THE FLOODING MANIFESTO

BACK BRITISH FARMING

NFU CYMRU

NFU

Introduction

The December 2015 floods were marked, not just by the extent of flooding to homes, property and agricultural land, but also by the damage to infrastructure caused by a succession of storms bringing heavy rain. While the December 2015 floods were locally devastating, they were just the latest in a continuing series of extreme weather events that have taken place over the past few years.

The UK food and farming sector contributes some £108 billion to the economy through its capacity to produce high quality food. The agri-food sector as a whole employs 13% of the UK's population. But UK farming also delivers a range of environmental benefits, maintains landscapes, and helps protects critical infrastructure.

It is estimated that the costs of the 2007 and 2013/14 floods on agricultural businesses were £50m and £19m respectively. The final costs of the 2015 floods are still unknown. However, it is crucial that these costs reflect both the direct financial impacts on individual agricultural businesses as well as the wider economic impacts on local employment, infrastructure and utilities.

Agriculture is often at the mercy of extreme and changeable weather. Whilst current funding prioritises concentrations of people and property, farmers experience a lack of maintenance of watercourses and coastal channels and reduced maintenance of banks and flood defence assets. The result is more frequent, more extensive and longer duration flooding events. This is an unsustainable and inequitable outcome, which causes damage to farming businesses and rural communities.

The NFU's preferred approach is for government to establish a long-term, strategic plan for flood and coastal risk management. This plan must be designed to cope with extreme events and take a whole catchment approach to management decisions and intervention. Consideration should also be given to the impacts of infrastructure and development on agricultural land.

Crucially, the importance and contribution of our food and farming sectors to the economy must not be overlooked; some of our most productive and highest value agricultural land is in the floodplain or coastal regions that are vulnerable to flooding, and deserves to be protected. In order to ensure that this plan can be enacted and delivered, actions and measures to address flood risk must be properly funded and the allocation for any funding must be transparent.

We recognise that farming has a key role to play in flood management. Where farmers provide a service in mitigating flood risk to help protect others this must be a coherent, planned component of total catchment management, for which farmers must be fairly compensated.

In short, the government's strategy to manage future flood risk must be to Plan, Protect and Pay.

Principal policy asks

Plan

Long-term planning for flood and coastal risk management:
A long-term, strategic and planned approach is needed to manage flood and coastal risk in the future.

Local decision making:
More decisions should be made at a local level, where they will be better informed, and can ensure collaboration between all stakeholders.

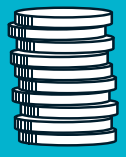
Increased catchment – based decisions:
Decisions should be made on a local, catchment basis, and funding should follow. These should be based on scientific knowledge and consider the increased frequency of extreme weather events.

Protect

Improved modelling for flood risk:
Systems for predicting flood events must be brought up to date in light of recent storm weather events.

Proper assessment of the value of agriculture:
Decisions to invest in flood defences must be based on the value of the assets protected. Crucially, they must include a proper assessment of the value of agricultural land to the nation, now and in the future, taking into consideration the multi-layered, locally dependent costs of flooding to agricultural land.

Better communications on flood risk:
Systems for communicating with those affected must reach the most remote communities, providing sufficient time for response.



Pay

Sufficient and transparent funding:
Flooding and water management in river and coastal areas must be properly funded to protect urban and rural businesses, infrastructure and communities. Government spending must be transparent, and the artificial distinction between capital and maintenance expenditure removed.

Appropriate resourcing during maintenance withdrawal:
The Environment Agency must be properly resourced to work with local groups during withdrawal of river maintenance. This may either be through the extension or establishment of new Internal Drainage Boards, other local solutions, including putting assets in good condition before they are handed over to others for future management.

Natural Flood Management establishment:
Where agricultural land is part of the solution to flooding as part of total catchment management, such as natural flood management or flood water storage, this must be planned, agreed and paid for.

Extent and impact of the recent floods on agriculture

There have been a number of flooding events that have affected agriculture over the past few years. These have varied in extent and impact, but a longer-term, strategic and planned approach to flooding is needed to help mitigate flood risk in the future.

In the winter of 2013 and 2014 some 45,000ha of agricultural land were flooded, including some coastal areas, at a cost of around £19 million to the sector. And in the summer of 2007, 42,000ha of agricultural land were flooded at a cost of some £50m to the sector.

December 2015 was the wettest December on record. Rainfall reached 2 to 4 times the average in the west and north of England, and the severe flooding was exacerbated by saturated ground conditions following very wet weather in November.

In Thirlmere, Cumbria, 264.4mm of rain fell in 24 hours on 6 December. At Honister Pass, also Cumbria, a new UK record for rainfall in a 24-hour period was set when 341.4mm fell on 5 December[1]

Because rainfall during December fell on already saturated ground, all the rivers in Lancashire were at record levels, and Yorkshire rivers, such as the Aire and the Wharf, were up to one metre higher than they have ever been.

Many of the immediate problems affecting farmers following the storms included damage to critical infrastructure, such as loss of power, impassable roads and bridges deemed unsafe to cross.

Problems persisted even as flood waters dispersed and many experienced difficulties as rocks, gravel and other debris were deposited on farmland and highways, livestock were lost and property and buildings were damaged.

It is still too soon to accurately assess the full impact of the December 2015 floods on the agricultural sector in northern England but early work estimates the impact in Cumbria (see box on the right).

A survey of flood-hit farmers in the worst affected parts of Cumbria has laid bare the scale of the costs. The industry-led investigation put the losses experienced by 144 farmers at a collective total of £1.7m. Defra has estimated that 650 Cumbrian farms were affected by storm damage. However, the full costs are expected to be far higher, and will not be fully understood until all recovery work is completed.

