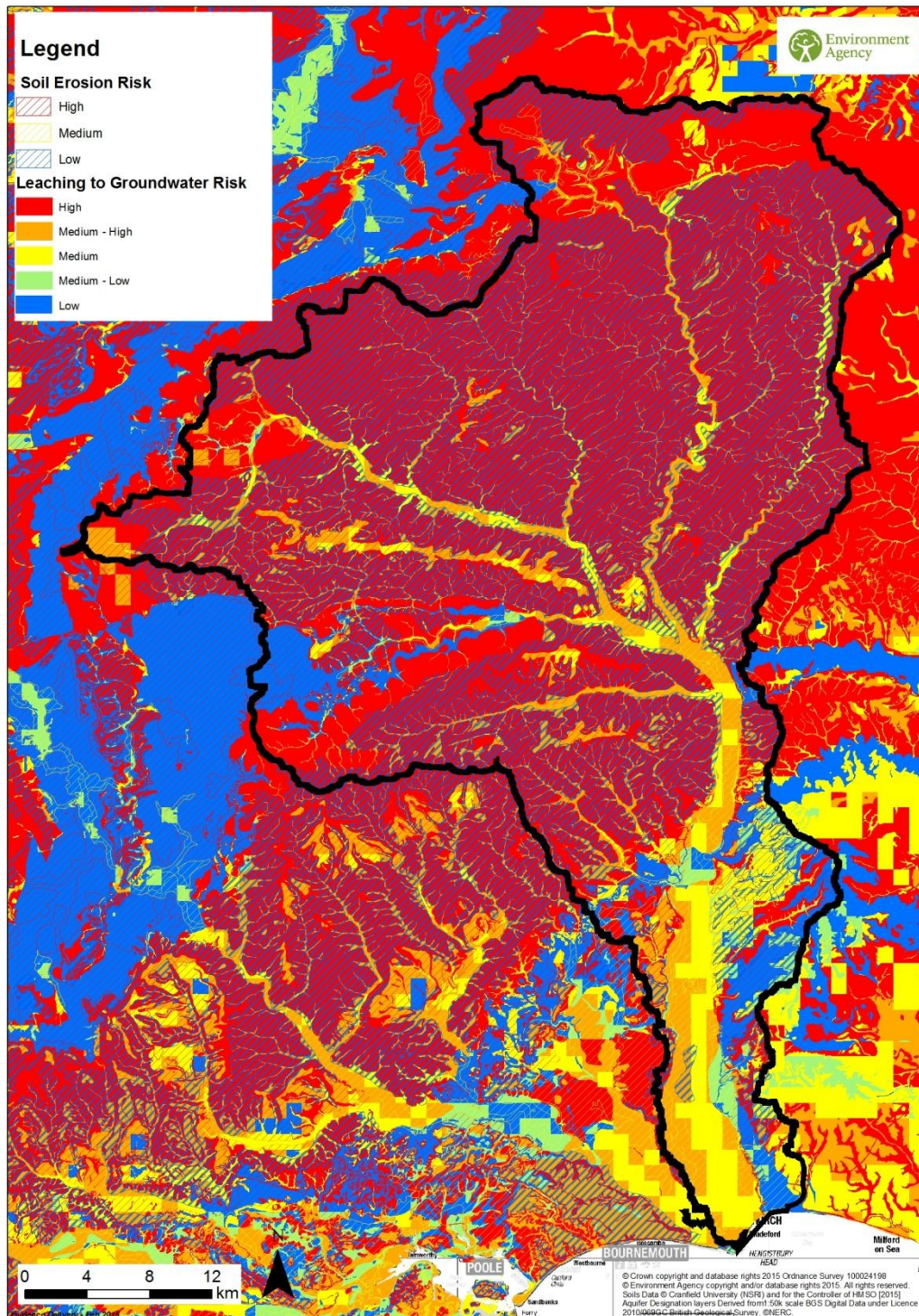


Figure C.1: Hampshire Avon soil erosion and leaching to groundwater risk map

The results of this identify a few headwater catchments where there is a high risk of both soil erosion and nutrient leaching to groundwater. These areas should be the focus of initial agricultural advice, followed by areas with “High” to “Medium-High” intrinsic risk respectively. By focusing our effort in the areas of greatest risk of nutrient loss, the effectiveness of advice

and uptake of measures can be monitored and recorded on a sub-catchment basis and expanded outwards.

Farmers themselves will also be expected to take responsibility for ensuring their own activities are at least in accordance with best farming practice and do not result in pollution. All farms should implement “all reasonable measures” to maximise nutrient management and soil management efficiencies.

Some funding will be available to assist in diffuse pollution reduction through the new Countryside Stewardship Scheme, CSF, and EA WFD bids. Also Wessex Water, through the Periodic Review programme, undertake catchment management work around their boreholes in Drinking Water Safeguard Zones to improve raw groundwater quality affected by diffuse pollution. This can reduce drinking water treatment costs.

The Catchment Sensitive Farming initiative currently has one officer post assigned to the Avon catchment covering approximately half to two thirds of the Avon catchment. Delivering the *additional* reductions to move towards the CSF ‘optimum’ scenario will necessarily require *additional* resource within the CSF initiative. Because of the priority of the Hampshire Avon nationally, NE and the EA are seeking support from DEFRA to obtain additional CSF resource within the Avon. To deliver more with the money already available, it is anticipated that CSF will use the risk mapping work to assist them in prioritising their working areas and grant awards. Farmers in High risk areas potentially having preference to those in lower risk catchment areas.

Funding for additional CSF resource has been sought from Defra but is not yet secured. Additional CSF resource within this catchment is dependent on prioritisation from EA and DEFRA. This is being looked into and would influence the extent of Countryside Stewardship uptake.

Additional funding is anticipated to be available through an Environment Agency bid which has been submitted to Defra to achieve water quality improvements and deliver good status under the Water Framework Directive. This funding will be used to secure/contract in, additional staff resource to provide 1:1 advice to address diffuse pollution within the Avon catchment. This additional resource will again be prioritised in high risk catchments (Figure C2:1) and in accordance with Wessex Diffuse Pollution Plan.

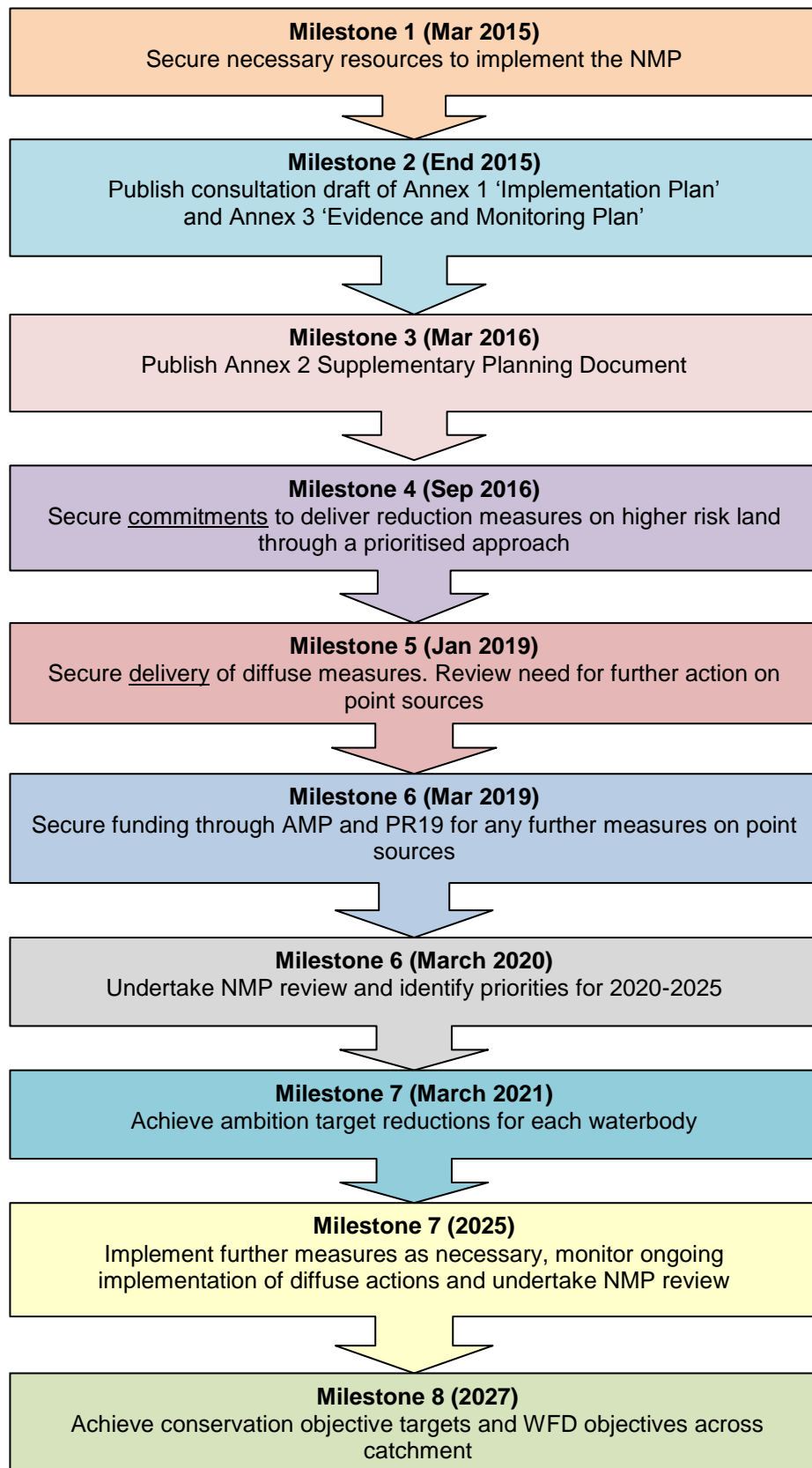
The overall objective of diffuse pollution reduction will therefore be achieved by prioritising where advice and grants are allocated, working outwards from areas with the highest intrinsic risk and working with the largest farms and then extending to areas of medium and lower risk and smaller farms. Local intelligence will also be used to identify any farms that are observed to be causing pollution or not following best farming practice and where required regulatory powers used to improve this situation. The effectiveness of the revised prioritisation approach and need for additional funding to scale up advice will need to be monitored and progressed as a priority by the Steering Group.

These targets reflect the relevant importance of action of diffuse sources to delivery of the necessary reductions, in light of the potential further reductions that might be achievable through further action on point sources, and the potential uptake of post review capacity by new development in the meantime. Each sub-catchment is assigned as low, medium or high priority for targeted advice on the basis of the commitment targets set.

Recommendation: Work undertaken by CSF, in delivering the Countryside Stewardship scheme and work by other stakeholders, and projects for new funding should be co-ordinated and targeted according to diffuse pollution risk to deliver and maximise benefits to the water environment across the catchment.

The milestones against which the implementation of this NMP can be assessed are set out in Figure C.2 below.

Figure C.2: NMP Milestones



C.3 Is the NMP 'fit for purpose'?

The rationale and justification set in section D below assumes that the NMP can be regarded as 'fit for purpose'. Going back to the original *obligation* to produce the NMP, and the provisions of regulation 64(3) this NMP must 'secure that regulated consents will have no adverse effect on the integrity of the River Avon SAC'. This means that the NMP must go beyond an aspirational document. It must be credible and robust.

As re-iterated in section D below, any decision by a competent authority to rely on this NMP, or otherwise, ultimately needs to be made by that authority as part of its statutory duties. This following section sets out a generic position, agreed by the relevant members of the NMP Steering Group, **but in each circumstance the competent authority concerned remains responsible for being satisfied that the NMP is 'fit for purpose' in respect of the particular decision to be taken.**

The Joint EA/NE Paper provides the most appropriate criteria against which to assess whether a plan is 'fit for purpose' or 'suitable'. The paper states that an appropriate management plan should:

- set out the actions that will be required to achieve conservation objectives in the longer term (refer section 2(ii)),
- improve water quality and aim to achieve the conservation objectives within a reasonable timescale (refer section 3),
- be robust and credible (refer section 4),
- address the most significant sources of pollution even where solutions are more difficult, eg: diffuse pollution (refer section 4),
- contain actions with a clear timetable for delivery (refer section 4),
- be appropriate to the severity and spatial scale of the water quality failure in terms of scope and content (refer section 4).

