

## Annex 1

### ENVIRONMENT AGENCY PROGRESS ON URGENT RECOMMENDATIONS

***Urgent recommendation 1:*** *The Review recommends that more frequent and systematic monitoring of groundwater levels at times of high risk should be undertaken by the Environment Agency, which should begin as soon as possible to predict and mitigate further serious groundwater flooding from this winter onwards.*

We have a long-term initiative to develop our groundwater flooding capabilities, to take forward the Making Space for Water (MSFW) programme and prepare to implement the EU Floods Directive. In response to this urgent recommendation, we are pursuing a number of additional short-term actions over the coming months:

- We completed two national groundwater level scenario forecasting exercises - one in October 2007 to assess risks at the start of winter, and the second in February 2008 to re-assess the situation after the heavy January rains. These were extended analyses, compared to those undertaken routinely for Southern England, so as to include the chalk aquifers of Yorkshire and North Lincolnshire, thus covering all major chalk aquifers in England. The most recent analysis found that overall levels in the south and east are likely to be higher than average for the time of the year, but are neither unusual nor likely to present any major concerns. We are considering the scope to undertake such national forecasting on a more regular or systematic basis.
- Associated with this forecasting, we are looking at a more systematic approach to warning key stakeholders and increasing public awareness - this is ahead of the longer-term consideration under MSFW of the feasibility of a consistent groundwater flood warning service.
- We already provide a limited groundwater flood warning service in Southern, Thames and South West Regions at times of high flood risk.

***Urgent recommendation 2:*** *The Review recommends that the Environment Agency, supported by the Local Authorities and water companies, should urgently identify areas at high risk from surface water flooding where known, inform Local Resilience Forums and take steps to identify remaining high risk areas over the coming months.*

We support the partnership approach to producing a shared assessment of surface water flood risk and have begun collating the information for the Local Resilience Forums. We want to ensure our resources and that of Local Authorities and water companies is targeted where the need is greatest. For this reason we are taking steps to produce an initial indication of areas that may, in certain circumstances, be prone to surface water flooding.

We currently have limited responsibilities in relation to surface water flood management. In response to this urgent recommendation, we are pursuing a number of short-term actions in the coming months:

- We have met with the many of the Local Resilience Forums to share knowledge of historic surface water flooding.
- We are determining what information is required from our professional partners such as Local Authorities and Water Companies on historical surface water flooding and will then write to them requesting the information. Once collated, we will provide the information to Local Resilience Forums to allow a multi-agency risk assessment of surface water flooding.
- We are looking to put in place by August 2008 an initial indication of areas that may, in certain circumstances, be prone to surface water flooding. This is aimed at providing indicative information to Local Resilience Forums in the interim period before more comprehensive surface water flood mapping is developed to implement the Floods Directive by 2013.
- These initial steps will support partners' move from a reactive to a pro-active risk based approach to flood risk and incident management for surface water flooding.

***Urgent recommendation 3: The Review recommends that the Environment Agency should urgently develop and implement a clear policy on the use of temporary and demountable defences.***

Temporary flood barriers are a relatively new technology that provide a quick and easy means to protect long lengths of river against floodwater. They are re-usable and offer many advantages over traditional sandbags.

We have trialled temporary defences, mainly in the Severn catchment, with the support of Defra. Our experience to date has been used to inform our policy, which confirms that we will consider providing temporary defences as a short-term measure against flooding from main rivers but that a number of criteria have to be met, such as (i) being economically viable, (ii) having support from the Local Authority, partner organisations and the community, (iii) that they are not used as a long-term alternative to permanent schemes.

We will circulate our temporary flood defence policy to our professional partners for comment shortly. A copy is attached.

Demountable flood defences are purpose built, generally above ground, that are supported by permanent foundations. They form part of the above-ground solution in a permanent flood defence scheme.

Our policy states that flood alleviation schemes, including demountable defences, will undergo full project appraisal and economic analysis as with other schemes. We will limit the use of demountable defences to those locations where raised structures have been or would be rejected following formal planning procedures or for unavoidable access. In either case, their use should be minimised in terms of length and height. Locally managed demountable defences will be considered in preference to those stored off site.

### Communicating our policies

Our temporary defences policy is now available and we will share and explain both this and the demountable defence policy to our professional partners and the public in the near future.

***Urgent recommendation 11:*** *The Review recommends that the Environment Agency should work urgently with telecommunications companies, consulting the Information Commissioner as necessary to facilitate the roll-out of ‘opt-out’ telephone flood warning schemes to all homes and businesses liable to flooding, including homes with ex-directory numbers.*

- We are already using an ‘opt-out’ recruitment method for our flood warning service, but we have only been able to do this where we have access to limited data sets. During our trials of this method ninety eight per cent of people remained in the scheme, meaning that only two per cent of people chose to opt-out. This compares favourably to the thirty to thirty five per cent we manage to recruit using ‘opt-in’ methods. The cost-effectiveness of the opt-out recruitment method is substantive.
- In order to maximise the number of customers who can be recruited via the “opt-out” method of recruitment we require:
  - full access to the BT Directory solutions database using address data only, so that we can obtain all telephone numbers and names of those in the floodplain (including ex-directory telephone numbers). This is our preferred option, however we understand there are legal and commercial restrictions in allowing us access to this information.
  - changes to current legislation allowing us full access to the electoral role. We would require this if we need to have names and addresses to access BT data rather than address data only.
- We have investigated other routes of obtaining telephone numbers of those in the flood plain, but cannot find as reliable and complete a source of information than that available from BT.
- We would need additional resources, including those for ongoing maintenance costs, to manage large increases in additional data.

We also have a **significant part to play in the following recommendations:**

***Urgent recommendation 10:*** *The Review recommends that Category 1 responders should be urgently provided with a detailed assessment of critical infrastructure in their areas to enable them to assess its vulnerability to flooding.*

- We will have an important part to play in the successful implementation of this recommendation by sharing our information on the probability of flooding from rivers and the sea where critical national infrastructure is located. At the time of

writing, we have just received notification of the agreed Cabinet Office process for securely sharing such information.

- We are also supporting the electricity and water sector to undertake risk assessments of their critical assets and sites in the floodplain.
- In February 2008 we released, jointly with the Cabinet Office, interim national guidance on developing Multi-Agency Flood Plans. This represents a substantial step towards a common national standard for flood emergency planning and we will monitor its use with Defra.
- It is difficult to assess the resource requirements for this work without knowing the scope and nature of the information we will be asked to provide. We are, however, receiving numerous requests for information and advice from infrastructure operators at all levels and expect this to intensify.
- We continue to take every opportunity to remind operators of critical infrastructure at national, regional and local level of their responsibilities to carry out risk assessments and review action to mitigate risk and ensure business continuity. Whilst we can share information on flood probability, and advise on the impact of any proposed mitigation measures on flood risk in the wider community, only infrastructure operators have detailed site specific knowledge including the level of flooding that will cause asset failure, the criticality of the asset and alternative options for maintaining supply (for example, network interconnectivity).
- We call for the Climate Change Bill to include a requirement for critical infrastructure operators to take adaptation and resilience to climate change into account. We would welcome any reinforcing of the Civil Contingencies Act to ensure that essential service providers take necessary action to ensure continuity of service. We would also welcome a review of regulatory regimes to ensure that utility companies are properly incentivised to take action, through appropriate penalties for loss of service.

#### ***Urgent recommendation 14 and 15:***

***14 - The Review recommends that members of the public make up a flood kit – including key personal documents, insurance policy, emergency contact numbers (including local council, emergency service and Floodline – 0845 988 1188), torch, battery or wind-up radio, mobile phone, rubber gloves, wet wipes or antibacterial hand gel, first aid kit and blankets.***

***15 - The Review recommends that members of the public increase their personal state of readiness and resilience to floods by following the Environment Agency's practical advice, where appropriate.***

- We published three new leaflets in December 2007 that provided practical advice on how to be prepared, before, during and after flooding. We are now ensuring that we promote these leaflets as the source of practical advice to the public. These leaflets provide the information set out in the recommendations, for example to prepare a flood kit or to move valuable possessions upstairs. You can view these on our website – [www.environment-agency.gov.uk/floods](http://www.environment-agency.gov.uk/floods)

- We have aligned this year's flood awareness campaign messages to these two recommendations.
- We are looking at how we can take these two recommendations further and are working with our professional partners to see how we can all enhance the way we warn and inform the public about flooding.
- We have seen over 37,500 people register to our Floodline Warnings Direct system since January this year.
- We are close to completing our work on surveying the views of people that flooded in last summer's floods. The findings will be available in April.
- We have established a new permanent joint communications team with the Met. Office. The team's priority is alerting the public to severe weather to improve their personal state of readiness
- We have started research with our professional partners in order to better understand their needs and improve our service with regard to flood warning and information.
- We have increased the scope of our March Floodline Warnings Direct recruitment programme, adding targeted regional advertising, community events and increased media coverage, in addition to the planned direct mailing.

