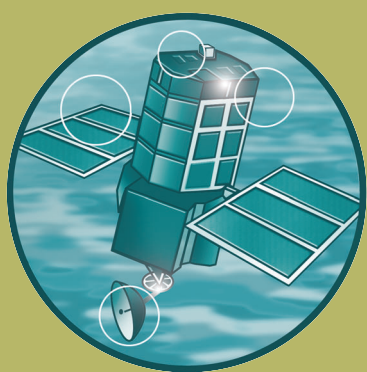


Development and dissemination of the Estuaries Research Programme - Report on initial consultation

R&D Technical Report FD2119/TR2



Joint Defra/EA Flood and Coastal Erosion Risk
Management R&D Programme

Development and Dissemination of the Estuaries Research Programme

Report on Initial Consultation

Incorporating Conference Consultation July 2007

R&D Technical Report FD2119/TR2

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Contract Statement

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Executive summary

This report presents the findings of the initial stage of consultation for the project FD 2119, Development and Dissemination of the Estuaries Research Programme (ERP), being undertaken by HR Wallingford and ABPmer. The objective of the consultation programme is *to assess the needs of Operating Authorities, the flood management industry and other organisations involved in estuary management, to understand who wants/needs to know about the outputs and the best way to disseminate the tools that the programme is producing.*

The Initial Consultation entailed discussions with 31 people in representative positions in industry. Advice was given in two main areas – firstly, relating to each consultee's background and previous experience with the ERP, and secondly, concerning future aspirations for improved understanding in estuary science. To gauge the response from different parts of industry, the 31 consultees were broadly grouped into four sectors: Policy Makers, Operators, Consultants, and Regulators. It must be stressed that these groupings were indicative, comprising those whose professional remits were believed to correspond predominantly to the given group type. Of the 31 people consulted, written responses were obtained from a total of 30, according to a predetermined agenda. These notes have been analysed as outlined below.

To give a quantitative indication of the strength of opinions, responses were collated according to the number of consultees citing particular points and issues. These responses were collected under eight subject groups dealing with: interests, familiarity with ERP, ERP web sites, ERP outputs, motivation, improvements needed, dissemination, and training.

The process described above forms the core part of this report, the so called Initial Consultation. Further to this it was agreed to carry out an open consultation at two events in July 2007, the Estuaries Research Programme Phase 2 Dissemination Day, and the Flood and Coastal Erosion Risk Management Conference – both in York. Using a questionnaire based on the analysis of the main consultation, this second exercise is referred to as the "Conference Consultation". The results are considered alongside and integrated with those of the Initial Consultation.

It is imperative to read the overall report to gain a meaningful understanding of the breadth and depth of opinions, and the many useful suggestions that the exercise generated, both from the Initial Consultation and the Conference Consultation. With this proviso, the following lists just the leading points that emerged from the consultation:

- better information and knowledge is needed to improve confidence, both within organisations and between organisations and the public;
- the main improvement sought is the reduction of uncertainty and, allied to this, having a better understanding of the boundaries of certainty;

- three main areas for dissemination have emerged; reports, workshops and the web. The overall preference is for information to be conveyed by reports, made available soon after the research is completed, alongside information conveyed by a central web site;
- training needs to be tailored according to the audience. Whilst training is needed more in the principles of estuary science than in the details of methodology, there is a demand also for the latter. The two consultation exercises yielded different conclusions in this respect but, overall, the greater demand is for training to be directed at those doing the day-to-day “operative” work; the decision makers were more favoured in the case of the Conference Consultation and so this needs to be catered for.

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1. Introduction

This report presents the findings of the Initial Consultation on the joint Defra/Environment Agency Flood and Coastal Erosion R & D project FD2119, Development and Dissemination of the Estuary Research Programme (ERP). The project is being undertaken by HR Wallingford and ABPmer and is due to be completed in March 2008.

The background to the present project is outlined as follows:

Completed in 2000, the first phase of work (ERP1, also known as EMPHASYS) was comparatively broad in scope, drawing together existing knowledge on estuaries, exploring the scope and limitations of estuary management tools, establishing a baseline of knowledge on estuary management, and disseminating this through various media. The project delivered a report outlining an Estuary Impact Assessment System (EIAS).

The second phase, ERP2, has focussed on specific aspects of estuary research with a view to filling in knowledge gaps identified during ERP1 (e.g. development of a formalised approach for predicting estuary geomorphology). Appendix 4 outlines all the projects under both ERP1 and ERP2.

The present project, Development and Dissemination of the Estuaries Research Programme, is the last to be commissioned under ERP2. Its primary objective is to deliver effective research management and to communicate results in a way that will inform and influence present practice. It also aims to produce an enhanced version of the EIAS first published in 2000. The specific aims of FD2119 are shown in Appendix 1.

2. Objectives

This Initial Consultation exercise relates specifically to Objective 4 (Appendix 1): “to assess the needs of Operating Authorities, the flood management industry and other organisations involved in estuary management, to understand who wants/needs to know about the outputs and the best way to disseminate the tools that the programme is producing”.

The exercise is the first component of a three pronged approach to the consultation programme. The second and third components will entail feedback on the draft enhanced EIAS and from the training workshops (partly undertaken now through feedback from conferences in July 2007). Whereas these later components will rely on invited feedback from a larger audience, the present exercise is targeted at specific organisations and individuals in strategic positions in industry. As such, the Initial Consultation is a vital front-end activity that will guide the very course of the project, in particular the first three objectives of FD 2119 listed in Appendix 1.

