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Post Approval Evaluation of Flood and Coastal Erosion Risk Management Investments

Synthesis Report

August 2011

Department for Environment Food and Rural Affairs

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PB13646

Executive Summary

The following report provides a synthesis of an evaluation undertaken by Defra between July and September 2010 of a sample of capital flood and coastal erosion risk management (FCERM) projects approved by the Environment Agency on the Minister's behalf. The purpose of this post approval evaluation (PAE) is to allow Defra's risk associated with delegation of approval to the Environment Agency (EA) to be monitored and managed. The evaluation looked for evidence that EA's appraisal and approval procedures are in line with the appropriate policies and guidance. The study was not commissioned to assess whether particular investment decisions made by the Environment Agency were justified or not.

The Agency was allocated a total of £1.8 billion in Flood Defence Grant in Aid (FDGiA) for the 2007 Comprehensive Spending Review period (CSR07) and was also set specific targets around achieving value for money, protecting households, and delivering important environmental outcomes. Twelve projects within the overall programme were selected at random and reviewed in the PAE, eleven (with a total cost of £56.3 million) were funded totally or substantially by FDGiA. The twelfth project was a 'Local Levy' scheme, at a cost of £1.9 million, funded through a Regional Flood Defence Committee (RFDC) levy on Local Authorities.

Overall, the projects reviewed demonstrated that the Flood and Coastal Erosion Risk Management appraisal guidance had been reasonably well applied, and that the principle of proportionality (i.e. the amount of work put into the appraisals is in proportion to the overall cost of the scheme and/or contentiousness of the decision) was applied appropriately. There were also a number of good working examples of best practice particularly in relation to community engagement. The project team were impressed with the professionalism of assessment board members, and noted the good level of examination that was undertaken.

In other areas the panel noted room for improvement in some aspects of the schemes considered, in the following areas:

- Definition of scheme scope and objectives
- Links with higher-level plans and strategies
- Option selection
- Seeking external contributions
- Treatment of innovative options, risks and uncertainty
- Environment assessment and valuation
- Use of cost-benefit analysis and cost-effectiveness analysis.

Other observations were noted regarding the financial thresholds for review boards, the application of optimum bias, and programme moderation.

In addition to reviewing project appraisals, the Defra team visited three Project Assessment Boards (PABs) and one National Review Group (NRG) meeting – now

the Large Projects Review Group. This was to observe the wider approvals process. The overall response from these meetings was positive, although some areas for possible attention have been highlighted within the report.

Finally, reflecting on the previous round of PAE, while much appears to have been achieved in learning the lessons of that exercise there remains evidence that some of the previous issues persist. However, none of the issues observed during the study necessarily imply that the ultimate decisions taken by the Environment Agency were incorrect or sub-optimal. Such judgements were out of scope for this evaluation and more evidence would be needed by the review team to be able to support or otherwise the course of action taken in each case.

1. Introduction

Defra makes a single block grant (Grant in Aid) to the Environment Agency for capital flood and coastal erosion risk management works in England and also delegates its grant giving functions to them in order to fund various flood and coastal erosion risk management activities. The Environment Agency then allocates this money in accordance with agreed procedures to its own projects, as well as those promoted by internal drainage boards and local authorities.

The purpose of Post Approval Evaluation (herein PAE) is to allow Defra's risk associated with delegation of approval to the Environment Agency to be monitored and managed. The process enables Defra to act as an 'intelligent client' in monitoring the extent to which projects are achieving Defra policy objectives; taking account of current guidance; and, delivering flood risk benefits and value for money. Post approval evaluation allows the department to do this while not interfering with the Environment Agency's administration of its ongoing grant giving role.

The Environment Agency approval routes for varying project costs are provided below. For the projects reviewed in this round of PAE, the delegated limits are those detailed in Table 1. Table A.1 in Appendix A shows the revised limits, effective for new projects approved as of 1st July 2010.

