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Date: September 2013  
Ref: SWMI Agriculture Industry Response

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## Water for Life and Livelihoods – England’s waters: Challenges and choices

### Introduction

**This is a joint consultation response produced by the National Farmers’ Union (NFU), Agricultural Industries Confederation (AIC), Country Land and Business Association (CLA) and Crop Protection Association (CPA).**

The NFU is the voice of British farming and represents more than 55,000 farming and growing members in England and Wales.

The AIC has over 250 Members in the agrisupply trade representing £6.5 billion turnover at farmgate. AIC represents several sectors within the agrisupply industry including: animal feed; crop protection and agronomy; fertilisers; grain and oilseed; and seed.

The CLA is the membership organisation for owners of land, property and businesses in rural England and Wales and speak for everyone who believes in a living and working countryside.

The CPA is a key voice of the UK Plant Science Industry promoting the role of modern plant science in safeguarding food supply from seed to shelf. CPA members are involved in the development and manufacture of a wide range of plant science technologies including pesticides which are of crucial importance to the cultivation and protection of food crops, protecting our gardens, woodlands, infrastructure and public places.

### Points of principle

- Robust, agriculture-related data to provide evidence for the development of informed, science-led policy is needed throughout the Water Framework Directive process. Local data is also key to enable farmers and advisers to understand the relevant issues and take “ownership” of them.
- Climate change should be considered as a Significant Water Management Issue as it may have considerable impact on many of the parameters that combine to the classification of Good Ecological Status/Potential. Although it is difficult to account for the impact of climate change in planning cycles, better attempts to understand the changes to “baseline” data need to be made to understand how this impacts on the requirement for “no deterioration” and how GEP/GES is measured in future.
- The impact of extremes on the baseline assumptions underpinning WFD should be further considered. Extreme weather related incidents change what can reasonably be expected of farmers and advisers, and cannot be dealt with through standard good agricultural practice. How the Environment Agency responds to, or what the Agency can expect from farmers and advisers during severe weather related events should be dealt with in guidance, rather than through regulation.
- An inability to produce food and fuel because of insecure access and/or an inadequate and costly allocation of water for farming represents a significant risk to our sector. The twin challenges of global climate change and meeting the needs of a growing population are likely to develop into an issue of national importance – both for the possible impact on national food security and the UK’s potential to make a greater contribution to global food production.

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Country Land & Business Association

- Impacts of WFD related action on flooding of agricultural land needs to be adequately evaluated and accounted for in the RBMP process. There is a significant danger of unintended consequences e.g. removal of structures that provide benefits or functions e.g. during a drought or flood situation.
- Restrictions placed on plant protection products should be the very last resort. The Government should consider how best to reduce risk, taking into account the chemical properties of individual pesticides, available mitigation measures and the potential effect of weed, pest and disease resistance on UK production. We have significant concerns that measures introduced through the River Basin Planning will not consider the cumulative effects of new regulation on the availability of plant protection products. There could be a significant cost to the agricultural and horticultural industry if no, or severely limited, crop treatments are available as a result of restrictions on use being introduced.
- We are concerned that invasive species present a significant challenge under WFD as there will be several species that cannot be eradicated, regardless of the actions (new or existing) proposed.
- We would strongly question any proposals for more prescriptive regulation where impacts are spatially variable and a “one-size-fits all” complex regulatory approach cannot deliver improvements in all areas. The Government should fully utilise and explore industry-led partnerships and non-regulatory measures first, and be satisfied that existing regulation (including codes of practice) and enforcement is inadequate before considering new regulatory approaches. Industry-led approaches and Continuing Professional Development (CPD) have already demonstrated that they can deliver to improve environmental outcomes, without the need for further regulation.
- The industry can take the lead in a number of areas e.g. CPD and professional adviser training and scheme development, working in partnership through farmer-facing initiatives, devising operator training schemes, development of farm skills (with or without professional advice) and managing professional registers. By working together towards common goals we can achieve environmental and business outcomes for our industry.
- A holistic approach to soil and nutrient management rather than single-issue activity is required. Phosphorus issues can be combined with messaging on reducing soil erosion and runoff, the importance of good soil management, whole system nutrient planning/management (alongside nitrogen) and avoiding faecal contamination in watercourses. The Challenges and Choices consultation does not satisfactorily reflect the long-term trend of decreases in fertiliser use and manure production, and reductions of nitrogen and phosphorus in animal feeds.

## Q1. What do you consider to be the significant issues facing waters in England?

SWMIs not expressly identified by the Challenges and Choices consultation:

### *Evidence and appropriate data*

***Throughout the WFD process is the need for robust agriculture-related data to enable the development of informed, science-led policy. Local data is also key to enable farmers to understand the relevant issues and take “ownership” of them.***

We are concerned that the headline figures on the extent of the issue of diffuse pollution from agriculture present a confusing picture at odds with our experience of farming practice and steps taken within the industry (as well as regulation) to manage and mitigate agricultural impacts. Diffuse pollution is difficult to attribute to a single source, and we do have concern that assessments do not discriminate between different sources of pollution in the rural environment but rather falsely attribute point and diffuse sources solely to agriculture. Local knowledge of the scale of the problem from specific sectors is needed to find appropriate solutions to achieve improvements in WFD classification. In addition to separating agriculture’s contribution from other point sources, there is a real need to disaggregate “agriculture” and “rural land management” in datasets.

For example, Defra and the Environment Agency both make reference to “agriculture and rural land management” being responsible for about 30% of the UK’s failures under the Water Framework Directive. This raises questions as to whether the data exists in order for an accurate distinction to be made between these two, very separate, sources. Not only is good robust data key to ensuring that there is a science-led approach to policy development, it is also key to giving re-assurance to those affected by policies that informed decisions are being taken.