## Annex 2

### Environment Agency progress or comments on Pitt review interim conclusions

Interim conclusions highlighted in grey are those that we believe the Environment Agency will lead on.

Interim conclusion	Interim conclusion	Progress or comments on interim conclusions
IC1	The interim conclusion of the Review is that Government takes the lead in making the case for the need for adaptation to climate change and particularly in mitigating the potential impacts of communities.	We support this interim conclusion.
IC2	The interim conclusion of the Review is that the Government develops a clear strategy and action plan to deliver the provisions of the Climate change Bill to support adaptation to increasing impacts from flooding.	We support this interim conclusion.
IC3	The interim conclusion of the Review is that the Environment Agency further develops its tools and techniques for predicting and modelling river flooding, especially to take account of extreme and multiple events; and takes forward urgently work to develop similar tools and techniques to model surface water flooding.	We support this interim conclusion. Our Flood Risk Science programme is committed to continuing to develop tools and techniques for predicting and modelling river flooding for a range of events. We will be undertaking medium to long term work to develop similar tools and techniques to model surface water flooding from April 2008 as part of our preparation for implementation of the EU Floods Directive.
IC4	The interim conclusion of the Review is that the Environment Agency revises its flood maps to identify areas where there is a risk of significant depths and velocity of water, to improve the effectiveness of emergency planning.	We support this interim conclusion and we already have information available for rapid response catchments and the information required for fluvial flooding. We will need to discuss with emergency planning partners to find out their needs. We will assess how to take this forward as one of the UK requirements under the EU Floods Directive.

IC 5	<p>The interim conclusion of the Review is that the Environment Agency works more closely with Local Resilience Forums to provide information drawn from flood risk modelling and mapping tools to improve the accuracy and consistency of flood risk information in Community Risk Registers.</p>	<p>We support this interim conclusion and we are preparing a short term solution involving a combination of known hotspot mapping (drawn from discussions with our Local Resilience Forum partners) and a broad-brush modelled risk assessment to predict areas at risk from surface water flooding. The work being carried out to meet the requirements of the EU Floods Directive and Making Space for Water will further build upon this short term solution using new science to continue to improve the accuracy and consistency of flood risk information in Community Risk Registers.</p>
IC 6	<p>The interim conclusion of the Review is that the Environment Agency progressively develops and brings into use flood visualisation tools, designed to meet the needs of flood risk managers, emergency planners and responders.</p>	<p>We support this interim conclusion and we already have a lot of data we think emergency planners and responders require.</p> <p>We have commenced work to identify improvements that can be made to how we provide and display information for emergency planners and responders, particularly around communicating risk.</p>
IC 7	<p>The interim conclusion of the Review is that the Met Office and the Environment Agency produce an early assessment of the costs, benefits and feasibility of techniques which can predict where rain will fall and where surface water flooding will occur.</p>	<p>We support this interim conclusion. We have set up a joint task group with the Met Office and ourselves to discuss this topic and produce an options paper. There are many complexities in developing a warning service for surface water flooding. It is a difficult form of flooding to model, as such a warning service cannot be delivered in the same way as that currently provided for fluvial and coastal flooding and solutions will be very different from those currently used.</p>

IC 8	<p>The interim conclusion of the Review is that PPS25 should be rigorously applied by local planning authorities, including giving consideration to all sources of flood risk and ensuring that developers make a full contribution to the costs both of building and maintaining any necessary defences.</p>	<p>We strongly agree that PPS25 should be rigorously applied by local planning authorities. Whilst we have a role to play, the Local Planning Authorities, along with Communities and Local Government, also have key roles to play in its delivery. Accordingly, we wish to see Government issue more prescriptive guidance to ensure local authorities' application of it is appropriate.</p> <p>We also agree that local planning authorities should give consideration to all sources of flood risk and ensure that developers make a full contribution to the costs both of building and maintaining any necessary defences. That developer contribution to costs of defences should take account of the lifetime of the development needing defending and any likely enhancement of the defences in line with climate change.</p>
IC9	<p>The interim conclusion of the Review is that householders and business owners should no longer be able to lay impermeable surfaces as of right.</p>	<p>We support this interim conclusion. Impermeable surfaces increase the risk of surface water flooding. The Government signalled its intention to remove the ability for householders to lay impermeable surfaces as of right in <i>Future Water</i>. We support this proposed change. Government is expected to change the legislation in permitted development rights in late 2008.</p>
IC10	<p>The interim conclusion of the Review is that the automatic right to connect surface water drainage of new developments to the sewerage system should be removed.</p>	<p>We support this interim conclusion. Government has issued a consultation on removing this automatic right in February 2008.</p>
IC11	<p>The interim conclusion of the Review is that no new building should be allowed in a flood risk area that is not flood resilient, and that the Government should work with organisations such as the Royal Institute of British Architects and the building industry to encourage flood resilient building and development design.</p>	<p>We support this with caution. Flood resilience is a secondary type of defence, and means to reduce flood damage. Resilient construction should not be used to justify development in otherwise inappropriate locations.</p>

IC12	The interim conclusion of the Review is that the Government should incorporate flood resistance and resilience requirements for new properties in flood risk areas into Building Regulations as part of the current process of revision.	We strongly support this interim conclusion. We have supported Communities and Local Government (CLG) and Defra in improving the evidence base through testing of building materials. We expect CLG to bring forward proposal on how the Building Regulations will be amended.
IC13	The interim conclusion of the Review is that the Government should incorporate requirements for resistant or resilient refurbishment of flooded properties in high flood risk areas into Building Regulations as part of the current process of revision.	We strongly support this interim conclusion. This should help remove the anomaly where flooded properties are repaired in exactly the same way they were constructed, when there are simple measures which can be taken to help increase resilience for no, or minor, extra costs.
IC14	The interim conclusion of the Review is that local authorities and housing associations should take a more active role in increasing the uptake of flood resistance and resilience measures, leading by example by repairing their properties with appropriate materials where it is cost effective.	We strongly support this interim conclusion, provided it is safe to do i.e. a risk assessment, including necessary structural checks, have been carried out.
IC15	The interim conclusion of the Review is that local authorities in high flood risk areas should extend eligibility for home improvement grants and loans to encompass flood protection and resilience products.	We strongly support this interim conclusion.
IC16	The interim conclusion of the Review is that local authorities, as they discharge their responsibilities under the Civil Contingencies Act 2004 to promote business continuity, should encourage the uptake of property-level flood resistance and resilience measures. This should be reflected in guidance from the Government.	As IC14. We support this interim conclusion, provided it is safe to do so i.e. a risk assessment, including necessary structural checks, have been carried out.
IC17	The interim conclusion of the Review is that local authorities should lead on the management of surface water flooding and drainage at the local level with the support of all responsible organisations including the Environment Agency, water companies and internal drainage boards, the Highways Agency and British Waterways.	We strongly support the interim conclusion that Local Authorities should lead on the management of surface water flooding and drainage at the local level, subject to appropriate resources and delivery timescales. We will provide strategic direction, information and guidance to Local Authorities as part of our National Overview role (IC19). We provide guidance to Local Authorities on flood risk matters and advice on drainage as a statutory consultee in the planning system. We will continue to support local authorities with their