Table 1: Approval limits pre 1st July 2010 (includes projects selected for PAE)

Standalone Projects			Project within an Approved Strategy		
Capital Approval Value (£)	**Review Body**	**Approving Officer**	**Capital Approval Value (£)**	**Review Body**	**Approving Officer**
<50k	-	Regional Appointed Officers	<50k	-	Regional Appointed Officers
50k - 2m	PAB	EA Regional Director	50k - 2m	PAB	EA Regional Specified Officer
2m – 5m	NRG	EA Regional Director	2m – 3m	NRG	EA Regional Specified Officer
5m -10m	NRG	EA Director of Operations	3m – 5m	NRG	EA Regional Director

10m -15m	NRG	EA Chief Executive	5m – 20m	NRG	EA Director of Operations
15m – 100m	NRG	EA Board	20m – 100m	NRG	EA Chief Executive
>100m	NRG	EA Board; Defra; Treasury	>100m	NRG	EA Chief Executive; Defra; Treasury

A previous PAE reviewed 18 projects between 2005 and 2006, reporting in September 2008. Changes since those reviews now make a further evaluation timely, namely:

- The Environment Agency's delegated authority has been raised from £50m to £100m for projects it undertakes under the Water Resources Act 1991.

- Since April 2006 the Environment Agency has been given responsibility for the approval of projects promoted by Local Authorities and Internal Drainage Boards under the Land Drainage Act 1991.

- Since April 2008 the Environment Agency has been delegated the role of approving grants to Local Authorities under the Coast Protection Act 1949.

- The earlier PAE review made recommendations for improvement and now is an appropriate time to confirm whether these have been embedded in Environment Agency procedures.

- A Defra Policy Statement was issued in June 2009, followed by revised Flood and Coastal Erosion Risk Management Appraisal Guidance (FCERM-AG) issued by the Environment Agency in March 2010. A review now of projects under existing guidance will provide a baseline for future reviews under the new guidance.

- In March 2009, the Environment Agency released an external contributions policy and it would seem appropriate to see how it is being implemented in option selection.

- A recently published report (FD2617/TR) on adaptation in the appraisal process provided suggestions for ways to overcome barriers to implementing more adaptive solutions, and PAE can be used to further reflect on the research findings.

This report summarises the findings of the PAE of Environment Agency approved projects undertaken between July and September 2010.

2. Approach

Twelve projects were chosen for review between July and September 2010. Eleven (with a total cost of £56.3 million) were funded totally or substantially by Defra Grant in Aid. The twelfth project was a 'Local Levy' scheme, at a cost of £1.9 million, funded through a Regional Flood Defence Committee (RFDC) levy on Local Authorities (these are projects judged by the RFDCs to be locally important but unlikely to satisfy national funding criteria).

The selection of projects for review was made by Defra on the basis of type (coastal, fluvial, drainage); value; location; and, promoting authority, with the aim of capturing the broad range of projects within the programme. No further information about the particular projects was reviewed at this stage.

For each project, the process started with Defra panellists reviewing the project documentation that had been made available to the Environment Agency approval boards. This was followed by a panel meeting, comprising on average four specialist Defra staff, and three staff from the Environment Agency project team. The Environment Agency project team gave a presentation to the Defra panellists, which was followed by a question and answer session. Immediate feedback was then given to the project team by Defra, and this was subsequently followed by written feedback.

In undertaking their reviews, Defra panellists assessed the appraisal and approval of projects against Defra and Environment Agency appraisal guidance, and also the Financial Memorandum for Defra Grant in Aid.

A variety of comments and issues have arisen through each project review and these are detailed in specific project feedback. The Environment Agency teams were given the opportunity to comment on this feedback before being finalised.

This synthesis report does not provide specific information on projects but presents the overall findings of this round of PAE.

3. Findings

This round of PAE involved 12 project reviews as well as the observation of a select number of Environment Agency assessment boards. The findings from these two aspects are discussed in the following sections.