All possible sources need to be thoroughly considered in assessments. Agriculture is not the sole contributor to diffuse pollution and concentration peaks from permitted sites, sewage discharges (diurnal variation and storm overflows) and pollution events all contribute to the concentration of a pollutant measured at any single point in time. Without thorough assessment of all available data from these point sources “diffuse agricultural pollution” is the simple conclusion being made. The Environment Agency needs to understand the variation in output from point sources (e.g. continuous data from sewage treatment works, data on industrial discharges, and mapping of pollution incidents) to understand the contribution of diffuse sources. We do not believe the data supports the assessments and we believe that farming’s contribution is being consistently overstated.

### *Climate Change*

***Climate change is likely to have a significant impact on many of the parameters that together combine to the classification of Good Ecological Status/Potential. Although it is difficult to account for the impact of climate change in planning cycles, better attempts need to be made to understand the changes to “baseline” data, how this impacts on the requirement for “no deterioration” and how GEP/GES is measured in future.***

We believe that climate change should be considered as a significant water management issue. Potentially all elements included in the definition of WFD qualitative and quantitative status of water are sensitive to climate change<sup>1</sup>. It is surprising that it does not appear more prominently in the national Challenges and Choices consultation which is at odds with the individual River Basin documents where climate change is highlighted and the water environment is said to be “particularly vulnerable to climate change”. We also do not understand the different approach taken by the RBMPs to climate change e.g. some address the issue in 1-2 pages, others have taken about 15 pages. We therefore question whether climate change is being effectively taken into account through the process and whether these draft RBMPs are indeed locally valid assessments of impact or simply formulaic compilations.

<sup>1</sup> [https://circabc.europa.eu/sd/d/a88369ef-df4d-43b1-8c8c-306ac7c2d6e1/Guidance%20document%20on%2024%20-%20River%20Basin%20Management%20in%20a%20Changing%20Climate\\_FINAL.pdf](https://circabc.europa.eu/sd/d/a88369ef-df4d-43b1-8c8c-306ac7c2d6e1/Guidance%20document%20on%2024%20-%20River%20Basin%20Management%20in%20a%20Changing%20Climate_FINAL.pdf)

We are surprised that all individual River Basin documents state that “over the period towards the end of cycle 2 (to 2021) and through cycle three (to 2027), it is predicted that the UK’s climate is likely to change significantly”. We think that it is important to provide further explanation of this generic statement; in particular what the EA considers a “significant” change and to reference the source of the “prediction”. 2021 is less than 10 years away and we would welcome sight of evidence that suggests that the change in the UK’s climate may be greater than that suggested by UKCP09.

The EU’s Common Implementation Strategy guidance<sup>1</sup> states that “although climate change is not explicitly included in the text of the WFD, the step-wise and cyclical approach of the river basin management planning process makes it well suited to adaptively manage climate change impacts”. Whilst adaptation to a changing climate may be facilitated by the planning cycle, we strongly question whether there is recognition that the baseline against which progress is measured has changed, is changing and will continue to change as the climate changes. The impact of climate change on the RBMPs and WFD targets must be assessed.

The UK Climate Change Risk Assessment<sup>2</sup> (CCRA) appears to begin to tackle this issue. It states that “in the near term (2020s), a large proportion of rivers could fail existing environmental flow targets if we continue to use historic climate to guide our regulatory framework. This also appears to be the case in the longer term (2050s, 2080s)” and suggests that further work is needed to monitor and possibly re-evaluate these environmental flow targets in rivers under a changing climate.

The risk to flow highlighted in the River Basin documents echoes the CCRA in that a “large number of national assessments and catchment studies indicate that winter river flows are likely to increase across the UK and summer flows are likely to decrease due to climate change”. However, the CCRA is clearer about the possible future variability “there is a wide range of results and in the near term (2020s) and medium term (2050s) changes in average seasonal flows may be positive or negative” and especially “that it is difficult to project changes in precipitation”.

In addition the CCRA notes that there is much less confidence in the consequences of changes in water quality than quantity and that this is attributed to the complex interactions between land use, climate change and aquatic ecosystems. This lack of confidence is not reflected in the consultation’s sections on nutrients, sediments etc. and we would agree this is an area where further research is required.

Whilst we note that in the supporting evidence for SWMIs for the South East, Thames and Severn Trent River Basins there is a recognition that the assessment of climate change impacts on WFD pressures are “generally qualitative at this stage and give no indication of the severity and timescale over which changes may occur”, the tone of the “evidence” is overwhelmingly negative.

The Common Implementation Strategy guidance suggests that RBM measures should be “mindful of the actions being taken by others to either mitigate or adapt to climate change”. We are concerned that there is little evidence of consideration of potential synergies and trade-offs with non-WFD initiatives. The CCRA reinforces this view, that the “water sector cannot be considered in isolation and adaptation measures need to reflect the complex linkages between sectors”.

### *Weather*

***Extreme weather related incidents change what can reasonably be expected of farmers and advisers, and cannot be dealt with through a regulatory approach.***

Summer precipitation (June, July and August) has increased dramatically in the past decade. However, there have been more subtle changes in the winter (December, January and February), which have seen less prominent decreases in rainfall since the late 1970s. In the summer of 2012, rainfall in England and Wales was the highest for 100 years with a total of 375.0mm. This total represents the fourth wettest summer on a record

<sup>2</sup> <http://randd.defra.gov.uk/Document.aspx?Document=CCRAfortheWaterSector.pdf>

dating back to 1766. Since 2003 winters have seen less rain compared to the 1961-1990 average. In the winter of 2012, rainfall was 213.3mm, 8 per cent lower than the 1961-1990 average.<sup>3</sup>

Variable or unpredictable weather can impact on farming in a number of ways, including:

- As well as causing leaching of nutrients, loss of soil and organic matter, unexpected soil erosion events caused by extreme weather can lead to a loss of crop protection products and reduced resilience in crop production.
- A regulatory approach lacks the flexibility to be able to deal with unusual conditions. For example in the extremely wet conditions of 2012 a great number of farmers around the country entered the autumn period with full slurry stores. Despite favourable conditions later in the year farmers were unable to spread because of NVZ closed periods.
- Unprecedented rainfall can bring flooding to tens of thousands of hectares of farmland, some for extended periods of time. In addition to the extent of the land affected, duration of flooding can leave land unworkable for extended periods due to the impacts of waterlogging and loss of condition.
- Farmers are faced with the requirement to irrigate during periods of water scarcity to avoid crop losses.