		<p>planning responsibilities and emergency planning role through Local Resilience Forums. Government will need to monitor and review the local authorities ability to be effective in this enhanced role. It will be important to consider the availability of guidance to assist partnership working, powers to ensure partnership working, sanctions if data is not shared voluntarily and resources to build organisational capacity.</p>
<p>IC18</p>	<p>The interim conclusion of the Review is that local authorities in flood risk areas should assess their capabilities to deliver the wide range of responsibilities in relation to local flood risk management.</p>	<p>We support this interim conclusion. It is essential the local authorities, as well as other organisations, assess their capabilities. Many local authorities do not currently have the capabilities and will need to carry out an analysis against what is expected of them (performance targets) to inform plans to address this issue.</p>
<p>IC19</p>	<p>The interim conclusion of the Review is that the Environment Agency should have a national overview of all flood risk and that, Defra's work on the development of a national overview role for the Agency in relation to surface water flooding should be progressed.</p>	<p>We support the interim conclusion that the Environment Agency should be asked to take a strategic overview of inland flood risks.</p> <p>The strategic overview is not yet defined. We have described how we believe this might work in Appendix 3, attached. The Defra Making Space for Water project (HA1b) is now looking at the role in more detail and at the necessary framework to enable effective planning for inland flood risks. New responsibilities will need to be supported by appropriate powers and resources.</p> <p>Implementing a strategic framework will require careful planning and delivery over some time. The objective of the strategic overview should be to provide a framework for relevant organisations to move from a reactive to a proactive flood risk management and incident management approach.</p> <p>In terms of surface water flooding we do not seek a significant delivery role. It is important that Defra's Making Space for Water project (HA2) on integrated urban drainage and surface water continues as planned and provides evidence for future policy decisions, as well as guidance on partnership working.</p>

<p>IC20</p>	<p>The interim conclusion of the Review is that local Surface Water Management Plans, as set out under PPS25, should provide the basis for managing surface water flood risk. These plans should be coordinated by the Local Authority and be risk-based, considering all sources of flooding.</p>	<p>We support the interim conclusion. We believe leadership and forward planning on surface water flooding at the local scale could be co-ordinated via Surface Water Management Plans (SWMPs) and await the conclusions from Defra's consultation on improving surface water drainage and the integrated urban drainage project (HA2) to determine how best to implement this recommendation. The plans should be where the need is greatest and consider all forms of flooding in the assessment of flood risk. However, SWMPs will not manage flooding from rivers and sea, as these policies and actions are set out in our Catchment Flood Management Plans and flood risk management strategies.</p> <p>We support the view that local authorities should lead SWMPs, subject to the plans having appropriate status and local authorities having powers/ to enable the production of plans supported by partners and the delivery of actions. Our National Overview role will help to prioritise and co-ordinate effort. Data sharing will be crucial to the process.</p>
<p>IC21</p>	<p>The interim conclusion of the Review is that a local register of all the main flood risk management and drainage assets (overland and underground) should be compiled by the relevant Local Authority, including an assessment of their condition and details of the responsible owners.</p>	<p>The compilation and maintenance of such asset registers would be a substantial piece of work and the value of this work is not clear. There needs to be debate on the expected outcomes of this recommendation, including how the register will be used and updated.</p> <p>We have a comprehensive database on our own assets, which is available to all Local Authorities. However there are complications around third party assets that need to be resolved.</p>
<p>IC22</p>	<p>The interim conclusion of the Review is that Defra should issue guidance on how all organisations can be brought together to work with local authorities on surface water flood risk management, sharing information, modelling and expertise on a consistent basis.</p>	<p>We strongly support this interim conclusion. Comprehensive national guidance will be crucial to facilitate new ways of working and overcome the technical and institutional barriers to managing surface water better.</p> <p>We believe the final recommendation on this point needs to include the importance of data sharing from all parties.</p>

		The outcome of good guidance will be that Surface Water Management Plans are fit for purpose and enable local authorities to manage surface water flooding better.
IC23	The interim conclusion of the Review is that the Government, as part of its Water Strategy, should resolve the issue of which organisations should be responsible for the ownership and maintenance of sustainable drainage systems.	We strongly support this interim conclusion. Our view is that ownership should rest with a durable, accountable organisation that can be expected to have the financial capacity to meet its responsibilities in the longer term. We believe that the Local Authorities should take the role in making sure the accountable organisation is in place and is operating effectively.
IC24	The interim conclusion of the Review is that Defra should work with Ofwat and the water industry to explore how appropriate risk-based standards for drainage systems (including pumping stations) can be achieved.	We strongly support this interim conclusion. Ofwat have written to water companies about this point in February 2008. But work must be look at the whole system, not just by water industry.
IC25	The interim conclusion of the Review is that, as part of the forthcoming water industry pricing review, the water companies, in conjunction with local authorities and other partners, should develop proposals for investment in the existing drainage network to deal with increasing flood risk.	We strongly support this interim conclusion and we think that this should take place immediately in order to inform Ofwat's Periodic Review process. This will help ensure that water company assets are able to manage increased flood risk from climate change, and other drivers.
IC26	The interim conclusion of the Review is that Local Authority scrutiny committees review SWMPs and other linked plans, such as Local Development Frameworks and Community Risk Registers, to ensure that flood risk is adequately considered and to ensure greater transparency and progress in the management of that risk.	We support this interim conclusion. We will provide a fit for purpose screening at the local level and engenders ownership at the local level.  See also IC17, 19, 20, 22
IC27	The interim conclusion of the Review is that it is appropriate for the Environment Agency and other local organisations to continue to focus investment on areas of highest assessed long-term risk, whether or not they have been recently flooded.	We strongly support this interim conclusion and we are doing this. NaFRA is prioritising investment to address the highest long-term risk. We are also developing a 'NaFRA Futures' tool to allow us to assess how risk may change in future, and what the impact of FRM investment is likely to be.

IC28	The interim conclusion of the Review is that the Government should commit to a strategic long-term approach to its investment in flood risk management, planning up to 25 years ahead.	<p>We strongly support this interim conclusion.</p> <p>We have initiated the development of a long term, 25 year programme that can be flexed to take account of climate change, policy and funding variations. This will be implemented through an integrated Long Term Investment Strategy.</p>
IC29	The interim conclusion of the Review is that the Environment Agency should open dialogue with all those landowners who will be affected by either a withdrawal from or significant reduction in maintenance of rural watercourses.	<p>We have had ongoing dialogue with relevant organisations and individuals, and communicated our approach via information posted on our website. National guidance is being developed on significant reductions and the withdrawal of maintenance. These together with national maintenance standards currently in development, will provide additional tools to enable local decision making.</p>
IC30	The interim conclusion of the Review is that the Government should develop a single national set of guidance for local authorities and the public on the use and usefulness of sandbags and other alternatives, rather than leaving the matter wholly to local discretion.	<p>A Ciria booklet entitled <i>Damage Limitation: How to make your home flood resistant</i> is freely available and provides instruction and advice on how to use sandbags and other temporary protection measures to protect homes.</p>
IC31	The interim conclusion of the Review is that Defra, the Environment Agency and Natural England should work with partners to establish a programme and framework to achieve greater working with natural processes, including the identification of appropriate sites and the development of more incentives for creating water storage, restoring the natural course of rivers and establishing green corridors.	<p>Defra, Natural England and ourselves should work with partners to establish the extent to which greater working with natural processes might contribute to a reduction in flood risk. Through Catchment Flood Management Plans and Shoreline Management Plans we will work together to identify appropriate sites for example; wetland creation, restoration of natural course of rivers and green corridors, and the development of better incentives to deliver multiple benefits through flood management.</p>
IC32	The interim conclusion of the Review is that the Environment Agency should provide an analysis of the effect that land management practices had or would have had on the impact of flooding during the summer 2007 floods.	<p>There has been significant research undertaken to investigate the links between land management and flood risk. Making Space for Water has confirmed that research is inconclusive regarding the impact of land management on flood risk at the catchment scale.</p> <p>The available research has looked at specific catchments but due to the many variables interacting at a catchment scale such</p>

		<p>as soil type, soil condition, land use, land management practices, connectivity, the overview cannot provide an analysis of those catchments affected by the Summer 2007 floods.</p> <p>No further work is planned at present and we do not feel that such work would add to the understanding. We do not feel that changes to land management would have had a significant effect on the impact of the 2007 summer floods.</p>
IC33	The interim conclusion of the Review is that flooding legislation should be updated and streamlined under a single unifying Act that amongst other outcomes addresses all sources of flooding, clarifies responsibilities and facilitates flood risk management.	We strongly support this interim conclusion and advocate that the Government develop a new Floods Bill to take it forward.
IC34	The interim conclusion of the Review is that the Government and the insurance industry should work together to deliver a public education programme setting out the benefits of insurance in the context of flooding.	We support this interim conclusion.
IC35	The interim conclusion of the Review is that the Government and the insurance industry work together to develop options to improve the availability and uptake of flood risk insurance by low income households and assess the costs, benefits and feasibility of these options, before the Review's final report.	We support this interim conclusion and look forward to the outcome of these discussions.
IC 36	The interim conclusion of the Review is that, in flood risk areas, a note on flood risk and the simple steps that could be taken to mitigate it should be included with all insurance renewal notices. Moreover, if Flood Warning Direct is available in a customer's area, one of the conditions of renewal could be sign-up to this service.	We support this interim conclusion in principle and look forward to involvement in discussions. We have recently revamped our key publications to reflect such information in simple terms.