Tidal Surge 2013

Although the floods in December 2015 largely affected inland areas, the tidal surge experienced in December 2013 was the most serious in more than 60 years. Anecdotally, it is estimated that in excess of 2,000ha of farmland was flooded as a result of the surge. In the north east over 1,000ha flooded around the Humber Estuary and River Ouse and in Lincolnshire some 500-700ha of high value agricultural land was flooded where defences were breached or over-topped.

"The tidal surge came over the banks and flooded 1200acres of land, 250 acres was under water for 4-5weeks. Fortunately freshwater flooded our land, however closer to the estuary the saline water has meant farmers have had to apply gypsum and micronutrients to repair the land. It has taken us 18 months to recover from the debris deposited on our land and in the ditches. Since the surge we have bought an extra pump and built an earth mound to protect us from the next event. "
Mr Sweeting, Humber Estuary

57%

of farmers surveyed have experienced at least one severe weather event that has impacted their farm business over the past 10 years

The Cumbrian Farm Flood Action Group survey contacted 1,000 farmers, of whom 220 completed a detailed survey. Of those:

63%
lost sections of watercourse bank sides

37%
lost walls

14%
lost hedgerows

53%
reported river stone/ gravel deposit

38 farmers
reported **701 SHEEP DEATHS** between them

16 farmers
reported a total of **189 SHEEP MISSING**

42,000ha
of agricultural land were flooded in the summer of 2007 at a cost of some £50 million to the sector

45,000ha
of agricultural land were flooded in the winter of 2013 and 2014

264.4mm
of rain fell at Thirlmere (Cumbria) in the 24 hours ending at 0900 GMT on the 6 December 2015

Storm & Flood Timeline:

Storm Abigail
12 – 13 November 2015
Storm Abigail moved across the UK with particular impact on north-west Scotland recording gusts up to 84 mph and brought heavy rain with it.

Storm Barney
17 – 18 November 2015
Storm Barney swept across southern parts of the UK bringing wind gusts up to 85 mph.

Storm Clodagh
29 November 2015
Impacts were most severe in the Republic of Ireland.

Storm Desmond
4, 5, 6 December 2015
Storm Desmond was the fourth named storm of the season and brought severe gales with gusts up to 81 mph. This was accompanied by record-breaking rainfall which brought flooding to areas across the north of England.

Storm Eva
24 December 2015
Storm Eva contained gusts up to 75 mph and heavy rain exacerbating flooding in the north of England. The storm came on top of existing disruption where Storm Desmond had already brought heavy rainfall and flooding to Cumbria.

Storm Frank
29, 30 and 31 December
Storm Frank brought yet more flooding to eastern Scotland and continued into the New Year.

The importance of protecting agricultural land

Agriculture is the foundation stone of the UK's food and drink industry; it provides a range of environmental benefits and is the conveyor of important infrastructure like roads, railways and utilities supplies which adjacent urban communities are dependent upon. Yet, farmers and rural communities feel that they are being sacrificed as the lowest priority when determining investment decisions to manage and improve the nation's flood defences.

In addition, 70% of the UK's land area is managed by farmers providing substantial environmental benefits and ecosystem services. Although it is difficult to place a value on these services, landscape character, biodiversity, carbon sequestration and water quality are all delivered through careful management of agricultural land.

It should also be highlighted that farmers use their equipment during floods to rescue and assist people, or help build defences and clear blockages. This is something that the wider communities should acknowledge as a vital service that farmers provide.

The government's *Flood and Coastal Erosion Risk Management Outcome Measures* prioritise flood defence funding towards the protection of people, property and protected habitats. While we recognise risks to these areas must be addressed, this undervalues the wider public benefits of protecting agricultural land, especially high quality agricultural land, including the environmental benefits that it provides and the infrastructure that it helps protect, such as: railways, roads, telecommunications, gas, electricity and water supplies.

The benefits of the defence of agricultural land are not adequately reflected in any government assessment to allocate flood defence funding. This results in a valuation that is related to its land classification value and any agricultural production valued is generally assumed to be as for wheat, the most prevalent crop within the UK. No consideration is given to how the severity, time of year, frequency, depth or duration of water inundation increases the impacts of flooding on farmland. Nor is any estimate included for the consequential losses for other parts of the rural economy, for the food chain, for the opportunity cost of lost domestic production replaced by imported food, or for the loss of environmental benefits.

The NFU believes that there is an urgent need to review the current government guidance to ensure that farmland is properly valued in terms of its long term benefit to society, rather than the present situation where a discounted market value is applied. Critically, consideration must be given to the future value of agricultural production.

COASTAL DEFENCES

Improving coastal flood defences is vital to protect agricultural land and rural communities from tidal surges and rising sea levels.

Whilst the frequency of coastal flooding events is lower than fluvial events, the impacts of them can be catastrophic to agriculture. Many low lying areas on the East coast of England, which are vulnerable to storm surge events, are also some of the country's most productive land.

Lincolnshire, an area affected by the 1953 and 2013 storm surges, produces 25% of all UK-grown vegetables, supports an agri-food industry worth £1 billion annually. Saline water intrusion can lead to long-term reductions in productivity, and large costs in restoring the land. The county is also home to 225, 000 people and handles a high proportion of UK offshore gas imports.

Improving coastal flood defences is vital to protect agricultural land and rural communities from tidal surges and rising sea levels. Funding for coastal defence activities must consider the long-term implications of the inundation of saline water on some of England's most important and productive agricultural land.

A review of this current approach is needed to rebalance the priorities towards the true value of agriculture, rural areas, communities, environmental benefits and critical infrastructure.

