

## Catchment Priorities

### ANGLIA RBD

#### 1. Bure, Ant and Muckfleet Catchments

The River Bure and the land draining into it and its tributaries from the source West of Aylsham to Great Yarmouth, including the River Ant.

Priority problem/Issue	Description	Justification
Run off from Agricultural fields	Sediment and associated phosphate	From appraisals which cover modelling data and anecdotal evidence, areas have been identified which indicate potentially high risk of diffuse water pollution from agriculture. The main priority areas are therefore considered to be the Upper Bure and Hundred Stream/Ant catchments.

#### 15. Deben, Alde, Ore Catchments

That land North-east of Ipswich as far as Saxmundham which drains to the sea via the Rivers Deben, Alde and Ore.

The following priority problems are located in the 'Sandlings' area of the catchment.

Priority problem/issue	Description	Justification
Nitrate leaching from intensive agriculture on sandy, free draining soils.	The sandy soils in the East of the catchment are well suited to root vegetables e.g. potatoes, onions, carrots, sugar beet and turf. The nature of the cropping and soil type means that nitrate leaching is a significant issue.	The area is designated an NVZ. Surface water concentrations of nitrates in the Deben, Alde and Ore are consistently >30 mg/l and commonly in excess of 50 mg/l. Nitrate concentrations in groundwater are commonly > 50 mg/l; there are a large number of groundwater fed private water supplies in the area.
Soil erosion/wind erosion	Water and wind erosion is a localised problem within the Sandlings sub-catchment. Specifically where light soils are overworked, fields have no vegetation cover and on sloping land.	Land use pressure maps highlight sediment loss as being a potential problem locally in the Sandlings area. Visual assessment has identified soil on roads, wet weather survey identified problem fields.
Outdoor pigs – nitrate leaching and soil erosion	Outdoor pigs units are well suited to sandy soils in the Sandlings sub-catchment. Nitrate leaching is a problem on densely stocked outdoor	Visual assessment has identified soil compaction problems, localised mud on roads, with tracks acting as pathway, wind and water erosion. Currently outdoor pig units are not regulated under the NVZ rules or under PPC and

	pig units, as is soil compaction, water and wind erosion.	therefore CSF has an important role to play in raising awareness of the diffuse pollution issues associated with outdoor pigs.
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#### 14. Lincolnshire Coast Rivers

The land between Grimsby in the North and Boston in the South draining to the coast, including the catchments of the Great Eau and Hobhole drain.

Priority problem/Issue	Description	Justification
Pig/poultry sector	Large, intensive indoor and outdoor pig farms. Large, intensive poultry farms producing large amounts of slurry and manures.	Disposal of large amounts of slurry needs to be managed carefully. Several watercourses in this area show excessive nutrient levels and evidence of eutrophication. Main area of pig farming is in headwaters of chalk rivers, the majority of which are situated on the steepest slopes in the catchment. Outdoor pigs are classified as high risk for P, indoor pigs are medium risk. Poultry sector is situated further south in an area of intensive drainage systems. Indoor poultry sector is classified as medium risk from P.
Hobhole Drain	High levels of eutrophication.	Intensive cropping = pesticide use catchment. Few buffer strips. High levels of N in field vegetable sector = moderate N grades in Hobhole Drain (GQA 2004 assessment). Very high levels of P in Hobhole Drain (GQA 2004 assessment). Chemical GQA for Hobhole is poor (2004 data).
Long & Great Eau area	Eutrophication and siltation. High levels of cereals and oil seed rape production.	Chalk stream rivers with sensitive habitats affected by abstraction levels and also silt deposition and nutrient levels. Sedimentation has major effect on ability of the river to support populations of salmon and trout as it covers the gravel bed where spawning takes place. High nutrient levels also impact.
River Steeping, Wold Drift Drain/ Willoughby High Drain	Eutrophication. High levels of cereal and some sugar beet production.	Poor and fair chemical GQAs. Moderate N levels. Very high and high P levels.

#### 10. Little Ouse (Thetford Area)

The Little Ouse River and the land draining into it and its tributaries from the source East of Thetford to where it joins the River Great Ouse near Littleport. Also the River Wissey, the land draining into it and its tributaries from the source near Great Cressingham to the Great Ouse near Downham Market.

<b>Priority problem/Issue</b>	<b>Description</b>	<b>Justification</b>
Excess <b>Nitrates and Phosphates</b> from FYM & slurry applications and storage.	High concentrations of livestock, particularly pigs & poultry, in the northern, eastern and southern target areas of the catchment along with inefficient manure and crop nutrition management.	Research reports, water quality data from EA & AWS. DWPA problems for SSSIs, modelled data & anecdotal evidence all point to this being a problem that adds significantly to high N & P loadings.
Occasional excess <b>Nitrates and Phosphates</b> . Growing of N leaky crops such as peas and oilseed rape, and inefficient users of P such as potatoes.	The area is under intensive arable and horticultural crop production.	Research reports, water quality data from EA & AWS, DWPA problems for SSSIs, modelled data & anecdotal evidence all point to this being a problem that adds significantly to high N & P loadings.
Soil erosion and soil wash from steeper slopes/lighter soil and areas of heavier soils in arable fields in the headwaters of the Wissey and Little Ouse causes <b>sediment deposition</b> . Fen and sand blows occur when soils are dry and there is a lack of crop cover.	Relatively small areas of sandy soils with slopes greater than 3° particularly those with maize & root cropping.	Data analysis has highlighted these areas & soil risk assessment makes them high risk.
<b>Nitrates &amp; Phosphates</b> causing eutrophication/ loss of certain habitats & species.	DWPA cited as being a cause of unfavourable/declining condition in certain SSSIs and SACs. It has caused the de-notification of Hinderclay Fen.	EN Condition assessment reports and Remedy Reports, EA Reviews of Consents - appropriate assessment stage 3 reports, wildlife trust evidence, etc.
Localised pesticide problems occur periodically –been detected.	Exceedances of the maximum admissible concentration necessitates removal at water treatment works, blending or shut-down of abstraction for a period / permanently.	Awaiting Anglian Water Services Ltd actual pesticide exceedances data.

## 9. North Norfolk Rivers

The land draining the North Norfolk Coast from Heacham in the West to Sheringham in the East. Includes the Heacham River and Rivers Burn, Stiffkey and Glaven.

Priority problem/Issue	Description	Justification
High risk crops for soil erosion including spring sown cereals, field vegetables, sugar beet, maize, potatoes and outdoor pigs.	These crops and land uses are considered high risk due to the nature and timing of their operations resulting in land being left bare during periods of high rainfall. This can result in sediment entering watercourses and tributaries via direct run off from fields, run off from fields to roads / fords, and via under drains on heavier land. This is an issue throughout the target area.	Anecdotal evidence and modelled data has identified this area as high risk due to light soil types, heavier soil types which are under drained, steep slopes, high connectivity to watercourses and high risk land uses. This problem can realistically be tackled within the scope of the CSF programme, through soil erosion workshops for farmers, one to one advice and the capital grants scheme.
Cattle Poaching	Meadows upstream of Wighton are stocked with cattle, resulting in poaching of the river banks and sedimentation. Poaching may also be a problem in other areas which have not yet been identified.	Although cattle are grazed in areas along all four rivers, there is only evidence of this on the Stiffkey. This problem can realistically be tackled within the scope of the CSF programme, through capital grants and 1:1 advice on appropriate stocking densities.

## 31. Gipping & Orwell (Orwell Catchment)

The River Gipping and the land draining into it and its tributaries from the source North of Stowmarket to Ipswich and the River Orwell South of Ipswich.

The following sub-catchments have been identified as priority target areas:

- Gipping Headwaters, River Jordan and Haughley Watercourse.
- All pig farmers (indoor and outdoor) in the highlighted priority areas of the Gipping & Orwell Catchment.

Priority problem/Issue	Description	Justification
<u>Gipping Headwaters, Haughley Watercourse &amp; River Jordan)</u>  Excess Nitrates and Phosphates possibly from FYM & Slurry Applications	High concentration of pigs (indoor and outdoor).  High N & P in water course. GQA Chemistry Grade D.	Research reports, water quality, modelled data & anecdotal evidence all point to this being a problem that adds significantly to high N & P loadings.

<u>Somersham Watercourse</u> High N & P in watercourse. Potential for leaching of lighter soils.	Excess Nitrates and Phosphates from FYM (and slurry applications). Some steeper slopes flanking the main watercourse. Potential for leaching of the lighter soils.	Small catchment with outdoor pigs. Some historic pollution issues & problems relating to pig units. Data analysis has highlighted this area. Soil risk assessment makes them high risk.
<u>Nacton (North &amp; South of the Orwell Estuary)</u> DWPA cited as being a possible cause of unfavourable / declining condition in the Orwell Estuary.	Excess Nitrates and Phosphates. No strong water quality evidence but DWPA thought to be causing loss of certain habitats & species.  Light sandy soils, loss from erosion.	EN Condition assessment reports, suspect DWPA has an impact on SSSI.  Limited monitoring, pressure maps indicate issues from diffuse pollution from pig farms.
All pig farmers in the priority areas of the Gipping & Orwell Catchment.	Need to increase the awareness of potential issues relating to soil loss, nutrient loss and best practices.	Many of the outdoor pig farmers do not come under any legislation.