How the Environment Agency responds to, or what the Agency can expect from farmers during severe weather related events should be dealt with in guidance, rather than through regulation. Standard good agricultural practice cannot deal with such extreme events. Keeping strictly within the regulatory constraints is difficult in these situations. Our ideal solution to this problem would be to devise a methodology that can offer adequate flexibility in situations where extreme weather events or late harvests arise. Flexibility could more easily be dealt with through guidance rather than a regulatory approach.

#### *Water availability and the importance of water to agriculture*

***An inability to produce food and fuel because of insecure access and/or an inadequate and costly allocation of water for farming represents a significant risk to our sector. The twin challenges of global climate change and meeting the needs of a growing population are likely to develop into an issue of national importance – both for the possible impact on national food security and the UK's potential to make a greater contribution to global food production.***

All farmers need water to grow crops. Farmers rely on rainfall, public supply and abstraction from rivers and aquifers. Abstracted water is particularly important to the high value fruit and vegetable sector. For example in the East of England, irrigated crops support a food and farming sector that provides 50,000 jobs and contributes £3 billion to the annual economy<sup>4</sup>. Nationally, irrigated crops account for only 4% of crop area but 20% of crop value<sup>5</sup>.

Agriculture accounts for only 1% of total water abstracted nationally<sup>5</sup>. Farmers also tend to abstract water on a seasonal basis and so typically need water at times of higher demand and lower availability. Spray abstraction (irrigation) is considered to be a 'consumptive' use of water because it is mainly taken up by the crop with relatively little water returned to the environment.

Global climate change and population growth are making national food security an increasingly important issue for Government; meanwhile more and more consumers demand a consistent supply of high quality local food. If farmers are to succeed in growing this food they will need a secure supply of water. Yet, water for domestic use, industry and the environment generally take precedence during periods of scarcity.

<sup>3</sup> [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/229810/precipitation\\_summary\\_report.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229810/precipitation_summary_report.pdf)

<sup>4</sup> Weatherhead E., Kay M., Knox J., 2007. 'Irrigation water security: promoting on-farm reservoirs in the UK', available at [www.icid.org/ws2\\_2010.pdf](http://www.icid.org/ws2_2010.pdf)

<sup>5</sup> Knox J., Kay M. and Hammett P., 2007. A Fair Share of Water for Agriculture. Cranfield University, EEDA, Environment Agency, NFU and UK Irrigation Association, available at [www.ukia.org/flyers/5020%20-%20EEDA%20Water%20Brochure%20A-W\\_final.pdf](http://www.ukia.org/flyers/5020%20-%20EEDA%20Water%20Brochure%20A-W_final.pdf)

Although water availability and flow may be an issue of national significance, its importance varies dramatically between river basin districts and individual water bodies. Local characteristics and uses are highly individual and sweeping generalisations in terms of options and measures should be avoided. Decisions must be taken based on local evidence.

We agree with the Agency's assessment that in many cases, measures taken to address other SWMIs will deliver the required ecological improvements. Similarly, we agree that it will not be necessary to recover flows back to the ecological flow indicator in all cases because measures to resolve other pressures will deliver the required ecological improvements. Therefore, while measures to address abstraction and flows can make a contribution to ecological improvement, full consideration must be given to the cost and benefit of identified abstraction and flow measures. Proportionality is also a key consideration – remembering that agriculture accounts for only 1% of total abstraction.

### *Flooding*

#### ***Impacts of WFD related action on flooding of agricultural land needs to be adequately evaluated and accounted for in the RBMP process.***

Flooding is a significant water management issue for farmers with 14% (1.5 million hectares) of the agricultural land in England and Wales at risk of flooding from rivers or the sea<sup>6</sup>. 58% of the most productive English farmland (Grade 1 land) is within the floodplain<sup>7</sup>. Around 30,000 hectares of high-quality arable and horticultural land floods each year and this figure is likely to increase<sup>8</sup>.

Unprecedented rainfall brought flooding to many parts of the country in 2012, with tens of thousands of hectares of farmland affected, some for extended periods of time. The estimated extent of agricultural flooding over a two day period in November 2012 was 43,000 hectares<sup>9</sup>, on its own this is already greater than the total extent of the flooding experienced during June and July 2007. In addition to the extent of the land affected, duration of flooding can leave land unworkable for extended periods due to the impacts of waterlogging and loss of condition.

Putting a price on the agricultural impact is challenging. Defra's latest farm income figures show a 14% decrease in the bottom line for UK agriculture, as the total income from farming (TIFF) decreased by £737 million in 2012 to £4.7 billion, in part as a result of the second wettest year since records began<sup>10</sup>.

Flooding in 2012, whilst unavoidable given the unprecedented nature of the rainfall, was widely perceived to have been exacerbated by reducing rural watercourse maintenance and contributing to floods over a greater extent of agricultural land for an extended duration and hindering recovery. Defra has estimated that some 35,000ha of high quality horticultural and arable land will be flooded at least once every three years by the 2020s, and that this could rise to around 130,000ha by the 2080s if there is no change to current flood defence provision<sup>11</sup>.