10%
of our national electricity is from land-based renewables

Collectively, the UK has a total farming and food sector worth some
£108 BILLION
and the contribution of Britain's farms should not be ignored if the nation is to become less dependent on food imports

The farming sector is a major employer and in 2015 the national agricultural workforce stood at
476,000

Agriculture's importance to the UK economy is also emphasised by the fact that the UK has
142,000
businesses that are registered as farm businesses for VAT purposes

CASE STUDY:
The importance of protecting agricultural land

Richard Bramley
Richard is an arable farmer near York. He farms 500 acres of grade 1 land, producing milling wheat, spring barley, oilseed rape, peas, potatoes sugar beet and linseed.

Last century, Richards's farmland flooded five times. Richard has always lived with flooding, but it is the frequency of flooding in recent years which has become so much of an issue – his land has now flooded eight times in the past 16 years. The frequency of flooding is causing a serious problem for Richard and is driving the need for action.

The most recent flooding in December 2015 cost Richard £20,000, and his land was under water for three weeks. He was one of 30 farmers in the area that were affected. In 2012, Richard's farm lost £100,000 due to the flooding.

The crop of wheat lost to flooding in December 2015 (65 acres) would have produced one quarter of a million loaves of bread, but he lost this entire crop.

"Given the challenge facing world food production and our own food security, can we afford to lose our most productive and sustainable land?"

As a result of the frequency of flooding on his land, Richard has been forced to plant spring crops to manage risk and thinks he may have to move entirely to less profitable spring cropping, unless a more planned approach is taken to managing flood risk. He said "we need to be able to plan".

"The flood bank around the River Ouse keeps the water away from the local villages like Cawood and the town of Selby, but it does not protect my land from flooding," Richard said.

Farmland is also providing another flood service, which should be recognised. His farmland stores floodwater thereby reducing risk for properties and urban settlements, at a loss to his own business but with no recognition or compensation.

Richard also undertakes valuable environmental work on his farm including mixed hedgerows, buffer strips, some of which are florally enhanced. This work means diverse ditch and river bank flora can be found.Bird surveys undertaken over the past ten years found 90 species on his farm alone, including all the red listed farmland birds – except the turtle dove.

The flooding destroyed the vast majority of the wildlife that his farm had provided habitat for. "Barns owls have only just started to return following a series of harsh winters, yet the frequent flooding is killing the voles and mice, so hindering their return."

Climate change

Farmers are at the mercy of climate change and extreme and changeable weather. Farmers and growers need to be particularly aware of the seasons, weather patterns and the climate in order to manage their business effectively: probably more so than most other industries.

The NFU carried out a survey in July and August 2015 to investigate our members' views and experiences with regard to the weather and any gradual changes that they had noticed over the past 10 years. The most common type of severe weather experienced over this time related to flooding and /or long periods of rain.

It is clear that climate change may have a detrimental effect on the future of flood events, causing them to become more frequent or more intense. Therefore, efficient and effective flood management will be even more important and valuable.

With or without climate change there have always been exceptional spells of weather and there always will be, but warmer air can hold more moisture and warmer oceans increase the moisture content of the atmosphere.

The Met Office's *State of the UK Climate 2014* report found that 'the annual number of days of rain with greater than or equal to 1cm was well above average for year 2014.' This is indicative of a change towards greater total precipitation levels, but also that these rainfall events are shorter in duration and more intense. Peak rainfall intensity increase can cause detrimental effects.

The 'flash flooding' style weather events, which appear to be increasing, leave little or no time to plan or react, therefore worsening the impacts. Increased intensity of storms and wetter winters will lead to greater flows, presenting greater challenges to flood risk management.

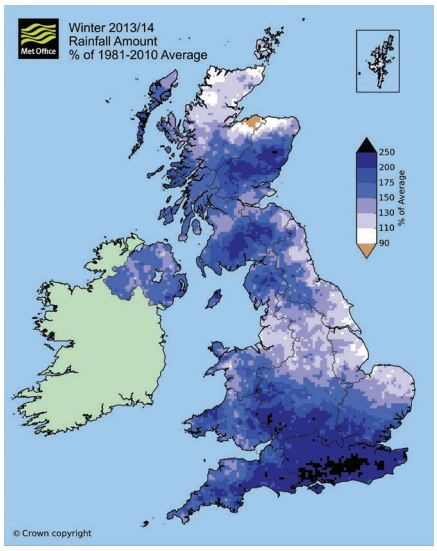
Government should plan for a more integrated approach to managing water, addressing both the threats of flood and drought.

In light of the increased frequency of extreme weather events, predictive flood models need to be more regularly updated and contingency modelling must plan for increased extreme events frequency.

EXPECTED ANNUAL DAMAGE

(Future flood risk in the UK)

Present day:	2050s:	2050s:
£1.9 BILLION	£2.4 BILLION (2°C global warming scenario)	£3.3 BILLION (3°C global warming scenario)



Rainfall in winter 2013/14 was well above average across nearly the whole of the country

15 of the 16 hottest years on record have all been this century

2015 is the world's warmest year on record and Meteorological Office figures show that December 2015 was the wettest for over a century, with estimated statistics showing a 191% of average rainfall (230mm) in northern England, northern Wales and southern Scotland.

CASE STUDY:
The impact of flooding

Sarah Chaplin-Brice:
Low Bridge End Farm
Sarah Chaplin-Brice is a livestock farmer who owns a small family-run farm situated in the valley of St John's in the Vale, downstream of Thirlmere Reservoir. The damage caused by Storm Desmond has left her family feeling bereft. Sarah runs a small tea room during the holiday season, which mainly caters to walkers using the footpath running through the farm. She provides a classroom on farm which is used for educational visits, and runs a camping barn which is rented out for holidays.

The farm is currently within the Higher Level Stewardship (HLS) scheme, options include grassland management, stone wall maintenance and fencing.