### 39. River Eye

The River Eye and the land draining it and its tributaries East of Melton Mowbray

<b>Priority problem/Issue</b>	<b>Description</b>	<b>Justification</b>
Soil and associated nutrient loss from Arable land.	Giving rise to High phosphate (P) levels and consequent eutrophication, particularly in the riverine SSSI and Southern tributaries. Promote Soil and Nutrient Management Plans	Evidence base and psychic modelling indicates particulate phosphate arising from Arable land. Causing eutrophication and siltation. Modelled risk not validated therefore concentrating on southern tributaries where actual monitoring confirms issue
Soil and Nutrient loss from mixed and livestock farming.	As above but different mechanism of P transport with livestock, consider organic P runoff and soil and nutrient management plans.	As above, modelling indicates this to be high in southern and northwest tributaries roughly in agreement with monitoring
Livestock access to	Bank erosion and direct deposition	Contributing to

watercourses- riparian issues	into watercourses causing nutrient enrichment and siltation. Consider off stream watering options and management of livestock access.	eutrophication. Locally apparent within riverine SSSI where initial focus directed. Affecting habitat and natural vegetation
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## 17. River Nar (River Nar and Great Cressingham Fen)

The River Nar and the land draining into it and its tributaries from the source near Tittershall to the A10. Includes the Country Drain.

Priority problem/Issue	Description	Justification
Cattle poaching	Meadows at Castle Acre and other areas further upstream around Litcham are stocked with cattle, resulting in poaching of the river banks and sedimentation of the river. Poaching may also be a problem in other areas which have not yet been identified.	The River Nar Geomorphological Audit identifies livestock erosion of the river banks around Castle Acre as providing a source of fine sediments, which are deposited further down the river. This problem can realistically be tackled within the scope of the CSF programme, through capital grants and 1:1 advice on appropriate stocking densities.
High risk crops for soil erosion including spring sown cereals, field vegetables, sugar beet, maize, potatoes and outdoor pigs.	Sediment entering watercourse and tributaries via direct run off from fields, run off from fields to roads / fords, and via under drains on heavier land. This is an issue throughout the target area.	Anecdotal evidence and modelled data has identified this area as high risk due to light soil types which are easily eroded, heavier soil types which are drained, steeper slopes, high connectivity to watercourses and high risk land uses. This problem can realistically be tackled within the scope of the CSF programme, through soil erosion workshops for farmers, one to one advice and the capital grants scheme.

## 2. River Wensum

The two Wensum target areas are south of Fakenham and around Reedham. The two areas total approximately 25% of the total area of the catchment which is 63000 hectares and holds approximately 180 holdings. The CSF project in these areas will focus on reducing sediment and phosphate diffuse pollution.

The target areas were selected for the following reasons:

- Soil type, generally light (sandy loam) or medium (sandy clay loam or clay loam).
- High predicted P and sediment loss to watercourses.

- Anecdotal evidence of sedimentation of watercourses from diffuse agricultural pollution.

Priority problem/Issue	Description	Justification
Run off from agricultural fields	Sediment and associated phosphate	From appraisals which cover modelling data and anecdotal evidence, areas have been identified which indicate potentially high risk of diffuse water pollution from agriculture.

#### 4. Yare and Waveney

The River Yare and the land draining into it and its tributaries from the source South of Dereham to Great Yarmouth. Includes tributaries such as Rivers Tas, Tiffey and Blackwater.

##### Yare

Priority problem/Issue	Description	Justification
<u>Blackwater &amp; Tas</u>  Soil erosion from steeper slopes and vulnerable soils on agricultural land in fields along the rivers Blackwater and Tas and associated waterbody catchments, giving rise to sedimentation and associated phosphate problems.	The Blackwater and Tas sub catchments have predominately clay loam soils, localised areas of lighter soils and steep slopes. In addition, the Blackwater area has the highest annual rainfall of the Yare catchment and both areas have relatively high excessive winter rainfall and high numbers of days at field moisture capacity. Significant concentrations of potentially risky enterprises such as pig production including outdoor pigs, maize production (especially Tas), and sugar beet (especially Blackwater).	Highlighted by modelled data and analysis, particularly Psychic, anecdotal evidence, including farming practices, dredging activity and soil risk assessment.

##### Waveney

The River Waveney and the land draining into it and its tributaries from the source West of Diss to Lowestoft in the East.

Priority problem/Issue	Description	Justification
Excess Nitrates and Phosphates from FYM & Slurry Applications	High concentrations of livestock, particularly pigs & some poultry, in the south west of the catchment along with inefficient manure and crop nutrition	Research reports, water quality, modelled data & anecdotal evidence all point to this being a problem that adds significantly to high N & P loadings.

	management.	
Soil erosion from steeper slopes/lighter soil arable fields along Waveney River terraces.	Relatively small areas of glacial sandy soils with slopes greater than 3° particularly those with maize & root cropping.	Data analysis has highlighted these areas & soil risk assessment makes them high risk.
DWPA cited as being a cause of unfavourable/declining condition in certain SACs	Nitrates & Phosphates causing eutrophication/ loss of certain habitats & species.	EN Condition assessment reports, EA Appropriate Assessment stage 3 reports, wildlife trust evidence etc.

## HUMBER RBD

### 30. Peak District Dales

From Rushup Edge to the North-east of Buxton to just West of Ashbourne in the South, including the Manifold and Dove Valleys, River Lathkill and upper reaches of the River Wye.

Priority problem/Issue	Description	Justification
Excessive levels of nutrients in rivers	Loss of nutrients from: yard run off; farm tracks; river crossings; riparian access for stock; applications of slurry and manure, not taking into account plant available nutrients.	Dove and its tributaries High levels of diatoms; Low levels of dissolved oxygen; Decreasing levels of invertebrates; and Decreasing fish stocks.
<u>Dove sub catchment</u>  Sheep Dip	Sheep dip lost from recently dipped sheep Sheep dip lost from dip area Sheep dip lost from disposal area	Pollution incidents and sheep dip picked up in routine sampling in River Dove, High risk of pollution from sheep shared grazing
<u>Hamps and Manifold sub catchments</u>  Low fish stocks	Organise passport fishing on un-fished river banks	Low fish stocks found in rive Dove
<u>Hamps and Manifold sub catchments</u>  Riparian Management	Stock access of surface waters causing bank erosion, River Crossings	Situation of trout spawning gravel beds; and Transport of phosphate to river on soil particles.



**6. East Riding of Yorkshire and North Lincolnshire** (Yorkshire East Riding Including Hornsea Mere)

The area of land immediately North of the Humber Estuary, North to Flamborough Head, including the River Hull and the land draining into it and its tributaries. Also the East Halton Beck catchment, South of the Humber, near Immingham.

<b>Priority problem/Issues</b>	<b>Description</b>	<b>Justification</b>
<u>River Hull Headwaters</u>  Siltation and high nitrate levels	Siltation	River Hull SSSI is failing due to siltation of the streambed caused by grazing animals with access to the stream banks. It also fails due to the high level of nitrates in the water probably caused by agricultural practice on the chalk aquifer from which the stream emerges.
<u>Hornsea Mere</u>  Eutrophication, high phosphates	Nutrients	Hornsea Mere failing SSSI due to eutrophication of the lake. Probably due to high phosphate in the three feeder streams caused by agricultural practices
<u>Plain of Holderness</u>  Low dissolved oxygen	Nutrients	SSSI failure of GQA due to low dissolved oxygen. Damage to SSSI after flooding with wash from surrounding agricultural land
<u>Yorkshire Wolds</u>  High nitrate levels and pesticides	Nutrients	Failure due to high nitrate levels and pesticides found at drinking water abstraction boreholes
<u>North Lincolnshire</u>  High nitrates and phosphates	Nutrients	Both the groundwater resource and the emergent streams have high levels of nitrate and the surface streams have high phosphate levels
<u>Rest of Yorkshire Wolds</u>  High Nitrates	Nutrients	High nitrate levels in the aquifer and emergent streams
<u>Rest of Plain of Holderness</u>  Low dissolved oxygen, phosphate	Nutrients	Failing river quality objectives due to low dissolved oxygen and all surface waters having high levels of phosphate.

**21. Yorkshire Derwent**

The Derwent and the land draining into it from its source draining the North Yorkshire Moors to the Humber, including tributaries such as the Rivers Rye and Dove.