3.1 Review of Project Appraisals

An overview summary of the 12 projects reviewed is provided in Table A.2 of Appendix A. This section will focus on general findings from the reviews collectively.

Overall, the projects reviewed demonstrated that **the FCERM appraisal guidance was being reasonably well followed in most cases**. It was generally felt that **'proportionality'** (i.e. the amount of work put into appraisals in proportion to overall scheme costs and/or contentiousness of decision) **was approached appropriately**, although there were some instances where more information on the key issues would have been beneficial.

A number of projects reviewed demonstrated **good working examples of best practice**, particularly in the area of community engagement. Not only was there evidence of earnest engagement with communities, but also examples of significant achievement in gaining public support despite difficult choices being presented.

The 12 projects were all different and varied in their scope, location, issues, responses and approach, reflecting that no two projects are the same in FCERM. However, a number of themes did emerge from our evaluations which could assist the preparation of future appraisals and promote the wider application of some of the good practice that we saw. Whilst 'lessons learned' were being captured by regional project appraisal boards and the national review group, evidence of their dissemination was less apparent (that is, similar types of issues were coming up across the regions).

Some of the issues picked up by the panel reviews are detailed below.

3.1.1 Scope and objectives

The Defra panel noted in two thirds of the projects reviewed, that the scope or project definition was somewhat constrained and presupposed some course of action would be appropriate. This was commonly as a result of the project being defined in terms of providing a certain level of protection or defence, rather than in managing the risk (consequences, as well as probability). In some instances the indicative standards of protection, now superseded by the 2009 Appraisal Guidance, were treated as if they were minimum standards rather than indications. Options were rejected if they did not satisfy these indicative standards.

3.1.2 Links with higher level plans and strategies

In seven of the twelve projects, the Defra panel commented that the strategic case for the preferred option was not sufficiently clear. This was either due to framing the problem in a narrow context (e.g. looking at a particular stretch of river rather than the wider catchment), relying too heavily on an unapproved strategy or High Level Plan, or not adequately linking the project with approved strategies.

3.1.3 Options selection

In seven of the twelve projects, the Defra panel felt that it was not sufficiently clear why options from the initial long-list had not made it into the short list of appraised options. This may partially be a result of the Project Appraisal Report (PAR) template not prompting for more detail. The Defra review teams did not necessarily conclude that more options needed to be taken through to the full appraisal stage, but rather that the reasons for option de-selection should have been made more transparent.

3.1.4 External contributions

In March 2009, the Environment Agency published its FCRM external contributions policy (Policy 284_09). Prior to this, a policy was already in place that projects should seek external contributions where appropriate and possible. The findings from the 2006 PAE noted that there was, in many cases, limited evidence of securing external contributions, and this was again found in this year's review. Excluding three projects (one Local Levy, one IDB and one Local Authority project that was part of wider scheme), of the nine projects reviewed, only three secured any form of external funding, constituting 6%, 7% and 8% of the whole life costs (equating to £4.45m of external contributions in total). Some projects secured contributions in kind (for example, agreement not to pay compensation for loss of land/access, etc), whereas the majority did not secure any contributions.

In half of the projects, the Defra panel considered that more could have been done to secure (or at least pursue) external contributions. The panel also observed a range in awareness among Environment Agency staff towards the aspiration of greater external contributions from beneficiaries, which may indicate full dissemination of the policy has not yet been achieved.

Linked to this is the question of "additionality" – i.e. would a project still go ahead with other funding if Grant in Aid was not forthcoming? For at least one of the projects reviewed it appeared that the project would have been delivered with or without Defra funding, which effectively meant the Grant in Aid could have been redirected to allow other schemes to also proceed. Approvers should be mindful of additionality when assessing projects rather than treating Government grant as the first option just because it is available.