On the day of the flooding they received 39cm of rain. The farm suffered every type of damage possible from the sheer force of the water, which obliterated bridges, fences and stone walls and flooded the lowlands. All of the farm's fields were eroded and some have been left buried under tonnes of gravel. Thankfully, Sarah managed to let the sheep out onto the hillside, but she lost her poultry. Estimated cost of recovery was upwards of £200,000.

DAMAGE CAUSED

- ✓ Destruction of bridge which is the main access
- ✓ 1.5km of fence flattened, ripped out or washed away
- ✓ 100m of stone walling collapsed
- ✓ 6000 tonnes of gravel dumped across 20 acres of grassland
- ✓ 400 metres of river bank eroded and washed away
- ✓ Beck filled with surplus gravel making land waterlogged
- ✓ Large silage bales washed on to land from upstream
- ✓ Had to cancel bookings for the camping barn

Investment in flood risk management

Flooding is the greatest threat to the operation of the UK's assets. Annual flood damage costs are approximately £1.1 billion[1]. Natural hazards such as storms, flooding, heavy snow and droughts already account for between 10-35% of all delays or service interruptions to electricity, road and rail customers every year. It is right then for government to invest in actions to reduce the impact of such events.

The National Audit Office's (NAO) report on Strategic Flood Risk Management warned that spending on managing flooding in England was "insufficient" to maintain defences. The Environment Agency's funding for maintaining flood assets fell by 14% between 2010/11-2013/14, with conveyance works taking the bulk of the cuts having fallen from £44m to only £30m[2].

This shortfall in investment has had to be addressed by emergency action. It was only through the devastation caused by the 2013/14 floods that an extra £270m was announced for flood and coastal risk management. Even with this emergency funding, spending on asset maintenance has still decreased during this five-year period.

The NFU welcomes the increases in capital and revenue funding which have been pledged by the government since our last manifesto. However, it is anticipated that the number of households at significant risk of flooding due to changing climate could increase from 330,000 today to 570,000 in 2035[3]. EFRA's recent inquiry in future flood prevention also reported that the Environment Agency's long-term investment scenarios concluded that £850-900million a year would be required by the

Transparent, long-term budgets for flood risk management

Then

In our 2014 Flooding Manifesto we asked for: Transparent, well-funded plans from the Environment Agency to maintain main rivers it's responsible for.

Now – 2017:

We welcome the publishing of the Environment Agency's annual capital up to 2021 and maintenance budget for this parliament, as well outlining where the maintenance funding will be spent for year 2016/17. Longer-term certainty on budgets must be sustained to enable longer term planning for Flood and Coastal Risk Management, particularly where partnership funding is required.

2020-40s to achieve optimum investment plans[4]. Therefore we continue to ask whether these increases in flood and coastal risk management spending are sufficient in light of the increased frequency in extreme weather events.

Exposure to more frequent extreme weather events in this country and the greater risk of flooding justifies an increase in total public spending and investment in both capital and maintenance activities.

The Committee on Climate Change stated within the Environment Audit Committee's 2016 review into cooperation across government, that in terms of asset maintenance spending by the Environment Agency, £170m was at the lower end of the ideal range. However, spending on maintenance has been below this figure every year since 2011.

The review also showed that the reduction in funding has resulted in more than one in 20 critical flood defence assets not meeting the Environment Agency's minimum condition. This lowering of condition of critical infrastructure places urban and rural communities and agricultural land at unacceptable risk.

There is currently £20bn worth of flood defence assets and the NFU is concerned that there is currently an imbalance between the investment being made by government in capital schemes, or the construction of new flood defences, and in the maintenance of existing defences, including the conveyance of our main river network.

To preserve and improve the condition of critical flood defence assets, the Treasury should allow greater flexibility for the Environment Agency to transfer monies between capital and maintenance funds. Greater transparency is needed on the proportion of maintenance and capital funding which is spent in response to flood events.

1. Association of British Insurers. https://www.abi.org.uk/News/News-releases/2014/03/6-7-million-a-day-in-insurance-claims-from-customers-hit-by-the-recent-flooding
2. Source: Environment Audit Committee: Flooding- Cooperation Across Government (2016).
3. HR Wallingford (2012b) for Department for Environment, Food and Rural Affairs. Climate Change Risk Assessment for the floods and coastal erosion sector http://www.theccc.org.uk/reports/adaptation/2012-progress-report/supporting-data-a-research
4. Environment, Food and Rural Affairs Committee. 2016. Future flood Prevention.