<b>Priority problem/issues</b>	<b>Description</b>	<b>Justification</b>
<u>Lower Derwent and Pockington Canal</u>  Nutrients	Area of intensive arable agriculture with extensive Ha of root crops. High P applied	High levels of nitrate, phosphate sediment load and pesticides. 2 SSSIs failure due to DWP criteria GQA 2004 poor, P very high. VI criteria.
<u>Helmsley and upper Rye catchment</u>  Run off, sediment	Extensive areas of winter wheat, maize potatoes and other arable crops established on a variety of gradients including steeply sloping land, and soil types including sandy loams and shallow lime rich soils.	High rainfall (837 to 1021mm) combined with steep gradients and the soil types of the area can result in some agricultural land generating high run off bringing very high volumes of sediment into the River Rye and the Derwent River system.
<u>Lower Rye basin West of Malton</u>  Nutrients	Area of intensive pig production. High percentage of arable land and significant beef production.	High GQA 2004 Phosphate High connectivity due to drainage network. VI criteria
<u>Buttercrambe area</u>  Nutrients	Area of intensive arable and dairy production	Very high GQA Phosphate and high GQA 2004 nitrate.
<u>The Carrs &amp; East of Malton</u>  Nutrients	Area of intensive arable production	GQA 2004 N high, P high. VI criteria
<u>Derwent Headwaters</u>  Sediment, nutrients	Upland livestock with some intensive beef production	High amounts of surface sediment loss and P surface mobilisation. PSYCHIC modelling also indicates significant amounts of P mobilisation from hardstandings.

## 8. Yorkshire Ouse, Nidd and Swale

The following rivers, their tributaries and the land draining into them: River Ouse North of York, the River Nidd West to near Knaresborough and the Swale North to near Richmond

<b>Priority problem/issues</b>	<b>Description</b>	<b>Justification</b>
<u>River Wiske and tributaries</u>  Nutrients	Nutrients  High proportion dairy, intensive grassland & arable, clay soils	Failing RQO and very poor GQA Phosphate 2004. PSYCHIC report shows high P losses from dairy. Underdrained heavy clay soils. Categorised by VI as HIGH PRIORITY for pesticide action

<u>Vale of York</u> Nutrients	Nutrients – P  High arable dominance and high proportion of pig and poultry farms. Large proportion of light sandy soils.	PSYCHIC model shows very high P inputs. GQA 2004 P status of adjacent rivers “high” and “very high” Groundwater failures 2001-2005 at Rainton and Ainderby Steeple BHs Categorised by VI as HIGH PRIORITY for pesticide action.
<u>Cod Beck and River Foss</u> Nutrients	Nutrients  Extensive area of arable, some on moderate to steep gradients. Underdrained clay loam soils.	Very poor GQA Phosphate 2004 Categorised by VI as HIGH PRIORITY for pesticide action
<u>Area south of Ripon</u> Nutrients	Nutrients  Arable dominated around Nidd with high numbers of pigs  Moderate to steep land in western end of sub-catchment where dairy farming is dominant. Relatively high rainfall.	Very poor GQA Phosphate 2004
<u>Upper Ure/Swale sub-catchment</u> Sediment	Sediment  Dales fringe farmland. Dominated by beef, sheep systems on clay loams	PSYCHIC drain-flow losses of P combined with high rainfall.
<u>River Nidd</u> Sediment	Arable dominated Nidd with high numbers of pigs. Mixture of sandy and clay soils.	Very poor GQA Phosphate 2004

## NORTHWEST RBD

### 34. Bassenthwaite Lake

The rivers and their associated tributaries draining the land of the North West lakes into Bassenthwaite Lake.

The Parishes of Mungrisedale and Matterdale (where these fall within the catchment boundary), Threlkeld and St Johns & Castlerigg will be the priority areas for the catchment. Focus with regard additional one to one support and funding will be targeted at this area. However due to the small number of farms within the Priority area (47) and the catchment as a whole (106 in total) the ECSF project will allow support to be delivered across the whole catchment area.

<b>Priority problem/Issue</b>	<b>Description</b>	<b>Justification</b>
Soil erosion & Compaction	Riverbank erosion caused by stock access and previous watercourse modification which is now having significant impacts. Erosion in fields due to steep slopes and high rainfall.	Fencing of river banks prevents stock from poaching and destabilising soil and also prevents faecal inputs into watercourses Assess stock densities on field by field basis. Consider installing tracks, moving gateways and managing supplementary feeding
Manure/Slurry Storage	Reduces ability to manage manures effectively and increases likelihood of spreading at inappropriate times. Higher nutrient rich runoff to watercourses	Actions such as covering yards, middens and separating clean and dirty water will reduce need for storage
Soil Analysis & Nutrient Management	Typically manures treated as a 'waste' product and fertilisers applied based on historic use. Very little soil nutrient analysis. Leads to over application of nutrients and leaching through groundwater	Continuing soil analysis to highlight farms with high P levels, introducing nutrient budgeting and analysis of manure/slurry to manage exactly what is being applied on a field by field basis and managing fertiliser applications to reduce indexes where appropriate.

## 11. River Wyre

The River Wyre and the land draining into it from its source in the Forest of Bowland to the sea at Fleetwood, including all tributaries. The catchment also includes the discreet catchments of the Pilling Water/Ridgy Pool network and the River Cocker.

<b>Priority problem/Issue</b>	<b>Description</b>	<b>Justification</b>
<u>Woodplumpton / Barton Brook</u>  Nutrients	Phosphorus. General water quality.	Whole catchment P class 4-5. Some sections grade D-E cGQA. Significant area not achieving grade c bGQA. Suspended solids >15mg/l whole catchment
<u>Pilling water / Ridgy Pool</u>  Nutrients	Phosphorus. General water quality.	Whole catchment P class 4-5. Some sections grade D-E cGQA. Significant area not achieving grade c bGQA Suspended solids >15mg/l whole catchment

<u>River Cocker</u> Nutrients	Phosphorus.	Whole catchment P class 4-5 Some sections not achieving grade c bGQA. Some sections grade D-E cGQA.
<u>Wyre Estuary tributaries – Lords (Inskip) and Thistleton Brook</u> Nutrients	Nutrients	Whole catchment P and N class 4-5. Significant area grade D-E cGQA. Some sections not achieving grade c bGQA. Suspended solids > 15mg/l whole catchment

### 19. River Waver and Biglands Bog (Rivers Waver & Wampool)

The River Waver and the land draining into it and its tributaries, from its source near Caldbeck to Moricambe Bay

The following problems will be targeted to the priority areas in the following order:

1. Biglands Bog Catchment (approx 30 holdings)
2. Crummock Beck (approx 25 holdings)
3. Sandraw Beck and Langrigg Beck (approx 30 holdings)
4. Little Waver (approx 30 holdings)
5. Causewayhead Beck and Blea Gutter (approx 35 holdings)

Priority problem/Issue	Description	Justification
High connectivity to watercourses from farmed land receiving high P inputs. Lack of nutrient budgeting and management leading to high soil nutrient status, and increased inputs of inorganic fertilisers	High connectivity due to extensive drainage of intensively farmed land. Drainage provides a fast pathway for P into watercourses. Assist farmers in balancing nutrient inputs and outputs to reduce a build up of excess P within the soil. Soil testing should be used to improve awareness of nutrient status of soil.	There is a need to raise awareness about connectivity, incidental runoff and soil nutrient status Little is known about the soil nutrient status across the catchment, slurry and manures are currently viewed more as a waste product than a nutrient resource. However, storage remains an issue.
Lack of storage to allow for effective nutrient management	Lack of sufficient storage reduces the ability to manage nutrients effectively, and increases the likelihood of spreading at inappropriate times. This is likely to increase soil structural damage, nutrient runoff, and imports of inorganic fertilisers later in the year.	It is hoped that steps such as the separation of clean and dirty water and guttering repairs will maximise available storage, as well as reducing the probability of spreading in unfavourable conditions.
Structural damage to soils	Ground in many areas remains wet for long periods of time, resulting in poaching	Reducing clean water entering storage may help to increase flexibility of spreading regime.

	from livestock and structural damage from trafficking. This increases the likelihood of fine particles carrying P becoming detached and transported into water courses.	Known structural problems may be managed to alleviate the associated problems.
Increased popularity of Maize growing across the catchment	Maize growing has become increasing popular in the last few years with improvements in varieties. The extent to which this is occurring across the catchment has not been recorded.	With improving varieties and potential to grow maize across the catchment, it may become more prevalent on increasingly inappropriate land. Note may need to be taken on the slopes and soil types on which maize is appearing.
Source and pathways of nutrients into watercourses which could be easily avoided.	Obvious sources of nutrients such as dirty yard water and manure piles and rapid pathways to watercourses make the transfer of nutrients during rainfall events very rapid	Observations of manure piles located next to watercourses, and dirty yard water pathways along roads and into drainage channels. Problems may need addressing along with the separation of clean and dirty water, but often relocation of nutrient source or diverting the pathway would alleviate problem.
Land management practices may become inappropriate due to changing conditions	Changes to flood management, and in the longer term, climate, may impact upon ground conditions and connectivity.	Land management may have to adapt with changes in order to minimise diffuse pollution.