We are concerned that attempting to move waterbodies to a more "natural" state through the WFD process, e.g. by removing structures and creating meanders or simply reducing or ceasing maintenance operations, will create further risk of flooding to rural land. Protecting agricultural land use needs to be seen as an appropriate justification for retaining control structures, similar to protecting other land uses. Many measures are identified in Challenges and Choices for controlling and mitigating physical modifications, but there is an acknowledgement that more research on the links between physical modification, ecological response and

<sup>6</sup> David Rooke, Head of Flood Risk Management, Environment Agency

<sup>7</sup> <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=2&ProjectID=16952>

<sup>8</sup> <http://randd.defra.gov.uk/Document.aspx?Document=CCRAfortheAgricultureSector.pdf>

<sup>9</sup> David Rooke, Head of Flood Risk Management, Environment Agency speaking at NFU Council January 2013

<sup>10</sup> [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/193241/agriaccounts-tiffstatsnotice-30apr13a.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/193241/agriaccounts-tiffstatsnotice-30apr13a.pdf)

<sup>11</sup> <http://randd.defra.gov.uk/Default.aspx?Module=More&Location=None&ProjectID=15747>, Agriculture section (figures for England and Wales)

effectiveness of measures needs to be carried out (including costs, benefits and technical feasibility). We consider that these evidence gaps are significant and options need to be thoroughly considered on a site-by-site basis to determine the potential consequences (for both ecological condition and physical functioning) of both action and inaction. There is a broad range of existing practices undertaken to help convey water and reduce flood risk to people, property and agriculture that are cited within the Technical Summary on Physical Modifications and Hydromorphology. The long term impacts of reducing or ceasing such activity on the status and condition of waterbodies must be better understood, especially where such activities may have been fundamental to the resulting water level management regime and existing species assemblage.

### *Population pressure*

***In the longer term, the need to produce enough food for a growing population represents a significant challenge of both national and global importance.***

The twin challenges of global climate change and meeting the needs of a growing population has potential to develop into an issue of national importance – both for the potential impact of national food security and the UK's potential to make a greater contribution to global food security.

There is also a major opportunity for the UK food chain to respond to domestic and wider EU/world population growth. However with increased market there also comes increased need to manage our farming systems more carefully and we know that production increase cannot come at cost to the environment, especially water quality.

So, we need to produce more food, but impact less on the environment. 'Produce more, impact less' must entail a range of actions ensuring that farmers and growers can build their capacity to produce food whilst continuing to safeguard the environment.

This isn't an entirely new concept to farmers; it is something that many farming businesses have been making strides towards for some time. They have maintained and in some cases increased production without increasing the overall volume of inputs through technologies such as GPS, variety selection and precision farming. As an example, the volume of nitrogen fertiliser used on farms in the UK has fallen by a third since the mid-1980s. But if more production is to be achieved, there will be a continued need for the development and implementation of new technologies, research and development and knowledge transfer.

There are also wider impacts of population growth that need to be considered e.g. more houses in lowland England exerting pressures on infrastructure and demands on the environment, increased pollution pressure and increased competition in south east and eastern England for scarce water resources.

The demands and impacts of a growing population should therefore be carefully considered through the RBMP process.

**Q2. Do you agree with our description of the issues affecting the water environment and society? Please specify which issue(s) your response refers to and provide relevant information to help explain your answer.**

### *Abstraction and flow*

We agree that future pressures relating to water scarcity present a real and increasing threat for all users – including the environment. But broad figures give no insight into the type and degree of local catchment issues. Indeed, focusing on these statistics can mask the considerable variation in catchment character and water balance across the country.

Farmers clearly contribute to abstraction and flow problems but collectively (and certainly individually) they are minor users of water compared to public supply and (especially in Wales) energy. Farmers' access to water is squeezed between, on the one hand, large volume (incorporating significant headroom) public supply licences historically granted on a permanent basis and so difficult to amend; and increasing legal protection for

important habitats and species on the other hand. A reduction in water availability for agricultural production could adversely impact national food security and increase food price volatility.

### *Chemicals – Possible future options for source control*

We are concerned by the future option of “EU restriction/authorisations based upon use” which we don’t consider to be appropriate management of the source – a risk-based approach should be used which needs to consider the impact upon the industry should restrictions mean that there are no alternatives left. Restrictions should be the very last resort and the Government needs to consider how best to reduce risk by taking into account chemical properties of individual pesticides, mitigation measures available and the potential effect of weed, pest and disease resistance on UK production.

There are barriers to new innovation and limitations on efficacy that mean that “voluntary substitution of chemicals” with e.g. biological alternatives cannot fully substitute for existing products. In many situations alternative crop protection technologies such as biological controls do not represent a ‘like for like’ swap.

### *Chemicals – Possible future options for pathway control*

There are many options suggested for pathway control from agriculture. However, we consider that there needs to be an evaluation of current pathways and the level of information that already exists on efficacy of controlling activities before implementing further controls.

We question the identification of agriculture as a sector that can deliver “sustainable drainage techniques to treat and reduce urban runoff”.

Some of these options need further research before they can be recommended e.g. “rural sustainable drainage options”. We need research, knowledge transfer and a clear understanding of who should pay for the benefits.

One of our big questions is over the aim to “reduce pesticide peaks”. Best practice drives farmers towards a tendency to produce a large, short-lived spike because everyone in a catchment will spray when conditions are deemed appropriate. Our question is whether it is better to accept this certainty and deal with spikes in a risk-assessed, smarter way or whether to change practice to reduce the magnitude of spikes but increase the duration that the product is measurable in surface water, as a result of prolonged sub-optimal use.

The suggestion to “change crop rotations” is overly-simplistic. Even if farming systems are able to change there are implications for the farmer – equipment availability, suitability of land and reductions in yield – all of which need to be evaluated. The farming system is driven by profitability and if this were to be changed it would have significant economic implications. These would need to be taken into consideration but a national approach to evaluate the cost at farm level would not take into account the differences in farms regionally and locally. Proportionate cost implications would need to be fully investigated. There is potential to simply swap the problem e.g. to soil management, nutrient loss etc. or to move the problem to another location. Pollution swapping is a real possibility when options such as changing crop rotations could represent the worst possible outcome for all parties concerned because of cost, time to adapt practices and confidence to be able to make the changes.