Increase in total budgets for flood defence capital and maintenance works

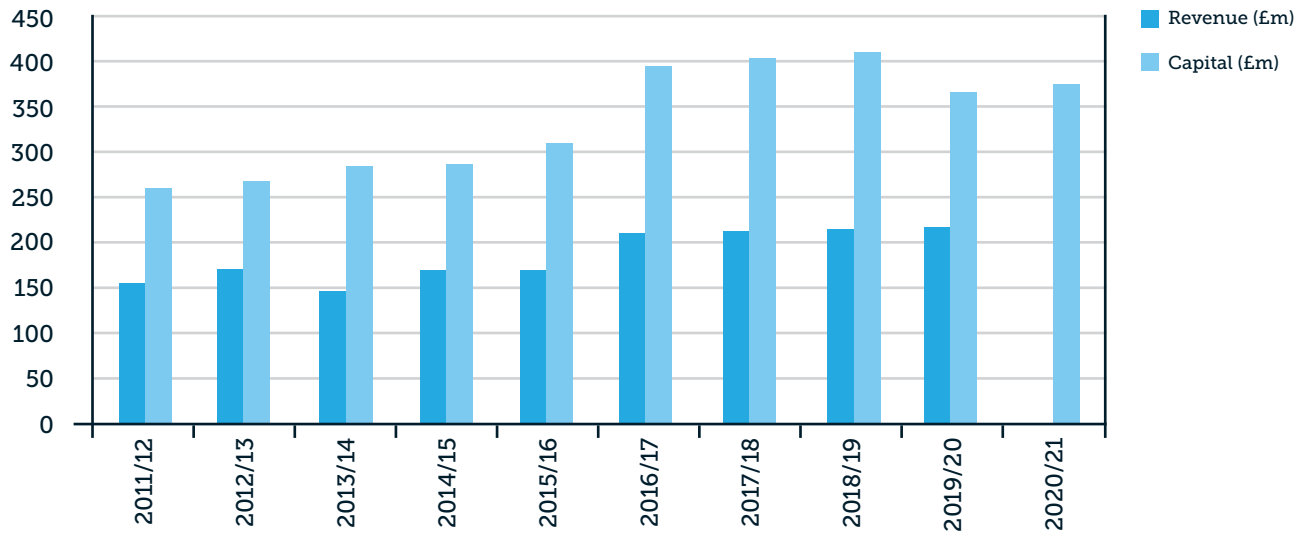
Then

In our 2014 Flooding Manifesto we asked for: Greater flexibility to transfer funding between capital and maintenance activities; and for a greater total public spending on both capital and revenue.

Now – 2017

Government has pledged a total of £2.3bn, plus an extra £700m for capital works until 2021. Furthermore, the government has recently increased the asset maintenance budget to from £171m to £211m per year in this parliament. These are positive steps but we believe the artificial distinction between capital and maintenance works must be removed.

Asset Maintenance (Revenue) and Capital funding from 2011/12 until 2020/21.



Planning for flood and coastal risk management

As well as adequate funding, we must have the right funding, structures, models and frameworks in place to manage flood risk at a local level. We have seen good models of greater co-operation across flood risk management authorities to address flood risk. An example is the Flood Partnership Framework in Lincolnshire. The Environment Agency, Lincolnshire County Council, 14 Lincolnshire Internal Drainage Boards, District Councils, Anglian Northern Regional Flood & Coastal Committee, two water companies, Natural England and Lincolnshire Resilience Forum co-ordinate their local delivery to ensure that local communities and infrastructure are better protected from flood risk. The partnership model in Lincolnshire has been developed from local circumstances, but could act as a model for other locations.

To ensure the correct prioritisation and allocation of funding, greater decision making on flood and coastal risk management funding should take place at a local level.

Increasingly, the Environment Agency is proposing to withdraw from maintenance in rural areas. Where this is the case, and before any withdrawal can take place, the Environment Agency needs to:

- Provide sufficient time and advice to enable local stakeholder to form alternative management solutions or to develop cooperation and coordination between riparian owners;
- Put assets or drainage systems back into good condition before handing over to local bodies or riparian owners; and
- Ensure there is suitable communication with local partners on the previous maintenance of river channels and assets.

Policy should enable a more efficient transfer of permissive powers from the Environment Agency to any local partnerships. To ensure that assets remain in a workable condition for longer after handover sufficient funding is needed to enable the Environment Agency to 'invest to withdraw'.

By investing in this way it will enable greater long term savings to the taxpayer to be realised.

On another point, tax allowances are currently available to businesses who contribute funds towards Flood Defence Grant in Aid (FDGIA) funded, Environment Agency-led schemes, including contributions in kind. Greater private investment could be encouraged by broadening the scope of this tax relief to cover all capital and maintenance flood defence works that have been consented, not just for FDGIA funded, Environment Agency-led schemes.

CASE STUDY:

Black Sluice IDB

The Black Sluice Internal Drainage Board (IDB) maintains 500 miles of watercourse and 34 pumping stations in south Lincolnshire. Currently the IDB has powers to maintain the ordinary watercourses within the catchment, with the Environment Agency maintaining the main rivers. The Environment Agency is unable to spend much money on maintaining the main rivers in the catchment as most of the benefits would be for the water level management of farmland and this does not score highly in the government calculations used to rank pieces of maintenance.

There is strong local support for the main river, the South Forty Foot Drain, to be reclassified as an ordinary watercourse. This would provide the IDB with powers to manage the whole catchment. The benefits of the whole catchment being managed by one body are numerous; it can enable better coordination of the maintenance of the river channels and pumping stations, create opportunities for better water resource management, and ensure that proper maintenance of main rivers in a predominantly agricultural area is undertaken.

CASE STUDY:
Implications of the abolition of the River Arun Internal Drainage District

The River Arun is one of several internal drainage districts (IDD) historically administered by the Environment Agency. Through a process of abolition and re-constitution the EA has intended to enable more local accountability within these areas. In other areas such as Kent and East Sussex the process has led to the establishment of two new Water Level Management Boards and we are pleased with this outcome. In West Sussex local authorities did not favour the creation of replacement IDB's.

In the River Arun IDD and other West Sussex catchments, we are concerned that there is no alternative solution for future water level management. Without this, the EA predicts that over one third of farmland within the IDD will undergo deterioration. There will be an additional 41 houses at risk with several evacuated in the 2013/14 floods. Continued water level management is also essential for delivering the conservation status of a number of environmental designated sites, including the Amberley Wildbrooks.

The NFU and it members are proactively working with the Environment Agency and other local stakeholders to feed into the "Arun Vision project" which is tasked with identifying sustainable long term options.

The NFU believe it is essential that appropriate time and resource is given to identifying ways of delivering essential services where there are identified needs.