The current 'conservation objectives' targets use phosphorus alone to address nutrient pressures on characteristic biodiversity of the river type and thereby set an objective standard for favourable status. In some stretches it has become apparent that this approach is not likely to be adequate for favourable status due to the nature of the catchment geology. Further environmental standards (possibly on nitrogen and other influencing factors) will need to be developed in conjunction with revised phosphorus targets that are as close as technically feasible to those presently defined. This introduces some challenges when considering the extent to which the NMP can be regarded as containing the necessary action to 'achieve the conservation objectives in the longer term' and 'within a reasonable timescale'. Whilst the evidence is being scrutinised, to avoid further delays in delivering much needed improvements to water quality, both organisations have agreed 'ambition target reductions' which are considered to be technically feasible and not inappropriate to any revisions to the current conservation objectives targets.

When considering each of the six key *criteria* set out in the bullet points above, the achievement of these ambition targets should be regarded as significant progress towards achievement of the conservation objectives in the longer term. The current expectation is that the targets in certain stretches will be revised to levels that are technically feasible to reflect the high natural levels of phosphorus. It is therefore not considered to be appropriate at present to identify and progress what might be costly and onerous measures that go beyond current mainstream UK practice on technical feasibility. Considering each criterion from a strategic catchment level, this NMP is considered to be 'fit for purpose' on the basis of the following justifications:

Criterion	Justification
set out the actions that will be required to achieve conservation objectives in the longer term	Section C.1 provides a summary of the measures identified in this NMP as necessary to achieve the ambition target reductions in the short term and shows that it remains credible for the delivery of the conservation objective targets in the longer term to be regarded as associated with an appropriate delivery mechanism and underpinned by a legally enforceable framework.
improve water quality and aim to achieve the conservation objectives within a reasonable timescale	The measures to deliver the ambition target reductions will represent important steps to 'improve water quality' and will represent significant progress towards the achievement of the conservation objectives targets in the longer term.
be robust and credible	This plan is developed by the Environment Agency and Natural England and is subject to approval by a Steering Group with representation from Wiltshire Council as the lead local planning authority within the catchment. The NMP has been informed by stakeholder consultation. The information set out in C.1 & C2 demonstrates that the delivery of necessary reductions is associated with a credible delivery mechanism and underpinned by a legally enforceable framework.
address the most significant sources of pollution even where solutions are more difficult, eg: diffuse pollution	The measures set out in C.1 address the most significant sources of phosphorus in the catchment. Covering both diffuse and point sources. Measures include those which are potentially difficult to achieve through the 'diffuse' target reductions.
contain actions with a clear timetable for delivery	Section C.2 sets out the implementation and delivery of the measures with milestones as appropriate to provide sufficient reassurance that measures are available through a suitable delivery mechanism.
be appropriate to the severity and spatial scale of the water quality failure in terms of scope and content	The NMP sets out a broad range of measures to be delivered across the catchment. The spatial scale and severity of the current exceedances is such that the NMP is a complex and ambitious document.

Table C.9: Assessment of NMP against the criteria set out in the Joint EA/NE Paper

Further information regarding the development of an appropriate plan is contained within the Annex to the Joint EA/NE Paper which goes onto state that:

- a) 'a 'suitable' plan is one where it is agreed that there is a sufficient certainty that an adverse effect on integrity to an international site, or damage to a SSSI through additional loadings from proposed building development, will be avoided by implementing the plan (taking into account reasonable timescales for nutrient reduction)'.
- b) In this context, "reasonable timescale" means a timescale commensurate with the scale of the task of achieving compliance with the nutrient target. For some sites, the task will be relatively simple and should be undertaken quickly. For other sites, the enrichment problem will be more complex and expensive to resolve, and will require a longer-term plan... plan timescales must ensure that the objectives of the Habitats Directive are met as soon as practicable and support a conclusion of no adverse effect on integrity'.

Point (a) above refers to a plan being suitable where *'it is agreed that there is a sufficient certainty that an adverse effect on integrity to an international site, or damage to a SSSI through additional loadings from proposed building development, will be avoided by implementing the plan (taking into account reasonable timescales for nutrient reduction)'*. The Joint Paper does not specify the parties which need to be 'in agreement' over this matter, but as a 'joint' paper between both Natural England and the Environment Agency, by implication it is clear that this agreement needs to be reached between both these organisations. This NMP is produced as a joint plan between both the Environment Agency and Natural England and has been formally signed off respectively at an appropriate level. It is therefore clear that, in signing off this NMP, both parties are in agreement that it provides what they have agreed to be 'sufficient certainty' in this regard. In the case of the River Avon, the Environment Agency and Natural England agree that the enrichment problem at the site is complex and requires a longer term plan (point b). Nevertheless, the plan seeks to ensure that the objectives of the Habitats Directive are met as soon as reasonably practicable.

Section 4.5 of the Annex to the Joint Paper provides a list of six main 'principles' to consider in a management plan as follows:

1. *"The intention of the management plan is to achieve compliance with nutrient targets over the long term. It should therefore be based on a shared view of the environmental outcomes sought over the longer term"*
2. *There should be a firm commitment to resources (and timescale for plan production) by Natural England and the Environment Agency*
3. *The plan should aim to cover large and small point sources, inputs from agriculture and the unsewered population, so that compliance with nutrient targets is achieved through a suite of measures from all sources. The plan should also outline where **new** measures to address inputs from point sources, agriculture and unsewered sources will be necessary to achieve nutrient targets. The degree of action required on all sources should be based on the magnitude of their impact and the effectiveness and costs of control, in line with principles developed for river basin planning.*
4. *In order to drive innovation and achieve improved environmental outcomes, the plan should consider alternative forms of treatment beyond the definition of Best Available Technology used in the Review of Consents. It should be noted that treatment technology is now in use in the US that consistently achieves effluent TP concentrations of 0.1 mg/l, and sometimes as low as 0.01mg/l. In more complex and expensive situations, a long-term perspective should, where necessary, involve full re-consideration of existing waste treatment facilities and processes and the potential for using innovative and progressive design, based firmly on environmental sustainability principles. Where available evidence demonstrates the need for such treatment technology, potential improvements should be considered for inclusion in the Price Review 'AMP' process, and in long term strategic plans for water treatment by planning authorities, water companies and developers.*
5. *The potential for more efficient, innovative and environmentally sustainable infrastructure should be encouraged as a long term solution, aiming, for example to reduce the use of metal dosing for phosphorus removal from sewage effluent over the longer term.*

6. *The approach to new development proposals must be Habitats Regulations compliant and ensure the duties under the CROW Act of both organisations are complied with. In instances where it is not possible to envisage restoring the water quality of the site to achieve the nutrient target even in the long-term, any new applications must still follow standard CROW or Habitats Regulations assessment procedures. Where an application may affect a Natura 2000 site, alternative solutions must be evaluated before considering whether there may be a case for Over-riding Public Interest together with compensatory measures (Regulation 62(1), Habitats Regulations 2010). Alternative solutions could involve selecting an alternative site for development.”*

Taking these six principles in turn: the objective of the plan is clearly set out as being the achievement of the ambition target reductions in the short term and the conservation objectives targets in the longer term (principle 1); there is a firm commitment by both organisations to allocate sufficient resource for its implementation (principle 2); the plan is comprehensive and covers all sources of phosphorus and has been informed by proportionality, cost effectiveness and with regard to what is ‘least onerous’ to those affected (principle 3); the plan acknowledges the potential for further actions on point sources in line with recent advances in treatment technologies (principle 4); the measures identified have been informed by matters of sustainability (principle 5); both organisations are in agreement that the approach to new development set out within this NMP is compliant with both the Habitats Regulations and duties under the Wildlife and Countryside Act (principle 6).

In addition to guidance contained in the Joint EA/NE Paper over how a NMP can be regarded as ‘fit for purpose’, the European Commission has also issued a note on ‘Establishing conservation measures for Natura 2000 sites’²⁹ against which the NMP can (albeit to a more limited extent) be further assessed to demonstrate a sufficient degree of robustness. This note sets out five ‘key elements to consider in establishing the necessary conservation measures’ which are set out below, together with a justification as to how they are incorporated within the NMP.

Key Element	Justification
Sound information base	The underlying technical annex (4) to this NMP sets out a sound scientific basis upon which the measures to be implemented have been derived.
Participation, consultation and communication	The NMP has been subject to stakeholder consultation, and clearly communicates the roles that stakeholders will need to play in delivering its objectives.
Defining the necessary conservation measures	The conservation measures identified in this NMP are realistic, quantified and manageable. The NMP also includes various alternative options for achieving its objectives.
Resources for implementation. Cost and benefits estimates and identification of possible financial instruments.	Section 4 of the supporting technical annex contains a detailed analysis of cost assessment of the options, and identified potential sources of funding.
Effective implementation and communication	The NMP will be subject to regular review and the delivery of the measures will be monitored allowing implementation to be effectively verified and communicated.

Table C.10: Assessment of NMP against the criteria set out in the EC note

²⁹ Commission Note on ‘Establishing conservation measures for Natura 2000 sites’, EC Sept 2013.

D How the NMP can be used to inform Habitats Regulations Assessment?

This part of the NMP explains how decision makers can refer to the NMP in respect of decision taken under the Habitats Regulations and is divided into 7 sections. D.1 - D.4 provide important introductory and contextual information, with D.5 – D.7 addressing the various scenarios which are likely to be encountered as summarised below:

- D.5 sets out an approach for development which can be accommodated within the ‘post review’ headroom at consented sewage treatment works without compromising deliverability of the NMP.
- D.6 acknowledges that some development within ‘post review’ headroom might compromise deliverability of this plan and sets out what might be required where this is the case.
- D.7 considers development beyond existing consented headroom and is relevant to both mains and non-mains development.

D.1 Introduction

First and foremost the NMP is a management measure which identifies a suite of measures (described in C.1), which will work together to reduce the levels of phosphorus within the river.

However the NMP also has an important supplementary role in **the facilitation of development within the catchment**. As explained in section A.3.1 (bullet point 4) above, proposed new development is subject to assessment under Regulation 61 of the Habitats Regulations, commonly referred to as a ‘Habitats Regulations Assessment’ or HRA. The Regulations require that any development that may have a significant effect (either alone or in-combination with other plans or projects) upon the SAC should be subject to a more detailed appropriate assessment (regulation 61(1)). In the light of the conclusions of such an assessment, development can only be permitted after having ascertained that it will have no adverse effect (either alone or in combination) on the integrity of the SAC (regulation 61(5)), subject to the derogations prescribed in regulation 62.

As set out in section B above, stretches of the River Avon SAC currently exceed the phosphorus targets set out in Natural England’s Supplementary Advice to the European Site Conservation Objectives. In the absence of any committed measures to reduce phosphorus, it would appear difficult to justify how even modest development which adds further phosphorus loading to such stretches can, in combination with other proposed development, be considered to have no adverse effect on the integrity of the SAC. The combined effects of such development could lead to further deterioration in water quality.

The development and implementation of this NMP represents a fundamental shift in the context within which such planning decisions will be taken. In accordance with EC case law³⁰, *‘in assessing the potential effects of a plan or project, their significance must be established in the light, inter alia, of the characteristics and specific environmental conditions of the site concerned by that plan or project*. Under regulation 61(1), the assessment of significance must be made either alone or in-combination with other plans and projects.

³⁰ ECJ Case C-127/02 ‘Waddenzee’ Jan 2004 (para 48).

The implementation of this NMP represents a commitment by the statutory bodies to deliver measures to reduce phosphorus levels and to achieve the Conservation Objectives for the SAC in terms of phosphorus levels in the longer term. As such, additional loading now needs to be assessed in combination with other plans and projects including the NMP; i.e. within a context of what will be an *improving* trend in phosphorus levels within the SAC. This revised position means that it is not necessarily the case that all development which contributes additional phosphorus will have a significant adverse effect on the integrity of the SAC, even when considered in combination with other plans and projects.

Defra guidance published in 2012 encourages competent authorities to co-ordinate their work if all or part of the assessment requirements have already been met by another competent authority. The implications of the Defra guidance are considered further in D.4 below.

D.2 A summary of the planning context

As referred to in A.3.1 above the NMP plays an important role in facilitating development within the catchment through informing planning policy and development management decisions and related assessments under the Habitats Regulations.