3. The Process

The Initial Consultation exercise involved four steps:

- (i) Identification of consultees: this was achieved through discussion with the respective project managers in the Environment Agency (Kate Marks) and Defra (Jule Harries), discussion within the project team, and through advice provided by consultees as the work advanced. It became apparent from the start, that there was a need to consult those tasked with actually using the products of the research, rather than those responsible for creating it – a perception and probably justified criticism of earlier stages of the programme. Appendix 2 lists the consultees with whom discussions were held.

The selection of consultees was made with a view to obtaining a representative cross-section of the industry, i.e: those who set policies that affect or are affected by estuaries; those tasked with operating businesses or managing the resources in estuaries; the experts and consultants who advise and design; and those who regulate both statutory and non-statutory plans and practices within estuaries.

- (ii) First contact: each consultee was contacted by one of the research team from HR Wallingford or ABPmer, to establish that they were willing to take part in the exercise.
- (ii) Briefing note: sent by email, the briefing note set out the background to the project (substantially as given in Section 1 above), the Objectives (as Appendix 1), and a list of sample points for discussion (see Appendix 3).
- (iii) Discussion: discussions were generally conducted by telephone with a few exceptions including written responses to the list of discussion points (Appendix 3), and same-place meetings. Consultees were not required to do any background work before the discussion, though they were encouraged to solicit the views of colleagues. Rather, it was preferred that the discussions were taken from the real perspective.

Further to the Initial Consultation exercise described above, a separate consultation was undertaken using a questionnaire type of approach at two events in July 2007, the Estuaries Research Programme Phase 2 Dissemination Day, and the Flood and Coastal Erosion Risk Management Conference. Using a questionnaire based on the analysis of the main consultation, this second exercise is referred to as the Conference Consultation. The results, described in Appendix 5, are considered alongside and integrated with those of the Initial Consultation.

4. Analysis of Advice

The points listed in Appendix 3 were intended to generate open discussion, driven by the experience and feelings of the consultee. As the consultations progressed it became apparent that there were a number of commonly recurring issues, and that different sectors of industry tended towards different views. Thus, it became desirable to collate these responses as an aid to interpretation.

The Initial Consultation exercise was not conducted as a “tick box” consultation and so the responses were not aligned in a mechanistic way such as would lend itself to direct input to a spreadsheet. To facilitate better collation of information, eight “response categories” were identified, being based on the discussion points listed in Appendix 3, as outlined in Table 4.1.

Table 4.1 Collation of responses

Response categories:	How Derived:
<p>1. Interests Interests in estuaries are:</p> <p>A – Generic B – Specific to particular sites</p>	<p>Answers to discussion point 1: <i>What are your interests in estuaries – general or site specific?</i></p>
<p>2. Familiarity with ERP Prior familiarity with the ERP could be described as:</p> <p>A – Familiar B – Aware of it C – Not really aware of it</p>	<p>Answers to discussion point 2: <i>Were you aware of the Estuaries Research Programme (ERP) before this contact?</i></p>
<p>3. ERP web sites Previously made use of ERP web sites:</p> <p>A – Yes B – Aware only C – No</p>	<p>Answers to discussion point 3: <i>Were you aware of the various web sites conveying details of estuary research? – e.g. the Estuary Guide: www.estuary-guide.net/links.asp</i></p>
<p>4. ERP Outputs Previously made use of the ERP outputs:</p> <p>A – Yes B – No</p>	<p>Answers to discussion point 4: <i>Have you used any of the products of the programme (or EMPHASYS) before? If so, which, and in what ways were they useful?</i></p>
<p>5. Motivation Improved information and methods help:</p> <p>A – Better decision making B – Better planning C – Better policy development D – Improved confidence (organisation and/or public) E – Independence from those holding the information</p>	<p>Substantially based on the answers to discussion point 6: <i>How might an improved knowledge help you? What would you like to see?, together with other responses.</i></p>
<p>6. Improvements Needed Main improvements that are needed in estuary science:</p> <p>A – Data availability B – Understanding impact of climate change C – Reducing uncertainty and/or understanding degree of uncertainty in the result D - Uptake of research E - Understanding the hydraulics F - Understanding the sediment physics (esp. muddy vs sandy estuaries)</p>	<p>Substantially based on the answers to discussion point 5: <i>In what areas do you think that our understanding of estuary morphology should be improved?, together with other responses.</i></p>

Response categories:	How Derived:
<p>7. Dissemination Preferences for information to be provided or demonstrated:</p> <p>A – Demonstration projects/worked examples B – Workshop C – Reports D – DVD E – web site F – a book</p>	<p>Based on the combined answers to discussion points: 7 <i>How would you want that information conveyed to you?</i>, and 8 <i>What tools would you like to use?</i></p>
<p>8. Training Training is needed:</p> <p>A – In principles B – In details of methods/models C – For decision makers D – For the operative workers E – For stakeholders F – Non needed</p>	<p>Answers to discussion point 9: <i>What training would be useful to you and your colleagues?</i></p>

The consultation list represents a range of interests in estuary management. For the purposes of the collation exercise these have been divided broadly into four groups of consultee.