Internal Drainage Boards

An Internal Drainage Board (IDB) is a local public authority that manages water levels. They are an integral part of managing flood risk and land drainage within areas of special drainage need in England and Wales. IDBs are an essential component of defending agricultural land and continuing food security in England, alongside communities, other businesses and important infrastructure such as rail and road transport links.

Following Defra guidance prioritising the reduction of flood risk to people and properties, the Environment Agency plans to cease the operation of pumping stations in the Lyth Valley and Waver Wampool in Cumbria.

In these areas new IDBs are being considered as the preferred option to continue to manage water levels. In other areas of the country, where there is local backing, we support the extension of IDBs or establishment of public sector cooperation agreements.

The NFU is working alongside the Environment Agency to establish new IDBs in the North West of England and is supporting expansion of IDB areas to other parts of the country, where support is made. However, progress is being slowed by:

- Concerns over the local authority contribution. Greater consideration needs to be given to how local authorities can be supported with the additional interim costs, or new burden, of IDBs in their areas.
- The availability of ratings information. Solutions are needed to help with the establishment of new or expanding Internal Drainage Boards.

The Environment Agency must be properly resourced to work with local groups during withdrawal of river channel and asset maintenance, either through the extension or establishment of new IDBs, other local solutions or for putting assets in good order before they are handed over to others for future management.

"If the pumps are turned off, I will not be able to continue dairying"

CASE STUDY:
The importance of IDBs

David Martin, dairy farmer
David Martin is a dairy farmer, milking 240 cows in the Lyth Valley on a zero grazing system. The farm supports David Martin and his family plus one full-time employee together with four part-time staff and outside contractors who are employed to undertake certain farming activities at busy times of the year.

A new IDB has been proposed for this area, with the intention of gaining the responsibility of the pumps from which the Environment Agency is withdrawing.

The impact on the farm in the event that only the nearby Levens Catchwater pumping station remains operational will be significant and therefore, in turn, the farming operation will have to be changed.

David is willing to pay a substantial amount towards the IDB so they can keep the pumps running; this illustrates that farmers are willing to pay for the service.

It is estimated that at least 46 acres of mowing land will be very significantly affected by an increase in soil wetness in the Lyth Valley – this represents 20% of the farm area. The remainder of the farm will no doubt be adversely affected. Increased soil wetness will not only result in a damaging drop in the grass yield but also a reduction in the quality of the silage produced.

In order to control costs, David will be required to change the management of the farm, resulting in a drop in cow numbers and therefore income.

David said: "If the pumps are turned off, I will not be able to continue dairying".

The issue with David's business is that if he had to go out of dairying into lowland livestock production for example, the business would employ far fewer staff and wouldn't be using the level of contracting that he currently is. He operates a zero grazing system for his dairy cows which relies on him being able to maximise his silage production.

It is felt that any change to the farm's management towards 'wetter farming' will reduce the farm's economic output at a time when dairy farmers are under serious pressure to run more efficient businesses.

Agriculture's role in reducing flood risk

Farmers across the country already play an active role in reducing flood and coastal management. This is through the continued maintenance of thousands of kilometres of river network, and where appropriate, proactive engagement in natural flood management schemes.

The NFU welcomes many of the new rules introduced under the Environmental Permitting Regulations. These enable farmers to undertake essential river maintenance works, such as bank repairs, dredging and habitat recreation with reduced administrative burden. Exemptions and permits must also be developed for groups of farmers or landowners who undertake river maintenance within a catchment partnership.

Many farmers also have key involvement in local decision making groups such as Regional Flood and Coastal Committees and IDBs. In many cases these actions provide a crucial flood mitigation service to downstream communities and other stakeholders within the catchment.

However, actions undertaken by farmers are only part of a package of measures to mitigate flood and coastal risk and will not alone mitigate against the impacts of future rainfall events. Further, the success and implementation of farmers' actions must be viewed alongside other societal demand to feed the UK's growing population. These actions will never replace the need for traditional flood defence structures and river maintenance work conducted by the Environment Agency or Lead Local Flood Authorities. Funding provided by the government and Regional Flood and Coastal Committees will continue to be required in rural catchments where farmers are involved in flood mitigation activities.

Planning for urban run-off

Increasing coverage of impermeable surfaces in urban areas prevents surface water from soaking into the ground, increasing the risk of flooding and pollution from heavy rainfall.

The incremental impact of development in urban areas over time, increasing the extent, duration and frequency of flooding, puts additional pressure on the floodplain downstream and farming in the urban fringe.

Sustainable Drainage Systems (SuDS) are designed to mimic natural drainage and filter and retain rainfall where it lands to prevent drainage systems from becoming overwhelmed during storm events.

SuDS should be implemented across all substantial developments with clear ongoing responsibility for maintenance and aim of reducing all run-off from the development.

CASE STUDY:

Impact of developments

Chris Mitchell farms in Darlington in the North East of England

Chris's field has flooded three times since the December 2015 floods, with housing development on one side of the river exacerbating the situation. Flood defences have been built to stabilise the banks on the side of the river with the new development, changing the flow of the river and causing a floodbank to collapse and depositing gravel and silt into Chris's field.

Chris has to clear all the debris on his land and import clay to rebuild the hole that was created in the floodbank. All in all, it will cost Chris about £19,000 – £21,000 just for the repairs, plus the costs of re drilling and re planting. He lost 30 acres of winter wheat and the land had been in a HLS agreement so was providing numerous benefits to wildlife.

The Environment Agency has withdrawn from the maintenance to the river bank protecting Chris's land. The agency has powers, no obligated duty, to maintain the river bank, so it has been left to the land owner to do this maintenance. Since the construction of the new developments and bankside protection, Chris wanted to change the banks on his side of the river to protect his fields, but he has not been allowed to change the bank in any way, which has proved very frustrating.