IC 37	The interim conclusion of the Review is that the Met Office and the Environment Agency should produce an assessment of the options for issuing warnings against a lower threshold of probability, including costs, benefits and feasibility; this will be considered further in the final report.	The Met Office and ourselves have set up a joint task group to discuss summer flood reviews recommendations.  We are concerned that care is needed to make sure that false or premature warnings are not provided. It is also important to remember the limitations of the technology available.
IC38	The interim conclusion of the Review is that unless agreed otherwise locally, 'upper tier' local authorities should be the lead organisation in relation to multiagency planning for severe weather emergencies at the local level, and for triggering multi-agency arrangements in response to severe weather warnings.	We strongly support this interim conclusion.
IC39	The interim conclusion of the Review is that where a Gold Command is established, the police, unless agreed otherwise locally, should convene and lead the multi-agency response.	We support this interim conclusion and we understand that this is normal practice in most areas.
IC40	The interim conclusion of the Review is that Gold Commands should be established at an early stage on a precautionary basis where there is a risk of serious flooding.	We support this interim conclusion, but there needs to be a clear trigger.
IC41	The interim conclusion of the Review is that Local Resilience Forums should assess the effectiveness of their Gold facilities, including flexible accommodation, IT and communications systems.	No comment
IC42	The interim conclusion of the Review is that the Local Government Association should consider how best mutual support might be enhanced between local authorities in the event of a future wide-area emergency.	No comment

IC43	The interim conclusion of the Review is that Cabinet Office guidance to local planners should specifically include incidents which leave large numbers of people stranded on motorways and trunk roads.	No comment
IC44	The interim conclusion of the Review is that, as part of their emergency plans, Local Resilience Forums should consider the vulnerability of motorways and trunk roads to flooding, and consider the potential for earlier, stronger, more specific warnings, and strategic road clearance and closures, to avoid people becoming stranded.	We support this interim conclusion.
IC45	The interim conclusion of the Review is that Defra should review the current requirement in emergency regulations for the minimum amount of water to be provided in an emergency, to reflect reasonable needs during a longer term loss of mains supply.	No comment
IC46	The interim conclusion of the Review is that central government crisis machinery should always be activated if significant wide-area flooding of whatever nature is expected or occurs.	We support this interim conclusion but the lead department plan must clearly state the triggers of when the central Government crisis machinery is activated. It is important that a need is demonstrated as supporting this requires a lot of resources. Any response to the event needs to be proportionate and not escalated beyond the requirements of the event.
IC47	The interim conclusion of the Review is that Defra extends its current departmental programme to share best practice and provide training in emergency response across the organisation.	We support this interim conclusion.
IC48	The interim conclusion of the Review is that Defra and the Environment Agency work together to establish a single London situation room to coordinate flooding information, to act as a focal point for cross-Defra efforts, and to support Defra Ministers.	Defra and ourselves will work together to deliver the intention of this recommendation without necessarily establishing a single London Situation Room. This can be achieved by ever closer joint working and information sharing, while allowing both organisations to continue to manage the flooding situation to meet their differing operational requirements.

IC 49	The interim conclusion of the Review is that a national flooding exercise should take place at the earliest opportunity in order to test the new arrangements which central Government departments are putting into place to deal with flooding and infrastructure emergencies.	We support this interim conclusion.
IC50	The interim conclusion of the Review is that financial assistance for local responders in relation to emergency response and recovery should be revised to improve speed, simplicity and certainty.	We support this interim conclusion.
IC51	The interim conclusion of the Review is that Local Resilience Forums should be made aware of recent Cabinet Office guidance setting out the transition to recovery. Recovery sub-groups should be established from the onset of major emergencies and in due course there should be formal handover from Gold Command to the local Recovery coordinating Group(s), normally chaired by the Chief Executive of the affected Local Authority.	We support this interim conclusion. We will work with our partners to support recovery planning and activities as appropriate to our role.
IC52	The interim conclusion of the Review is that the Government should establish a systematic, coordinated, cross sector campaign to reduce the disruption caused by natural events to critical infrastructure and essential services.	We support this interim conclusion and look forward to participating on both flooding and drought perspectives.
IC53	The interim conclusion of the Review is that the Government should develop and issue guidance on consistent and proportionate minimum levels of protection from flooding for critical infrastructure.	<p>We support this interim conclusion in principle.</p> <p>Appropriate risk management and business continuity measures must be in place and regulatory regimes must incentivise operators to take actions. Regulators must take responsibility for supervision of utilities and take action if the risk exposure is not appropriate.</p> <p>However common levels of protection (for example protecting up to a 1 in 200 year standard) may not be practical as they do not take account of the criticality of the asset concerned, alternative options for maintaining supply (for example interconnectivity) or the dynamics of climate change, with the</p>

		<p>expected increase in flood risk. It may be better to insist that flood risk assessments are carried out to a given standards by infrastructure operators, or that cost-benefit analysis is employed, and the residual risk that operators are prepared to accept shared with Government. We can advise on the impact of proposed mitigation measures on flood risk in the wider community.</p> <p>We believe that the need for critical infrastructure operators to meet these levels of protection should be a provision of the Climate Change Bill.</p>
IC54	The interim conclusion of the Review is that infrastructure operating companies should present the case for further investment in flood resilience through the appropriate regulatory process.	We support this interim conclusion. Regulatory processes need to have appropriate incentives for companies or adequate penalties where unacceptable risks have been taken.
IC55	The interim conclusion of the Review is that a duty should be introduced on critical infrastructure operators to have business continuity planning to BS 25999 in place to more closely reflect the duty on Category 1 responders. This should include minimising the loss of supply as far as practicable in the event of a serious emergency resulting from flooding.	We support this interim conclusion. Critical infrastructure operators must carry out more effective business continuity planning and be better incentivised to do so.
IC56	The interim conclusion of the Review is that, in relation to information sharing and cooperation, the Civil Contingencies Act and Regulations should be extended to require Category 2 responders to more formally contribute information on critical sites, their vulnerability and the impact of their loss.	We support this interim conclusion. This will require a welcome step change in behaviour for some Category 2 responders (for example on sharing data and information)
IC57	The interim conclusion of the Review is that single points of failure and the complete loss of assets need to be explicitly considered in the risk assessment and contingency planning undertaken by operators, emergency planners and responders.	We strongly support this interim conclusion

IC58	The interim conclusion of the Review is that Local Resilience Forums should ensure that Community Risk Registers reflect risks to critical infrastructure from flooding and other hazards.	We strongly support this interim conclusion
IC59	The interim conclusion of the Review is that Category 2 responders should be required to participate fully at Gold and Silver Commands and that the Government should deliver this through the Civil Contingencies Act or other regulatory regimes.	We support this interim conclusion. A lack of involvement hinders decision-making but participation needs to be well-managed.
IC60	The interim conclusion of the Review is that the emergency plans and business continuity plans of essential service providers should be reviewed annually by Local Authority scrutiny committees.	We support this interim conclusion that such plans should be subject to independent scrutiny.
IC61	The interim conclusion of the Review is that critical infrastructure planning should become a separate discipline within civil protection at the local level.	We support this interim conclusion, if this means that resilience is properly addressed, as well as emergency response.
IC62	The interim conclusion of the Review is that the Government should implement the legislative changes proposed in the recently published Environment Agency biennial report on dam and reservoir safety.	We strongly support this interim conclusion. We are seeking some fifty changes to the Act ranging from the introduction of a risk-based approach to minor improvements. There is broad support for most of our proposals from the reservoir industry, although there is still some opposition to any form of checking process from panel engineers.
IC63	The interim conclusion of the Review is that all reservoir undertakers should be required by Defra to prepare inundation maps and share them with Local Resilience Forums to improve Community Risk Registers and emergency planning.	We strongly support this interim conclusion.