- predominantly **Policy makers** – e.g: public sector policy makers; R&D programme managers;
- predominantly **Operators** – e.g: port managers and engineers; public sector regional defence and estuary managers;
- predominantly **Consultants** – e.g: private sector consultants and advisors;
- predominantly **Regulators** – e.g: environmental regulators from both public and private sectors.

It must be stressed that these grouping are indicative only, and have been identified as a means discerning the varying needs of needs of the different sectors. It is recognised that in a number of cases, a consultee’s role can be described by more than one of the above groups; in these cases the dominant role group is chosen. For this reason, the groups are considered to “predominantly” comprise those whose main role or activity could be identified with that group label. Whilst the term “predominantly” is implicit in each of the groups definitions, for conciseness in the text they will be referred to simply as Operators, Regulators, etc.

Of the 30 consultees, academia constituted just one person, i.e. 3% of the representation; in this case the responses were split between Policy Makers and Consultants. The total numbers of consultees in each group were therefore: Policy Makers (7.5); Operators (6), Consultants (10.5); Regulators (6). It should also be noted that consultees were asked to speak on behalf of their interest group peers, not just themselves. Where the views of **All** consultees are given, this literally means all those consulted and the results are not adapted in any way to try and equalise the weighting between different groups.

The exercise described above is supplemented with a discussion on each of the response categories. This provides an opportunity to discuss not only the collated results but also important specific issues, diversity of opinions and the reasoning behind certain responses.

5. The Findings

5.1 Interests

5.1.1 Collated results

Figure 5.1 shows the results of the first response category:

Interests in estuaries are:

A – Generic

B – Specific to particular sites

The answers to this question are not exclusive and so, in any given group, the total answers do not necessarily add up to 100%.

The results are, perhaps, not surprising. The Operators interests are totally site specific. In contrast, both the Policy Makers, and the Regulators, indicate a level of generic interests in estuaries, with comparatively less interests in site specific cases. Consultant's interests in estuaries are strong in both generic and site specific cases.

5.1.2 Discussion

To varying degrees, consultees described the aspects of estuaries which they were principally concerned with. This included human activities, habitats and ecology, and water quality.

Habitats and ecology were the most mentioned aspects with the main concerns in England and Wales being in the south east of England round to Poole Harbour, plus the Severn Estuary. There is evidently concern regarding the implementation of the Water Framework Directive (WFD); both Operators and Regulators observed that clarity is needed from a flood risk management perspective; e.g. how do Flood Risk Managers achieve best ecological potential in an estuarine environment.

Both the Policy Makers and Operators noted that estuary management is not just about national/strategic studies; e.g. *...as we increase our understanding on the broad context of estuaries, we need to be able to convert management to a local scale, acknowledging the implications of any actions.* By way of example, there was thought to be a lack of understanding of the wider issues in respect of more localised details.

Consultants noted that a lot of their work has been on the human aspects of estuary management, not necessarily the geomorphological side.

5.2 Familiarity with ERP

5.2.1 Collated results

Figure 5.2 shows the results of the response category:

Prior familiarity with the ERP could be described as:

A – Familiar

B – Aware of it

C – Not really aware of it

The answers to this question are exclusive and so, in any given group, the total answers must add up to 100%.

In this category, the responses of all groups except Operators were similar, 100% of consultees indicating some familiarity with the ERP. By comparison, Operators were less aware of the programme, 50% indicating no awareness.

5.2.2 Discussion

Whatever the method of selecting the consultee base, it can always be argued that their responses might be skewed in one way or another, as that skewness is only relative to a notional view of what the ideal (skew free) consultee base might look like. In the case of this Initial Consultation, the consultee base was targeted specifically at those who were known to be active, one way or another, in estuary related business, i.e. the user community. We can say with confidence that this approach will demonstrate a higher degree of prior familiarity with ERP than had, for instance, the consultee base been selected at random from those involved generally in the science and management of the environment.

Given that the purpose of the exercise was to appraise the needs of the user community there is a kind of “closed circuit” connection between this type of question (familiarity?) and those consulted. This is not a fault of the exercise but an inevitable feature of it, which we can be aware of when considering the response to this question; the same applies to response categories 3 and 4 (ERP web sites and ERP outputs). This issue can also be checked in Appendix 5 which describes a separate but allied open consultation (i.e. not targeted), conducted at conferences in July 07.

A number of Consultants and Regulators questioned what had happened to the ERP after Phase 1, EMPHASYS. Several had had no specific contact with the programme then. Some asked what had happened to the Estuary Advisory Group (EAG) whilst some said that they never got the final output from the uptake project (FD 2110 see Appendix 4).

One consultee astutely observed that: *...a common problem with these projects (e.g. EMPHASYS) is that they fall off the edge – i.e. interest quickly diminishes*

when they finish, and consultants cease to refer to them, (even those that developed them!).

Thus, whilst consultees' familiarity with the earlier Phase 1 programme was good, it was weak with respect to Phase 2 and there was disappointment with the dissemination of information during that stage.

5.3 ERP web sites

5.3.1 Collated results

Figure 5.3 shows the results of the response category:

Previously made use of ERP web sites:

A – Yes

B – Aware only

C – No

The answers to this question are exclusive and so, in any given group, the total answers must add up to 100%.