### 32. River Eden & Tributaries

The land draining into the Eden valley from the Lake District Fells to the West and Pennines to the East, from the source near Kirkby Stephen to Carlisle

#### River Eden tributaries:

1. River Leith & high risk areas of the River Lyvennet
2. Dacre Beck & high risk areas of the River Eamont
3. Briggle & Skirwith Beck
4. High risk areas of Hoff Beck

Priority problem/Issues	Description	Justification
Slurry and manure management presents a high risk of P entering watercourses.	Lack of storage and large volumes of slurry mean that slurry is spread at inappropriate times; areas of high connectivity are used; spreading is in excess of nutrient	SIMCAT modelling, WQ conservation objective failure, RoC Stage 4 Options Appraisal, EA risk modelling and PSYCHIC modelling.

	requirements. Slurry is often seen as a 'problem' rather than a resource.	
Phosphate from inorganic fertiliser entering watercourses and wetlands	Lack of soil sampling to inform of nutrient requirements. High risks of direct nutrient loss in underdrained areas and prior to high magnitude rainfall events. High risk of particulate P loss with erosive soils.	SIMCAT modelling, WQ conservation objective failure, RoC Stage 4 Options Appraisal, EA risk modelling and PSYCHIC modelling.
Sediment loss	All of catchment is at high risk of soil loss. Arable areas, especially on slopes or areas susceptible to flooding present a high risk. Stock access to river banks exacerbates erosion.	Biological monitoring, EA risk modelling and PSYCHIC modelling.

### Valley and Basin Mires

1. Cliburn Moss
2. Temple Sowerby Moss
3. Newton Reigny Moss
4. Cumwhitton Moss
5. Moorthwaite Moss

Priority problem/Issues	Description	Justification
Nutrients and sediment entering mires from intensive management of surface water catchment.	The topographical structure of basin and valley mires makes them susceptible to receiving runoff from the immediate catchment, causing them to act as a nutrient sink.	Failure of conservation objectives for SSSI due to DWPA impacts
Nutrients and sediment entering mires through drainage systems	The topographical structure of basin and valley mires and the wetness of the sites means that they may be used as an area to direct drainage towards. With Cliburn Moss, this includes large, old railway drains.	Failure of conservation objectives for SSSI due to DWPA impacts
In valley mires - nutrients and sediment entering mires from watercourse running through the site	Valley mires have one or more watercourses running through the site that may be carrying high nutrient levels from farmland outwith the immediate surface catchment.	Failure of conservation objectives for SSSI due to DWPA impacts

## SOLWAY AND TWEED RBD

### 25. Tweed Catchment Rivers, England (Tweed Catchment (England) and Lindisfarne)

The land draining into the River Till and its tributaries from the source in the Northumberland National Park to the River Tweed near Coldstream. Also the coastal rivers draining into Budle Bay and the North Low near Lindisfarne.

Priority problem/Issues	Description	Justification
North and South Low	Nutrients/Enteromorph growth on Fenham Flats (Lindisfarne)	GQA failures
Hetton Burn	Nutrients	Biological Investigation 2003
Bowmont Water	Sheep dip	MSc
Breamish	Possible Sheep dip	MSc
New Bewick to Millfield Plain	Soil Loss	Failing PSA JCA measure to maintain or improve SSSI

## SEVERN RBD

### 36. North Somerset Moors

The Land Yeo, Blind Yeo and Congresbury Yeo and the land draining into them and their tributaries from the source to the Severn Estuary.

Priority problem/Issue	Description	Justification
<u>Congresbury Yeo</u> Phosphate, Sediment and Nitrogen	Steep slopes on the Mendip Hills and Broadfield Down. Areas of intensive dairy, pigs, poultry and maize with the high conservation value Blagdon lake SSSI. 194 holdings in total, with 34 dairy farmers..	This sub-catchment contributes sediment and nutrients to the catchment, eventually flowing into Blagdon Lake SSSI. This catchment is relatively rural with most pollution likely to arise from agriculture. However, there are many small villages and two STWs present. Presence of significant amounts of duckweed and algae indicate nutrient enrichment.
<u>Land Yeo</u> Phosphate, Sediment and some Nitrogen	Steep slopes on the Tickenham and Failand Ridge and Broadfield Down. Areas of intensive dairy, beef and maize production with a high conservation value wetland Tickenham, Nailsea & Kenn Moor SSSIs. 51 holdings in total, with 5 or less dairy farmers.	This sub-catchment contributes sediment and nutrients, eventually flowing into Tickenham, Nailsea & Kenn Moor SSSIs. This catchment is less rural than the Congresbury Yeo, with two large villages/small towns Nailsea and Clevedon. Agriculture is thought to contribute to 22% of the pollution (ADAS 2006). Presence of significant amounts of duckweed and algae indicate nutrient enrichment.



## 7. River Lugg

The River Lugg and the land draining into it and its tributaries from the source at Pool Hill to the River Wye. Includes the Rivers Arrow and Frome.

The following sub-catchments have been identified as target areas to look at soil management:

Arrow below Kington

Pinsley Brook

Curl Brook

Stretford Brook including Newbridge and Tippets

Catchment scale: potatoes, polytunnels, poultry, agronomists and land agents

Priority Problems/issues	Description	Justification
Curl Brook	Poultry manure/ Nutrients	Flowing into NE failing SSSI/EA WQ
Arrow below Kington	Nutrients/silt	Flowing into NE failing SSSI/EA WQ
Pinsley Brook	Nutrients/silt	Flowing into NE failing SSSI/EA WQ
Stretford Brook	Nutrients/silt	Flowing into NE failing SSSI/EA WQ

## 28. River Teme

The River Teme and the land draining into it and its tributaries from the source West of Ludlow to the River Severn. Includes tributaries such as the Leigh Brook, Rivers Rea, Corve, Onny and Clun.

Prioritisation areas:

River Clun subcatchment

River Corve subcatchment

Catchment-scale intensive roots, dairy & poultry systems

## 23. River Wye (excluding Lugg)

English sections of the River Wye and the land draining into it and its tributaries.

Priority problem/Issue	Description	Justification
Agricultural diffuse pollution in the form of dirty water	Dirty water running off from farmyards in the winter, lack of clean / dirty water separation	Due to the large amount of winter rainfall that is experienced in the Upper Wye catchment, this is a big problem, and tackling this problem is potentially a good way of improving water quality

<u>Lower Wye</u> Agricultural diffuse pollution in the form of soil running off arable land	Soil running off arable land that has been left bare over the winter, causes big problems with regards to siltation of watercourses	Due to the amount of land under arable crops, especially potatoes in the Lower Wye catchment this is a big problem. Tackling this problem would help reduce silt levels in watercourses, which would improve salmon spawning
<u>Upper Wye</u> Agricultural diffuse pollution in the form of muck and slurry	Inadequate storage facilities, over application and untimely applications of Muck and Slurry throughout the Wye catchment, but mainly in the Upper Wye, due to the greater density of stock.	Improved muck and slurry storage and improved manure management would reduce the amount of run off / leaching and would provide cost savings for the farmer.
Agricultural diffuse pollution from maize growing	Maize is harvested in the autumn and land is left bare over the winter with just the stubble present, this land is often used as an area to dispose of slurry / muck in the winter months	Improved management of Maize ground could provide benefits with regards to less muck / slurry run off and less soil erosion
Sheep dip pollution	Sheep dip chemicals entering watercourses due to poor dipping facilities or poor management of sheep post dipping	Sheep dip chemicals are highly toxic and more awareness of the issues and improved facilities would reduce the amount of sheep dip pollution incidents

### 3. West Midlands Meres

The series of Meres and Mosses lying roughly between Wolverhampton to the South and Stockport in the North and the land draining into them. Includes Aqualate Mere, Rostherne Mere and Whixall Moss.

Mere/moss catchment	Priority problem/Issue	Justification
<b>Cheshire</b>		
Chapel, Bar and Norbury Meres	Nutrient enrichment, (in particular nitrogen, but also phosphorus), of water bodies from dairy, beef, root and fodder crop production. Soil loss causing sedimentation in some catchments, (Betley Mere; Chapel, Bar and Norbury Meres; Flaxmere and Hatch Mere; Quoisley Meres; Wybunbury Moss)	These catchments contain meres and/or mosses that 1. are failing the PSA target for SSSIs 2. have hydrology (where known) dominated by surface water and/or surface runoff inputs, rather than groundwater
Flaxmere and Hatch Mere		
Oak Mere		
Quoisley Meres		
Wybunbury Moss		
<b>Shropshire</b>	Flaxmere and Hatch Mere; Quoisley Meres; Marton Pool; Cop Mere)	Other factors considered: observed versus recorded SSSI condition, previous EN prioritisation, coverage of relevant agri-environment options,
Bomere, Shomere and Betton Pools		
Brown Moss		

Comber and Oss Meres	land use, slope, ECUS conservation plans, proximity to other catchments, SAC status, improvements planned by water companies, (in particular, for Aqualate Mere), potential for land management changes alone to bring about significant improvements in water quality.
Fenemere	
Fenns/Whixall Moss	
Marton Pool	
<b>Staffordshire</b>	
Betley Mere	
Black Firs and Cranberry Bog	
Cop Mere	

## SOUTHEAST RBD

### 40. Pevensey (Pevensey Levels & Combe Haven)

The Pevensey Levels and Moors, including the Pevensey Haven, Waller's Haven, Combe Haven and the land draining into them and their tributaries.