IC 64	<p>The interim conclusion of the Review is that the Environment Agency should produce a sliding scale of options for greater personalisation of public warning information, including costs, benefits and feasibility, before the final report.</p>	<p>We support this interim conclusion.</p> <p>We will look at the options, associated costs, benefits and feasibility of personalising public warning information.</p> <p>We have established a joint communications team with the Met Office with the aim to discuss how we alert the public to severe weather to improve their personal state readiness. This work will link to the personalisation of flood warnings.</p>
IC 65	<p>The interim conclusion of the Review is that the Environment Agency works with local responders to raise awareness in flood risk areas and identify a range of mechanisms to warn the public, particularly the vulnerable, in response to flooding.</p>	<p>We support this interim conclusion.</p> <p>We already have a programme of work in place to raise awareness and warn the public in flood risk areas, as well as work underway to consider the best way of addressing the needs of vulnerable groups.</p> <p>We have started field research with our professional partners to understand their needs and improve our service.</p> <p>We have met with the BBC network news and National Steering Committee on Warning and informing the public with an objective of improving joint working on public information and community resilience.</p> <p>We have established a joint communications team with the Met Office with the aim to discuss how we alert the public to severe weather to improve their personal state readiness.</p>
IC 66	<p>The interim conclusion of the Review is that advice by telephone during a flood emergency should come from just two sources – the Environment Agency for flooding information and Local Authority contact centres for local advice.</p>	<p>We support this interim conclusion in principle. But need to have discuss the detail of how this might work and would like to make sure that this would be multi-agency.</p>
IC 67	<p>The interim conclusion of the Review is that advice disseminated via the internet should be coherent by ensuring integration and consistency between local websites, including that of the Local Resilience Forum and those of all category 1 responders.</p>	<p>We support this interim conclusion that there should be consistent advice to the public. It would be important that lead organisations make sure that local websites are up to date.</p>

IC 68	The interim conclusion of the Review is that essential service providers should maintain continuous provision of public information during an emergency, through a website linked to other responders and Local Authority contact centres.	We support this interim conclusion in principle.
IC 69	The interim conclusion of the Review is that the Government works towards a single definitive set of flood related health advice for householders and businesses, which can be used by media and the authorities locally and nationally.	We strongly support this interim conclusion. We are working closely with the Health Protection Agency to make sure we can obtain the health advice we need and direct others to it.
IC70	The interim conclusion of the Review is that council leaders and chief executives play a prominent role in public reassurance and advice through the local media during a flooding emergency as part of a coordinated effort overseen by Gold Commanders.	We support this interim conclusion.
IC71	The interim conclusion of the Review is that flood risk should be made part of the mandatory search requirements when people buy property and should form part of Home Improvement Packs.	We strong support this interim conclusion. It was previously a government commitment but its current status is unclear.
IC 72	The interim conclusion of the Review is that the Government launches a public information campaign which draws on a single definitive set of flood prevention and mitigation advice for householders and businesses, and which can be used by media and the authorities locally and nationally.	<p>We support this interim conclusion that there should be a Government campaign that we will lead.</p> <p>This can follow on from well established annual flood awareness campaign. Our 2008 flood awareness campaign messages have already changed to align with Pitt urgent recommendations 14 and 15.</p> <p>We have increase the scope of our March Floodline Warnings Direct recruitment programme adding targeted regional advertising, community events and increased media coverage in addition to the planned direct mail.</p>

IC73	The interim conclusion of the Review is that local recovery coordinating groups should ensure that coherent health and well-being support is readily available to those affected by flooding, using a variety of sources including voluntary and community groups.	We support this interim conclusion.
IC74	The interim conclusion of the Review is that the monitoring of impacts on health and well-being, and actions to mitigate and manage the effects, should form a systematic part of recovery work at the local level.	We support this interim conclusion.
IC75	The interim conclusion of the Review is that communication strategies during recovery need to be agreed at the outset by all recovery coordinating groups and focus on reassurance, advice and progress.	We support this interim conclusion.
IC76	The interim conclusion of the Review is that local authorities should coordinate a systematic programme of community engagement in their area during the recovery phase.	We support this interim conclusion.
IC77	The interim conclusion of the Review is that central Government recovery coordinating groups should be established from the outset of major emergencies and in due course there should be formal handover from the crisis machinery to the recovery coordinating group – normally chaired by the minister of the lead Government department for recovery.	We support this interim conclusion.
IC78	The interim conclusion of the Review is that Communities and Local Government should have lead responsibility within central Government for coordinating recovery from wide area flooding emergencies.	We support this interim conclusion.

IC79	The interim conclusion of the Review is that roles and objectives of those in central Government responsible for recovery should be developed on the basis of the model employed during the recovery from last summer's floods, and that these standing arrangements should be set out in the <i>Concept of Operations</i> (CONOPS) for central Government's response to emergencies.	We support this interim conclusion.
IC80	The interim conclusion of the Review is that the central Government guidance to local responders – <i>Emergency Response and Recovery</i> – should be updated to reflect the new formalised arrangements for recovery.	We support this interim conclusion.
IC81	The interim conclusion of the Review is that all Local Resilience Forums should plan, train and exercise on the basis of the recently published <i>National Recovery Guidance</i> .	We support this interim conclusion.
IC82	The interim conclusion of the Review is that local authorities should have a clear plan for harnessing voluntary and community resources during the recovery phase.	We support this interim conclusion.
IC83	The interim conclusion of the Review is that for recovery from emergencies spanning more than a single Local Authority area, the Government Offices should enable coherence and coordination, if necessary, between recovery operations in different local authorities.	We support this interim conclusion.
IC84	The interim conclusion of the Review is that the Local Government Association and Government Offices should develop arrangements to provide advice and support from organisations experienced in recovery to areas dealing with recovery from an emergency.	We support this interim conclusion.

IC85	The interim conclusion of the Review is that there needs to be an agreed framework – including definitions and timescales – for local-central recovery reporting, and that this should be included in all relevant government guidance.	We support this interim conclusion.
IC86	The interim conclusion of the Review is that local authorities should continue to make arrangements to bear the costs of recovery for all but the most exceptional emergencies, and should revisit their reserves and insurance arrangements in light of last summer’s floods.	We support this interim conclusion.
IC87	The interim conclusion of the Review is that central Government should have pre-planned rather than ad hoc arrangements to contribute towards the financial burden of recovery from the most exceptional emergencies.	We support this interim conclusion.
IC88	The interim conclusion of the Review is that any future model for financial assistance should be designed to minimise unnecessary expenditure and maximise value for money for public finances collectively, rather than singularly for central or local government.	We support this interim conclusion.
IC89	The interim conclusion of the Review is that the arrangements for distributing any financial assistance during the recovery phase should be transparent and equitable.	We support this interim conclusion.
IC90	The interim conclusion of the Review is that aims and objectives for the recovery phase should be agreed at the outset by recovery coordinating groups to provide focus and enable orderly transition into mainstream programmes when multi-agency coordination of recovery is no longer required.	We support this interim conclusion.

IC91	The interim conclusion of the Review is that recovery coordinating groups should make early strategic decisions about longer-term regeneration and economic development opportunities during and after recovery.	We support this interim conclusion. We would like to highlight that there are also opportunities during recovery to improve the long-term flood resilience of buildings, infrastructures and communities, and would like to encourage all involved in the recovery effort to take these opportunities.
IC92	The interim conclusion of the Review is that recovery coordinating groups should evaluate and share lessons from both the response and recovery phases to inform their planning for future emergencies.	We support this interim conclusion.