In this category, whilst the Regulators indicate the most use of the estuary web sites, the Operators indicate the least familiarity.

5.3.2 Discussion

The subject of web sites, and their use, generated strong views both favourably and otherwise (this is reiterated in Section 5.7). This divide can be partly attributed to the estuary web sites themselves, in combination with individuals' attitudes towards internet technology transfer.

On the plus side, a number of the ERP web sites were referred to (see Appendix 4 for full list). Apart from being the web site most referenced by Consultants and Regulators, the Saltmarsh Management Manual was found to be "very useful" and was used as a model for the EA web site on managed realignment. The Estuary Guide was also referenced and regarded in favourable terms.

Being aware of the existence of the web sites is obviously a factor. One consultee noted that these things (e.g. EMPHASYS) do not come up on a Google search <ironically, using the search-engine does bring up EMPHASYS – a web design company>. Other negative feedback from those that actually use the web sites included: systems are slow to download, and that the estuary-guide does not seem to link to ERP2 projects.

5.4 ERP Outputs

5.4.1 Collated results

Figure 5.4 shows the results of the response category:

Previously made use of the ERP outputs:

A – Yes

B – No

The answers to this question are exclusive and so, in any given group, the total answers must add up to 100%.

The Consultants and the Regulators have similar results in this category, indicating the greatest use of ERP outputs. Similarly but conversely, the Policy Makers, and the Operators also have close results, about 80% indicating no previous (direct) use of the ERP outputs. These results are not surprising; the nature of their roles would indicate that both the Consultants and the Regulators are more likely to use the ERP methods.

5.4.2 Discussion

Amongst the Operators and Policy Makers, whilst they did not use ERP outputs directly, they often felt that they were being used by consultants.

There was praise for the ERP products from several Consultants, in some cases a number of the outputs being referenced. One Consultant noted that *...the EMPHASYS work supported views on estuary morphology, and helped to decide what is important in a given context or situation.*

Alongside this, there were perceptions that the ERP methods were being guarded in some way by those that developed them, viz:

- *...not aware of anyone using EMPHASYS other than those who did it...*
- *...does not know how much of the EMPHASYS technology found its way into models...*
- *...ERP1 methods used routinely.*

A common criticism of the earlier ERP outputs was the time taken to deliver results to the user, viz:

- *...the problem with the current dissemination of products from the Defra/EA R & D programme is that the results take far too long to be disseminated. For example the output report for FD 2116 (Interpretation and formalisation of geomorphological concepts) was supposedly completed in Autumn of 2006. The January issue of FCERM¹ R & D newsletter indicates that this output can be found on the www.defra.gov.uk/enviro/fcd/research. However, the final report does not appear to be available... (see Appendix 4 for update on this issue).*

¹ Flood and Coastal Erosion Risk Management

5.5 Motivation

5.5.1 Collated results

Figure 5.5 shows the results of the response category:
Improved information and methods would help:

A – Better decision making

B – Better planning

C – Better policy development

D – Improved confidence (within a consultee's organisation and/or public)

E – Independence from those holding the information

The answers to this question are not exclusive and so, in any given group, the total answers do not necessarily add up to 100%.

All groups, except the Regulators, indicated improved confidence, either within their respective organisation or with the public, as the primary area that would help them in their job. The Operators rated public confidence, by far and away, as the primary motivator.

Other than answer D, the results are rather mixed.

5.5.2 Discussion

Despite the trends just referred to, it is fair to say that this question was not answered very coherently overall. This may be because the original briefing note combined the question with another (see Table 4.1) which consultees seemed to prefer to focus on. Also, it is possible that consultees are fundamentally intending the same message whether referring to better decision making, better planning or better policy development (A, B and C), but even if these were considered as one group, the total percentage would equate to that for prompt D, improved confidence, in the All vote.

The last prompt, *E – independence from those holding the information*, was mentioned by Operators and Regulators who wanted to conduct their own studies independently (from Consultants), whilst Consultants wanted independence from those that had formulated the estuary science:

- *...a software package that is generically available and not tied into the regime of the research contractor!...*
- *..... we should expect outputs that are applicable by estuary management practitioners, not just the researchers themselves..*

5.6 Improvements needed

5.6.1 Collated Results

Figure 5.6 shows the results of the response category:

Main improvements that are needed in estuary science:

- A – Data availability*
- B – Understanding impact of climate change*
- C – Reducing uncertainty and/or understanding degree of uncertainty in the result*
- D - Uptake of research*
- E - Understanding the hydraulics*
- F - Understanding the sediment physics (esp. sandy vs muddy estuaries)*

The answers to this question are not exclusive and so, in any given group, the total answers do not necessarily add up to 100%.

This category generated a wide range of responses with indistinct patterns between the four groups. Because of these differences, the various responses to this important category are considered separately in the next section.

5.6.2 Discussion

Improved (input) **data** was identified by all groups except the Operators. By way of example, more data was recognised as being useful for FEPA licensing. Improvement to the prediction of the effects of **climate change** was identified by all groups, and is the second most quoted issue. However, beyond mentioning climate change, this topic was rarely expanded upon. Consultants made the least reference to climate change.