A brief summary of key planning decisions which are relevant to the NMP are set out below.

- **Planning Policy:** Wiltshire Core Strategy³¹ is the most important element of the Local Development Framework and was found sound by the Planning Inspectorate in December 2014 and adopted by the Council in January 2015. The legal adoption of the plan was reliant upon the conclusions of the accompanied Habitats Regulations Assessment which refers to the NMP, while the delivery of the proposed development is reliant upon the accommodation of housing either within permitted headroom, or where necessary, in conjunction with the effective implementation of the NMP.
- **Development Management:** Ongoing planning applications for individual development proposals will be subject to HRA under regulation 61 and the NMP will be relevant to such assessments.
- **Associated consents and permits:** In some cases a proposed development will require separate environmental permits from the Environment Agency, and possibly other regulators (referred to as competent authorities in the regulations). Where any such decisions might have effects upon the SAC they will also be subject to a separate HRA³² and such assessments are likely to be informed by the NMP where water quality effects are under consideration.

D.3 Decisions which the NMP will be relevant to

The development and implementation of a NMP is of relevance to the determination of new proposals (referred to as 'plans and projects' under the Regulations) by competent authorities where such decisions might result in phosphorus enrichment effects upon the River Avon SAC triggering an assessment under the provisions of the Habitats Regulations. The 'plans and projects' which are likely to be of most relevance are those determined by Local Planning Authorities in respect of both planning policy and development management decisions. The NMP might be relevant to the following planning proposals (with the corresponding Habitats Regulations number given for ease of reference).

³¹ Refer <http://www.wiltshire.gov.uk/core-strategy-adoption.pdf>

³² Refer regulations 61, 98 and 99

Planning decision	Regulation
Grant of planning permission (further defined in 68(1) (a)-(g))	68
General development orders ('permitted development')	73 - 76
Special development orders	77
Local development orders	78
Neighbourhood development orders	78A
Simplified planning zones	79
Enterprise zones	80
Grant of development consent	81
Construction or improvement of highways or roads	84
Cycle tracks and other ancillary works	85
Land use plans (including neighbourhood development plans)	102, 102A & 107

Table D.1: planning related decisions to which the NMP might be relevant

Beyond planning related decision making the NMP will also be of relevance to the assessment of other plans and projects which might lead to an increase in nutrient loading to the SAC. Primarily these will most likely relate to decisions made by the Environment Agency referred to below, but this list is not exhaustive.

Environment Agency decision	Regulation
Environmental Permits	98
Abstraction and works authorised under water legislation	99
Derogations in relation to nitrate pollution prevention legislation	101

Table D.2: Environment Agency decisions to which the NMP might be relevant

In many cases a given 'plan' or 'project' might require multiple consents; it is entirely reasonable therefore that a proposal might obtain planning permission and also need a separate environmental permit due to the nature and scale of associated emissions. Alternatively a proposal might obtain planning permission and be *dependent* on a separate environment permit already being in place. This is considered further below.

D.4 Competent authority co-ordination under the Habitats Regulations

Habitats Regulations Assessment is relevant to 'plans' and 'projects'. As set out above, these terms incorporate a broad array of consenting and permitting regimes meaning there is frequently a degree of overlap between an assessment undertaken for one plan or project and that which might be required for another.

There is therefore the *potential* for duplication of assessment effort amongst competent authorities. For example, the Environment Agency will assess the effects of a given sewage treatment works under the Habitats Regulations, either through the 'review provisions' for an *existing* consent or the 'assessment provisions' where a *new* permit is required (and issued after the site had been designated as a SAC). It would be an unnecessary duplication of assessment effort for Wiltshire Council to then re-assess the effects of such treatment works each time a new planning decision was taken which would result in development connecting to such works.

In July 2012, Defra published statutory guidance, under the provisions of regulation 65, about coordination where more than one competent authority was involved in a project³³, but

³³ Habitats Directive – 'Guidance on competent authority coordination under the Habitats Regulations'. Defra, July 2012.

that guidance generally has wider application, including where competent authorities have taken decisions over a period of time.

The application and implications of the Defra guidance to such situations has been considered in *'The Habitats Regulations Assessment Handbook'*³⁴ which refers to a 'common sense' approach at C.12.3 and states that:

In respect of 'earlier decisions' that relate to a separate plan or project, the competent authorities do not need to 'coordinate', because only one authority has a decision to take... However, the principles set out in the Defra statutory guidance, about adopting the reasoning and conclusions of another authority may be applicable and should be adopted as good practice. 'Earlier decisions' that relate to a separate plan or project could be separated by short, or relatively long, periods of time. The point is that the earlier decision is made before the later competent authority embarks on its assessment'

Paragraphs 5-7 of the Defra guidance comprise guidance issued by the Secretary of State under regulation 65(3) and competent authorities are required to 'have regard' to these paragraphs under regulation 65(4). The key section of the Defra guidance which would be relevant to the reliance of a competent authority upon the NMP as good practice is set out in paragraphs 6 and 7 which are copied in full below:

'6. Competent authorities should adopt the reasoning, conclusion or assessment of another competent authority in relation to the appropriate assessment requirements for a plan or project, if they can. This can happen when all or part of the appropriate assessment requirements have already been met by another competent authority. It could also happen if one competent authority is completing all or part of the appropriate assessment requirements on behalf of others. Competent authorities remain responsible for ensuring their decisions are consistent with the Habitats Directive, so must be satisfied:

- No additional material information has emerged, such as new environmental evidence or changes or developments to the plan or project, that means the reasoning, conclusion or assessment they are adopting has become out of date*
- The analysis underpinning the reasoning, conclusion or assessment they are adopting is sufficiently rigorous and robust. This condition can be assumed to be met for a plan or project involving the consideration of technical matters if the reasoning, conclusion or assessment was undertaken or made by a competent authority with the necessary technical expertise.*

'7. Due to these conditions there may be cases where it is not appropriate to adopt the reasoning, conclusions or assessment of another competent authority, or it is only appropriate to adopt some elements of an earlier assessment. In addition, even where the conditions are met, a competent authority may need to undertake additional work to supplement the assessment they have adopted in order to meet the full appropriate assessment requirements.'

Of relevance to the manner in which the development of this NMP might inform Habitats Regulations Assessment work for proposed new development is the fact that *existing* sewage treatment works within the catchment, to which *new* development would connect,

³⁴ Tyldesley, D. & Chapman, C. (2013). 'The Habitats Regulations Assessment Handbook' (November 2013 edition) UK: DTA Publications Limited

have already been assessed under the provisions of the Habitats Regulations by the Environment Agency through their 'Review of Consents' work under regulation 63. So, the Defra guidance on competent authority co-ordination is clearly of relevance to decision making for new proposals as the assessment requirements in relation to the disposal of wastewater have *potentially* 'already been met' by the Environment Agency.

Taking the above within the context of how the development of a NMP might inform such an assessment, certain principles can be extracted which are summarised below.

- a) Firstly, assuming development can be accommodated within a reviewed permit, a local planning authority *should* adopt the reasoning, conclusion or assessment set out within a previous Environment Agency decision in relation to their own assessment of wastewater impacts associated with new development, if they can.
- b) Secondly, it is clear that, irrespective of any reliance on a previous Environment Agency review decision, the ultimate responsibility for ensuring that a planning decision is compliant with the Habitats Regulations rests with the local planning authority concerned.
- c) Thirdly, it might be appropriate for a local planning authority to adopt only part of the reasoning, conclusion or assessment undertaken through the review.
- d) Finally, in all cases, it might also be necessary for a local planning authority to undertake additional work to supplement that undertaken by the Environment Agency through their review.

D.5 New development within the (post-review) headroom of sewage treatment works.

D.5.1 Introduction

The impacts associated with development which can be accommodated within existing 'post-review' capacity were considered as part of the Environment Agency review of consents. In considering the extent to which the review decisions might be 'adopted' by a local planning authority, or indeed other competent authorities, the Defra guidance quoted above is clear that it is necessary for the competent authority concerned to be satisfied that:

- No additional material information has emerged which might mean that the review decision has become 'out of date', and
- The analysis underpinning the reasoning, conclusion or assessment of the review decision is sufficiently rigorous and robust.

Taking bullet point 1 first, the 'additional material information' since the review decision which is of most relevance to these decisions is the revision to the phosphorus targets against which assessments need to be made. Section 2.0 of the Technical Annex 4 provides further information, but the targets which were used during the review have recently been updated in response to emerging evidence and understanding of the effects of phosphorus on riverine ecology in general. Also there is now information on background levels of phosphorus influencing concentrations in the river that was not available for consideration in the review. Furthermore the Simcat model used in the review has since been updated with inclusion of more of the smaller point sources, and new data helping to improve its calibration and reduce uncertainties in assumptions. The publication of the Joint EA/NE Paper in 2011 might also introduce material information which is of relevance to the review decision.

With regards bullet point 2, the technical aspect of the analysis underpinning the review decision can be assumed to be rigorous and robust as the Environment Agency has the necessary technical expertise to undertake such an assessment. However a competent authority wishing to 'adopt' the review decision will need to be satisfied that other aspects of the decision are also sufficiently rigorous and robust.

Each of these two tests is considered in more detail below, followed by a summary of what they mean for the 'adoption' of the review decisions in accordance with the Defra guidance.

D.5.2 Additional material information

The implications of the revision of the phosphorus targets for the SAC will need to be considered in relation to the review decision. Table D.3 below shows the targets used for the review against the current revised targets.

Water body (listed in d/s to u/s order along spine river)	SAC phosphorus standard for favourable condition*	
	Current revised targets (2014)	Targets for EA review (2010)
Hampshire Avon (Lower)	50	100 (Bickton to Christchurch) 60 (Salisbury to Bickton)
Dockens Water	15	40
Nadder (Lower)	50	100
Nadder (Middle)	50	100
Wylie (Lower)	50	60
Wylie (Middle)	50	60
Wylie (Headwaters)	50	60
Till Tributary - lower	20	40
Till Tributary - upper	30	60
Hampshire Avon (to near Nine Mile River)	50	60
Hampshire Avon (from d/s Nine Mile River)	50	60
Nine Mile River ¹	20	?
Bourne	50	60
Hampshire Avon (West) ²	50	?

Table D.3: Phosphorus Targets adopted during the review against the current revised SAC targets.

*Assessed as annual and growing season means (March-September) of reactive phosphorus (μg per litre) for latest 3 year period along length of water body

¹. The Nine Mile River is designated only along its upper reach as river SSSI and lies in Salisbury Plain SSSI and SAC

². The Hampshire Avon West tributary is designated as river SSSI only and extends upstream from the head of the River Avon SAC.

The Environment Agency review of consents (here referred to as the review) conclusions were reached on the basis of action required to remove the 'proportionate contribution' from Environment Agency consented sources from the amount the phosphorus exceeded the target within the river at that time. In doing so the action taken did not go beyond what was considered (at the time of the review) to be Best Available Technology (BAT). It is reasonable to assume that the subsequent changes to the targets would make a material difference to the *scale* of the phosphorus reductions required for a given stretch, and hence the 'proportionate' reductions from consented sources.

It is of relevance however that the phosphorus improvements relied on in the review related to 'standard' emission limits. These were applied in accordance with national guidance in light of the size of the works concerned, rather than a 'bespoke' limit calculated for each

individual works on the basis of a strict proportionate approach. The review documentation states:

*'The reduced emission levels comply with Review of Consents guidance for discharges, which sets out an emission limit of 1mg/l total phosphorus for discharges with population equivalents greater than 1000, and 2mg/l total phosphorus for population equivalents from 250-1000.'*³⁵

In practice therefore, where phosphorus reductions were required, the approach taken through the review imposed standard limits on the works affected. The review then asked whether the standard limits had achieved *at least* a proportionate reduction. In many cases, the review decisions were therefore based upon reductions which went *beyond* a proportional approach. Furthermore, the standard limits for works with population equivalents greater than 1000 was considered to represent BAT at the time of the review.