## Annex 3

### ENVIRONMENT AGENCY VIEWS ON PROPOSALS FOR NATIONAL STRATEGIC OVERVIEW ROLE

**IC 19 The interim conclusion of the Review is that the Environment Agency should have a national overview of all flood risk and that, Defra's work on the development of a national overview role for the Agency in relation to surface water flooding should be progressed.**

#### Background

At present, no single organisation has a strategic overview role for all flooding issues, including flooding from surface water. Surface water flooding is extremely difficult to predict, and the division of responsibility between local authorities, water companies, the Highways Agency and the Environment Agency make it harder to manage. There is no common approach to the management and operation of drainage systems, a lack of joint strategic outcomes and failure to optimise expenditure, particularly within urban drainage systems. The UK Foresight *Future Flooding* report suggests that flood risk in urban areas will increase two to twenty fold over the next 100 years.

The Government's first response to *Making Space for Water (2005)* included an announcement to give the Environment Agency an overarching strategic overview for all forms of flooding. The Pitt Review (interim conclusions) and the Environment Agency's own review of the Summer 2007 floods came to the same conclusion.

The strategic overview of all forms of flooding is essential for prioritising investment and co-ordinating actions to reduce flood risk. It will provide a framework for relevant organisations to move from a reactive to a proactive flood risk management and incident management approach.

#### Framework for the Strategic Overview

An effective Strategic Overview will consist of two elements

- An assessment of the risk posed by all forms of flooding, shared by key partners, identifying where risks are greatest and the need for intervention most urgent.

- A common action-planning process that coordinates responses and investments across the broad range of organisations involved, but which has sanctions to ensure compliance and standards of output.

The role of the Environment Agency will be to provide national coordination, mapping and forecasting tools, guidance and advice, contribute to local delivery as a partner, and to ensure that the risk assessment and planning process results in real action.

### **Shared assessment of risk**

Strategic Flood Risk Assessments (SFRAs) are required for all areas under Planning Policy Statement PPS25 (and TAN15 in Wales). Local planning authorities should prepare SFRAs in consultation with the Environment Agency to determine the flood risk across their area as the basis for flood risk and emergency management. The SFRA should either form part of the Sustainability Appraisal of the Local Development Documents (LDDs), or be used to inform it. SFRAs are currently variable in quality, often not providing a good assessment of the risk from surface water, sewer and other forms of flooding. We propose that the Environment Agency develops an industry standard toolkit of methods for preparing a SFRA that includes data and models provided by water utility companies.

Where SFRAs identify that surface water flooding is a significant issue, a Surface Water Management Plan (SWMP) should be prepared. Other triggers for a SWMP might be the designation of a Critical Drainage Area or a significant flooding event.

### **Action planning – surface water management plans (SWMPs)**

Strategic Flood Risk Assessments are the cornerstone of flood risk management planning. However a further step is needed to translate SFRAs into practical action. That further step is a SWMP.

Local authorities should bring a partnership of relevant bodies together, undertake a risk assessment that provides an understanding of local flooding mechanisms, and, crucially, agree responsibilities and plan for action.

A true partnership approach will require stakeholders to take ownership of their individual actions in the plan. This will need the support of organisations, regulators (e.g. OFWAT) and government funding streams.

The Environment Agency in its strategic role will provide guidance to help Local Authorities produce the right plan for the right location.

### **Sanctions**

There must be a mechanism to ensure that SWMPs are produced where they are required, to an appropriate standard, and that action plans are delivered. This should be achieved, for the most part, by appropriate guidance. The Environment Agency should provide this as part of its strategic role. Sanction would be applied

through objection to a Local Authority's Local Development Framework if it were not accompanied by an appropriate SWMP.

### **Next steps**

We need to agree with Defra the full scope of the strategic overview in the light of our own summer floods review, Sir Michael Pitt's recommendations and the requirements of the Floods Directive.

Legislation will be required to ensure that both the Environment Agency and Local Authority roles are supported by appropriate powers and resources.

The Environment Agency and others are working on building blocks of the Strategic Overview, including new and improved mapping, modelling, warning and forecasting of flood risk, data sharing and guidance. Significant investment in forecasting, more detailed urban flood mapping and a new approach to flood warning will be required.

In the long term our aim is to make the assessment, appraisal and planning for surface water flooding as mature as it is for rivers and sea.

## Annex 4

### ENVIRONMENT AGENCY COMMENTS ON CHAPTER 9: RECOVERING FROM THE FLOODS

We do not have a leading role in recovery. We may need to undertake specific activities to recover from flooding, and will also need to work with Local Authorities and others during the recovery phase. We recognise the importance of clarity about roles and responsibilities, and have outlined our role below.

Our role falls into two broad areas:

- those actions which are specific to recovery, reconstruction and clean-up after a flood incident;
- activities which are part of our general role in flood risk management, but which may be especially important, or which may need to be modified to take account of circumstances as communities recover from a flood.

Activities specific to recovery and clean-up following a flood may include:

- maintaining, repairing or improving flood defences for which we are responsible (this may include the installation of temporary defences);
- undertaking pollution control activities where necessary, e.g. removal of animal carcasses from watercourses;
- providing advice to professional partners or others on disposal of waste material that is being removed from the local area as part of the clean-up activities;
- providing information about what happened during the flood incident, commensurate with our role as Category 1 responder<sup>1</sup>, including actions we have taken.
- gathering information in the aftermath of a flood incident in order to ensure constant improvement in the data we need to map, model, forecast, and manage flood risk. To do this we may need to undertake surveys and gather information from a range of people and organisations following a flood.

Activities that are part of our general role include:

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<sup>1</sup> The Civil Contingencies Act places a duty on Category 1 Responders to supply information to the public before, during, and after an emergency.

- providing information to both our professional partners and communities about flood risk and flood risk management;
- raising awareness about flood risk and providing guidance about what people or businesses can do to prepare for future flooding;
- signposting people to other sources of information, and explaining our role to people affected by flooding;
- monitoring river levels and rain gauges to assess future flood risk
- continuing to provide our flood warning services, and encouraging people to sign up to receive warnings where they are available;
- continuing to undertake our role of evaluating flood risk and making decisions about flood risk management. After a flood, there may often be new information to consider in this process.

We recognise that we may need to tailor our planned work to take account of the recovery process, and to ensure that what we do is co-ordinated or undertaken in partnership with other organisations involved in recovery.

We have used public engagement exercises such as drop-ins and surgeries to communicate after a flood, many of which were very successful. We are committed to working in collaboration to plan and deliver post-flood public engagement in the future, and welcome IC75 and IC76.

We are developing policies and processes to ensure effective flood recovery planning internally within the Environment Agency.

## Annex 5 – Environment Agency Temporary flood defence policy

Environment Agency Policy	
<b>USE OF TEMPORARY FLOOD BARRIER SYSTEMS</b>	
Policy Number: **_05	Draft
<b>Policy Statement:</b>	
<p><b>We will consider providing temporary defences as a short-term measure against flooding from main rivers where:</b></p> <ul style="list-style-type: none"><li>• <b>The location for their use and the time available to deploy them in normal conditions are suitable</b></li><li>• <b>There is support from the Local Authority, partner organisations and the community</b></li><li>• <b>They are economically viable</b></li><li>• <b>They are not used as a long term alternative to permanent schemes</b></li><li>• <b>They are provided at the Environment Agency’s discretion on a best endeavours basis</b></li></ul>	
<p><b>Other Considerations</b></p> <p>We have a separate policy for the use of demountable defences. Demountable defences have fixed engineered foundations and form part of a long term scheme. The demountable elements provide unrestricted access to defended areas when not deployed.</p> <p>Our temporary defences are not equivalent to or a substitute for permanent defences. They are not suitable for protection against sea flooding with wave action. We will treat the provision of temporary defences on an equal basis with all other investment and provide them where it is economically justified.</p> <p>Where we provide temporary defences it will be in conjunction with local partners and will be part of an incident response plan detailing responsibility for storage, transport, operation and removal of temporary defences and the provision of temporary pumping and other necessary measures. We will ensure that the community understands who is responsible for what. We will seek to avoid the use of temporary defences as a long term solution to flooding. We will deploy and operate temporary defences within our statutory powers.</p> <p>We will only buy and use suitably accredited temporary defences e.g. BSI Kitemark (ref. 3) or similarly accredited and we will operate them within safe working limits in accordance with the manufacturer’s instructions.</p> <p>We will deploy temporary defences in advance of flooding where there is a capability for detection and forecasting to provide adequate notice of flooding allowing timely mobilisation and installation. We may, on a best endeavours basis and at our discretion, also consider the use of temporary defences during flood events under the direction of Command Centres and where we have available temporary defences and resources to deploy them.</p>	

Examples of their use includes:

- While permanent defences are in planning or under development.
- While part of a permanent defence is being repaired/replaced.
- In an emergency situation where a breach or overtopping of permanent defences has or is about to occur.
- While improvements in individual property protection and resilience are made.
- Locations of self contained flood risk areas requiring minimal advanced works.