3.1.5 Treatment of innovative options, risks and uncertainty

A quarter of the projects found it difficult to properly compare the costs and benefits of some options in the face on uncertainty over how less tried and tested options would perform in terms of reducing risk. As a result, more precautionary approaches were sometimes pursued when there may have been other options. In particular, a sense of risk aversion was detected with regard to particular kinds of intervention such as temporary defences and "informal" defences not fully in the control of Environment Agency. Such options were seemingly discounted in PARs without a clear explanation. In these instances it was felt that, as a minimum, further sensitivity testing may have helped to illustrate some of the difficulties and provide for a more robust appraisal. Whilst all risks should be appraised and account needs to be taken of uncertainties, Defra policy and the Treasury Green Book promote a risk neutrality approach for publicly funded projects. As noted earlier, these observations do not necessarily mean the ultimate course of action was not justified, but that the reasons for favouring some approaches above others were not always fully evidenced in the PAR.

3.1.6 Environment assessment

Two of the 12 appraisals reviewed were "environmental projects", which is to say that the main reason for undertaking the work was to achieve an outcome for the natural environment. One was for the purpose of meeting a legal requirement under EU Directives and the other was primarily to meet a domestic policy goal. Other projects had environmental components insofar as they risked adversely affecting the environment or presented opportunities to conserve or enhance various aspects of the local environment to a greater or lesser extent.

In many cases a statutory Environmental Impact Assessment (EIA) had been, or would be, required. Even where this was not the case, all the Environment Agency's projects had been screened to ensure that the requirements had been, or would be, met. However, in the case of one project (not an Agency led scheme) the panel were unable to confirm, from the project appraisal documentation, assessment board notes, or panel interviews, whether the appropriate process had been followed.

In a number of cases, although the proper screening processes had been followed, it was not clear at the point the projects were given funding approval, whether or not a statutory Environmental Impact Assessment (EIA) would be required before final planning or other consents were given. We were concerned about this for two reasons; 1) the EIA may have gathered valuable information to support the options appraisal, and b) the EIA could highlight environmental issues that might add to costs of one or more of the options and therefore affect the cost benefit analysis. Wherever possible we felt that it would be better to carry out the environmental assessment of options prior to the appraisal of options so that the impacts on the environment could be integrated, notwithstanding the fact that a statutory environmental statement may need to be produced at a later date.

3.1.7 Economic appraisal:

Cost Benefit Analysis (CBA)

The “mechanics” of Cost Benefit Analysis in the projects reviewed was generally good, particularly in relation to clearly defined tangible impacts. However, in a small number of projects some relatively minor issues were noted, which whilst not affecting overall conclusions, may reveal a lack of understanding in some appraisal concepts amongst those drafting these particular reports (such as Incremental Benefit-Cost Analysis). It is recognised that in many cases, those preparing PARs have not been through the appraisal process previously and are not necessarily familiar with economic analysis. However, these issues whilst minor could have been picked up and corrected by the approval boards.

Cost-Effectiveness Analysis (CEA)

Three of the 12 projects used Cost-Effectiveness Analysis (CEA) for the economic appraisal of the project – that is, an assessment of the costs of options to achieve a defined outcome without explicitly valuing their benefits. Appraisal guidance notes that this can be appropriate where there are overriding legal obligations, or for some works where approved strategies have already established an adequate economic case for the project. The purpose of CEA is therefore to establish the most cost-effective way of meeting an externally-validated benefit or objective.

In the three cases that we reviewed, it was felt that an absolute minimum level of intervention to achieve overarching objectives was not tested, before considering the merits of going beyond this baseline. Thus the costs and benefits (including environmental costs and benefits) of alternative ways of meeting the minimum legal requirement were not clear. This made the case for enhancements over the minimum level difficult to judge.

There were at least two schemes where it was clear that adaptive measures were going to be necessary to meet legal requirements sooner or later. In both cases a more open assessment of the options could have helped decide whether it would be more cost effective to take the adaptive measure now or put them off until some point in the future.