The review decisions for the River Avon SAC were based on reductions which in many cases went beyond a proportionate approach and, in any case, secured what was considered to be BAT at the time on all but two of the sewage treatment works within the catchment. At the time of the review the imposition of BAT at Warminster did not achieve a proportionate reduction and the Environment Agency approach for that particular works was to require the development of this Nutrient Management Plan for the river under the provisions of regulation 64(3). The modelled proportionate reduction was also not achieved at two other STWs but EA considered the failure lay within the error of margin of the modelling at that time

The implications of the changes to the phosphorus targets since the review have been compounded by the more recent emerging evidence of naturally high levels of phosphorus within the underlying Upper Greensand geology affecting certain stretches of the SAC. As already explained, this evidence is likely to prompt further changes to phosphorus targets.

The Joint EA/NE paper was also drafted following the review decisions and it sets out agreed policy positions which are material to the review decision. As set out in B.1, the joint paper describes the principles on which both the Environment Agency and Natural England will provide advice to local authorities and developers and states that *'The aim of these principles is to maintain or achieve the level of protection required for Natura 2000 sites in light of growth, and to achieve water quality targets in the longer term'*. This paper refers to sites such as the River Avon as 'sites with outstanding water quality issues post-Review of Consents' and, irrespective of reliance or otherwise on regulation 64(3), states that a 'management plan' should be developed for these sites which *'sets out the actions that will be required to achieve the conservation objectives'*.

D.5.3 Analysis underpinning the review decision

The review decision for Warminster Sewage Treatment Works relied on the provisions of regulation 64(3) (previously regulation 51(3)) and 'other action' being taken. In this regard the review documentation stated:

'The Environment Agency and Natural England have agreed that a Nutrient Management Plan for the Hampshire Avon SAC will be written looking at other sources of phosphate such as farming, groundwater and unconsented point sources and the appropriate action needed to address these. These diffuse sources (see figure C1.3.6) will be detailed further in the proposed plan. The implementation of this

³⁵ River Avon SAC – Site Action Plan v1.3, March 2010.

nutrient management plan fulfils Regulation 51(3) [now 64(3)] of the Habitats Regulations 1994 and supports a conclusion of no adverse effect for this consent on the basis of other action being taken. The Environment Agency has agreed that if biological evidence of adverse effect for this consent has been identified after other sources of phosphate have been addressed then the consent will be re-visited.’³⁶

This reliance on the development of a ‘Nutrient Management Plan’ is fundamental to the manner in which a competent authority might consider ‘adopting’ the review decisions for Warminster STW with regards to the ‘*analysis underpinning the reasoning, conclusion or assessment of the review decision*’. In the absence of a NMP, or any commitment to produce one, a competent authority might not have been able to ‘adopt’ the review decision for Warminster STW because the ‘further action’ which would have been relied upon would not have been progressed.

It is relevant for competent authorities looking to adopt the review conclusions to recognise that the development of a NMP was only identified as being necessary in relation to the decision for the Warminster STW. Adoption of the review decisions, without any further assessment effort, need therefore only *rely* on the NMP in respect of new development which would connect to this particular sewage treatment works. This conclusion of the Environment Agency prompted dialogue with Natural England who raised some queries in relation to the extent of the proposed use of Regulation 64(3) as part of their consultation response to the review process.

The consultation responses by Natural England to the review decisions are of relevance to another competent authority when considering whether the decision can be regarded as sufficiently rigorous and robust. Natural England is a statutory consultee under the Regulations so a competent authority looking to adopt the review decision should therefore ‘have regard’ to any representations they made, especially where they might continue to have relevance to the decision as to whether to adopt the conclusions of the review.

Natural England expressed a view that³⁷:

‘Even when the effect of a discharge is reduced in proportion to its contribution to the non compliance at the point of discharge, a conclusion of ‘no adverse effect on integrity’ can only be reached once a [NMP] has been secured... Based on the information available to NE, we understand that P concentrations across most of the River Avon SAC will still be exceeding the P target after the actions on licences proposed through RoC are implemented, and that such a [NMP] is not yet in existence. Whilst we acknowledge that EA-NE work is now underway to develop such a plan, it should be formally noted in the RoC audit trail that, where P non-compliance is predicted to remain following proposed actions on licences through RoC, a conclusion of ‘no adverse effect on site integrity’ for such licences is dependent on the production of an appropriate [NMP] for further P management.’

The Natural England response refers to external advice which had been sought from David Tyldesley (an independent consultant) on this matter³⁸ which stated:

‘It seems to me an appropriate use of the provisions of regulation 51(3) [now 64(3)] for the EA to conclude that the discharge now regulated to BAT will not adversely affect the integrity of the SAC and the post-AMP discharge can be affirmed. This is

³⁶ River Avon SAC – Site Action Plan v1.3, March 2010

³⁷ Letter from NE to EA dated 14th November 2009

³⁸ David Tyldesley advice to Natural England. ‘Housing Growth and phosphate levels in the River Avon SAC, Hampshire. 17th March 2009.

the case even though the action taken at the STW, and indeed all the other STWs will not eliminate the prospect of an adverse effect on integrity. Action taken or to be taken by competent authorities can also be taken into account in ascertaining whether the discharge under review would adversely affect the integrity of the site. The critical thing, if this is the course of action to be adopted in the RoC, is that the [NMP] is put in place promptly and that its provisions are effective and implemented expeditiously’.

In light of the Defra guidance, a competent authority looking to ‘adopt’ the EA review decisions in respect of a Habitats Regulations Assessment for new development should have regard to the consultation responses from Natural England which was informed by the independent advice provided by David Tyldesley.

D.5.4 Adoption of the review decisions

A decision by a competent authority to ‘adopt’ the review decision(s), or otherwise, ultimately needs to be made by that authority as part of its statutory duty to undertake an assessment under regulation 61. The following section sets out a generic position, agreed by the relevant members of the NMP Steering Group **but in each circumstance the competent authority concerned remains responsible for ensuring that the justification set out below is appropriate to the plan or project under assessment, and that the NMP can be regarded as ‘fit for purpose’ in terms of the particular decision to be made (refer C.3 above).**

On the basis of the reasoning set out above, the revision of the phosphorus targets and other matters set out above since the review have the *potential* to be material to an adoption of the review decisions, because together they might influence the outcome of the proportionate approach taken by the Environment Agency. However, upon closer inspection:

- a) The approach taken went beyond a proportionate approach for many of the works
- b) It is clear that BAT (at the time of the review) was applied to all but two of the sewage treatment works
- c) Had the application of BAT not secured ‘proportionate’ reductions in respect of the revised phosphorus targets, the review decision for Warminster suggests that the correct course of action would have been to regard the decisions for other works (beyond Warminster) to also be reliant on the development of an appropriate Nutrient Management Plan.

In light of the subsequent Environment Agency and Natural England Joint Paper (referred to in B.1), all parties have now agreed that the NMP is equally relevant to the historic decisions taken under the review in respect of all sewage treatment works which discharge into the catchment of the SAC. The uptake of all available *post-review* consented headroom across the catchment is therefore now considered to be reliant on the NMP providing sufficient certainty that an adverse effect on the integrity of the River Avon SAC, or damage to the River Avon SSSIs through additional loading from proposed development, will be avoided by implementing the plan (taking into account reasonable timescales for phosphorus reduction)³⁹.

Being mindful of paragraph 7 of the Defra guidance, and with reference to:

- **The revised phosphorus targets,**
- **the Joint EA/NE paper, and**
- **the Natural England consultation response to the review decision,**

³⁹ Refer para 4.3 of the Joint Paper

any adoption of the review decisions should, in the case of any development discharging to any of the sewage treatment works, be dependent on the development and implementation of a sufficiently robust NMP.

Recommendation: Sewage Treatment Works should be allowed to accept further connections without the need for an appropriate assessment, where permit headroom remains and where further development will not compromise deliverability of this NMP

D.6 Development which might compromise deliverability of the NMP (within existing post-review capacity)

Tables C.9 and C.10 above set out the basis upon which the NMP can be considered to be 'fit for purpose' at a strategic catchment level. It is a robust and credible plan which will improve water quality and deliver measures on the ground which will *work towards* the achievement of the Conservation Objectives in the longer term through the delivery of ambition target reductions in the short term.

However the extent to which each criterion can be evaluated on a stretch by stretch basis throughout the catchment is less straightforward. The river is a complex dynamic natural ecosystem and the factors influencing the phosphorus loading and the delivery of necessary reduction measures will vary enormously from stretch to stretch. It is possible therefore that whilst measures taken *across the catchment* will certainly deliver overall reductions, there may be localised stretches where further phosphorus loading might compromise the ability of the NMP to deliver its overall objectives.

It is for this reason that the Joint EA/NE paper includes a specific caveat to the reliance on a 'suitable management plan' being in place, irrespective of any capacity with a post-review consent. The paper states in respect of development which will result in (non-trivial) deterioration to existing water quality that *'we will not object to the application if a suitable management plan is in place which will improve water quality and aims to achieve the conservation objectives within a reasonable timescale, and the proposed development will not compromise deliverability of that plan'*.

In practice therefore, whilst there may be volumetric 'headroom' or 'capacity' available for new development within the specific limits of the post-review wastewater treatment works consent, through the 'adoption' of the review decisions, the availability of such headroom is reliant on the NMP being in place. The 'ambition target reductions' are set for certain 'stretches' within the river and localised circumstances, which might only come to light during the implementation of the plan, might mean that the allocation of capacity at a particular works *might* compromise the deliverability of the reduction targets unless further measures, over and above those identified in the NMP, are secured.

The NMP therefore needs to recognise from the outset that there is *potential* for increases in phosphorus associated with new development *in certain stretches* to off-set any reductions that may be achieved through positive actions taken forward as part of the overall NMP. It is therefore necessary for the availability of all 'post-review' capacity to be dependent upon any restrictions or limitations that the NMP might need to place upon that capacity at any particular treatment works.

Therefore, in spite of consented headroom being *potentially* available for new development, if it becomes apparent that the uptake of such capacity might compromise the deliverability of the plan, a developer contribution scheme (or an equivalent alternative) might reasonably



be required. Further information on any such scheme is provided in section H.3 below and Annex 3. Where relevant, new development that contributes to such a scheme will not conflict with the overall objectives and purposes of the NMP.

Table D.4 below sets out how the % achievement of the ambition target reductions through action on diffuse sources are affected by forecast growth⁴⁰. Comparing the 'without growth' columns to the 'with growth' columns reveals that in many cases the effects of forecast growth are minimal, but in some catchments the effects of growth have a more pronounced influence over the potential for reductions that might be delivered through action on diffuse sources to secure the necessary reductions.

As explained in section C, the 'optimum CSF' scenario represents a best case outcome which is considered to be very challenging to achieve. It is most likely in practice that the reductions achieved from diffuse sources will fall somewhere within the range of the 'current' and 'optimum' scenarios.

Water body	Target reductions	% ambition target achieved			
		CSF current without growth	CSF Optimum without growth	CSF current with growth	CSF optimum with growth
Hampshire Avon (Lower)	-9312	34	129	16	112
Nadder (lower)	-1421	114	360	99	345
Nadder (upper)	-417	157	293	157	292
Hampshire Avon (Upper) u/s Nine Mile	-2007	47	140	36	130
Hampshire Avon (Upper) d/s Nine mile*	-2007	47	140	36	130
Hampshire Avon (West)	-733	26	82	23	79
Bourne	-191	308	528	254	473
Hampshire Avon East and Woodborough Stream	-555	68	113	62	107
Nadder Middle	-1270	58	122	55	119
Wylie (lower)	-744	70	432	46	408
Wylie (headwaters)	-630	30	83	9	62
Wylie (Middle)	-588	70	332	43	305

Table D.4: The effects of forecast growth on the delivery of ambition target reductions from diffuse sources

 = ambition target reduction not achieved
 = ambition target reduction achieved

Considering the table above, the potential for growth within each water body catchment to 'compromise the deliverability of this NMP' is considered on the basis of risk. Sub-catchments which appear to be more susceptible to the affects of growth are identified as 'high' risk, whilst those which are less affected are 'low' risk as set out in table D.5 below. The risk categories assigned take account of the potential further reductions that might be achieved by further action on sewage treatment works sources within PR19 (column B in table C.3) and assume that further reductions from cress and fish farms (columns C-E in table C.3) are unlikely to be achievable⁴¹.

⁴⁰ Tables D4-D6 are based on forecast growth figures at the time of writing. Changes in growth forecasts may lead to subsequent changes to these tables.