Their flood risk impact must be assessed to ensure that they do not significantly increase flood risk for other communities or properties.

Continued management, liaison and dialogue between professional partners and the protected community will be necessary to make sure that the right level of emergency preparedness is maintained when temporary defences are used. The plan must include full evacuation in the event that the defences are not deployed, fail or are overtopped.

Where other parties, such as local authorities, provide their own temporary defences we will aim to provide a warning and forecasting service and assist, on a best endeavours basis, with any operational response. We will also provide advice through the regulatory consents process.

## **Policy Implementation**

### Existing Locations

We will apply the policy to those locations where we currently use temporary defences on a regular basis. Where their continued use cannot be justified we will seek to secure the support of the local community and partners in sharing the costs and responsibilities such that we can demonstrate value for money. We will act reasonably in applying the policy in such circumstances.

### New Locations

We will apply the policy to all new locations from the date of the issue of this policy.

## **Background**

Temporary defences are a relatively new technology that provides a quick and easy means to protect long lengths against floodwater. They are re-usable and offer many advantages over traditional sandbags.

We have trialled temporary defences, mainly in the Severn catchment, with the support of Defra. Our experience to date has been used to inform our policy.

## **Use to date**

Temporary defences can make a difference and have been used successfully to protect properties from flooding. We have used them in several locations (see list in Appendix 1) providing protection to many properties on numerous occasions and most recently in June and July 2007 and January 2008.

## **Definition**

Temporary flood barriers are systems that are brought to site to provide a flood defence for

a limited period (the duration of potential flood conditions). They are then removed until required again. They have no fixed foundation other than the natural ground on which they are based with perhaps minor modifications to drains, sewers, highways and footpaths to ensure proper stability or performance of the temporary barriers.

**Objectives:**

**The objectives of this policy are to:**

- *provide clarity on the use of temporary defences as part of our overall aim of flood risk management.*
- *ensure we provide sustainable solutions for flood protection securing best value from public investment.*
- *set common standards of health and safety for the design and deployment of temporary defence systems where and when we use them.*

**Primary Contact:** Tony Andryszewski - Asset Management , Policy Advisor

**Policy Author:** Tony Andryszewski

**Policy Sponsor:** Tim Kersley, Head of Asset Management

**Signature of Authorisation by Policy Sponsor (as set out in Schedule B of the NFSoD):**

**Version:**

**Date:**

**Available from:** (e.g. Intranet location)

If you have any queries on the content of this document or suggestions for improvement, refer to the Primary Contact named above.

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## Explanatory Note

[POLICY TITLE]

Policy Number: [reference]

### **Audience**

**Internal** – The principal audience will be operational and asset management staff in areas. NCPMS. Head Office Policy and process teams and staff based in regions should be aware of this policy.

**External** – NEECA consultants, Defra, Welsh Assembly Government and other Government Departments; stakeholders that we wish to influence.

### **References**

1. The Severn Valley: An Alternative Solution, Evaluation of Temporary Flood Barriers during February 2004 Flood , Environment Agency May 2004
2. Temporary Flood Barrier Systems Risk and Performance Evaluation, Risk & Policy Analysts, February 2006
3. PAS 1188
4. Asset Management Policy Case Studies – Environment

## Policy Implementation Plan

**Policy Number: \*\*\_04      TITLE**

1. Who are the target audiences, and do they require awareness, training or education?	Area Flood Risk Management Operations Delivery and Asset System Management teams. Regional Operations and Enforcement teams.	
2. What do they need to know?	The use of temporary flood barrier systems in flood incident management.	
3. When do they need to know it?	As soon as possible. Temporary Flood Barrier Systems will continue to be considered as part of area flood incident management planning.	
4. How will they be told?	Face to face, as part of frequent meetings between area process liaison contacts and regional /area liaison meetings..	
5. Who will tell them?	Technical Specialists Operations Delivery and Asset System Management	
6. Monitoring of Progress  Method(s):  Success Criteria:  Date(s) Undertaken:  Comments:	Reporting through internal reports.	
7. Authorisation	<u>Policy Sponsor</u>	<u>Chair Approval Body</u>
	Sign: Name: <u>Phil Rothwell</u> Title: <u>Head of FRM Policy</u> Date:	<u>David Rooke</u> <u>Head of FRM</u>
8. Review Date		Version: N    dd/mm/yy

## Appendix 1

### List of locations that have benefited from the use of temporary defences by the Environment Agency

- Upton (30 properties protected): Used in 2007, 2008.
- The Wharfage, Ironbridge (11 properties protected): Used in 2004, 06, 07.
- Coleham Head, Shrewsbury (60 properties protected): Used in 2004, 06, 07, 08.
- Coton Hill, Shrewsbury (28 properties protected): Used in 2004, 06, 07, 08.
- Hylton Road, Worcester (22 properties protected): Used in 2004, 06, 07, 08.
- Beales Corner, Bewdley (16 properties protected): Used in 2004, 06, 07, 08.
- Etterby Terrace, Carlisle: (24 Properties protected): Used in 2007.
- Walham electricity sub station, 2007

## Appendix 2

### Cost benefit results for locations where temporary defences have been used by the Environment Agency

- The Wharfage, Ironbridge
  - Capital cost: £316k
  - Benefit/ cost ratio: 0.15
  - Estimated whole life cost: £2,463k
- Coleham Head, Shrewsbury
  - Capital cost: £91k
  - Benefit/ cost ratio: 0.91
  - Estimated whole life cost: £628k
- Coton Hill, Shrewsbury
  - Capital cost: £68k
  - Benefit/ cost ratio: 1.32
  - Estimated whole life cost: £364k
- Hylton Road, Worcester
  - Capital cost: £182k
  - Benefit/ cost ratio: 0.24
  - Estimated whole life cost: £574k
- Beales Corner, Bewdley
  - Capital cost: £120k
  - Benefit/ cost ratio: 0.38
  - Estimated whole life cost: £315k

## Annex 6 – Environment Agency Demountable flood defence policy

Environment Agency Policy
<b>EA USE OF DEMOUNTABLE FLOOD DEFENCE SYSTEMS</b>
Policy Number: **_04
<p><b>Policy Statement:</b> Demountable defences form part of our options for permanent flood alleviation measures.</p> <p>We will consider providing demountable defences as part of a permanent scheme where:</p> <ul style="list-style-type: none"><li>• Their residual risk, when using them instead of permanent defences, is acceptable to the Environment Agency and does not compromise the overall integrity of the scheme.</li><li>• They are economically viable when considering whole life costs.</li><li>• There is support from the Local Authority, partner organisations and the community for their use.</li></ul> <p>Where we use demountable defences our preference will be:</p> <ul style="list-style-type: none"><li>• That they are located insitu or stored on site.</li><li>• That their length and height is minimised by incorporating permanent raised defences where possible.</li><li>• That they can be deployed and operated safely in all reasonably foreseeable weather conditions</li></ul> <p>Schemes considering including demountable defences will:</p> <ul style="list-style-type: none"><li>• Undergo full project appraisal and economic analysis as with other flood alleviation schemes.</li><li>• Use whole life costs within the benefit cost analysis including the operational, replacement and storage costs,</li><li>• Comply with and be designed to appropriate British standards including PAS 1188.</li><li>• Ensure there is appropriate capability in our emergency response teams to operate the defences in a safe and timely manner.</li><li>• Develop a response plan for their operation</li></ul> <p><b>Other considerations</b> Where demountable defences are used then there must be appropriate <b>forecasting and warning arrangements</b> in place to ensure the timely operation of the defences and to warn if the defences cannot be operated in time, fail or overtop.</p> <p>Continued management, liaison and dialogue between partners and the protected community will be needed and documented in a <b>response plan</b> to ensure an adequate level of emergency preparedness is maintained.</p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"><li>• <i>To ensure the appropriate use of demountable defences.</i></li></ul>

- *To ensure that the whole life costs of demountable defences are included in the benefit cost analysis as part of a flood defence scheme's options appraisal*
- *To ensure common standards for health and safety and for the design and deployment of demountable defences are applied.*

**Primary Contact:** Tony Andryszewski, Asset Management, Policy Advisor

**Policy Author:** Tony Andryszewski, Asset Management, Policy Advisor

**Policy Sponsor:** Tim Kersley, Head of Asset Management

**Signature of Authorisation by Policy Sponsor (as set out in Schedule B of the NFSoD):**

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## Explanatory Note

[POLICY TITLE]

Policy Number: [reference]

### **Background**

#### **Planning and access requirements**

Demountable defences can form part of our options for the provision of flood defence solutions to locations at risk of flooding. They have been used to reduce the visual impact of permanent defences and allow unimpeded access. Such examples exist in Bewdley and Shrewsbury where part of the flood schemes includes a demountable section to maintain the open vista of the riverside and open access through the old towns. However the use of demountable defences must not override the principle aim of reducing flood risk to a community and the residual risk must be acceptable by the Environment Agency.