Similarly, it is simplistic to suggest that “wider, well managed buffers” are the solution. Buffers certainly have a role to play but the factors that make a buffer appropriate will differ depending on the situation. Wider does not necessarily mean better.

The industry is already going beyond the regulatory minimum and using precision application methods such as low drift nozzles and crop mapping to reduce the risks from pesticides. However, regulation does not always facilitate the use of new technology readily, having taken a number of years to reach consultation stage on the inclusion of low drift nozzles in the risk assessment processes for registration of crop protection products.

We question the need to suggest “targeted land use change to woodland...to act as a barrier to spray drift resulting from aerial application of chemicals” as this method of application is not widely used and only very specific products are used this way.



### *Faecal contamination and sanitary pollutants*

Faecal indicator organisms (FIOs) are another area where we are concerned over some of the uncertainties and assumptions in the data. There are evidence gaps and gaps in the data, and it is likely that “agricultural” sources will include unmapped sewage and septic tanks discharges – this must be made clearer in RBMPs. Again, data to inform the source-pathway-receptor model is key, and actions shouldn’t be based on assumptions about the source of FIOs.

### *Fine Sediment*

We disagree with the low scale of impact that fine sediment has on risk of flooding according to the Challenges and Choices consultation, especially when seen in comparison with other impacts e.g. impacts on wildlife.

It is important to assess the longer term (+10 year) impacts on WFD objectives of ceasing maintenance activity by the Environment Agency (e.g. the removal of silt), previously undertaken to facilitate the conveyance of water in order to reduce flood risk.

The evidence and data behind the identification of fine sediment as a SWMI is not as robust as it should be when regulatory approaches are being suggested to manage the problem. This is acknowledged in the Evidence Summary which notes that there is “no in-river WFD sediment standard; sediment pressures are assessed by a link to biological element failures; and we do not routinely monitor sediment run-off or in-river siltation”. The methodology for identifying sediment pressures and attributing water body failures to sectors seems to be based on assumptions and perceptions rather than good quality data. While these assumptions may be founded in some cases, we need better information in order to target efforts in the right places both in field and in channel.

Without this unbiased information on the source-pathway-receptor linkages there is no clear understanding of “background” sedimentation, agriculture’s contribution to the problem, so no way to ensure that agriculture’s contribution to the solution is proportionate to achieve the results.

### *Nitrates*

The Challenges and Choices consultation does not satisfactorily reflect the long-term trends in nitrogen fertiliser and feed use, manure production, and overall crop and livestock nitrogen use efficiency which will be contributing to reducing the nitrogen load at risk of loss as nitrate to rivers. Use of nitrogen in grassland has declined by 59% since 1990<sup>12</sup> and nitrogen from manures has reduced by 22% between 1990 and 2012<sup>13</sup> due to reductions in livestock numbers and lower nitrogen excretion rates (as a function of reductions in nitrogen content of feeds). Over this same period, the agriculture sector has made significant improvements and reduced the amount of nitrogen at risk of loss through leaching.

Groundwater trends may take much longer to show improvements in nitrate concentrations. The complexity around this issue, and the potential solutions (and time to reflect reductions in inputs) needs to be clearly communicated when explaining WFD groundwater failures.

Experience the NFU has gained through the most recent review of the Nitrates Regulations and areas designated as Nitrate Vulnerable Zones leads us to question some of the statements in the Evidence Summary that states that “modelling has suggested that in rural areas in the UK more than 80% of nitrate in groundwater may come from agriculture”. We know that modelling used in NVZ methodology is based on assumptions, incorrect and limited datasets and methodological inconsistencies (e.g. not accounting for other rural sources such as rural sewage treatment works, overflows, and septic tanks in the dataset). Statements like this should be properly evidenced as the reality on the ground rarely reflects the modelling.

The consultation doesn’t make it clear enough that the lowest WFD failures are a result of nitrates. The number of “extra measures”, including land-use change and regulatory options suggested to tackle the issue are therefore a concern as they don’t take into account the improvements that have taken place recently. Options

<sup>12</sup> [www.gov.uk/government/statistical-data-sets/british-survey-of-fertiliser-practice-dataset](http://www.gov.uk/government/statistical-data-sets/british-survey-of-fertiliser-practice-dataset)

<sup>13</sup> [www.gov.uk/government/publications/statistics-notice-uk-and-england-soil-nutrient-balances-2012](http://www.gov.uk/government/publications/statistics-notice-uk-and-england-soil-nutrient-balances-2012)

such as good practice guidance on nutrient planning, and one-to-one advice for farmers should be the priority. Industry initiatives such as Tried & Tested<sup>14</sup> and the Greenhouse Gas Action Plan<sup>15</sup> can help to improve nutrient management both directly and indirectly.

### Phosphorus

The Challenges and Choices consultation also fails to satisfactorily reflect the long-term trends in phosphorus fertiliser and feed use and manure production. Use of phosphate has declined by 67% on grassland and 51% on tillage land since 1990<sup>12</sup>, while phosphate from manures has reduced by 20% between 1990 and 2012<sup>13</sup>.

Overall fertiliser phosphate input vs. offtake balances for cereals, oilseed rape, potatoes and sugarbeet are negative, which could have implications for yield if the nutrient gap is not being filled by organic phosphate resources. Similarly, overall phosphorus use in animal feeds has declined by over 20% since 1999<sup>16</sup> and loading of phosphorus on pig and poultry farms has been reduced as a result of widespread use of Phytase – an enzyme feed additive to improve nutrient utilisation. These trends are not reflected adequately in the consultation document or evidence summary.

### Q3. How do you think these issues should be tackled? Please specify which issue(s) your response refers to and describe any consequences of taking particular actions or approaches.