In another case, a cost-effectiveness analysis was used to justify a project undertaken to meet a high level Government target (but not a legal requirement). In this case we considered that CEA was not the proper approach and the project appraisal report should have made a better value for money case. This could have been done through either a benefit-cost analysis or benchmarking value for money against similar projects in other locations.

In a number of cases we were referred to previous studies, strategies or plans as providing the authority which demanded that a project should be as defined. While we accepted that previous high level plans or strategies may provide such authority, in some of the cases cited we were unable to find an adequately appraised case made in the documents relied upon.

3.1.8 Environmental valuation

The impacts of options on the environment had generally been given appropriate consideration in most appraisal reports. However, we felt that in some cases the appraisal of the impacts of different options on the environment could have been more systematic. None of the projects made any serious attempt to explicitly value environmental impacts, either by putting monetary values on the impacts and integrating them into the benefit cost analysis or through multi-criteria analysis (which could supplement a Benefit Cost Analysis). While it is important to keep appraisal effort proportionate, we felt that in some cases such an assessment would have either provided helpful information to support the business case for the preferred option or, potentially, revealed other options which may represent better value for money.

3.1.9 Other issues

Other less substantial miscellaneous observations included: the planning process (clarity on what was required, or lacking evidence that it was not required, or had been undertaken); consideration of climate change; understanding legal obligations; and other Environment Agency processes (should a project go to the regional Project Assessment Board or National Review Group, as a standalone or extension etc). In general it was felt that these issues were indicative of the wide variability of projects with differing requirements, and reconfirmed the need for centralised expertise that can be called upon to support local project appraisal where necessary.

3.2 Observations of the Approvals Process from Project Reviews

As well as observations relating to the appraisal of the specific projects, the Defra panel noted a number of issues with the wider approvals process, as detailed below.

3.2.1 Financial thresholds for review boards

The review team noted that the financial thresholds determining whether a project goes to the local Project Assessment Board (PAB) or National Review Group (NRG) have been set in terms of the Financial Scheme of Delegation (FSoD) sum (generally a short-term financial commitment), not the whole-life cost. In one example, a PAB recommended approval of a scheme with an FSoD sum of £1.8m (within its threshold of £2m) but in doing so, was countenancing a course of action which would eventually have whole-life costs amounting to some £31m.

Although the approval is formally only being given to the initial costs, it does indicate a commitment to some extent to the project in its entirety. Given the scale of the overall long-term expenditure, we argue the review of this scheme should have been undertaken by NRG, so that schemes of similar value go through the same review processes (whether the bulk of the cost falls in the short term or longer term). As such, the Environment Agency should consider modifying the financial thresholds triggering PAB and NRG reviews to reflect whole-life costs.

3.2.2 Optimism bias and contingency management

Correcting for optimism bias in option appraisal

In the schemes reviewed, the presentation of "optimism bias" cost corrections within generic Table 5.2 of the PAR template seemed contrary to the relevant guidance (Defra supplementary note of 2003, still in force as an annex to the new FCERM-AG guidance). That advice states that the 95% point in Monte Carlo cost simulations should be taken for economic options appraisal purposes (or either "best estimate" plus a simple 60% or 30% cost uplift for strategies and schemes, respectively). However, Table 5.2 (or equivalent) in the PARs studied suggested that the 50% point in the Monte Carlo distribution was being taken in determining the benefit-cost position of options and hence option choice. Ultimately we concluded that this did not lead to any incorrect or uneconomic options being chosen – not least because sensitivity analysis was typically used to explore the implications of different outturn costs (including the 95% Monte Carlo level). Going forward however, the Environment Agency should ensure the PAR template is fully compliant with current statements of best practice and, with Defra, consider whether improvements to current guidance are necessary.