Prompt C, relates to improvements needed both in **reducing uncertainty and in understanding the boundaries of certainty** in predictions of estuary morphology and related parameters. This was a major issue, being referred to by all the groups; it is akin and related to prompt D in Section 5.5. Overall, this was the highest ranked issue and generated the most discussion; the following outlines a selection of the statements made:

by the Policy Makers:

- *...more certainty in future would help with communication with stakeholders, giving them faith in decisions, clarity of the long term impacts of short term decisions and for demonstration of the most sustainable options....*
- *...clarity on how different levels of any work that are carried out fit together...*

by the Operators:

- *...we are still very limited in our ability to make predictions that stack up with the public (e.g. very different perspectives on salt marsh loss – predicted versus anecdotal); there is a problem in the timing of predicting trends, when compared with that of realising the trends – i.e. whether right or not;*
- *...modelling predictions vary enormously...*
- *... we need a set of rules that tell you what is going to happen..*
- *...disentangling a multitude of cause and effect factors – sedimentation changes, climate change, sewage treatment..... we need to be able to link cause and effect better, and the uncertainties regarding this..*

- *...the current default is the precautionary principle and this doesn't necessarily satisfy best interests...*
- *...we need to understand what is really happening better in order to make monitoring more efficient, and to avoid fruitless endeavours...*

by the Consultants:

- *...it would be good to know the upper and lower bounds of solutions so that we can make better decisions from the more confident bandwidth; presently there is considerable scepticism surrounding the result...*
- *... local issues are very difficult to convey to members of the public because of the very different timescale involved – need to link timescale to real business...*
- *... boundaries for evolution predictions....*

by the Regulators:

- *...with the aim of environmentally acceptable flood management long term policies, tools must be available to assess impacts and uncertainties, and understanding of a range of the different impacts from different options....*

The need to improve the **uptake** of research was mentioned by all except the Operators. This subject was not expanded on significantly but consultees may have felt that they had covered this whilst talking about past experience or ERP (see Section 5.2.2). An important point was made by one consultee *...you need to see where the demand is coming from - who is the user?* Others expressed concerns about technology transfer:

- *... so far, uptake appears to be limited. LOIS is an example of science with very little uptake...*
- *...Defra should expect to see evidence of funded research being used in strategies etc, ...then perhaps it should be part of Defra policy...*

The two remaining prompts, E and F, relate to improvements in the understanding of technical matters – **hydraulics** and **sediment physics** respectively:

In respect of hydraulics, the following were mentioned:

- *...issue and meaning of ebb/flood dominance needs clarification, and its relation with other factors (e.g. sedimentation)...*
- *... changes in water level in response to estuary changes in shape (e.g. retreat)...the understanding needs to be improved at the expert knowledge level, so that this advice can be applied directly and can be used to help define higher levels of analysis / modelling. The same is true for biology and other attributes of interest...*
- *...need to know the total extent of the intertidal area, particularly low water. Saltmarsh prediction is perhaps easier to define, however, movement of low water, and the transition between vegetated and unvegetated intertidal areas are harder. Low water is difficult to measure, and define and also to assess what will happen to it in the future...*

In respect of sediment physics, the following were mentioned:

- *...in respect of morphology alone, two important issues are: (i) better knowledge of sand-silt interaction; (ii) impacts of extreme conditions...*
- *...sediment physics is the key area to address: we've spent 50 years trying to do this. Muddy estuaries depend on the type of mud; we still don't understand the material itself; sandy estuaries are much easier by comparison...*

Technical issues were highlighted mainly by the Consultants and Operators. Taken individually, hydraulics and sediment physics were the least and third ranked issues respectively. If considered together, however, they would be the second most mentioned required improvement, following that of the reduction of uncertainty.

The wide range of views and opinions in respect of improvements reflects the broad range of interests of the consultee base. This, in turn, emphasises the multifunctional aspect of the Estuary Research Programme. This part of the survey in particular indicates the need for dissemination to be applied at a range of levels and subject areas but, importantly, to explore and where possible quantify limits of certainty.

5.7 Dissemination

5.7.1 Collated results

Figure 5.7 shows the results of the response category:

Preferences for information to be provided or demonstrated:

A – Demonstration projects/worked examples

B – Workshop

C – Reports

D – DVD

E – Web site

F – A book

The answers to this question are not exclusive and so, in any given group, the total answers do not necessarily add up to 100%.

This category comprises two of the original questions: *how would you want that information conveyed to you, and, what tools would you like to use?* The latter question was generally interpreted as meaning tools of dissemination, rather than methods or models; exceptions to this are mentioned in the discussion.

As with category 6, this subject generated a wide range, but a good yield, of responses. The various responses are considered at the end of the next section.

5.7.2 Discussion

Some consultees were more interested in getting the right message to the right people rather than how the information was delivered, e.g:

- *...there seems to be a gap in communicating strategic goals...*
- *... people involved in estuaries don't always understand that we are dealing with the edge of scientific ability; we need better consensus of opinion; the "how" it is delivered is not so important...*

For the purpose of this analysis, the first prompt (**demonstration projects / worked examples**) combined two related, but in practice quite different, things. Together, these proposals were referred to mostly by the Policy Makers, e.g:

- *...interim demonstration of projects rather than final dissemination...*

Overall, the use of worked examples and/or demonstration projects featured moderately.

Ranking third overall, consultees would like to see dissemination through **workshops** and through personal contact. This topic is dealt with in more detail in Section 5.8.