#### Abstraction and flow

Farmers need secure access to water to make long-term business investment in future food production. WFD measures aimed at addressing the impacts of abstraction and flows must have regard to the need to allocate a fair share of water to grow our food. The abstraction of water is already a heavily regulated activity. Meanwhile, reaching GES may become impossible/more difficult in some water bodies because of climate change. Standards and the practicability of measures must be reviewed in those circumstances.

From the list of suggestions included in the consultation document, we believe that the current system for managing water could be improved by:

- Ensuring that the abstraction licensing system is simple, flexible and cost effective to administer. This may be government's long term aim through its abstraction reform proposals but potential improvements should be identified and introduced now. For example, the ability of farmers to take 'high flow' surface water irrespective of the season to fill reservoirs is a sustainable water management option that should become a permanent measure.
- Basing the decision-making process, from the enforcement of abstraction licensing strategies to variations of individual licences on sound scientific evidence that is properly communicated to users, thereby building trust between user and regulator.
- Treating evidence of (lack of) groundwater availability with special care, based as it is as much on modelling as it is on monitoring which makes the link between groundwater abstraction and ecological harm difficult to prove.
- Ensuring that options to reduce abstraction and increase flows focus on the public water supply sector as the major water user (particularly in the dry south and east) and often bulk exporter of water from sensitive catchments.
- Adoption of more rigorous activity in the public supply sector such as compulsory domestic metering and improved leakage performance.
- Continued promotion of water efficiency measures by all users.

<sup>14</sup> [www.nutrientmanagement.org](http://www.nutrientmanagement.org)

<sup>15</sup> [www.nfuonline.com/science-environment/climate-change/ghg-emissions--agricultures-action-plan/](http://www.nfuonline.com/science-environment/climate-change/ghg-emissions--agricultures-action-plan/)

<sup>16</sup> AIC data

### *Abstraction and flow- Possible future options*

We believe there is some merit in exploring opportunities for greater collaboration and partnership working both within and between sectors. Also, we agree that there is value in increased promotion of water storage schemes at all levels – from identifying need at the water body, catchment and regional scale, to improving design and delivering schemes on the ground whether by individuals or multi-sectoral.

In general, we believe that other ideas listed are technically infeasible and/or of limited benefit (mainly in terms of potential cost of the measure). For example, while the desire to “increase the rate at which measures are being implemented” is understandable, it is important for licence changes to proceed at a measured pace to allow businesses sufficient time to adjust and invest in water security and efficiency.

Removal of current licensing exemptions is included in the list of possible further options in the future. While we realise that government intends to use the provisions of the Water Act 2003, the removal of the existing exemption afforded to trickle irrigation needs to fully accommodate the water needs of the many trickle irrigators. Through their open and transparent use of water over many years, these irrigators have established what amounts to ‘grandfather rights’ to those abstracted volumes.

We note the listed option of revoking unused licences. This process must pay due regard to irregular farming need for licensed volume arising from variable weather and cropping patterns.

### *Chemicals - Possible future options for source control*

It should be noted that farm assurance schemes already go beyond regulatory requirements and therefore we would challenge the suggestion to make “enhancements to current schemes”. There may be more to do to help farmers understand the risky areas on farm e.g. by mapping that could be used in farm assurance or rewarded through earned recognition. These would have the additional benefit of helping farmers to manage risks without creating a burdensome process.

Similarly, there is no evidence that labelling is not being followed and therefore needs more stringent regulation and “improved enforcement of...regulations governing chemical use”. WFD should not challenge legitimate practice in the use of plant protection products.

Low toxicity products (e.g. metaldehyde) need a risk-based approach and achievable standards. Managing the issue of pesticides in waterbodies needs to follow a risk-based approach based on the risk to the receptor. Developing regulation on a hazard basis and using out-of-date standards is already having a detrimental impact on the industry. Standards need to be achievable and based on sound science.

We have significant concerns that measures introduced through the River Basin Planning process will not consider the effects of new legislation on the availability of plant protection products. There could be a significant cost to the agricultural industry if no treatments are available as a result of restrictions on use being introduced.

### *Faecal contamination and sanitary pollutants*

We agree that the best options for working within catchments of bathing and shellfish waters needs to be tailored to the specific source of pollutant. Advice and guidance from voluntary schemes and incentives to implement measures that have been proven to reduce the problem should be the first option. Catchment Sensitive Farming should be the preferred route for advice in these protected areas.

In addition, the ‘discounting’ approach, which can be used to disregard samples during unusual events, should also be investigated for use in England. We understand that Scotland is already taking advantage of the ‘discounting’ approach (via the Short Term Pollution provision).

### *Invasive non-native species*

We are concerned that invasive species present a significant challenge under WFD as there will be several species that we cannot eradicate, regardless of the actions (new or existing) proposed.

There is a danger of unintended consequences of action aimed at other SWMIs having a detrimental impact on the ability to control invasive species. As an example, we are aware of instances where fencing watercourses has affected access required to manage invasive species. Similarly, due to the limited suite of herbicides available for aquatic use, water and habitat quality will be reduced where certain plant or algal species predominate. A lack of herbicide availability also increases the need for more invasive management techniques.

We would therefore be concerned, should some of the suggested actions on pesticides be implemented, that herbicides would not be available in future to manage invasive species.

### Nitrates

We would strongly question any proposals for more prescriptive regulation around nitrates, especially as this appears driven by the threat of European Commission infringement proceedings rather than any evidence for cost effective and targeted measures that deliver reductions in agricultural nitrate. At the national scale the impact of the NVZ action programme (NVZ AP) on nitrate reduction has been assessed as “modest” by ADAS<sup>17</sup>. This shows that regulation alone isn’t a solution to a problem, and even very prescriptive regulation such as nitrates can be limited in their impact. Impacts are spatially variable and a “one-size-fits all” complex regulatory approach cannot deliver improvements in all areas. The long term trends in reducing fertiliser inputs predates NVZ implementation and evidence has shown that most NVZ action programme measures only limit nitrate pollution by small percentages with the impact depending wholly on the local situation.