⁴¹ Pers comm: EA advice regarding uncertainties in the modelled reductions from fish farms dated 7th October 2014

Water body	Risk from Growth	Justification
Hampshire Avon (Lower)	H	Delivery of the necessary reductions through diffuse sources is likely to be challenging for this water body, with diffuse reductions needing to approach the 'optimum scenario'. Further reductions from STWs sources only deliver 64% of the short term ambition target reductions. The effects of growth are pronounced (with an 18% difference between the current scenario with and without growth) and are therefore considered to have high likelihood of potentially compromising delivery of the NMP objectives (especially when the longer term objectives are considered).
Nadder (lower)	L	The ambition target reductions are 99% delivered on the basis of the 'current' CSF scenario with growth. The effects of growth are considered to have very low likelihood of potentially compromising delivery of the NMP objectives.
Nadder (upper)	L	The ambition target reductions are exceeded on the basis of the 'current' CSF scenario with growth. The effects of growth are considered to have very low likelihood of potentially compromising delivery of the NMP objectives.
Hampshire Avon (Upper) u/s Nine Mile	M	Delivery of the necessary reductions through diffuse sources is likely to be challenging for this water body, with diffuse reductions needing to approach 75% of the 'optimum scenario'. The effects of growth are considered to have moderate likelihood of potentially compromising delivery of the NMP objectives.
Hampshire Avon (Upper) d/s Nine mile*	M	Delivery of the necessary reductions through diffuse sources is likely to be challenging for this water body, with diffuse reductions needing to approach 75% of the 'optimum scenario'. The effects of growth are considered to have moderate likelihood of potentially compromising delivery of the NMP objectives.
Hampshire Avon (West)	L	In this water body it is not anticipated that the delivery of diffuse measures will deliver the ambition target reductions, further action on point sources is likely to be necessary. Whilst growth will only compound the problem the effects are fairly marginal (only 3% difference). The effects of growth are therefore considered to have a low likelihood of potentially compromising delivery of the NMP objectives.
Bourne	L	The ambition target reductions are exceeded on the basis of the 'current' CSF scenario with growth. The effects of growth are considered to have very low likelihood of potentially compromising delivery of the NMP objectives.
Hampshire Avon East and Woodborough Stream	M	Delivery of the necessary reductions through diffuse sources is likely to be challenging for this water body, with diffuse reductions needing to approach the 'optimum scenario'. The effects of growth are however fairly marginal (6% difference) and growth is considered to have moderate likelihood of potentially compromising delivery of the NMP objectives.
Nadder Middle	L	Delivery of the necessary reductions through diffuse sources is likely to be challenging for this water body, with diffuse reductions needing to approach 80% of the 'optimum scenario'. Whilst growth will only compound the problem the effects are fairly marginal (only 3% difference). The effects of growth are considered to have a low likelihood of potentially compromising delivery of the NMP objectives.
Wylfe (lower)	M	Delivery of the necessary reductions through diffuse sources will only require 25% of the optimum scenario to be secured. As a result whilst the effects of growth are pronounced (with a 24% difference between the current scenario with and without growth), the potential reductions

Water body	Risk from Growth	Justification
		from the 'optimum' scenario are so significant that the effects of growth are considered to have a moderate likelihood of potentially compromising delivery of the NMP objectives from diffuse and point source measures combined. It is only if very low commitments from farmers are secured that growth might pose more of a threat to delivery.
Wylfe (headwaters)	H	In this water body it is not anticipated that the delivery of diffuse measures will deliver the ambition target reductions, further action on point sources is likely to be necessary. Growth will not therefore make the difference between the target being delivered or not through action on diffuse sources. The effects of growth are however pronounced (with a 27% difference between the current scenario with and without growth) and whilst early action on point sources might deliver the short term ambition target reductions, the effects of growth are considered to have a high likelihood of potentially compromising delivery of the <u>longer term</u> conservation objectives targets through reductions from diffuse and point source measures combined.
Wylfe (Middle)	M	Delivery of the necessary reductions through diffuse sources will only require 33% of the optimum scenario to be secured. As a result whilst the effects of growth are pronounced (with a 27% difference between the current scenario with and without growth), the potential reductions from the 'optimum' scenario are so significant that the effects of growth are considered to have a moderate likelihood of potentially compromising delivery of the NMP from diffuse and point source measures combined. It is only if very low commitments from farmers are secured that growth might pose more of a threat to delivery.

Table D.5: Table showing the risk that growth might compromise delivery of NMP by water body

On the basis of the information set out in table D.5 above it is considered that growth which is most likely to have the potential to 'compromise the delivery of the NMP' is that within the catchment of the Hampshire Avon Lower and the Wylfe headwaters. The sewage treatments works which discharge to each of the water bodies is listed below; those which discharge to these two high risk catchments are highlighted in amber:

Sewage treatment works	Catchment
SALISBURY STW FE	Hampshire Avon (Lower)
WARMINSTER STW	Wylfe (Headwaters)
RINGWOOD STW	Hampshire Avon (Lower)
CANNINGS STW	Etchilhampton Water
HURDCOTT	BOURNE
COLLINGBOURNE DUCIS STW	BOURNE
PEWSEY STW	Hampshire Avon East and Woodborough Stream
FORDINGBRIDGE STW	Hampshire Avon (Lower)
DOWNTON	Hampshire Avon (Lower)
EAST KNOYLE STW	Sem
AMESBURY STW	Hampshire Avon (Upper) d/s Nine Mile River

SHREWTON	Till Tributary
RATFYN STW	Hampshire Avon (Upper) d/s Nine Mile River
GREAT WISHFORD	Wylfe (Lower)
FOVANT STW	Fovant Brook
MARDEN	Hampshire Avon (West)
UPAVON	Hampshire Avon (Upper) u/s Nine Mile River
NETHERAVON STW	Hampshire Avon (Upper) u/s Nine Mile River
TISBURY	Nadder (middle)
MAIDEN BRADLEY STW PRIOR TO SOAKAWAY	Wylfe (Headwaters)
BARFORD ST MARTIN	Nadder (middle)

Table D.6: sewage treatment works and receiving catchments

It is therefore the case that development which connects to the sewage treatment works which discharge to these high risk water bodies (highlighted amber in table D.6 above) will be more likely to require phosphorus removal or off-setting to be secured through developer contributions (refer H.3 and Annex 3 for further information), unless sufficient commitments to meet CSF ‘optimum’ can be demonstrated and/or further investigation identifies that significant reductions from fish and/or cress farms can be secured.

Recommendation: where the allocation of permit headroom is considered to compromise the deliverability of this NMP, phosphorus removal or offsetting will be required.

For purpose of implementation, and to provide clarify to decision makers, it is assumed by the Steering Group that development connecting to mains drainage will not compromise the deliverability of the plan until monitoring or modelling of impact on river water quality results (refer Annex 3 Evidence and Monitoring Plan) suggest otherwise. Once monitoring / modelling results become available this situation will be kept under review, and decision makers should be aware that developer contributions *might* be required during the timeframe of the NMP in respect of development connecting to ‘high risk’ STWs listed in table D.6, if the Steering Group decide, on a risk based professional judgment decision and the results of monitoring / modelling, that further growth could compromise the deliverability of the NMP.

Further detail regarding any such developer contributions will be provided within Annex 2 ‘Supplementary Planning Document’.

Beyond these sewage treatment works identified above, there are numerous smaller works which were screened out as being insignificant during the EA review, these works currently have no phosphorus stripping in place due to the relatively smaller scale of the discharge. Where capacity is available the allocation of such capacity will likewise need to be considered in terms of whether it might ‘compromise the deliverability of the NMP’. As set out in table D.5 above certain water bodies are identified as being at ‘high risk’ from growth in this regard and works discharging to those water bodies will require close scrutiny.

New development connecting to smaller works without P stripping in place which discharges to these high risk areas might require phosphorus removal or off-setting to be secured through developer contributions.

D.7 Development beyond existing consented headroom of the sewage treatment works

D.7.1 Why development beyond consented headroom needs to be treated differently

The justification and approach set out thus far is relevant to the allocation of any remaining capacity within the post review existing sewage treatment works consents. Development beyond existing capacity was not subject to prior assessment by the Environment Agency as part of the review process and, as such, there is no 'previous decision' in respect of such additional capacity which might be 'adopted'.

For development connecting to the mains, where new capacity is required to accommodate proposed development the permit at an existing works will need to be amended, or a new permit will need to be issued. Any variation to an existing consent or the granting of a new permit, will need to be assessed separately under regulation 61 and subject to a full Habitats Regulations Assessment by the Environment Agency as the relevant competent authority.

Likewise, where new development is proposed in a 'non-mains' location the rationale and approach set out so far within this section will not be relevant. All such development will also need to be assessed separately under Regulation 61.

Whilst the review decisions are not relevant to such development, and cannot be 'adopted' by competent authorities, the development of this NMP is still of relevance to decisions about such new development as explained below.

Whilst the NMP has now been published, with a clear commitment from the statutory bodies to implement the necessary measures, the reductions in phosphorus have not yet been delivered; decision making needs to acknowledge the necessary lead in time associated with:

- The implementation of measures to reduce phosphorus
- The actual delivery of reductions in phosphorus levels within the SAC (whilst some measures will result in immediate reductions, others will deliver more gradual improvements)

In assessing the effects of a plan or project in accordance with regulation 61, there are potentially two tests to be applied by the competent authority, a "significance test", followed if necessary by an appropriate assessment which will inform the "integrity test". The relevant sequence of questions is as follows:

- Step 1 - Under reg 61(1)(b), consider whether the project is directly connected with or necessary to the management of the site? If not –
- Step 2 - Under reg 61(1)(a) consider whether the project is likely to have a significant effect on the site, either alone or in combination with other plans or projects ("the Significance Test"). If Yes –
- Step 3 - Under reg. 61(1), make an appropriate assessment of the implications for the site in view of its current conservation objectives. In so doing, it is mandatory under reg 61(3) to consult Natural England, and optional under reg 61(4) to take the opinion of the general public. Reg 61(2) empowers the competent authority to require

the applicant to provide information for the purposes of the appropriate assessment, or to enable the authority to determine whether such an assessment is required.

- Step 4 - Pursuant to reg 61(5) and (6), consider whether the project will adversely affect the integrity of the site, having regard to the manner in which it is proposed to be carried out, and any conditions or restrictions subject to which that authorisation might be given (“the Integrity Test”).
- Step 5 - In accordance with reg. 61(5), but subject to reg 62, reject the project unless, it is ascertained that the project will not adversely affect the integrity of the site.

With full implementation of the NMP providing the *expectation* of an improving trend in phosphorus levels to those set as interim progress goals, it is not necessarily the case that all development which contributes additional phosphorus will have a significant adverse effect to the integrity of the SAC, even when considered in combination with other plans and projects. Temporal and spatial elements (duration and extent) of potential effects will need to be taken into consideration in coming to any such conclusions, with reference to case law and relevant guidance as discussed in Appendix 1 of this plan.

Recommendation: Where a STW reaches its full permit headroom, or otherwise requires any form of variation, any requirement for a new permit or any change in permit condition should be re-assessed in accordance with current permitting regulations and practice and will be subject to a full Habitats Regulations Assessment in light of best available scientific understanding of the catchment.

D.7.2 Effects from development which can be regarded as ‘insignificant’

Applying the principles established following the discussion on case law and guidance in Appendix 1 will rarely be straightforward in practice, in particular with regards to a decision that effects can be regarded as ‘trivial’ or ‘de minimis’. However practical guidance is available through the Habitats Regulations Assessment Handbook which states at section C.7.1 that:

‘An effect which would not be significant can properly be described as an ‘insignificant’ effect; or a ‘de minimis’ effect or a ‘trivial’ effect; or as having ‘no appreciable’ effect; but it is important to keep firmly in mind that, in this context, all the terms are synonymous and are being used to describe effects that would not undermine the conservation objectives⁴²

The consideration of such ‘insignificant’ effects is further complicated in practice by the in-combination requirements and the need to assess an individual plan or project ‘in-combination’ with other plans and projects. In addressing this issue the Handbook goes on to clarify in C.8.1 (with added emphasis) that:

‘... it may be apparent at an early stage that there are no other plans or projects with effects which could combine with those of the subject proposal to produce any significant adverse effect on the integrity of a site in combination. In this case cumulative effects are taken into account by their elimination; and the subject plan or project may be authorised.