Approval sums and contingency management

Table 5.2 of the PAR template also presents the Financial Scheme of Delegation (FSoD) approval sum, including a contingency for financial planning based on the 95% point of the Monte Carlo cost distribution. The current guidance (Defra's 2003 supplementary note) recommends that approval sums be estimated as either the

50% point in the Monte Carlo distribution, or the best estimate plus a suitably small simple cost uplift (20% is suggested)[1]. The review team was therefore concerned about what appeared to be an excessive financial contingency allocated to projects – with the potential for poor incentives to manage down costs.

In discussion with Environment Agency colleagues, we learnt that although the FSoD approval is based on a 95% contingency sum (to reflect potential "worst case" liabilities), the allocation to Regional Programme Boards and scheme Project Managers is based on the 50% Monte Carlo point. Project Managers can access additional sums only on application to the Project Executive/Board and Regional Programme Board, via a "Release of contingency" form. If any individual project is at risk of exceeding the FSoD approval sum (based on the 95% Monte Carlo point), then it must submit a formal "Form G" supplementary expenditure variation to either PAB or NRG.

In concept, the treatment of financial allocations appears satisfactory in that local Project Managers are given sums without excessive contingency and Regions are able to manage portfolios within an envelope determined by likely outturn costs. However, the PAR template refers only to the FSoD approval and not Regional or Project allocations. The review team suggests that the presentation of approvals and variations within PARs should be reviewed to ensure that all parties to schemes get the management information they need – but without risking poor incentives to manage costs. In particular, the new Partnership approach to Grant in Aid funding from 2012/13 may imply different information requirements.

To best judge whether the existing financial allocation process leads to effective cost control in practice, the Environment Agency has been invited to present data on all recently completed projects showing actual outturn costs against the 50%ile and 95%ile costs presented in the PAR. The Environment Agency is currently collating this information.

It should be noted that the management of contingency allocations is a wider issue for public sector projects which has been raised by Infrastructure UK, and Environment Agency should take note of any new guidance emerging from IUK or Treasury. A recent review of the Environment Agency's procurement strategy commissioned by the Cabinet Office Major Projects Authority concluded that:

"The Agency may wish to consider whether greater central programme-level control of contingency/risk budgets would lead to more effective use of its capital budget."

3.2.3 Programme moderation

We noted some schemes had been approved even though economic appraisal data and Outcome Measure (OM) scores suggested they might not ordinarily be priorities for funding. In these cases, strict economic and OM criteria had been overridden through the Agency's moderation process. Moderation affects which schemes are selected for appraisal, as well as which ultimately attract funding. We therefore saw

[1] See Sections 3.4 and 3.5 of Defra (2003): FCDPAG3 Economic Appraisal, *Supplementary Note to Operating Authorities*, March 2003.

some of the effects of this in our review of project approval reports and comment on it in that context.

Moderation can be a legitimate programme management process if used to ensure the Agency complies with minimum statutory requirements, to overcome shortcomings in appraisal data or other technical issues, or to ensure matters such as urgency are recognised in prioritisation. The concern is in making sure that the case to fund a relatively low priority investment is well made, and outweighs the opportunity cost of having to defer schemes that on the face of it would offer better value for money. To ensure transparency, we would suggest that the reasons for moderating a scheme are made more readily available. Under the new partnership approach to funding projects, there are plans to make the opportunity cost of moderating otherwise lower priority schemes into the programme more explicit and transparent.

3.3 Observations of Review Boards

In addition to the project reviews, this round of PAE also included observation of a selection of assessment boards. One NRG meeting and three regional PAB meetings were attended by members of the Defra panel, in an attempt to get a more detailed understanding of the process of the meetings (as opposed to the appraisal of the projects).

The general response from these meetings was very positive. Those observing were **impressed with the professionalism of the board members**, and noted the **good level of examination that was undertaken**. There was **appropriate representation across the table from the required skill areas**. There was also evidence that **considerable discussion went on outside the meetings** (which is welcomed, given the time constraints during the meetings themselves).