Assessment of the NVZ action programme has shown that compliance with some measures within the NVZ AP was already high before designation. Several measures within the NVZ AP reinforced good practice which was already widely adopted. For example, applications of manufactured nitrogen fertiliser in autumn had already fallen to low levels in England before introduction of the NVZ AP in 2002<sup>18</sup>. We would therefore strongly question the value for further NVZ measures enforcing good practice for which prior compliance is already high.

### Phosphorus

We suggest a holistic approach to soil and nutrient management rather than single-issue activity. Phosphorus issues can be combined with messaging on reducing soil erosion and runoff, whole system nutrient planning/management (alongside nitrogen) and avoiding faecal contamination in watercourses. Therefore we do not believe that there is value in extra regulatory measures solely related to phosphorus. We are surprised by the suggestion to “maximise use of sewage sludge application to land within detailed nutrient management plans to reduce reliance on artificial fertilisers in agriculture”. The water industry is already reliant on agriculture in the UK, which utilises 77% of sewage biosolids<sup>19</sup>, a point which doesn’t appear to have been taken into account.

Septic tanks do not appear to have been adequately taken into account as a source of nutrients in waterbodies, and few measures relate to reducing pollution from septic tanks. There is a need to provide transparent and verifiable evidence that disaggregates septic tanks from agricultural phosphorus in datasets – EA data attributes 36% of failures *where the reason is known* to “agriculture and rural land management”. The Government needs to be able to target activities where they will result in improvements in water quality.

### Physical Modifications – how this is managed now

Physical modifications attributed to agriculture account for 422 known reasons for failure to achieve GES/GEP, however the measures to mitigate the impact are far from simple. It should be taken into consideration that it is highly unlikely that these modifications could be reversed without a substantial change in the local water regime.

<sup>17</sup> [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/82409/20111220nitrates-directive-consult-evid2.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82409/20111220nitrates-directive-consult-evid2.pdf)

<sup>18</sup> [www.gov.uk/government/publications/british-survey-of-fertiliser-practice-reports-for-1992-to-2010](http://www.gov.uk/government/publications/british-survey-of-fertiliser-practice-reports-for-1992-to-2010)

<sup>19</sup> [www.water.org.uk/home/policy/publications/archive/recycling/biosolids/recycling-biosolids-to-agricultural-land--january-2010-final.pdf](http://www.water.org.uk/home/policy/publications/archive/recycling/biosolids/recycling-biosolids-to-agricultural-land--january-2010-final.pdf)

We believe there are still many heavily modified water bodies classified as natural or vice-versa. There is a need to ensure that artificial and heavily modified water bodies are correctly identified and classified to ensure that assessments and targets are appropriate. The information used for classification on the basis of physical modification needs to be made accessible for external scrutiny and challenge.

The Challenges and Choices consultation notes that modifications will have been carried out in order to provide benefits such as drainage or flood risk management, and that those benefits are still required. We believe it is very important to acknowledge this. The aim seems to be to have natural looking systems, but to have them functioning in a controlled manner. Again, there appears to be a significant danger of unintended consequences with the removal of structures in order to improve river connectivity seen as the aim, but this doesn't take into account the fact that control structures provide other benefits or functions both to agriculture and the water environment (e.g. during a drought situation). In situations where a watercourse management activity constitutes a physical modification there is a need to consider whether there is a need to classify the water body as heavily modified rather than simply acting as a trigger for labelling the watercourse as failing to meet good environmental status. More should be learnt from other European nations in this regard where watercourse maintenance is essential to life and livelihoods such as in the Netherlands.

The Environment Agency needs to be realistic in its assessments of what GEP entails for heavily modified water bodies. We would need evidence that a structure is the driving factor preventing a water body from meeting good ecological potential, and that its removal would not cause unintended consequences, including an increased risk of flooding or waterlogging to agricultural land.

#### Q4. What could you, or the organisation you represent, do to better protect and improve England's waters? Please specify which issue(s) your response refers to

##### *Evidence and appropriate data*

The industry will be providing Defra with information and data on long-term trends in the industry as part of the Water Quality and Agriculture Project. This will help to counter some of the assumptions and assist the Environment Agency in developing a robust evidence-base.

##### *Abstraction and flow*

Farmers can contribute to the improvement of abstraction and flow related issues by:

- Improving water security through the continued development of on-farm storage. Farmers will need fiscal and financial support and incentives to make this happen (grants, tax incentives, skills); and a reduction in red tape for reservoir applications (licensing, planning).
- Embracing water trading. Farmers will need help, support and guidance to engage with other users (especially water companies) on a catchment basis to more efficiently manage available resource and to share and trade water.
- Building on scientific and technological research and ensuring the transfer of knowledge to the farm level. Developing the knowledge base and improving knowledge transfer systems to deliver first class water management training in the agri-food sector.
- Embracing the 'catchment approach' and actively engage in the creation of new local water resources groups (abstractor groups) and the further development of existing groups.
- Exploring ways of encouraging water infiltration and conservation thereby reducing runoff for the benefit of both cropping and groundwater recharge. This is mainly applicable to rain-fed arable crop production.
- Engaging in the process of evidence collection. Farmers are ideally placed to collect local evidence to ground truth the models on which so many decisions are based.

- Exploring opportunities for using ‘grey’ (non-potable) water for crop production, depending on water quality issues that may arise.

### Chemicals

The industry has worked together on the Voluntary Initiative<sup>20</sup> (VI) since 2001. The VI is an industry-led partnership that works with government, regulators and stakeholders to promote the responsible use of agricultural pesticides. Through its national groups, member organisations and, in England, collaboration with the Campaign for the Farmed Environment (CFE), the VI provides a UK-wide framework for promoting best practice at a local scale.