One type of situation where an early conclusion as envisaged in principle 7 [referring to preceding text in Handbook] might be justified is when consideration of:

⁴² Tyldesley, D., and Chapman, C., (2013) *The Habitats Regulations Assessment Handbook*, June 2014 edition UK

- *the generally restrictive nature of the local planning or other regulatory or policy context, or*
- *the characteristics and specific environmental conditions and pressures at the site, and*
- *the lack of any credible evidence for a real risk of any damaging precedent whereby harmful effects on the site from similar proposals might accrue in a cumulative manner over the long term through proliferation,*

might lead to a conclusion that the risk of the subject proposal contributing to a significant adverse effect in combination is hypothetical rather than realistic. Where this is the case, cumulative effects are taken into account, and excluded on the basis of lack of credibility, without having to identify all other plans and projects and undertake what might be a costly and time consuming assessment, on the basis of effects which are not credible. To put it another way, such an effect can properly be described as: an 'insignificant effect'; or a 'de minimis' effect; or a 'trivial' effect; or as having 'no appreciable effect' (refer principle 6, C7). This principle should be applied with caution, on a case-by-case basis. Competent authorities should not assume that categories of plans or projects defined by reference to spheres of activity can, by definition, be excluded as a 'rule of thumb'. European case law specifically excludes such an approach (refer Section C.7.5.1). Points a. and b. [referring to preceding Handbook text] above will be different for each European site and a plan or project which might only present a hypothetical risk of cumulative effects at one site, might present a real risk to another.'

This guidance therefore sets out three criteria against which a competent authority might test a decision as to whether proposed development might be regarded as 'insignificant' either alone or in-combination. Two examples are provided in section E.8.3 to assist readers when trying to apply the guidance which are as follows:

'First, where there are strict policies and regulatory controls in place limiting the number of other proposals that may be authorised, it may be clear that other plans or projects will not realistically add to the effects of the subject project because they are unlikely to be authorised.

Secondly, where a particular European site may theoretically be sensitive to the effects of increased recreational pressure from new housing projects, but the area is remote and largely inaccessible and development pressures are very low. The potential recreational effects from a single dwelling would be insignificant. In-combination effects can also be eliminated because cumulative effects from the small number of other dwellings likely to come forward in the area mean there is no credible risk to the site'.

With particular reference to 'strict policies and regulatory controls' referred to above, it is relevant to note that both Natural England and the Environment Agency work to agreed criteria in respect of the assessment of non mains discharges to surface water. It is therefore entirely feasible that a robust argument might be made for certain development proposals being 'insignificant' in the context of regulation 61 where they are below the screening thresholds agreed by the Environment Agency and Natural England as being relevant for the River Avon. Such criteria will have been developed to take account of the potential for proliferation and can be relied upon to ensure sufficient protection to a European site. Table D.7 below sets out the criteria which are used at a national level by Natural England on impact risk from discharges in the catchments of riverine SACs and SSSIs. Evidence from the Avon catchment suggests these criteria should be refined to

better reflect local circumstances. They are presented here for guidance within this NMP and at the present time should be used with caution to screen out proposals.

Within site	All discharges
Within 500 m	All discharges
Within 1 km	All sewage or trade discharge to SW greater than 2 m ³ /day
Within 3 km	All sewage or trade discharge to SW greater than 5 m ³ /day.
Within 5 km	All sewage or trade discharge to SW greater than 10 m ³ /day
Within 10 km	All sewage or trade discharge to SW greater than 20 m ³ /day.

Table D.7: Screening criteria for non-mains discharges

For discharges which are not screened out on the basis of the above screening criteria, a further assessment will be necessary. Whether a discharge which is screened in on the basis of the other criteria and might nevertheless be regarded as ‘strictly temporary’ and ‘capable of being fully undone’, and hence ‘insignificant’, will need to be considered on a case by case basis, with regard to advice from Natural England. Such a decision will need to be informed by consideration of:

- a) the magnitude and spatial extent of the proposed effect
- b) the characteristics and specific environmental conditions at the site
- c) the measures being delivered through the NMP which might ‘fully undo’ the effects from the proposed development and the timetable for implementation

Recommendation: The screening criteria for discharges to groundwater and surface water should be locally refined in the light of evidence from the Avon catchment. Pending this refinement non-mains point source discharges which are screened out on the basis of the criteria in D.7.2 will normally be considered as ‘insignificant’, appropriate assessment will not be required for such development

D.7.3 Effects which are neither ‘trivial’ nor strictly temporary

There will be circumstances where the phosphorus contribution from a proposed plan or project cannot be considered to be ‘insignificant’ or to represent a ‘temporary’ increase in phosphorus load within the SAC. In such cases the duration, severity and spatial extent of the potential increase might be considered to undermine the conservation objectives of the SAC, and hence become ‘significant’ within the context of regulation 61, even when considered in combination with the measures being delivered through the NMP. Such a situation might arise where:

- a) there is a lack of clear measures within the NMP which will be relevant to the stretch affected,
- b) the severity and spatial extent of the effects are such that the identified measures could no longer be relied upon to deliver the ambition target reductions in the short term and achieve the conservation objective targets in the longer term.

Under both scenarios, the development concerned would compromise the deliverability of the NMP; it is anticipated that where this is the case new development will need to be subject to plan or project bespoke mitigation measures. These will need to be agreed with the relevant authorities who will ensure that the proposed development will have no overall effect on the phosphorus levels within the SAC. It is generally expected that such project specific mitigation will need to be provided prior to occupation/utilisation of the development

concerned, and will be the responsibility of the project proposer. Where no such mitigation measures are available, it is likely that the plan or project will need to be refused (subject to the derogations set out in the Habitats Regulations).

It is possible that, where development pressure is high, a strategic solution to such bespoke measures might be delivered through a developer contributions scheme (see further H.3 below and the Annex 2 'Supplementary Planning Document').

The Annex 2 'Supplementary Planning Document' is scheduled to be produced by Wiltshire Council by March 2016. In the meantime, an interim approach to decision making is required which is set out below:

- If the discharge is such that an Environmental permit is required from the Environment Agency, bespoke mitigation measures are likely to be required, the needs for phosphorus offsetting will be considered on a case by case basis.
- If the discharge triggers the screening criteria for significance but does not require a permit from the Environment Agency phosphorus offsetting will not be required during an agreed grace period until the Supplementary Planning Document is published.

Recommendation: Non-mains point source discharges which trigger the screening criteria for significance, will require phosphorus removal or offsetting unless a risk assessment can identify the discharge will not result in an adverse effect on the integrity of the River Avon SAC, or the discharge is otherwise allowable under the 'interim approach'.

E An explanation as to how to use and apply the NMP in practice to inform and improve compliance with SSSI obligations.

Whilst the boundary of the SAC is defined, the scope of this NMP covers the entire catchment of the River Avon. As such its influence extends to all parts of the catchment, whether the stretch concerned is a designated SAC, a classified SPA, or a notified SSSI. Whilst land which is within a European site is always underpinned by a SSSI notification the reverse is not always true. The extent of the SSSIs within the catchment is greater than the extent of the SAC and in certain areas SSSI obligations will prevail unless activities also affect the SAC to an equal or greater extent.

Where boundaries are coincident, the nutrient targets for the SSSI features are synonymous with those which apply for the European site and, with regard to the effects from nutrients, compliance with the Habitats Regulations can be assumed to also achieve compliance with SSSI obligations. However there are river stretches which are notified as SSSIs which are not also part of a European site; compliance with the Habitats Regulations should not be assumed to also deliver compliance with SSSI obligations under such circumstances.

As set out in A.3.2 above, Public bodies have a duty to *'take reasonable steps, consistent with the proper exercise of the authority's functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is a SSSI'*. Furthermore, statutory undertakers (also referred to as 'section 28G authorities') have specific duties in relation to carrying out operations which are 'likely to damage' the features of a SSSI. Where a stretch of river which is a SSSI *only* is affected the approach set out in D.7 would apply with appropriate modifications for a SSSI. The potential effects of existing consented activities on such stretches was not subject to prior assessment by the Environment Agency as part of the review process and, as such, there is no 'previous decision' which might be 'adopted'.

As in D.7, whilst the review decisions are not relevant to such a scenario, the development of this NMP is still of relevance to such decisions. The NMP sets out a clear commitment from the statutory bodies to implement the necessary measures to achieve compliance not only with the Habitats Directive (which applies only so far as the extent of the SAC), but also with the Water Framework Directive, which applies to the entire catchment.

With the NMP now in place, and the *expectation* of an improving trend in phosphorus levels, it is not necessarily the case that all development which contributes additional phosphorus will be 'likely to damage' the features of a SSSI. Temporal and spatial elements of potential effects will need to be taken into consideration in coming to any such decisions.

Local planning authorities have a statutory duty to consult NE in respect of all developments likely to affect the interest features of a SSSI whether or not the proposed development is located in the SSSI. Para 118 of the National Planning Policy Framework also refers to 'in combination' effects in relation to SSSIs not just SACs.

F Roles and Responsibilities

This section explains the roles and responsibilities of those who may be involved in the adoption and implementation of this Nutrient Management Plan.

F.1 Environment Agency

The Environment Agency has a range of statutory duties and is a ‘competent authority’ under the Habitats Regulations as well as being ‘the Agency’ under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 and thus lead regulator in England. In partnership with Natural England and other signatories the Environment Agency is responsible for the implementation of this NMP. The Environment Agency has agreed to work with Natural England to achieve the objectives set out in this NMP; namely to deliver the necessary measures in accordance with the agreed timetable to meet the ambition target reductions in the short term and achieve the Conservation Objectives for the River Avon SAC in the longer term.

The Environment Agency will commit necessary resource to the implementation and ongoing monitoring of this plan and is committed to giving clear, cohesive and complementary advice regarding its implementation.

The Environment Agency is responsible for ensuring that any further consented discharges into the river, beyond those considered during the review of consents (see B.3), are fully compliant with the requirements of the Habitats Regulations and subject to assessment under regulation 61 where appropriate.

F.2 Natural England

As set out above, Natural England, working in partnership with the Environment Agency and other signatories is jointly responsible for the delivery of this NMP and will work with the Environment Agency to achieve the plan’s objectives. Natural England is the ‘Statutory Nature Conservation Body’ with associated roles and responsibilities in the implementation of the Habitats Regulations.

Natural England will also commit necessary resources to the implementation and ongoing monitoring of this plan and is committed to giving clear, cohesive and complementary advice regarding its implementation.

Natural England are responsible for setting the conservation objectives for the site and will work to review the current targets for phosphorus in light of the emerging evidence for high natural levels of phosphorus within the upper greensand, in consultation with the Environment Agency, as soon as reasonably practicable.

F.3 Local Planning Authorities

Local planning authorities are also ‘competent authorities’ under the Habitats Regulations and must ‘have regard’ to the requirements of the Birds and Habitats Directives in exercising

any of their functions⁴³. They have obligations as a ‘public body’ to have regard to the River Basin Management Plan and to any ‘supplementary plans’ within the river basin district.

Whilst the *responsibility* for preparing the NMP rests with the Environment Agency and Natural England, the delivery of the measures and the overall success of the plan are dependent upon the appropriate engagement of local planning authorities. Local Planning Authorities are responsible for ensuring that their decision making is compliant with the requirements of the Habitats Regulations. In doing so they must therefore have regard to the NMP and in particular to the approach set out in section D below.

F.4 Water Utility Companies

Water utility companies are likewise ‘competent authorities’ under the Habitats Regulations and ‘public bodies’ under the Regulations which implement the Water Framework Directive. As such they also have a statutory duty to ‘have regard’ to the requirements of the Birds and Habitats Directives and to the River Basin Management Plan.

F.5 Farmers (including fish farms and cress farms) and land managers

Many of the measures identified for implementation within this NMP are voluntary in nature. The role of farmers (including those involved in fish farms and cress farm) and land managers in the delivery of the ambition target reductions and the overall achievement of the Conservation Objectives should not be underestimated. As set out in section 3 of the Technical Annex 4, the NMP will seek to deliver its objectives without the need for regulatory control. The willingness of farmers and land managers to sign up to the various delivery mechanisms will be crucial to the extent to which reductions can be achieved without the need for further regulatory control.