Without capturing the flood water on this farmland, the local village of Wilton may have been at threat. Once again, agricultural land has provided a service and saved properties from flooding without any compensation or acknowledgement; at significant cost to farmers' own businesses.

Natural flood management

Natural flood management techniques are measures that replicate natural occurrences to store, filter or slow the flow of water to reduce peak flows in flood-prone areas further downstream. Examples include woodland creation, woody debris dams, river re-meandering, soil management techniques, water storage areas in low-lying areas or ditch removal or blocking.

The NFU recognises that natural flood management techniques, in the right location, can have a role, but they are not the universal panacea. Instead they should only be used as part of a cohesive and carefully planned package of measures across the catchment, such as maintenance and de-silting, looking at upstream attenuation and downstream conveyance to address shorter and longer term flood risk.

Special consideration needs to be given to the following:

- The need to actively and fully consult, engage and seek agreement with land managers, especially farmers, to ensure schemes can work alongside other land uses, including agriculture and food production.
- Natural flood management measures bring their own suite of maintenance issues that need to be addressed in any scheme's development and long term flood risk management resource planning.
- Where natural flood management techniques are implemented, suitable financial support and incentives should exist. Agri-environment schemes may not be suitable, particularly for bespoke, longer-term schemes or areas of low land water storage; funding mechanisms need to truly value the flood mitigation services provided and help farmers continue to produce food.
- Any natural flood management measures must work for both the landowner and tenant(s).

Natural flood management techniques could be implemented on UK farms and have a role in catchment wide flood risk reduction. But these measures must meet minimum defence resilience thresholds to provide the protection needed. Research is needed to develop funding and implementation.

CASE STUDY: Soil management

Mark Pope, arable farmer, Somerset
Appropriate soil management can help to reduce the risk, severity and impact of flooding.

Mark has been taking part in a small "slowing the flow" project using a variety of soil management techniques in order to slow the rate of run-off, reduce soil erosion and nutrient losses.

"We are trying a small project with slow the flow, using coir rolls to slow water on some of our fields. We are also doing work with a trailing strip tillage planting on the farm and we have noticed a lot less erosion of soils. We have also been using a flat lift to lift up soil pans and so help drainage through the soil and this has reduced the run off of rain water. All the fields on the farm also are planted with grass margins again to help stop soil getting into watercourses. On steeper fields we have planted crops across the slopes to slow the rain water run- off".

Funding for natural flood management

Natural flood management services offered by farm businesses would, in some cases, make a very considerable saving for the wider economy. However before decisions are made on the sourcing of funding for natural flood management, it is necessary to clearly identify the range of techniques that could be provided.

In the short-term, it is not known whether the appropriate techniques for Natural Flood Management could be funded by the Common Agricultural Policy (CAP). How CAP funding is spent is tightly regulated by EU Regulations, and there are already numerous demands on Pillar II funding, including biodiversity and water quality. Overall, we are sceptical that CAP funding is the right route for appropriate Natural Flood Management.

Instead, and subsequent to the UK's exit from the EU, we need a funding model which truly values the service provided by Natural Flood Management and the benefits that it brings to the wider economy and society.

So, we would like to see a scheme that provides incentives, not just for income forgone, but also in recognition of the flood mitigation service farmers are providing to other stakeholders in the catchment. The ongoing maintenance costs of these schemes must also be taken into consideration.

Government ought to look at funding mechanisms which truly values the flood mitigation or water storage services provided by agriculture – whether in the uplands or in more low-lying areas.

CASE STUDY:
Flooding and compensation

Paul Williams, sheep farmer, Llanrwst, Conwy
On 10 December 2015, a huge bow wave resulted in 170 sheep being swept away from Paul William's farm, with 70 of those being killed. It was a tragic experience that involved various other members of the public and rescue teams attempting to save the sheep. Before this point, his land was inundated so frequently that it was under water for some 30 days in total.

Mr Williams said: "The rain at that time was unprecedented; we've never seen water like that before." Mr Williams had moved his sheep 13 times in the 15 days before the major storm. On 10 December the flood warning came at one in the morning. "I didn't get the first warning because my mobile signal was out; the second one I received on the landline. I got down there in 10 minutes but by the time I got down to the sheep they were already knee-deep in water."

Mr Williams is one of the farmers in this area involved in a natural flood management scheme which cost £6.5m. The flood embankments have been lowered in certain locations in order to direct the water, during high flows, away from the town of Llanrwst and the village of Trefriw. All of the farmers at the time were consulted and agreed to be part of the scheme, and a one-off payment was given. In this case, Mr Williams is the tenant farmer, so he did not actually receive any money, but is the one dealing with the consequences of frequent flooding.

"We as farmers are feeling the effects of the scheme; we are flooding quicker and more often"

Mr Williams said: "The scheme does exactly what it's supposed to, protecting the town and village and I would hate to think of the devastation that may have been caused had the scheme not been running. I just feel that the public do not appreciate the impacts it has on the land or the agriculture within that land. They are all happy now, but they have not looked on the other side of the river, they do not see the devastation the flood has caused."

Mr Williams will feel the impacts of the flooding in the long term, as well as the initial losses he experienced. "It cost me around £1,000 just to dispose of the carcasses". All of his ewes were in lamb, and he will now be short of replacement ewes this year. "I will either have to lower my sheep numbers, which will mean fewer lambs to sell, or buy in replacement stock."

Mr Williams stressed the importance of policy makers understanding exactly how natural flood risk management schemes can have on farmers businesses.

Things such as re-seeding, moving stock and inconvenience of frequent flood warnings are all things he now has to deal with, and costs of these have not been covered by the one-off easement payment at the start of the scheme."