The most dominant plea was for the findings of the research to be delivered through **reports**. Moreover, consultees wanted to see the outputs as the work progressed or soon afterwards; this positive request reflected the negative feedback regarding the past programme, as alluded to in Section 5.2.2. Some of the consultees' comments are outlined below:

- *...reports need to be made available more promptly. Interested individuals should be able to register interest in ongoing projects and review automated updates and deliverables as they come available...*
- *...fact sheets...*
- *...want to be kept up-to-date on what's going on – e.g. a periodic flyer...*
- *... would like to see quarterly updates of what's been published, but don't rely on established lists, check it reaches the right people...*
- *... it might be worth producing a paper note on "these are the things you need to know"...*
- *...- by way of a "ready reckoner" conveying the fundamental "truths" about estuaries (a quick guide)...*
- *...for engineers (Defra/ EA etc), who need to understand the knowledge / system but not actually use it / apply it, there should be an easy to understand summary / primer – preferably on paper; for project managers – a longer description with capabilities etc...*

Though not the least asked for medium, the **DVD** did not appear to be popular with consultees. Also, the use of external software appeared to present problems to some authorities; this was also the case with web sites.

The last two prompts, *E – web sites*, and, *F – a book*, generated probably the most diverse comments in the whole consultation exercise.

With regards to **web sites**, consultees commented as follows:

- ... *too many web sites...*
- ... *web is best...*
- ... *web sites are a cop out...*
- ... *for users / consultants – tool should be web-based or similar...*
- ... *hate web sites, putting stuff on a web site is a cop out..*
- ... *not interested in whiz-bang CD/web based approaches...*

Those advocating the use of web sites tended to offer more positive suggestions:

- ... *if web site, should have easy / clear process that you can just click through without having to navigate the whole web site (a wizard perhaps)...*
- ... *a web site must be good, updated regularly (different / updated every time you access it) and you must also know of its existence..*
- ...*a web site with ownership of the material.*

Preferences for web based technology transfer probably has a lot to do with individuals' approaches to how they go about their work. However, despite the love-hate relationship with the internet, many conceded that web sites were a necessary part of today's technology transfer, thus making web sites the second most referenced method of delivering information.

With regards to **a book**, consultees commented as follows:

- ... *a good old fashioned book*
- ... *definitely not a book..*
- ... *a book is preferred; it needs to be something published against some kind of standard to have provenance and credibility; we need to distinguish fuzzy knowledge from accepted knowledge...*
- ... *short sharp documents are good, NOT A BOOK!...*

Whilst the Policy Makers and Operator groups made no request for a book, the Consultants who identified it as their preferred medium made strong arguments in its favour. In particular it was pointed out that a book has "provenance" – from a designer's point of view this is important. The designer wants to benchmark their design against an acknowledged reference – in this same context, web sites were seen by some as ephemeral, either not up-to-date or, conversely, changeable and with no constancy.

The subject of **tools**, meaning methods and models, was not picked up consistently by the consultees. The views of those that did respond on this issue are summarised below:

Policy Makers, Regulators and Operators suggested:

- ...*models that the public can play with, so that they can replicate the decisions made and see the modelled consequences...*
- ...*3d visualisation to aid communication with stakeholders...*
- ... *a simple system using simple inputs to a generic model...*

- ...we need a whole new generation of models that capture biological and other factors if we are going to make predictions that are of value...

Some took the view that it was the consultant's job to take new developments on board and use them, viz:

- ... tools not relevant, would expect consultants to use it...
- ... as it is often difficult to get estuary managers within the EA for example to use the science it should be used by consultants...

Interestingly though, the Consultant's comments also tended to relate to the style and protocol of new tools, more so than the technical content:

- ...a software package that is generically available (not tied into the regime of the research contractor!)...
- ... want copies of new models developed which should be in open code...
- ...developments need to go into software.....
- ... we need to think about updating systems we have now...

5.8 Training

5.8.1 Collated Results

Figure 5.8 shows the results of the response category:

Training is needed:

- A – In principles
- B – In details of methods/models
- C – For decision makers
- D – For the operative workers
- E – For stakeholders
- F – Non needed

The answers to this question are not exclusive and so, in any given group, the total answers do not necessarily add up to 100%.

The first two prompts, *A – in principles*, and *B – in details of methods / models*, are not exclusive but indicate opposite views as to the technical level of information conveyed through training. Of the two, training in *principles* was preferred by each group, making this particular prompt the most referenced in this category.

Similarly, prompts, *C – for decision makers*, *D – for the operative workers*, and *E – for stakeholders*, are not exclusive but indicate a range of views as to who needed to receive training. All except the Regulators identified the *operative workers* as being the most important people needing training. Only the Regulators put *decision makers* and *stakeholders* ahead of the *operative workers*.

A small number of consultees indicated a preference for no training at all.