Priority Problem/issue	Description	Justification
<u>Hurst Haven</u> Nutrients	<ul style="list-style-type: none"> <li>Identified high risks: sediment, crop P &amp; crop N</li> <li>Identified main land uses: maize, stockfeed, cereals &amp; extensive beef &amp; sheep / grassland</li> <li>GQA: very high P, high N &amp; poor chemical quality</li> <li>SSSI / Ramsar</li> <li>High connectivity – dyke system on levels</li> <li>Minor Aquifer (High)</li> </ul>	<ul style="list-style-type: none"> <li>Achieve multiple objectives by targeting arable land which surrounds SSSI – PSA target.</li> <li>Land outside core-grassland SSSI previously not specifically targeted unless under HLS.</li> <li>Opportunity for farmers to remove DWPA blame from their doorsteps in an area of high complexity.</li> <li>Large, potentially influential landowners</li> <li>Within Pevensey Levels JCA and the integrated landscape, access and bio-diversity implementation plan (NE target 116).</li> </ul>
<u>Nunningham Stream</u> Nutrients	<ul style="list-style-type: none"> <li>Identified high risks: sediment &amp; crop P</li> <li>Identified main land uses: other arable, maize &amp; extensive beef / grassland</li> <li>GQA: very high P &amp; poor chemical quality</li> <li>Moderate to Steep slopes</li> <li>Sandy loamy soils on higher ground.</li> </ul>	<ul style="list-style-type: none"> <li>High geographical inherent risk</li> <li>A main tributary of Waller's Haven – achieve positive results downstream, again SSSI, as well as in target area.</li> <li>Prime example of an upper Waller's Haven sub-catchment – act as a pilot for further work after initial 2 years.</li> </ul>

<p><u>Glynleigh Levels</u></p> <p>Nutrients</p>	<ul style="list-style-type: none"> <li>• Identified high risks: sediment, crop P &amp; Crop N</li> <li>• Identified main land uses: maize, stockfeed, cereals, peas &amp; beans &amp; extensive beef / grassland</li> <li>• GQA: excessively high P &amp; N.</li> <li>• SSSI / Ramsar</li> <li>• High connectivity – dyke system on levels</li> <li>• Minor Aquifer (High)</li> </ul>	<ul style="list-style-type: none"> <li>• Achieve multiple objectives by targeting arable land which surrounds SSSI – PSA target.</li> <li>• Land outside core-grassland SSSI previously not specifically targeted unless under HLS.</li> <li>• Opportunity for farmers to remove DWPA blame from their doorsteps in an area of high complexity.</li> <li>• Large, potentially influential landowners</li> <li>• Within Natural England Pevensey Levels JCA and the integrated landscape, access and bio-diversity implementation plan (NE target 116).</li> </ul>
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## 29. Rivers Test & Itchen

### Test

The River Test and the land draining into it and its tributaries from the source near Overton to Southampton Water. Includes tributaries such as the Bourne Rivulet, Rivers Dever, Anton and Blackwater.

Priority	Description	Justification
River Dever	Soil type: Shallow silty over chalk Predominantly Cereals Risk maps: Horticulture, poultry SSSI Chalk river, salmonid river	Water Quality: Very high N (Nitrates) Psychic modelling: High application of P Opportunity to address poaching problems identified as a cause for SSSI unit failure. (Unit 86: Unfavourable Declining) Not a designated NVZ Groundwater vulnerability
Wallop Brook	Soil type: Shallow silty over chalk Predominantly Cereals Risk maps: Poultry Moderate slopes Chalk river, salmonid river	Water Quality: Excessively high N Psychic modelling: High application of P Opportunity to identify and address anecdotal evidence re sediment run-off. Groundwater vulnerability

Pillhill Brook	Soil type: Shallow - Deep silty over chalk Predominantly Cereals Risk maps: Moderate slopes Chalk river, Salmonid river	Water Quality: Excessively high N Psychic modelling: High application of P Opportunity to identify and address anecdotal evidence re sediment run-off. Groundwater vulnerability
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## Itchen

The River Itchen and the land draining into it and its tributaries from the source near Alresford to Southampton Water. Includes tributaries such as the Candover and Monks Brooks.

Priority Area	Description	Justification
Itchen Valley	Soil Type - Shallow silty over chalk with some areas of deep silt to clay Predominantly - Cereals Risk maps include maize, horticulture, dairy and poultry Moderate slopes SSSI, Chalk River	High Nitrates – NVZ Psychic modelling suggests high phosphates Groundwater vulnerability SSSI unit failure 106 & 107 Unfavourable no change Opportunity to identify and address anecdotal evidence re. Sedimentation run off
Cheriton and River Alre	Soil Type - Shallow silty over chalk with some areas of deep silt to clay Predominantly – Cereals Risk maps peas and beans, some maize Moderate slopes SSSI , Chalk stream	Very High nitrates Psychic modelling suggests high phosphates Groundwater vulnerability Anecdotal evidence to support silt run off
Bow Lake Stream	Soil Type - predominately clayey with deep silty clay giving over to shallow silty over chalk in the upper catchment Predominantly – grassland and cereals. Risk maps include dairy and beef. Moderate to low slopes adjacent to stream Tertiary bed stream	Failing watercourse on Biological GQA High risk from sediment. Opportunity to address anecdotal evidence of poaching Groundwater vulnerability in upper catchment

### **37. The Stour** (Sandwich Bay to Hacklinge Marshes)

The River Stour and the land draining into it from the source North-west of Ashford to the sea, including the East Stour, River Nailbourne, Little Stour, Wingham River and North Stream tributaries.

<b>Priority Problem/Issue</b>	<b>Description</b>	<b>Justification</b>
<u>Wingham</u>  Excessive Nitrates and Phosphates, Eutrophic waters. Poor biological quality.	Intensive arable area. Dominated by cereals, vegetables, oilseed rape and re-emergence of large-scale orchards. High risk from sediment, P-crop, pesticides	EA Failing river for dissolved oxygen. Evidence of farm runoff entering watercourse. Major aquifer, Source Protection Zone 1, 2, and 3.
<u>North Stream</u>  Very high Nitrate and Phosphate. Poor biological quality, probably due to proximity of Eastry STW. Low flows. N and P levels very high above STW.	Very intensive arable area. Dominated by cereals, vegetables, oilseed rape and horticulture, High risk from P-crop. High connectivity	EA Failing watercourse for dissolved oxygen. SSSI, Ramsar
<u>South Stream</u>  Poor biological quality probably due to proximity of Eastry STW. Low flows. No dilution of effluent. Possible storm problems.	Arable area, Cereals, beans, vegetables, OSR. Flat marshland, high connectivity. Mining and subsidence issues. Predominantly clay. Risk identified from N-crop, P-crop. High connectivity	Numerous SSSI units failing for agricultural diffuse pollution reasons. EA Failing watercourse for dissolved oxygen. SPA, SAC, Ramsar.
<u>Aylesford Stream</u>  High Nitrate, High Phosphate. Prone to waterlogging	Small sub-catchment. Cereals, OSR, Dairy, maize. Steep slopes. Sand and clay. Potential problems with runoff from slopes onto clay levels.	Dairy issues in area.
<u>East Stour</u>  High Nitrate, High Phosphate. DWPA found to be problematic	Catchment split by motorway and Eurostar rail link. Intensive arable area. Cereals, OSR, Beans, Vegetables. Clay, loam and sandy soils. Sediment, P-crop	EA Failing watercourse for dissolved oxygen. PSYCHIC highlights area as extremely prone to sediment and P loss.

### 35. Eastern Rother (Walland Marsh)

The Eastern Rother and the land draining into it and its tributaries from the source West of Heathfield to the sea near Rye. Includes Walland Marsh to the East of Rye.