The UK arable and horticultural industry is already ahead of the Sustainable Use Directive for sprayer testing and operator CPD – a fact that should not be overlooked in Challenges and Choices. The introduction of legislation will not be necessary as industry-sponsored activity already addresses competence and application issues.

It is important to recognise the contribution that is made by voluntary measures compared to regulatory mechanisms. The industry already contributes a great deal to reducing the likelihood of pesticides causing pollution to surface and groundwater. This has been achieved in advance of measures outlined in the Sustainable Use Directive through the VI and other pesticide stewardship campaigns. Pesticide application has become a specialised, professional job on-farm. The NRoSO scheme ensures best practice during spraying through ongoing operator training. Some 20,000 sprayer operators have been trained to date as a result of the introduction of the scheme. BASIS qualifications have become “the norm” for professionals working in the area of crop protection advice<sup>21</sup> – farmers use BASIS qualified advisers and are increasingly becoming BASIS qualified themselves.

Integrated Pest Management is not a new idea and it should not be interpreted as meaning an organic system. Crop rotations and cultivation techniques are an integral part of farm assurance already – this should be recognised in Challenges and Choices.

We accept that permits are necessary for some activities, but the Agency must continue to work to make them as low cost and low burden as possible – remembering that the aim should be to improve outcomes, not create a burdensome process. It must be recognised that some of the options that might be desirable in future such as biobeds and handling area improvements are expensive and will be difficult to implement without incentives.

### Fine Sediment – possible options in the future

The agriculture sector recognises the importance of soils and the need for “reliable, consistent and clear messages to farmers”. One of the five themes of the Campaign for the Farmed Environment (CFE) is “Soil Management” and CFE will be producing new advice on soil management for arable and livestock farms in the autumn of 2013<sup>22</sup>. Industry initiatives can support messaging for relevant soil and water management issues in a local area, supporting existing Government initiatives such as Catchment Sensitive Farming and Farming Advice Service.

Best practice options for soil management are mostly well-known and future activity should focus on working with the industry to provide advice and guidance to ensure that the right management is in the right place to minimise risk. We need to encourage best practice, and this will not be achievable through regulation. The Soil Protection Review (GAEC 1 under cross compliance) is aimed at ensuring farmers protect their soils with appropriate management. It is currently under review because it does not deliver improvements in soil management, but creates an onerous process for farmers to follow. It needs to be recognised that these types of regulatory process are blunt tools. Options for improving soil management must not be aimed at creating an inspection paper trail. Future options should deal with management that is causing an impact on water quality and may contribute to increasing flood risk, provide information advice, and incorporate knowledge transfer to encourage best practice. Government and industry initiatives can do this, regulation cannot.

<sup>20</sup> [www.voluntaryinitiative.org.uk](http://www.voluntaryinitiative.org.uk)

<sup>21</sup> [www.agindustries.org.uk/latest-documents/value-of-advice-project-report/](http://www.agindustries.org.uk/latest-documents/value-of-advice-project-report/)

<sup>22</sup> [www.cfeonline.org.uk/campaign-themes](http://www.cfeonline.org.uk/campaign-themes)

### *Invasive non-native species*

Under Cross Compliance rules, GAEC 11 already requires farmers to take all reasonable steps to prevent the spread of specified invasive non-native weeds and injurious weeds; and to comply with any notice served under the Weeds Act 1959. This should be noted as a mechanism already being used to manage the issue.

We are concerned about the achievability of the “no deterioration” requirement under WFD with respect to invasive species and climate change impacts also need to be taken into account. More needs to be done to model the impacts of climate change on invasive species and to determine whether it is economic to continue to attempt to control the species. An important question is: at what point does an alien species become accepted as native? Ecosystems are continually adapting and changing to their environmental conditions and actions under WFD must be appropriate.

### *Nitrates and Phosphorus*

Fertiliser nutrients are expensive – based on a 2005 baseline nitrogenous fertiliser costs have increased by 2x, phosphatic fertilisers by 2.5x and potassic fertilisers by 2.5x<sup>23</sup>. It is not in farmers’ best interests to waste expensive inputs although this appears to the assumption in the Challenges and Choices consultation.

The industry is already working with farmers and their FACTS Qualified Advisers<sup>21</sup> through Tried & Tested (T&T) to ensure good nutrient and manure management are understood as key to both farm profitability and reducing environmental impacts. Tried & Tested has a number of practical tools and published guides to help farmers to make best use of inorganic fertilisers, manures and slurries, and home-grown and bought animal feeds. Tried & Tested works with the Campaign for the Farmed Environment to deliver messages tailored to local environmental priorities.

Tried & Tested covers nutrient optimisation and overall balanced crop nutrition through promotion of soil testing (15% increase since 2007) nutrient, manure and feed planning and can deliver messages on managing nutrients to reduce pollution, promote good practice and optimise feed conversion to reduce wastage. These messages are delivered locally by T&T partners and supporters, including Catchment Sensitive Farming and (since summer 2013) Campaign for the Farmed Environment, and by the day-to-day work of some 2000 FACTS Qualified Advisers, who are continually upgrading their knowledge and skills to reflect the ambitions for water and the environment in the context of the farm business.

As part of the industry commitment to Professional Nutrient Management, the Feed Advisers Register (FAR) has also been established and compliments farm CPD schemes such as Dairy Pro and the Pig Industry Professional Register.

The fertiliser industry is also taking leadership in working with water companies and academia through the NERC programme (2013) to evaluate feasible options for the recovery of phosphorus from water and waste streams, so that material may be more easily distributed to lower risk farming areas, e.g. soils with lower P concentrations and incorporated into fertiliser production.

<sup>23</sup> [www.gov.uk/government/publications/agricultural-price-indices](http://www.gov.uk/government/publications/agricultural-price-indices)