5.8.2 Discussion

The collated results of this consultation category are largely self explanatory. A number of useful comments made by the various groups are, however, outlined below:

Policy Makers:

- *...should be user focussed, for those who make decisions – not too academically orientated – with worked examples...*
- *... for the Agency and NCPMS engineers who deal with consultants, sell information to them under the auspices of helping to make them a more informed client, and get their attention!*
- *... training should go hand in hand with demonstration projects where appropriate...*
- *... there should be a help desk...*
- *...training with worked examples..*

Consultants:

- *...the alpha-beta-gamma approach in which technical knowledge is combined with non-technical issues - training is needed to open eyes to this concept - important views found from Dutch experience are: projects are rarely determined by technical considerations, sometimes by financial elements, mostly by emotional elements...*
- *...need to know what goes into models, not how to operate them necessarily..*
- *...there is no point in training on sophisticated methods if the trainee does not understand the fundamentals; best training is by experience and mentor/student conveyance of knowledge; then, this should be supported by training on specific matters..*
- *...the decision makers are only usually interested in a bit of the work; graduates are better at informing the decision makers; emphasis should be on improving their knowledge in principles and methods..*
- *... personal interaction is best..*
- *...more feedback from the regulators please.*

Regulators:

- *...regional workshops for key stakeholders..*
- *...regional workshops for managers, perhaps for specific strategy areas, e.g. Suffolk Estuarine Strategies, could involve key stakeholders...*
- *...the level of understanding on processes and morphology is good but perhaps there is scope for explaining this to the non-specialist. We need to shift the thinking of engineers; introduce the subject at university level, and create a common baseline...*

6. Conference Consultation

In addition to the Initial Consultation exercise, as detailed in Section 5, a separate but allied exercise was conducted by way of voluntary open consultation at two events in July 2007, the Estuaries Research Programme Phase 2 Dissemination Day, and the Flood and Coastal Erosion Risk Management Conference. Using a questionnaire based on the analysis of the main consultation, this second exercise is referred to as the Conference Consultation.

The Conference Consultation is described in Appendix 5. The results are considered alongside and integrated with those of the Initial Consultation.

7. Concluding Comments

The **objective** of the consultation programme undertaken within R&D Project FD2119 is *to assess the needs of Operating Authorities, the flood management industry and other organisations involved in estuary management, to understand who wants/needs to know about the outputs and the best way to disseminate the tools that the programme is producing*. This objective has been substantially met by the Initial Consultation exercise. Further to this, by collating the responses according to four industry groups which comprised predominantly Policy Makers, Operators, Consultants and Regulators, the consultation has identified different viewpoints on what is considered to be important.

In total, discussions were held with 31 **consultees** of which 30 yielded written responses, i.e. the data for the present exercise. In discussion it was understood that the individuals represented their sector groups, not just themselves. Contact was also made with some 17 other people who advised that they were no longer involved with estuaries, or their responses would be covered by others.

More consultations were undertaken than had been envisaged at the outset and, whilst it is always tempting to pursue more contacts and discussions, it is necessary to draw the line at a certain point. The consultation represents a reasonable cross-section of the industry but, on balance, it is probably fair to say that the Operators are slightly under-represented, in relation to consultants for instance. However, we are of the opinion that this does not necessarily undermine the usefulness of the consultation exercise at this stage of the project because of the practical experience of the consultees in other groups.

The discussions raised a number of both **positive and negative issues**, based essentially on the past programme, people's experience, and their respective expectations. The feedback reiterated in this report possibly conveys a somewhat negative flavour but it may be human nature to be more vocal on the negatives rather than the positives. Whilst many positive things were said about the Estuaries Research Programme (ERP) generally, many consultees

had apparently lost touch with the programme after Phase 1, EMPHASYS (EMPHASYS, 2000).

The discussions were effectively in two parts, the first dealing with each consultee's background and their previous knowledge and experience of the ERP. The second part dealt with the future, what consultees would like to see, and how they wanted the information to be delivered. The report uses concise formats to relate a mass of advice and information and it is neither practical nor necessary to condense that information further in these concluding comments. Instead, the following bullet points highlight the key messages that emerged from each of the four response categories that dealt with **future aspirations**. These notes include feedback from the Conference Consultation:

- **Motivation** – *improved confidence* emerged overall as the dominant motivator for having a better understanding of estuary behaviour. The reasons for this were particularly strong with Operators who work closely with communities and local issues. The Conference Consultation added strength to the vote for better decision making and planning.
- **Improvements needed** – allied to the issue of Motivation, consultees generally want to see improved certainty in the results of estuary predictions and modelling. Apart from looking for reduced uncertainty, consultees want to have a much better idea about the range of answers that are produced; i.e. what boundaries are we working within? The issue of uncertainty stood out as possibly the strongest message from the whole consultation exercise. Within the improvements category, wishes for better understanding of climate change, and of muddy estuaries, also featured strongly. Though not so significantly ranked in the Initial Consultation, the Conference Consultation also pointed to the importance of better data availability.
- **Dissemination** – this category generated a strong response in favour of reports over other forms of media. Allied to this, consultees wanted to see the results of research much sooner than has been the case, and to be kept in the loop. Though not liked by some consultees, web sites were generally seen as a necessary means of communication; workshops (and personal contact) were also rated highly, thus making these the second and third most sought after means of dissemination. In the Conference Consultation the use of web sites featured most strongly overall.
- **Training** – This final category produced good coherent responses with two important messages: by far and away, the requirement is for training in the principles of estuary science rather than in the details of model operation etc; apart from the Regulators, consultees wanted training, in the first instance to be directed at those doing the operative work (e.g. graduates), rather than the managers and decision makers - it was felt that the operatives are better at conveying information to the decision makers rather than vice versa. The Conference Consultation, whilst concurring qualitatively with the preference of training in principles over

training in details, yielded the opposite preference in respect of training for operative vs training decision makers; it must be concluded therefore that both groups need training that is tailored to the particular requirements and applications of each audience, and hence through separate training sessions.