CASE STUDY:

Impact of infrastructure exacerbating flooding:

Mr Chamberlayne, Gloucester
The 2007 floods affected 120ha of the Chamberlaynes' land near Gloucester, including their 120 sow piggery, which closed as a result. This was one of several farm businesses seriously affected in the area.

The Chamberlaynes have successfully diversified their farm business to establish a 25 office business park. The business park is an essential source of employment within the rural community, providing jobs for 120 people. In 2007, the main road access from Gloucester was closed for two weeks, and has closed in more recent years due to increasingly frequent flooding events. The perceived increase risk of flooding affecting access to the business park has made the leasing of units more difficult.

Working in the floodplain, Mr Chamberlayne understands that flooding will sometimes occur, however it is the exacerbation of flooding caused by recent developments in the floodplain which has the greatest impacts on his farm business.

There has been successive development on the eastern side of the floodplain, including the development of a landfill site, factory and associated embankments. This has acted to cut off this floodplain, meaning that water is forced onto farmland on the opposite banks during high flow events.

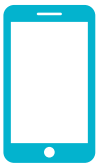
The Gloucester ring road, the A417, and the Gloucester – Cardiff railway line also act to dissect the flood plain. Due to inadequate flood relief provision when these pieces of infrastructure were built, when water does attenuate on farmland it rises to higher levels and takes a longer time for the water to recede. This increase in duration is forcing Mr Chamberlayne to adapt to a spring-cropping system, heavily impacting upon productivity.

Development is necessary to serve the UKs growing population; however, Mr Chamberlayne's case demonstrates the importance of understanding how these developments exacerbate flooding on agricultural land and rural communities. Where this occurs, there must be support for these farm businesses coping with these more acute impacts.

Flood resilience and preparedness

Flood warnings

Communications such as telephones and internet services often fail during floods so it is vital that there is a connection with the community. Timings of the flood warnings are a key factor along with accuracy and clearness. As stated in the NFU's spotlight on farm broadband and mobile networks report, 56% of farmers own a smart phone and 52% had reliable signal in only a few outdoor locations. (Source: broadband report infographics). The NFU is calling for government to ensure that farmers and rural areas are prioritised throughout the remainder of the roll out of universal super-fast broadband and reliable mobile phone networks.



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Guidance

Following the December 2015 floods, it is apparent that farmers in the North West believe there is not enough information out there on how to be more resilient. Although flood groups exist in the North West, these are based around built-up areas and don't extend out to their farming neighbours. These groups often have flood wardens, whose job it is to go and visit people during floods to make sure they are okay and share information, however, rarely do they go up the farm drive and talk to farmers.

Clear and constructive guidance should be available on how farmers can be more resilient and adapt their business to cope with future floods.

Lessons learned from the Netherlands

The NFU recognises that the need to improve flood resilience is not unique to the UK, and we continue to work closely with our farming counterparts to understand how rural farming communities in other nations approach flood management issues.

In 1995, the Netherlands suffered from some very bad flooding, and the Dutch are now learning to adapt.

Evidence gathered during a recent visit to the Netherlands has shown that the Dutch regularly make use of raised bunds to protect important portions of land used for food production and key residential and farm buildings, as well as rural roads and other infrastructure.

The goal of the Dutch Room for the River Programme is to give the river more room to be able to manage higher water levels. At more than 30 locations, measures are being taken that give the river space to flood safely.

At one location, the river at the Overdiepse Polder has been widened. In a bid to keep farming the land, and working with the authorities, the local water board built platforms called 'terps' of about 2 ha The farmers who wished to continue to farm in the Polder could then install farmhouses and farm buildings for livestock and storage on this elevated ground.

The area continues to flood but the farmers are given notice before the flood happens, which gives them chance to move any animals at risk and compensation is available for any crop losses at certain times of the year. The total cost of project was about five million euros and was all funded by the government.

The willingness of all, farmers and authorities, to be involved to work in partnership and to balance objectives with other important priorities, such as food production, is encouraging.

"It was a bottom-up approach, pushed by farmers; it was their idea. They had can-do attitudes"

Robert Caudwell,
NFU (attended Netherlands visit)

Notes

Principal policy asks

Plan

Long-term planning for flood and coastal risk management:
A long-term, strategic and planned approach is needed to manage flood and coastal risk in the future.

Local decision making:
More decisions should be made at a local level, where people will be better informed, and can ensure collaboration between all stakeholders.

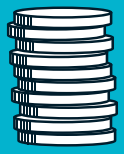
Increased catchment-based decisions:
Decisions should be made on a local, catchment basis, and funding should follow. These should be based on scientific knowledge and consider the increased frequency of extreme weather events.

Protect

Improved modelling for flood risk:
Systems for predicting flood events must be brought up to date in light of recent storm weather events.

Proper assessment of the value of agriculture:
Decisions to invest in flood defences must be based on the value of the assets protected. Crucially, they must include a proper assessment of the value of agricultural land to the nation, now and in the future, taking into consideration the multi-layered, locally dependent costs of flooding to agricultural land.

Better communications on flood risk:
Systems for communicating with those affected must reach the most remote communities, providing sufficient time for response.



Pay

Sufficient and transparent funding:
Flooding and water management in river and coastal areas must be properly funded to protect urban and rural businesses, infrastructure and communities. Government spending must be transparent, and the artificial distinction between capital and maintenance expenditure removed.

Appropriate resourcing during maintenance withdrawal:
The Environment Agency must be properly resourced to work with local groups during withdrawal of river maintenance. This may either be through the extension or establishment of new Internal Drainage Boards, other local solutions, including putting assets in good condition before they are handed over to others for future management.

Natural Flood Management establishment:
Where agricultural land is part of the solution to flooding as part of total catchment management, such as natural flood management or flood water storage, this must be planned, agreed and paid for.