Priority problem/Issue	Description	Justification
<u>Shirley Moor</u> Nutrients	<ul style="list-style-type: none"> <li>Identified high risks: crop P, total N &amp; sheep-dip</li> <li>Identified main land uses: cereals, oilseed, peas &amp; beans, maize, grassland / sheep &amp; poultry</li> <li>GQA: excessively high N &amp; P &amp; poor chemical quality</li> <li>Some SSSI</li> <li>High connectivity – sewer system</li> <li>NVZ</li> <li>Minor Aquifer (High)</li> <li>Some moderate slopes</li> </ul>	<ul style="list-style-type: none"> <li>One of the most intensively farmed areas within the catchment.</li> <li>One of very few NVZ areas within catchment.</li> <li>Poultry farming – single issue – allows delivery of specific targeted advice.</li> <li>Crop P risk appears extremely high in southern half of area</li> </ul>
<u>Walland Marsh</u> Nutrients	<ul style="list-style-type: none"> <li>Identified high risks: crop P, total N, sheep-dip</li> <li>Identified main land uses: cereals, oilseed, potatoes &amp; peas &amp; beans.</li> <li>GQA: none available</li> <li>Some SSSI</li> <li>High connectivity –dyke system on marsh</li> <li>Minor Aquifer (High)</li> </ul>	<ul style="list-style-type: none"> <li>One of the most intensively farmed areas within the catchment.</li> <li>Larger farms – potentially more benefit for fewer visits.</li> <li>Arable land bordering SSSI previously not specifically targeted unless under HLS – as ditch system so connected, this should positively benefit SSSI.</li> <li>The risk from crop P appears to be one of the highest in the south-east - appears extremely high across entire area.</li> </ul>
<u>Guldeford Levels</u> Nutrients	<ul style="list-style-type: none"> <li>Identified high risks: Sheep-dip &amp; sediment</li> <li>Identified main land uses: grassland / sheep</li> <li>GQA: none available</li> <li>SSSI</li> <li>High connectivity – dyke system on marsh</li> <li>Minor Aquifer (High)</li> </ul>	<ul style="list-style-type: none"> <li>Sheep-dip risk appears extremely high</li> <li>One issue target – advice can be very focused and quick wins should be accomplished</li> <li>Achieve multiple objectives – sheep-dip, SSSI (PSA target), EAs Sheep-dip Pollution Reduction Programme (triggered by EU Directive).</li> </ul>
<u>Royal Military Canal (R.M.C.)</u> Nutrients	<ul style="list-style-type: none"> <li>Identified high risks: crop P, sheep-dip &amp; sediment</li> <li>Identified main land uses: cereals, oilseed, grassland / sheep, peas &amp; beans &amp; poultry</li> <li>GQA: poor chemical quality</li> </ul>	<ul style="list-style-type: none"> <li>Improvements to land management should aid water quality in RMC and in turn the quality of water feed onto the marsh in summer.</li> <li>Crop P risk appears extremely high through the mid of the area.</li> </ul>



	<ul style="list-style-type: none"> <li>• Some SSSI</li> <li>• High connectivity – dyke system on marsh</li> <li>• Minor Aquifer (High)</li> </ul>	
<u>Rother Levels</u> Nutrients	<ul style="list-style-type: none"> <li>• Identified high risks: Sheep-dip, crop P, total N &amp; sediment</li> <li>• Identified main land uses: grassland / sheep, cereals &amp; oilseed</li> <li>• GQA: high P</li> <li>• High connectivity – dyke system on levels</li> <li>• Minor Aquifer (High)</li> </ul>	<ul style="list-style-type: none"> <li>• Sheep-dip risk appears extremely high to the west of the area.</li> <li>• Crop P risk appears extremely high to the east of the area.</li> </ul>
<u>Dudwell &amp; Rother Headwaters</u> Nutrients	<ul style="list-style-type: none"> <li>• Identified high risks: livestock P &amp; sediment</li> <li>• Identified main land uses: Grassland, beef, pigs &amp; dairy</li> <li>• GQA: very high P &amp; high N</li> <li>• Some SSSI</li> <li>• Steep slopes</li> <li>• Higher rainfall</li> <li>• Predominately sandy soils</li> </ul>	<ul style="list-style-type: none"> <li>• According to Ag census data, 2000, this area has one of the highest concentrations of pigs within the south-east.</li> <li>• Dairy &amp; pig farming – single issues – allows delivery of specific targeted advice – potentially quick wins.</li> <li>• High inherent geographical risk.</li> </ul>

## SOUTHWEST RBD

### 20. The Frome, The Fleet, part of Poole Harbour (Chesil, The Fleet, Poole Harbour & River Frome)

The River Frome and the land draining into it from the source North of Maiden Newton to Wareham, including the River Hooke and South Winterbourne. The River Piddle from its headwaters near Piddlehinton to Wareham. The Fleet and the streams draining into it from Swyre in the West to the A354 in the East.

## Fleet

Priority problem/Issue	Description	Justification
<u>West Fleet</u> Nitrogen and Phosphorous	A small catchment dominated by impeded drainage soils, highly connected to the Fleet.	An area with relatively intensive agriculture that seems to be impacting directly on the unfavourable status of a highly significant conservation site.  However all farms within this catchment have already received a 1 to 1 visit through previous programmes where diffuse pollution risks were discussed. The time has now come for most farms to move to the implementation stage.

## Frome

Priority problem/Issue	Description	Justification
<u>Hooke</u> Phosphorous and Sediment	A tributary at the very top of the catchment with impeded drainage, steep slopes and areas of intensive dairy interspersed with high conservation value reserves.	This catchment contributes significant amounts of sediment and nutrients to the catchment as a whole, eventually flowing into the SSSI. This catchment is very rural with most pollution likely to arise from agriculture. Unlike other catchments in the Frome (a project rich catchment), the Hooke has received little targeted DP advice in the past and nothing happening in the present so there is great opportunity to make a difference.
<u>Upper Frome</u> Phosphorous and Sediment	A tributary much like the Hooke with more intensive agriculture, particularly higher concentrations of maize and other arable.	Again the pollution situation in this rural catchment is uncomplicated, however there is a short and minor involvement of the Landcare programme in the past that should be built on before it becomes too old. There are existing contacts and support structures from the Landcare programme that can be built on.
<u>Upper Win</u> Phosphorous and sediment	This is a very small, steep and intensive part of the Main Frome II catchment which grows quite a bit of maize and is linked directly to the Frome SSSI.	In order to target more effectively a small part of the Main Frome II sub-catchment has been split off, the area with the most risky soils and land use to target. After discussions with experts this is a particular problem section, with uncomplicated pollution problems that contribute a disproportionate amount of the targeted pollutants.

## Piddle

Priority/Problem Issue.	Description.	Justification.
Soil erosion and enhanced run off leading to increasing levels of sediment on the bed.	Arable farming in areas of steep slopes, high rainfall and several moderate to high risk soils. Roads and preferential pathways also provide ideal routes for run-off to enter the watercourse	The sediment issues in Upper Piddle is a long established problem in which funding was given to 2 projects conducted by Exeter University (1993) and Fairfield Associates (1995). Work has also recently been conducted by the LOCAR project. Run-off can be exacerbated by farming methods; in order to reduce sediment levels in watercourses working in partnership with local Highways is essential.
High Levels of nitrate throughout the catchment	Arable farming in an area of high rainfall in which both fertilisers and organic manure is applied.	Despite the catchment being in an NVZ nitrate levels are an historic problem and continue to be as the GQAs highlight.

## 25. Dorset Stour (Middle Reaches)

The River Stour and the land draining into it and its tributaries from North of Sturminster Newton to Wimbourne. Includes the North Winterbourne, Tarrant, Iwerne, Develish and Manston Brook.

Priority/Problem Issue	Description	Justification
Soil erosion and enhanced run-off leading to increasing levels of sediment on the bed.	Arable farming in areas of steep slopes, high rainfall and several moderate to high risk soils. Roads and preferential pathways also provide ideal routes for run-off to ensure the watercourse.	The sediment issues in the Rivers Lodden, Cale, Lydden, Cams, Caundle and Key Brook are a long established problem due to dairy and arable farming practices within the catchment. Run-off can be exacerbated by farming methods; in order to reduce sediment levels in watercourses working in partnership with local Highways is essential.
High levels of nitrate throughout the majority of the catchment.	Arable farming in an area of high rainfall in which both fertilisers and organic manure is applied.	Despite the catchment being in an NVZ, nitrate levels are an historic problem and continue to be as the GQAs highlight.
High levels of phosphate throughout the majority of the catchment.	Arable farming in an area of high rainfall in which both fertilisers and organic manure is applied.	It is unclear the level of phosphates due to agriculture as a large proportion of the catchment is dependent on septic tanks and soakaways, although this amount is decreasing there is still a large number which will contribute a huge amount of

		phosphates to the watercourse. In addition to this information agricultural land is currently and has for the past 10 years a negative P balance in which only 16% of tillage crops receive any applications of farm yard manure.
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### 18. Exe Estuary (Exe Catchment)

The River Exe and the land draining into it and its tributaries from the source on Exmoor. Includes the Culm, Creedy, Barle and Clyst tributaries.

The priority problems listed below occur in three priority sub catchments, namely the Clyst, Culm and Creedy/Yeo, but occur to a lesser degree throughout the Exe catchment.