Access through defences has always posed problems but can usually be dealt by using various types of flood gates. Where the access is particularly wide, for example a two lane road and flood gates might not be appropriate then demountable defences might be used but only where the residual risk is acceptable by the Environment Agency

#### **Limiting their length and height**

The use of demountable defences should always be minimised. For example, to maintain an open vista, it might be possible build a low wall say 1m high and have the demountable defences built off the top of the wall. The small wall would be less intrusive but would provide a low level of protection giving more time to erect the demountable defences or removing the need to use demountables in low level flooding. Where access is concerned then raising or ramping the road can have the same effect as the low wall.

#### **Using Insitu demountable defences**

By insitu we mean the defence is stored at the point of its deployment. For example some demountable defences can be stored flat in the ground and lifted into an upright position when needed. This has the advantages of not needing to be transported to site, no additional storage and readiness for use reducing the overall risk of deployment failure. There are some drawbacks with insitu defences which are they tend to be limited in height, unless they are well protected insitu they can suffer damage when not used and they need to be regularly inspected and tested to ensure they can operate effectively. Cold weather can also cause steel components to freeze together making it difficult to operate.

#### **Implications of Using Demountable Defences**

There are implications in using demountable defences when compared to permanently raised defences which is why their use needs to be carefully considered and consistent with this policy and guidance.

The principal differences are:

- The **risk of flooding** with demountable defences is higher than that of permanently raised defences.
- There is an increased demand on emergency **operational response** from our personnel and other Category 1 responder personnel.
- They can have greater **whole life costs**.
- There is an increased reliance on **detection and forecasting**.

### **Flood Risk**

Flood risk with demountable defences is not reduced to the same level as permanently raised defences as there remains a greater reliance on detection, forecasting, operational response and installation. If any of these areas of support fail then flood protection may not be available. This is demonstrated in the risk decision tree which includes other factors of risk. The residual risk should be calculated on a scheme by scheme basis and where risk remains high then demountables should not be used. Risk is reduced where we use insitu based demountable defences as they require less time to mobilise and, since they are on site, their availability is more certain.

### **Operational Response**

Demountable defences can require a significant resource for mobilisation, erection, supervision, and demobilisation. This is at a time, on the onset or during flooding, when operational resources are at a premium. This response can be reduced where we use demountable defences located insitu that can be readily erected.

Consideration needs to be given to resource availability to ensure that the operation of demountable defences does not undermine the operational response to other locations. The use of Local Authority or other organisations to assist in the deployment of demountables should be considered to spare valuable Environment Agency resources or limit them to a minimum.

It is therefore essential that the operational response of demountable defences is considered at an early stage in the scheme development.

### **Whole life costs**

In addition to the capital costs of demountable defences there are additional costs that need to be considered as part of the economic appraisal. These being ongoing costs such as storage costs, repair and maintenance costs, deployment costs (mobilisation and demobilisation), supervision costs and replacement costs. Over the life of the scheme these costs could be considerable and higher than the capital costs of the demountable defences. For this reason it is necessary to include whole life costs within the benefit costs analysis.

Storage – Storage costs are overcome where we use insitu based demountable defences. Where demountables are not insitu then there is a need to store the demountable defences relatively close and within good access of their destination. This may not be readily available and may have to be bought or leased adding additional cost to the scheme.

Repair and maintenance – demountable defences are more likely to require repair and maintenance than say a concrete wall as they are mechanical, will have moving parts, fittings,

seals and other perishable components. The costs of keeping these components working correctly will vary depending on the type of demountable employed and the manufacturer will no doubt provide guidance on how this can be assessed.

Deployment costs – this includes mobilisation and demobilisation which is taking the defences to their location for erection and removing and returning them to storage after use. The costs of this will need to include transport, loading and unloading and any special arrangements such as leased access. There will also be the costs of Environment Agency and other personnel. Insitu designs of demountables will not require transport to and from site, as they are located at the point of use, saving time and costs in addition to reducing risks.

Supervision costs – these are the costs associated with managing the demountable defences once they have been erected. We cannot erect then leave the defences unsupervised. We need to maintain a presence to ensure they are working properly and to prevent damage from vandalism or accident.

Replacement costs – demountable defences are mechanical defences that will have components with different operating lives. Vulnerable parts such as seals and fixing bolts may need to be replaced relatively regularly say every 5 years depending on frequency of use and storage conditions. Other components will last longer but will need periodic assessment in accordance with the manufacturer's recommendations and last 10 to 20 years but will no doubt require replacement during the life of a scheme of 50 years. Reference should be made to manufacturer's product information for determining repair and replacement costs.

### **Detection and Forecasting**

A scheme with demountable defences must have proper detection and forecasting capability proportionate to the risk being managed. If this does not exist then its development and implementation costs will need to be included as part of the scheme costs. If it does exist then it needs to be assessed as to its adequacy which needs to be sufficient to allow time to initiate deployment and have the demountables in place before the onset of flooding.

### **Definition**

Demountable defences comprise purpose built structural components generally above ground that are supported by permanent insitu structural foundations. They form part of the above-ground solution as part of a permanent flood defence scheme.

### **Desired Outcomes**

- Our use of demountable defences is limited to locations where no other options are available and their residual risk is acceptable to the Environment Agency.
- We use insitu based demountable defences in preference to those stored off site.
- The whole life costs and operational response is considered as part of option appraisal

### **Audience**

**Internal** – The principal audience will be NCPMS, Asset Management Teams in areas. Operations Delivery teams. Policy and process teams and staff based in regions should be aware of this policy.

**External** – NEECA framework consultants, Defra, Welsh Assembly Government and other Government Departments; Local Planning Authorities and other partner bodies that we wish to influence.

### **References**

1. Temporary Flood Barrier Systems Risk and Performance Evaluation, Risk & Policy Analysts, February 2006
2. PAS 1188, BSI, 2003
3. Environment Agency Policy: Use of Temporary Flood Barrier Systems, (date)
4. Temporary and Demountable Flood Protection, Interim Guidance on Use, R&D Publication 130/1, Defra and Environment Agency, Flood and Coastal Defence R&D Programme, 2002

## Policy Implementation Plan

**Policy Number: \*\*\_04      TITLE**

1. Who are the target audiences, and do they require awareness, training or education?	Area Flood Risk Management Operations Delivery and Asset System Management teams. Regional Operations and Enforcement teams.	
2. What do they need to know?	The use of temporary flood barrier systems in flood incident management.	
3. When do they need to know it?	As soon as possible. Temporary Flood Barrier Systems will continue to be considered as part of area flood incident management planning.	
4. How will they be told?	Face to face, as part of frequent meetings between area process liaison contacts and regional /area liaison meetings..	
5. Who will tell them?	Technical Specialists Operations Delivery and Asset System Management	
6. Monitoring of Progress  Method(s):  Success Criteria:  Date(s) Undertaken:  Comments:	Reporting through internal reports.	
7. Authorisation	<u>Policy Sponsor</u> Sign: _____ Name: <u>Tim Kersley</u> Title: <u>Head of Asset Management</u> Date: _____	<u>Chair Approval Body</u> Sign: _____ Name: <u>David Rooke</u> Title: <u>Head of FRM</u> Date: _____
8. Review Date		Version: N    dd/mm/yy