F.6 Residents

Whilst residents within the catchment have no ‘responsibility’ for any of the measures set out within this plan, everyone can ‘do their bit’. Reducing water usage in the home and at work will reduce the wastewater load on sewage treatments works and thus help to maximise the benefits that the delivery of the NMP measures will secure for the river. Reporting water pipe leaks to the local water company also helps as prompt repairs reduce the loss of water from the supply network and allows more water to remain in the river for dilution of wastewater from treatment works.

F.7 Summary

Summarising the information from section C above and looking beyond to delivery of the longer term objectives of the NMP the following responsibilities, actions and outcomes can be established:

Dates	Responsibility	Actions	Outcomes
Ongoing	Environment Agency Natural England Wessex Water	Engage as appropriate with discussions over allocation of funds from Defra (NELMS and WFD funding) and through	Secure sufficient resources to implement NMP

⁴³ Refer regulation 9(3) of the Habitats Regulations

Dates	Responsibility	Actions	Outcomes
		PR14 for diffuse pollution measures	
Ongoing	Environment Agency Natural England	Identify and secure sufficient staff resource (reallocation of existing FTE or recruitment of new FTE as might be appropriate)	Ensure skilled staff in place, with appropriate management structure and clear remit to deliver the NMP
Ongoing	Natural England Environment Agency	Further Investigation of evidence for natural levels of P in upper greensand and implications for current targets Produce Annex 3 'Evidence and Monitoring Plan'.	Publish revised conservation objectives targets for P which take account of the upper greensand issue as soon as possible but by 2020 at the latest
Ongoing	All Steering Group members	To review the implications of development within the sub catchments which are considered to have a 'high risk' of compromising deliverability of the plan (refer table D.5). Agree how development in these catchments needs to be progressed and need for developer contributions	Produce Annex 2 supplementary guidance document regarding development which connects to the 'high risk' sewage treatments works identified in table D.6 by March 2016
2015-2020	Environment Agency, Natural England	Produce Annex 1 Implementation Plan. Extensive engagement with farmers to seek to secure sufficient commitment to the CSF 'optimum' scenario measures and meet the % farmland targets set out in table C.7 Ongoing monitoring	Maximise commitment from farmers / land managers to implement phosphorus reduction measures to as full extent as possible to achieve the ambition target reductions.
2018-2020	Environment Agency Natural England	Review the CSF reductions secured and consider if further action on point sources is necessary. Secure funding for PR19 to implement any further measures on point sources	Secure delivery of (or commitment to) remaining measures to secure the achievement of the conservation objectives targets by 2027
2020-2025	Environment Agency Natural England	Implementation of further measures on point sources and ongoing monitoring of implementation of diffuse source measures	Secure delivery of (or commitment to) remaining measures to secure the achievement of the conservation objectives targets by 2027
By 2027	Environment Agency Natural England	Implement further measures as necessary (whether point source or diffuse).	Meet the WFD objectives to secure good status across the catchment and deliver the protected area objectives (ie: the conservation objectives) within the SAC.

Table F.1: Responsibilities, actions and outcomes to deliver the NMP

G Cost Effectiveness

As set out in B.3 above, the production of this NMP has been relied upon by the Environment Agency in their decisions recorded under the 'review of consents' meaning it is subject to the certain legal requirements. With relevance to this NMP, the Habitats Regulations state that the authorities involved must '*seek to ensure that the action taken is the least onerous to those affected*'⁴⁴. This 'least onerous' duty (refer further B.3.5) is to 'seek to ensure' rather than to 'ensure'. So, where the NMP is being relied upon to secure that existing sewage treatment works will not have an adverse effect on the integrity of the River Avon SAC, the obligation upon the authorities involved in its implementation is to do their best to ensure that the measures to be delivered are the 'least onerous' to those involved. Certainty regarding such matters is not therefore required by law; demonstrating *certainty* that any particular course of action would actually be the 'least onerous' would be very difficult and potentially open to extensive debate.

The Environment Agency adopted a proportionate approach to their review decisions whereby they sought to secure reductions which removed a 'fair share' from consented sources. The rationale against which a 'fair share' approach to the decision making might have been justified, as a *starting point*, could have been entirely appropriate. It would certainly have been unreasonable for the EA to take further action on point sources beyond their 'fair share' without having considered what reductions might realistically be achieved from other sources. Indeed the provision of regulation 64(4) envisages that a decision taken under review might have regard to such 'other action' taken or to be taken, either by EA or by another competent authority. However, **there is no regulatory basis for a 'fair share' or 'proportionate' approach to then be carried forwards, as a *guiding principle*, to be applied to subsequent decisions over the nature of such 'other action' which might ultimately be delivered through this NMP.** Once a fuller understanding is obtained over the various options through which such 'other action' might be delivered, the decision taken over which of the various options to progress, **must (under regulation 64(4)) be the 'least onerous' to those affected, whilst still fully meeting the requirement to secure the integrity of the site concerned.** It should not be assumed, without justification, that a fair share approach would necessarily be the least onerous to those affected

The aim of this NMP is not therefore to seek reductions from diffuse sources *irrespective* of what might be achieved through further action on point sources, instead potential measures across all sources are considered and the action which is considered to be the 'least onerous' to those affected is taken forward. Whilst 'least onerous' will not always equate directly to 'cost effectiveness', cost implications are a primary consideration in respect to the burden placed upon those affected.

Section 4 of the Technical Annex 4 technical report to this plan sets out some introductory cost benefit assessment of the measures which are included within the NMP. The conclusions of this analysis are set out in section 4.3 which states that '*It is felt that the resource allocations under Wessex Water catchment initiative are the most likely to deliver optimum P reduction. The estimated cost would be £64/kg P reduction, comparable with the capital only costs for point sources*'. However, as set out in C.2, this initiative is highly targeted to 44km² of the overall catchment; whilst the reductions delivered might be 'cost effective' they will make only a nominal contribution towards the achievement of the phosphorus reduction objectives. The discussion goes on to refer to the broader number of benefits arising from measures which tackle diffuse sources including reduced suspended

⁴⁴ Refer regulation 64(4)

sediment, reduced nitrogen leaching and a lower CO₂ footprint.

Whilst farmers are 'affected' by the NMP measures, section 4.2 of the technical annex highlights that significant phosphorus reductions might be achieved on a farm scale without incurring costs to the farmer. There are of course cost implications associated with the engagement and provision of advice to farmers across the catchment but these could be funded through wider initiatives.

Should the diffuse measures not deliver the necessary reductions to achieve the objectives of this NMP then the 'least onerous' course of action to secure the integrity of the SAC would be to consider further reductions to point sources.

It is clear that further work to produce a full analysis of costs is necessary to underpin the selection of measures to be taken forward through this plan, and provide supporting information against which the 'least onerous' measures can be identified and prioritised.

Recommendation: A full analysis of costs should be undertaken to inform decisions regarding the selection and implementation of measures, and to seek to ensure that those taken forward are the 'least onerous' to those affected.

H Implementation and Delivery

H.1 How the measures are proposed to be implemented, and by whom.

As set out in section F, the ultimate responsibility for delivery of the objectives of the NMP rests with the Environment Agency and Natural England. **The Annex 1 Implementation Plan (refer table A.1) will provide the detailed information regarding implementation of the measures required by this NMP.**

The Environment Agency has regulatory powers to deliver measures which relate to point sources (which are subject to permits), and more limited powers with regards the implementation of measures to address diffuse sources of pollution. This potential difficulty in securing implementation of measures to tackle diffuse sources of pollution is not unique to this NMP; the recently published Defra 'River basin planning guidance'⁴⁵ acknowledges this challenge in the context of meeting obligations under the Water Framework Directive. This NMP is concerned with meeting obligations under the Water Framework Directive as well as those under the Habitats Directive and, whilst it is not the formal River Basin Management Plan document for which the guidance is drafted, there are principles set out therein which are equally relevant to the delivery of measures in respect of the implementation of this NMP.

The guidance states at para 4.13 that: *'If there are disputes about the implementation of voluntary measures, the Agencies should seek to resolve them. But if agreement is not possible, the Agencies should consider alternative voluntary measures or, if necessary, use regulatory measures to achieve the environmental objective'*.

The guidance goes on in paras 4.11-4.13 to note that:

- a) Non regulatory powers may include voluntary agreements
- b) Non regulatory powers could also include payments for ecosystem services
- c) In considering 'non-regulatory measures' the decision making process should consider whether there is sufficient certainty and permanence in the delivery of required outcomes.

Should voluntary measures not deliver the necessary reductions by 2021 the Environment Agency may need to utilise regulatory powers to ensure that the objectives are secured.

The diffuse pollution reduction required to achieve the ambition targets is likely to be co-ordinated through Wessex Diffuse Pollution Reduction Project. This will bring all partners across Wessex, including Wessex Water, CSF, Environment Agency and other organisations, together to deliver diffuse pollution reduction work in a co-ordinated way. The key focus of this group shall be to:

- prioritise diffuse pollution work across Wessex in a co-ordinated way
- agree geographical areas each organisation shall operate and identify additional resources required (where available) to deliver catchment objectives
- agree common objectives & pollutants that advisers should focus on reducing across each catchment. Across the Avon this shall be nitrates within Safeguard Zones and Phosphorus across the wider catchment area.
- Agree implementation & engagement plan for each year (farms that will be visited & outcomes sought).

⁴⁵ River Basin Planning Guidance, Defra, July 2014

Organisational Managers



Diffuse Pollution Steering Group (Wessex Wide: including Water Companies, Regulators, NFU, CLA and representatives, Local Authorities of nongovernmental organisations)



Catchment Based Partnership (Catchment Specific) & Task Groups



Delivery Group (Advisers from all organisations involved in this work)

The Wessex Diffuse Pollution Implementation plan shall be overseen by a Steering Board, comprising of the Environment Agency and Natural England, Local Authorities, Water Companies and landowner representative groups such as the National Farmers Union and Country Landowners Association. Ultimately it will be the responsibility of each competent authority and individual within the catchment to follow guidance and best practice and achieve the outcomes required of them through legislation. The Diffuse Pollution Steering Group shall meet biannually and receive guidance from a Catchment Based Partnership and Delivery Group.

H.2 The role of the Periodic Review and Asset Management Planning

The 'Periodic Review' and 'Asset Management Planning' cycles are essentially the processes through which water companies, in consultation with OFWAT, *review* the work that needs to be undertaken to maintain their infrastructure and/or meet regulatory obligations and *plan* how and when such work will be carried out and appropriately funded.

This process is in place to ensure external scrutiny over any proposed changes to prices charged to customers; ensuring any price increases are both reasonable and necessary.

So, where the NMP identifies measures relating to water utility company assets, the delivery of such measures will necessarily incur costs which will need to be passed to the customer. The implementation of such measures will therefore necessarily (to ensure OFWAT scrutiny) involve them first being proposed through the next round of the Periodic Review of the water industry in 2019 (PR19) for inclusion in the subsequent Asset Management Plan for 2020-2025 (referred to as AMP7) which will set out when the measures will be implemented within the wider programme of works.

H.3 The need and justification for any developer contribution scheme that may be necessary

If there were to be no new development in the catchment, developer contributions would not be a consideration with regard to the implementation of the NMP measures. The NMP would be concerned solely with the 'establishment of the necessary conservation measures' and the taking of 'appropriate steps to avoid deterioration' in accordance with the obligations under Articles 6(1) and 6(2) of the Habitats Directive, which are duties upon the Government.

However, the development pressures within the catchment are intense. Section D sets out the basis upon which the NMP might be relied upon by competent authorities to facilitate new development. However, there will inevitably be a point at which the measures delivered through the NMP will no longer be sufficient to facilitate development beyond a certain point in a manner which is compliant with the requirements of the Habitats Regulations.

This is reflected in the core strategy Wiltshire Council which states, at para 6.178 that '*new development must not prejudice achievement of the conservation objectives for the SAC over the long term*'. A key objective of this NMP is to achieve the conservation objectives for the SAC, over the longer term. Development which compromises deliverability of this NMP will therefore, by definition, prejudice the achievement of the conservation objectives and will be inconsistent with the NMP.

The potential for development of this kind has already been acknowledged in sections D.6 and D.7 above; the potential scenarios through which such development might arise are not repeated here. Suffice to say that, where such development is nevertheless proposed, reliance on the NMP alone will not be able to provide compliance with the requirements of the Habitats Regulations. Under such circumstances further measures, beyond those being delivered through the NMP will need to be identified and secured which are likely to need to be funded through developer contributions.