Whilst it is difficult to draw conclusions based on such a small sample of meetings, the following observations relating to the PABs were also noted:

- In some instances documentation of the discussions and responses was perhaps lacking as only the key issues are recorded in minutes and/or require updated PARs. More minor issues were therefore lost in the records, which makes examination seem incomplete in hindsight, even though it was undertaken. We would not necessarily recommend that the more meticulous records that the National Review Group keep are precisely copied in Regional Boards, as proportionality applies to the approvals process as much as the appraisal. However, it was useful for the panel to observe the work of the PABs and it is helpful to have a transparent record of the reason for decisions.
- During the panels a number of significant questions were asked and answers seemingly accepted on face value (that is, no requirement for additional evidence was made). This, in combination with the above point again makes evaluation on hindsight harder.
- It was observed that local pressure and timing issues relating to funding schedules have an impact on approval of schemes. The need to commit funds within a financial year or spending period may result in a more hurried appraisal, or the selection of more readily-deliverable options. Local pressure

may also result in a bias in the appraisal towards 'doing something'. Whilst these scenarios are understandable, they are not desirable in the context of a "fair" and objective approach to the allocation of taxpayers' money and we would welcome thoughts on how this might be minimised.

- Collating the lessons learned from project appraisals (through to completion) was actively undertaken, but given the observations from the panel reviews, it was not clear how effective the dissemination of these lessons has been. We recognise that this could be inherent to the nature of PAR preparation, in that many people only do a small number of appraisals, which makes dissemination and uptake of lessons learned a challenge.
- We were encouraged by EA's aspiration, already being taken forward, for a greater level of quality assurance before a project comes to the assessment boards (that is, the approval boards are not there to check for errors, but rather to assure that any recommendation to approve is robust). Linked with this, it was observed that whilst most boards had the necessary economic skills, it sometimes appeared to be lacking in the appraisal teams.

4. Progress since 2008 PAE

The 2008 PAE listed eight key findings within the synthesis report to which the Environment Agency responded with a plan of actions. The eight key findings can be summarised as the need for improvement in:

1. Scrutiny by regional PABs
2. Governance of local levy schemes
3. Co-ordination of projects with high level plans
4. Consideration of appraisal guidance and emerging policy
5. Transparency and integration of wider issues in decision making
6. Definition of legal obligations
7. Approach to securing contributions
8. Arrangements for learning lessons.

Although the number of projects assessed in this round of PAE is relatively small, it is still possible to note where previously observed issues were still apparent.

Of the eight key issues listed above, two were not observed in this year's PAE, namely: "the need for improved consideration of appraisal guidance and emerging policy" and "the need for improved governance of local levy projects", although we only reviewed one local levy scheme.

The project reviews did highlight some inconsistencies in the scrutiny applied by regional PABs. However, the observation of the review boards demonstrated that this might reflect different approaches to documentation rather than inadequacies in the boards themselves (as discussed in Section 3.3).

The remaining five points were again noted in some of the projects in this year's PAE. Two in particular: "the need for an improved approach to securing contributions" (see Section 3.1.4), and "the need for improved co-ordination with high level plans" (see Section 3.1). There was also a general comment that there was a need for the development and appraisal of projects to be improved before they are submitted to boards for approval (see Section 3.2).

The final three issues from the 2008 round noted again this time were observed only in a select number of projects and these were not considered to be major themes overall.

5. Adaptation in the Appraisal Process

In March 2010, the findings from the Defra/Environment Agency research project *The Appraisal of Adaptation Options in Flood and Coastal Erosion Risk Management* (FD2617) were published. The project explored the challenges and barriers to adaptation measures presented by the project appraisal process, and identified potential means to overcome them. The two key points of relevance from the findings were that: there is "a tendency to frame problems somewhat narrowly, in terms of protection rather than maintaining system functionality in the face of change" and that "funding was seen to cause problems, practitioners' past experience of what might be funded constrains thinking, along with a perception of what benefits can be paid for from which funding source".