Priority problem/Issue	Description	Justification
<u>River Clyst</u> Nutrient leeching, run off and erosion	Sediment loss, nutrient loss (P & N), phosphate bound to soil particles, slurry run off	Phosphate and nitrate GQA failures, RQO failures, river stretches of concern to fisheries staff (siltation).
<u>River Culm</u> Nutrient leeching, run off and erosion	Sediment loss, nutrient loss (P & N), phosphate bound to soil particles, slurry run off	Phosphate and nitrate GQA failures, RQO failures, river stretches of concern to fisheries staff (siltation).
<u>Rivers Creedy/Yeo</u> Nutrient leeching, run off and erosion	Sediment loss, nutrient loss (P & N), phosphate bound to soil particles, slurry run off	Phosphate and nitrate GQA failures, RQO failures, river stretches of concern to fisheries staff (siltation).

### 24. Hampshire Avon System (Hampshire Avon Catchment)

The River Avon and the land draining into it and its tributaries from the source North of Upavon to the sea at Christchurch. Includes tributaries such as the Wylde, Nadder, Ebble, Bourne and those draining the New Forest around Ringwood.

Priority problem/Issue	Description	Justification
Soil structural degradation and nutrient management in greensand outcrops	Upper Nadder and Wylde, East and West Avon. Hydrologically connected farms in the high risk areas that have not already received training will receive a 1:1 visit over the duration	Outcrop of greensands through chalk with intensive dairy. Greensand soils have increased run off implications

	of the CSF project	
Gateways as conduits for field runoff carrying diffuse pollutants	The main problem on the Sem are sediments. Sediments cause the silting up of important gravel beds and can also smother species through deposition. Sediments from agricultural runoff can transport phosphates and pesticides from the fields into the rivers.	Hilton et al in 'Reducing Diffuse Pollution to Rivers' identified a number of gateways in the Sem catchment that were contributing to the high sediment load in the river by facilitating the pathway between source and receptor
Working with river restoration projects and groups working on Avon	Working on Avon WLMP – Wessex Chalk streams – Wiltshire Fisheries Association	There are a number of other groups and projects that are working on river restoration on the Avon, WLMP, Wessex Chalk Streams and Wiltshire fisheries. Many of these projects, in order to be successful in terms of improving river quality need land management changes in the connected areas as well. The CSF project can provide complimentary work
High Nitrate levels in Bourne subcatchment	Surface and groundwater nitrates are high in the catchment and there is a long term increase	Despite the tailing off of nitrate levels, the peaks of nitrate in the ground water are threatening the drinking water supply

## 16. West Cornwall Catchments

(South West Cornwall Catchments – Marazion Marsh, Loe Pool, Lower Fal and Helford Intertidal, and St Austell Area)

The land draining the South coast of Cornwall from Falmouth Bay to St. Austell. Includes the River Fal catchment. Also the land draining the Marazion River and its tributaries.

Priority problem/issue	Description	Justification
<u>Brighten Stream, Tresillian River, Kestle River and Allen Fall</u>  Intensive livestock	Nutrient loss	Phosphate; Nitrate; GQA failures; RQO failures concern for fishery staff; Diffuse pollution from dairy incidents
<u>Caerhays Stream</u>  Intensive livestock	Nutrient loss	Nitrate; Bathing water failure; Diffuse pollution from dairy incidents
<u>Whole Catchment</u>  Veg/ bulb production	Sediment loss; pesticide loss; nutrient loss	Fluvial surface run-off; Soil on roads; GQA (Phosphate; Nitrate)

## 26. River Camel Valley & Tributaries (River Camel)

The Camel Valley and the land draining into it from Trefrew to Wadebridge.

Priority problem/Issue	Description	Justification
<u>Camel and Dunmere Stream</u>  Intensive livestock (dairy)	Nutrient loss	River GQA Nitrates;
<u>Allen</u>  Intensive livestock (dairy)	Nutrient loss	River GQA Nitrates; RQO failures concern for fishery staff;
<u>South of Trelill in Allen</u>  Mixed farming (Arable)	Sediment loss; Nutrient loss	Arable land use on high run potential land; High risk of elemental pin particulate (PSYCHIC); concern for fisheries
<u>St Lawrence Stream</u>  Dairy/Intensive Beef	Nutrient loss	River GQA Nitrates;

### 3. Rivers Axe and Otter

#### Axe

The River Axe and the land draining into it and its tributaries from the source South of Crewkerne to the sea at Seaton.

Priority problem/Issue	Description	Justification
<p><u>Upper Axe</u></p> <p>Phosphates and Sediment</p>	<p>A catchment dominated by intensive dairy farming and maize growing, with some cereals. An unusual catchment in that the land use remains intensive to the limit of the watershed with very few areas of woodland or extensive pasture. The catchment is slightly complicated in terms of pollution with historic impacts from urban areas and the Dairy Crest processing factory.</p>	<p>This is the very top of a river that has often failed its RQO due to BOD issues and includes the top of a riverine SAC that is currently in unfavourable condition due to unacceptable levels of P and sediment. This river stretch is of concern for fisheries staff due to high sedimentation leading to poor salmonid survival. This catchment has had a lot of involvement from the Ave/ Cycleau project but still requires 1:1 follow ups and the filling of advice gaps.</p>
<p><u>Yarty</u></p> <p>P and Sediment</p>	<p>A rural, steep, flashy catchment less intensive than the upper Axe, however contributes significantly to the flow of the main river and feeds directly into the riverine SAC. The Yarty is easily the largest tributary within the catchment with comparatively very high rainfall. Dairy farming dominates the land use, however the growing of maize is less common than on the Upper Axe.</p>	<p>The Yarty is a stretch of river of concern for fisheries staff due to raised levels of sedimentation, much like the Upper Axe. The Yarty has also suffered from RQO failures due to high levels of BOD associated with diffuse agricultural pollution. Poor soil structure has been identified as a contributing factor towards increasing local flooding. This catchment has had far less attention than the Upper Axe from the Axe/ Cycleau project.</p>

#### Otter

The River Otter and its tributaries from the source on the Blackdown Hills to the sea near Budleigh Salterton.

<b>Priority problem/Issue</b>	<b>Description</b>	<b>Justification</b>
<u>Upper Otter</u>  P and Sediment	A steep, highly connected catchment dominated by soils with high clay and silt content. In association with high rainfall, this topography leads to poor drainage and high levels of run-off. Land use is dominated by dairy farms, some of which have manure management and infrastructure problems. Maize is being increasingly grown for silage.	Although the RQO failure may not be as serious as it seems, this is the only stretch of river within the catchment that has failed RQO with diffuse pollution implicated as a source. This area of the catchment has received little Landcare support in the past when compared to other parts and may benefit greatly from CSF interaction.
<u>Wolf and Mid Otter</u>  P and Sediment	A catchment much like the Upper Otter with large numbers of cattle, however maize is much more prolific.	Similar to the Upper Otter. However, there are greater opportunities here due to the influence that the ECSFDI can bring regarding the encouragement of best practice maize cropping.

### 13. Slapton Ley and Salcombe to Kingsbridge

The Kingsbridge Estuary, Slapton Ley and the land draining into them.

<b>Priority problem/Issue</b>	<b>Description</b>	<b>Justification</b>
Cattle in Watercourses - Prevent / reduce / control access to watercourses.	Defecation leading to increased risk of E-Coli (assuming DWPA rather than sewage is the primary cause).	Shellfisheries are an important economic factor in the community. E-Coli also impacts on human health both within the local community and within the more transient tourist seasons. The quality of the water (streams, estuaries and sea) is important to all users, from children paddling, to rod fishing, to regular access. Positive benefit to bathing waters. The benefits of fencing off the watercourses go far beyond shellfisheries – it will encourage better bank stabilisation, richer vegetated buffers strips, leading to a higher biodiversity impact. It could also result in fewer injuries and sickness in stock.
Cattle in Watercourses – Prevent / reduce / control access to watercourses	Cattle accessing the watercourses by damaging the existing banks. This leads to erosion and sedimentation, affecting fish spawning	Fencing off the watercourses would lead to an immediate reduction in sedimentation. It would also encourage better bank stabilisation, richer vegetated buffers strips, leading to a higher biodiversity impact. It could also result in fewer



	grounds and other ecologically important processes.	injuries and sickness in stock.
Positioning of manures, feeders, etc. Relocate specific items to more appropriate locations.	Some have been positioned inappropriately close to watercourses. In terms of manures, this could lead to direct pollution of the streams through run-off and leaching. In terms of feeders, this could lead to increased sedimentation from poaching, with soil and defecation run-off reaching the streams.	Just simply repositioning some features on the farm can lead to immediate and significant improvements in water quality. Reduction in nutrient enrichment will also benefit bathing waters.
Run-off from arable farming – Reduce / prevent run-off. Red tides.	Run-ff leading to sedimentation and nutrient loading of watercourses. Encouraging the use of buffers to help reduce the impact.	Where appropriate, buffers can lead to a reduction in sediment and run-off from reaching the watercourses by direct means. They can also help meet other biodiversity PSA targets, for example birds. Reduction in nutrient enrichment will also benefit bathing waters.
Out-wintered stock	This may not be the problem it was in the past.	This would need to be checked, as the situation may have improved over the past few years.
Resource management	Poor management of wastes and nutrients (yard containment, clean/dirty water, management practices (timing) etc.)	If resource management was addressed where appropriate, it would lead to a reduction in liability risk for farmers. Also better storage and use of resources. Reduction in nutrient wastage and soil loss. Reduction in soil compaction.