It is important to be clear from the outset that such developer contribution will not be used to deliver the wider obligations with which the NMP is primarily concerned, but will be targeted at measures which will be required to offset the phosphorus arising from the new development. In this regard para 6.179 of the core strategy states:

'Developer led measures or financial contributions to help implement the NMP could be secured through Section 106 or CIL contributions for implementing the relevant NMP, or through on or near site measures to be agreed by the LPA (in consultation with the EA and local utility providers as necessary)... An important principle is that developers are only required to offset the P arising from proposed new development and contributions would not be used to reduce historic pollution.'

As set out in sections D.6 and D.7, future development where phosphorus removal or off-setting might need to be secured through developer contribution has been identified.

The need for developer contributions is under consideration by the Steering Group. Further specific guidance will be issued by March 2016 as Annex 2 to this NMP regarding the form of measures which might be delivered and the scale of any contributions which might be necessary.

Recommendation: Where off-setting is required, the level of offsetting shall be determined by the P load (kg) that will enter surface waters from new development. Groundwater discharges to chalk aquifer may require a lower level of offsetting where the attenuation of phosphorus loads can be demonstrated. Offsetting for development which will compromise deliverability of this NMP will be provided through the use of developer contributions. Developer contributions must be targeted to measures which will directly offset the effects of new development and should not be used to deliver wider NMP obligations.

H.4 Provisions for monitoring, review and a protocol for revisions

Monitoring of progress in delivering the NMP is an essential part of the ongoing governance of the plan. **Further detail regarding evidence and monitoring will be provided in the Annex 3 Evidence and Monitoring Plan (refer table A.1).** Monitoring to be undertaken will include:

- a) Ongoing monitoring of water quality and phosphorus levels (by Environment Agency)
- b) Monitoring of the extent of farm land in each sub catchment on which commitments for P reduction measures have been secured (by Natural England CSF officers and Wessex Water catchment initiative officers)
- c) Monitoring of the delivery of reduction measures in each sub-catchment (by Natural England CSF officers and Wessex Water catchment initiative officers)

The NMP as a whole is a live document which will be subject to a formal programmed bi-annual review. This review process will enable the plan to adapt to the results of such ongoing monitoring and also to any other material considerations which might arise, such as the publication of revised conservation objectives targets for stretches affected by high background levels of phosphorus in the upper greensand.

A timetable for review is set out in figure H.1 below

	2017	2019	2021	2023
1 st review				
2 nd review				
3 rd review				
4 th review				

Figure H.1: NMP review programme

Individual Annexes of the NMP (as set out in Table A.1) will be subject to their own review programmes which will be developed as these annexes are produced.

Where necessary the review will identify further measures to be taken, in light of the reductions already secured, and set out how any such measures will be implemented and by whom. The Environment Agency and Natural England will prepare a protocol for revisions prior to the first review scheduled for 2020.

Delivery of the favourable status in the Avon, will require continued monitoring across the catchment and a regular (in line with WFD reporting) update of this plan. Current WFD monitoring may not be sufficient to achieve these objectives and it is recommended the location, type and frequency of monitoring is reviewed to ensure the appropriate data is collected during the period of this NMP to enable the benefits of measures to be assessed and refined understanding of natural sources of P across the Avon gained. Natural England and the Environment Agency should agree who and how this will be delivered.

The type of monitoring that will be required will include:

- Changing Farming Practices: the uptake of measures by farmers and comparison with required uptake to achieve P load reduction and ambition targets.
- Land Use Change: Changing farming practices through Agricultural Census & CSF surveys.
- Water Quality: Surface and groundwater quality within key catchments and at strategic locations along the Avon and its tributaries to enable water quality along key reaches of the Avon to compare with land use/measure changes. Continuous gauging (flow and quality) should be installed on key sites to refine our understanding

of total phosphorus loading. This is likely to include Knapp Mill in the Lower Avon, at the confluence of Upavon East and West in Upper Avon, and potentially on the Wylde or Nadder.

- Ecology: surveys should be undertaken to track the condition of designated species within the Avon and to be able to link this to water quality and other determining factors.

Recommendations:

Surface and groundwater quality across the Avon should continue to be sampled and analysed to refine our understanding of the spatial and temporal influence of Upper Greensand and Chalk mineralogy on surface and groundwater quality and in particular phosphorus concentrations.

If better local characterisation of natural / background concentrations is available for Upper Greensand Fed catchments, revised conservation objective standards for the Hampshire Avon should be developed, taking into account the ecology that would be expected in a naturally phosphorus rich environment such as the upper reaches of the Hampshire Avon. This will supplement or provide a local refinement of current conservation objectives targets.

The framework of surveillance and investigation monitoring should be refined, incorporating that from research programmes, to improve knowledge on phosphorus concentrations and loads across the river system, to inform the targeting of measures on point and diffuse sources and to discern changes that arise with delivery of these measures

The baseline improvement in water quality should be monitored against SIMCAT 2010/11 water quality and flow, and with reference to WFD reporting.

This NMP should be updated in line with WFD planning cycle and in light of new science, growth projections, water quality targets and information on natural / background concentrations.

The recommendations of this plan should continue to be reviewed, as scientific knowledge improves. In particular some areas where a refinement in our understanding of natural processes would be of benefit would include:

1. Geographical and spatial understanding of natural phosphatic minerals in the Upper Greensand and its influence on river baseflow OP & TP concentrations. This will enable further refinement of water quality targets and ecological targets across the Avon.
2. Impact and link between nitrate and phosphorus and SAC designated species
3. The impact of temperature change on eutrophication in the Avon & potential impact of climate change.
4. Refining list of measures for diffuse agricultural delivery.

Principles which can be extracted from European and Domestic case law and guidance relating to development which is 'insignificant'

European case law

In Waddenzee, Case C-127/02 the European Court of Justice ruled authoritatively on the interpretation of Article 6(3), including to the effect that:

- An effect should be considered 'likely': *"if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the site"* (para 45)
- An effect should be considered 'significant' *"if it undermines the conservation objectives"* (para 47)
- A conclusion of no adverse effect on integrity : *"That is the case where no reasonable scientific doubt remains as to the absence of such effects"* (para 59)

In relation to the likely significant effect screening stage (the significance test) Advocate General Sharpston, in an opinion delivered to the Court of Justice of the European Union⁴⁶ commented:

'The requirement that an effect in question be 'significant' exists in order to lay down a de minimis threshold. Plans or projects that have no appreciable effect on the site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill'

Of relevance to the manner in which the NMP might inform an assessment under regulation 61, the case in question to which this opinion refers considered the potential permanent loss of part of a SAC, and the implications for the integrity of the site affected. In setting out her arguments, the Advocate General also, for purpose of comparison, gave consideration to how a temporary effect might be considered.

The Opinion helpfully clarifies two important points. Firstly, it allows for the authorisation of proposals whose possible effects, alone or in combination, can be considered 'trivial' or *de minimis*; referring to such cases as those *'which have no appreciable effect on the site'*⁴⁷. Secondly, the opinion recognises that if an adverse effect is *'strictly temporary'* and *'capable of being fully undone'*, that may be a reason why such an effect may properly be characterised as not being an adverse effect on the integrity of the site for the purposes of Article 6(3)/regulation 61⁴⁸. This approach to the temporal nature of an effect, is picked up and implicitly accepted in the later Judgment of the European Court for the case concerned⁴⁹ which consistently used the term *'lasting'* within the key relevant paragraphs. By way of example, the Court ruled (with added emphasis) that *'competent national authorities cannot therefore authorise interventions where there is a risk of lasting harm to the ecological*

⁴⁶ Advocate General's Opinion to CJEU in Case C-258/11 Sweetman and others v An Bord Pleanala 22nd Nov 2012

⁴⁷ Refer para 48 of Opinion

⁴⁸ Refer para 59 of Opinion

⁴⁹ Case C-258/11 Sweetman and others v An Bord Pleanala 11th April 2013

*characteristics of sites*⁵⁰, and that a plan or project will adversely affect the integrity of a site where it ‘will lead to the lasting and irreparable loss of the whole or part of a priority natural habitat type’⁵¹, and that a plan or project ‘will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site...’⁵².

Beyond the case of Sweetman, the European Court has more recently ruled in the case of Briels that:

‘Article 6(3) of the Habitats Directive must be interpreted as meaning that a plan or project not directly connected or necessary to the management of a site of Community importance, which has negative implications for a type of natural habitat present thereon and which provides for the creation of an area of equal or greater size of the same natural habitat within the same site, has an effect on the integrity of that site’

There is nothing in Briels which undermines or materially extends the principles established in Sweetman which are set out in the ‘summary’ below.

Domestic case law and guidance

Beyond European case law, with reference to the first point established in the Sweetman opinion (that of ‘trivial’ or ‘de minimis’ effects) the July 2011 joint EA/NE paper excludes the potential effects from development where ‘*there is agreement that based on sound evidence that the impact of the resulting discharge (alone or in combination) is trivial*’.

This principle of what is a likely significant effect was also considered in the Boggis judgment⁵³; the Court of Appeal ruled that there should be “*credible evidence that there was a real, rather than a hypothetical, risk*”. What the assessment needs to concentrate on are those aspects of a plan or project that could, realistically, be likely to have a significant effect, either alone or in-combination.

The second point established in the Sweetman opinion (regarding temporary effects) is endorsed within a Natural England internal guidance note on the concept of site integrity⁵⁴. Section 4.3 of the paper specifically considers the duration of an impact and the potential for recovery/reversibility of effects. It states:

“The duration of any impact(s) and the potential for recovery/reversibility are important factors to consider when determining whether it is possible to demonstrate no adverse effect on integrity. The following key points need to be worked through:

- *What is the anticipated duration of any potential impact (as opposed to the duration of the plan or project)? The issue of duration should also be considered with reference to the issue of scale. For example a conclusion of no adverse effect on integrity may be able to be reached in the case of a small-scale effect from which the site/feature can quickly recover.*
- *Is recovery possible and if so would it be natural recovery or would management be required?*

⁵⁰ Refer para 43 of Judgment

⁵¹ Refer para 46 of Judgment

⁵² Refer para 48 of Judgment

⁵³ Peter Charles Boggis and Easton Bavants Conservation v Natural England and Waveney District Council, High Court of Justice Court of Appeal case C1/2009/0041/QBACF Citation No [2009] EWCA Civ. 1061 20th October 2009

⁵⁴ Natural England “Internal Guidance to decisions on ‘site integrity’: A framework for provision of advice to competent authorities”, Chapman & Philp, May 2004

- *What is the timescale of any anticipated recovery (for example vegetated shingle habitats take thousands of years to form and recovery times would be of this magnitude, other habitats may be expected to recover within a year)? The longer the recovery time the more difficult it will be to demonstrate no adverse effect on integrity.*
- *Is there any uncertainty regarding whether recovery will take place?"*

With reference to temporary effects, such an interpretation would align with the guidance provided within the Joint EA/NE Paper. The guidance states that the agencies would not object to development that would result in deterioration of existing water quality "if a suitable management plan is in place which will improve water quality and aims to achieve the conservation objective within a reasonable timescale, and the proposed development will not compromise deliverability of that plan". In essence a temporary effect, capable of being undone, within a reasonable timescale would not attract an objection from the agencies under the provisions of the Regulations.

Summary

In summary therefore, the following principles can be established:

- In the light of the implementation of the nutrient management plan to deliver the conservation objectives targets in the longer term, there may be a threshold for development, which has no appreciable effect, to be regarded as *de minimis*. The effects from such development would be regarded as 'trivial', and in any event, the forthcoming NMP will nevertheless cancel those effects. They cannot therefore be regarded as having a likely significant effect (alone or in combination) under regulation 61(1).
- In the light of a forthcoming nutrient management plan to deliver the conservation objectives targets in the longer term, temporary increases in phosphorus levels which are capable of being fully cancelled within a short period of time would not necessarily represent a significant adverse effect on the integrity of the site.

The above principles potentially accommodate a justification for development beyond the post review capacity where the effects associated with such development can be regarded either as trivial or as 'strictly temporary' and where there is sufficient certainty that they are 'capable of being fully undone'. However this may not always be the case and competent authorities will need to remain live to the fact that the NMP cannot necessarily be relied upon in relation to proposed increases in phosphorus which cannot be demonstrated as such.