The findings of this year's PAE were consistent with the research project's findings, confirming in a number of instances constrained project objectives, as well as issues with perceptions of funding availability for more adaptive projects. In addition, uncertainty also appears to be a barrier in some cases – not only in the effectiveness of more adaptive responses to manage risk, but how to assess them in comparison to more traditional approaches.

Appendix A: Additional Information

Table A.1: Revised delegation limits, effective for projects approved post 1st July 2010

Standalone Projects			Project within an Approved Strategy		
Capital Approval Value (£)	**Review Body**	**Approving Officer**	**Capital Approval Value (£)**	**Review Body**	**Approving Officer**
<100k	-	Regional Appointed Officers	<100k	-	Regional Appointed Officers
100k – 1m	PAB	Regional FCRM Manager	<2m	PAB	Area FCRM Manager or Regional FCRM Manager
1m – 5m	PAB	EA Regional Director	2m – 10m	PAB	Area FCRM Manager or Regional FCRM Manager
5m – 10m	PAB	EA Director of Operations	10m – 20m	NRG	EA Director of Operations
10m -20m	NRG	EA Chief Executive	20m – 100m	NRG	EA Chief Executive
20m – 100m	NRG	EA Board	>100m	NRG	EA Chief Executive; Defra; Treasury
>100	NRG	EA Board; Defra; Treasury			

Table A.2: Projects reviewed in the 2010 Post Approval Evaluation

Panel Date	Project Name	EA Region	Approval Route	Project Type	Project Costs	Whole Life Costs	OM score	BCR (ave)	Initial SoP	Final SoP
6/7/2010	Amble Marshes SSSI WLMP	South West	PAB	WLMP to improve status of SSSI	£674,000	£996,000	n/a	n/a	n/a	n/a
6/7/2010	Redcar Flood Alleviation Scheme	North East	NRG	Coastal, flood defence improvements	£29,200,000	£51,200,000	2.53	5.15	1 in 10	1 in 300
6/7/2010	Upton upon Severn Flood Alleviation Scheme	Midlands	NRG	Fluvial flood defence	£4,480,000	£5,110,000	0.56	1.2	1 in 2	1 in 150
3/8/2010	Godmanchester Flood Alleviation scheme	Anglian	NRG	Fluvial flood defence improvements	£11,100,000	£13,100,000	4.16	11.55	1 in 10	1 in 100
3/8/2010	Seasalter to Graveney Sea Defences	Southern	PAB	Beach recharge to extend the life of existing defences	£1,417,000	£23,466,000	6.61	13.0	1 in 50	1 in 50
3/8/2010	Warden Hill	Cheltenham Borough Council	PAB	Urban fluvial/pluvial flood alleviation scheme	£713,500	£1,707,500	5.14	8.14	1 in 5	1 in 100
2/9/2010	Kingsbridge 3	Thames	PAB	Flood defence replacement	£910,000	£948,000		9.6	1 in 1000	1 in 1000
2/9/2010	Park Drain, Carlton on Trent Improvements	Newark Area IDB	PAB	IDB culverted watercourse diversion	£90,000	£109,410		21.83	1 in 5	1 in 100
2/9/2010	Steeple	Anglian	PAB	Local Levy flood alleviation	£1,927,000	£2,276,000	0.54	1.45	1 in 2	1 in 25

	Bumpstead Flood Risk Management Scheme			scheme						
9/9/2010	Bristol Harbour – Flood Gates	Bristol City Council	PAB	Local Authority flood defence refurbishment	£1,531,000	£9,483,000	9.42		1 in 200 (+)	1 in 200 (+)
9/9/2010	Didsbury Flood Storage Basin	North West	PAB	Statutory flood storage improvements	£1,950,000	£3,620,000	n/a	n/a	1 in 18	1 in 18
9/9/2010	Minsmere Flood Management Project	Anglian	NRG	Coastal defence and managed realignment	£4,284,000	£77,791,000	n/a	n/a	1 in 20	1 in 10 (incl 50 yr sea level rise)