## 12. Somerset Levels and Moors (Somerset Levels and Bridgewater Bay)

The River Bure and the land draining into it and its tributaries from the source West of Bruton and the River Axe from its source near Wells, to Bridgewater Bay.

Priority problem/Issue	Description	Justification
<u>Upper Tone</u>  Soil erosion and enhanced runoff leading to increased nutrient losses.	Steep slopes, vulnerable soils and high rainfall in the headwaters. Areas of intensive dairy, maize, <i>Miscanthus</i> and potatoes Also outdoor pigs and poultry.	This sub-catchment contributes sediment and nutrients to the R Tone which feeds Curry and Hay Moor SSSIs, both of which are unfavourable. Presence of significant amounts of duckweed and algae in the SSSIs indicate nutrient enrichment. It is very rural with most pollution likely to arise from agriculture. However, there are many small villages and a major STW at

		Wellington. The Tone suffers from RQO and FWFD failures and mud on roads. Damaged soil structure causes accelerated runoff and related erosion and increased flood risk. Advice has been given in the past but there are still problems and it remains a priority area. Review of efficacy of past work to inform future will form part of the work.
<u>Upper Parrett</u>  Soil erosion and enhanced runoff leading to increased nutrient losses.	Steep slopes in the headwaters. Extremely vulnerable soils with potatoes in rotation. Areas of very intensive dairy, also maize. Some poultry, and off farm wastes.	This sub-catchment contributes sediment and nutrients to the Parrett which feeds some of the key Management Plan SSSIs (Southlake, King Sedgemoor, West Sedgemoor ). Presence of significant amounts of duckweed and algae in the SSSIs indicate nutrient enrichment. A largely rural area with many small villages with small STWs. Damaged soil structure, particularly on the vulnerable soils causes accelerated runoff and related erosion and increased flood risk. Muddy floods and mud on roads are concerns. This sub-catchment has received targeted Diffuse Pollution advice in the past, however there are still problems. Review of efficacy of past work to inform future will form part of the work.
<u>Upper Brue</u>  Phosphate, Sediment loss	Steep slopes on the upper Brue. Areas of very intensive dairy, and maize production. Large poultry and pigs units. Clays, tufa streams and high connectivity.	This sub-catchment contributes sediment and nutrients, to Catcott, Edington and Chilton SSSI. Presence of significant amounts of duckweed and algae indicate nutrient enrichment in these SSSIs. Predominately rural, with villages and small towns. This sub-catchment has received advice in the past but is so intensively stocked it is still a priority.

## 22. Tamar – Tavy Estuary (Tamar and Tavy Catchments)

The River Tamar and the land draining into it and its tributaries from the source East of Bude to the sea at Plymouth. Includes the Rivers Tavy, Ottery, Inny and Lyd.

<b>Priority problem/Issue</b>	<b>Description</b>	<b>Justification</b>
From the upper reaches of the River Tamar as far down as Launceston (including Lamberet Water, Small Brook, River Deer, River Claw, Tals Water, River Carey, and River Ottery from the confluence with Tamar as far up as North Petherwin)	This gently sloping terrain with predominantly loamy or slowly permeable, seasonally wet clayey soils presents moderate to high run-off potential (Standard Potential Run-off, NSRI) and is likely to drain rapidly to surface waters carrying nutrients resulting in eutrophication and fine sediments and particulates resulting in siltation.	<p>RQO significant failure for upper reaches of the Tamar with DWPA suspected or proven.</p> <p>EC Freshwater Fish Directive failure for upper reaches of the Tamar with DWPA suspected or proven.</p> <p>GQA for Phosphate recorded as bad and poor for River Deer.</p> <p>The entire Tamar catchment is non-compliant with salmon targets in Salmon Action Plans.</p> <p>All these stretches cause concern to EA fisheries experts regarding fish populations and siltation.</p>

### 37. Yealm and Erme Estuaries (Yealm and Erme Catchments)

The Rivers Yealm and Erme and the land draining into them and their tributaries from the source on Dartmoor to the sea.

<b>Priority problem/Issue</b>	<b>Description</b>	<b>Justification</b>
Cattle in Watercourses - Prevent / reduce / control access to watercourses.	Defecation leading to increased risk of E-Coli (assuming DWPA rather than sewage is the primary cause).	<p>Shellfisheries are an important economic factor in the community. E-Coli also impacts on human health both within the local community and within the more transient tourist seasons. The quality of the water (streams, estuaries and sea) is important to all users, from children paddling, to rod fishing, to regular access.</p> <p>However, the benefits of fencing off the watercourses go far beyond shellfisheries – it will encourage better bank stabilisation, richer vegetated buffers strips, leading to a higher biodiversity impact. It could also result in fewer injuries and sickness in stock. Improvements in bathing water quality.</p>
Cattle in Watercourses – Prevent / reduce / control access to watercourses	Cattle accessing the watercourses by damaging the existing banks. This leads to erosion and	Fencing off the watercourses would lead to an immediate reduction in sedimentation. It would also encourage better bank stabilisation, richer vegetated buffers strips, leading to a

	sedimentation, affecting fish spawning grounds and other ecologically important processes.	higher biodiversity impact. It could also result in fewer injuries and sickness in stock. Loss of soil into watercourses has a cumulative effect on field size – the more bank-side soil loss, the smaller the field size (but larger areas of “terrestrialisation” downstream). This could have a negative impact on the amount of land to be claimed under SFP over time.
Positioning of manures, feeders, etc. Relocate specific items to more appropriate locations.	Some may have been positioned inappropriately close to watercourses. In terms of manures, this could lead to direct pollution of the streams through run-off and leaching. In terms of feeders, this could lead to increased sedimentation from poaching, with soil and defecation run-off reaching the streams.	Just simply repositioning some features on the farm can lead to immediate and significant improvements in water quality.
Out-wintered stock	This may not be the problem it was in the past.	This would need to be checked, as the situation may have improved over the past few years.
Resource management	Poor management of wastes and nutrients (yard containment, clean/dirty water, management practices (timing) etc.)	If resource management was addressed where appropriate, it would lead to a reduction in liability risk for farmers. Also better storage and use of resources. Reduction in nutrient wastage and soil loss. Reduction in soil compaction.

## THAMES RBD

### 33. Rivers Lambourn and Kennet

The River Kennet and the land draining into it from the source West of Marlborough as far as Thatcham in the East. Includes tributaries such as the River Lambourn.

Priority problem/Issue	Description	Justification
Soil erosion, particularly those farms in riparian areas and from high risk crops	Chalk catchments being permeable mean the connectivity between the catchment and the river is limited to the riparian areas. Maize and late planted cereals also cause a problem with lack of crop cover during vulnerable	Reduction of soil, SS and PP going into the streams and rivers will affect the water Quality.

	times of year.	
Soil erosion from farm tracks and road.	Farm tracks form a path way for erode material to get to the river	Reducing the connectivity will cut off the path way for erosion
Livestock access to the river	Unrestricted livestock access destroys banks.	The River Survey of the River Lambourn and Kennet by Land Use Consultants showed on both rivers where there is access the aquatic plants are absent

## Abbreviations Used

<b>Abbreviation</b>	<b>Definition</b>
ADAS	Consulting Service providing environmental and rural solutions and policy advice
Ag	Agricultural
AWS	Anglian Water Services
BOD	Biological Oxygen Demand
CSF	Catchment Sensitive Farming
DWP	Diffuse Water Pollution
DWPA	Diffuse Water Pollution from Agriculture
EA	Environment Agency
EN	English Nature
FYM	Farmyard Manure
GQA	General Quality Assessment
GWQ	Ground Water Quality
HLS	Higher Level Stewardship
JCA	Joint Character Areas
N	Nitrates
NE	Natural England
NVZ	Nitrate Vulnerable Zone
OSR	Oil Seed Rape
P	Phosphates
PSA	Public Service Agreement
PSYCHIC	Phosphorus and Sediment Yield Characterisation in Catchments
Ramsar	Intergovernmental treaty which provides the framework for national action and international co-operation for the conservation and wise use of wetlands and their resources
RQO	River Quality Objective
SAC	Special Areas of Conservation
SIMCAT	WQ Model
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest
STW	Sewage Treatment Works
UV	Ultra Violet
VI	Pesticide Voluntary Initiative
WQ	Water Quality