The programme funders, Defra and the Environment Agency, and the research contractors, HR Wallingford and ABPmer, are extremely grateful to all those who gave both their time and valuable advice to assist with this important consultation exercise. The results from the consultation presented in this report will be used in conjunction with the project inception report (Report FD2119/TR1) to refine the deliverables of the project in agreement with Defra and the Environment Agency.

8. References

EMPHASYS (2000). A guide to prediction of morphological change within estuarine systems, Version 1B, produced by the EMPHASYS consortium for MAFF project FD1401, Estuaries Research Programme, Phase 1, December 2000. Report TR 114, HR Wallingford. *Download from* <http://www.hrwallingford.co.uk/projects/ERP/index.html>

Figures

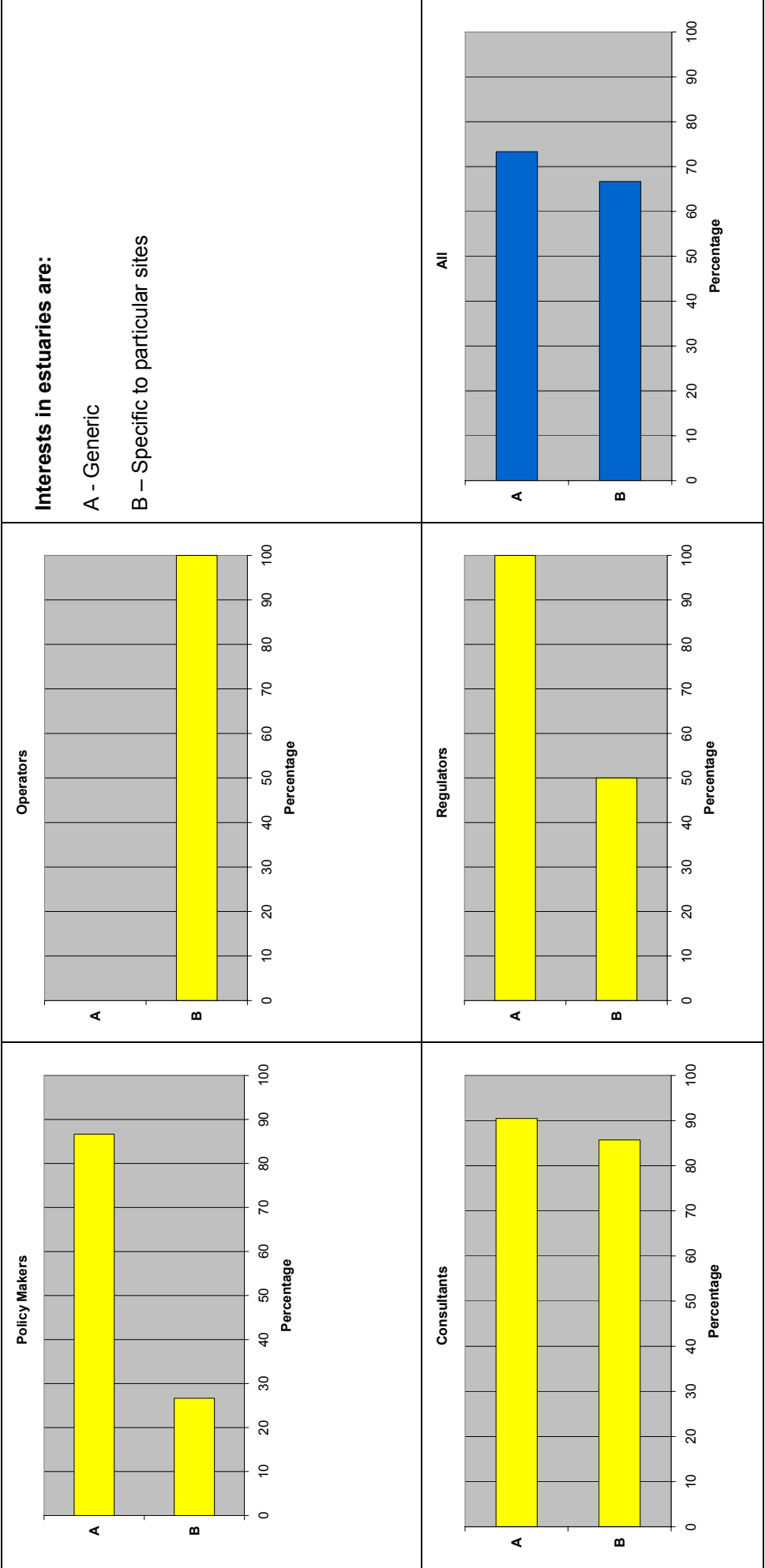


Figure 5.1 Interests

Notes: The terms “Policy Makers”, “Operators”, “Consultants” and “Regulators” are indicative only, representing the predominant roles of the consultees. The total number of consultees (All) is 30, distributed as follows: Policy Makers (25%), Operators (20%), Consultants (35%), Regulators (20%).

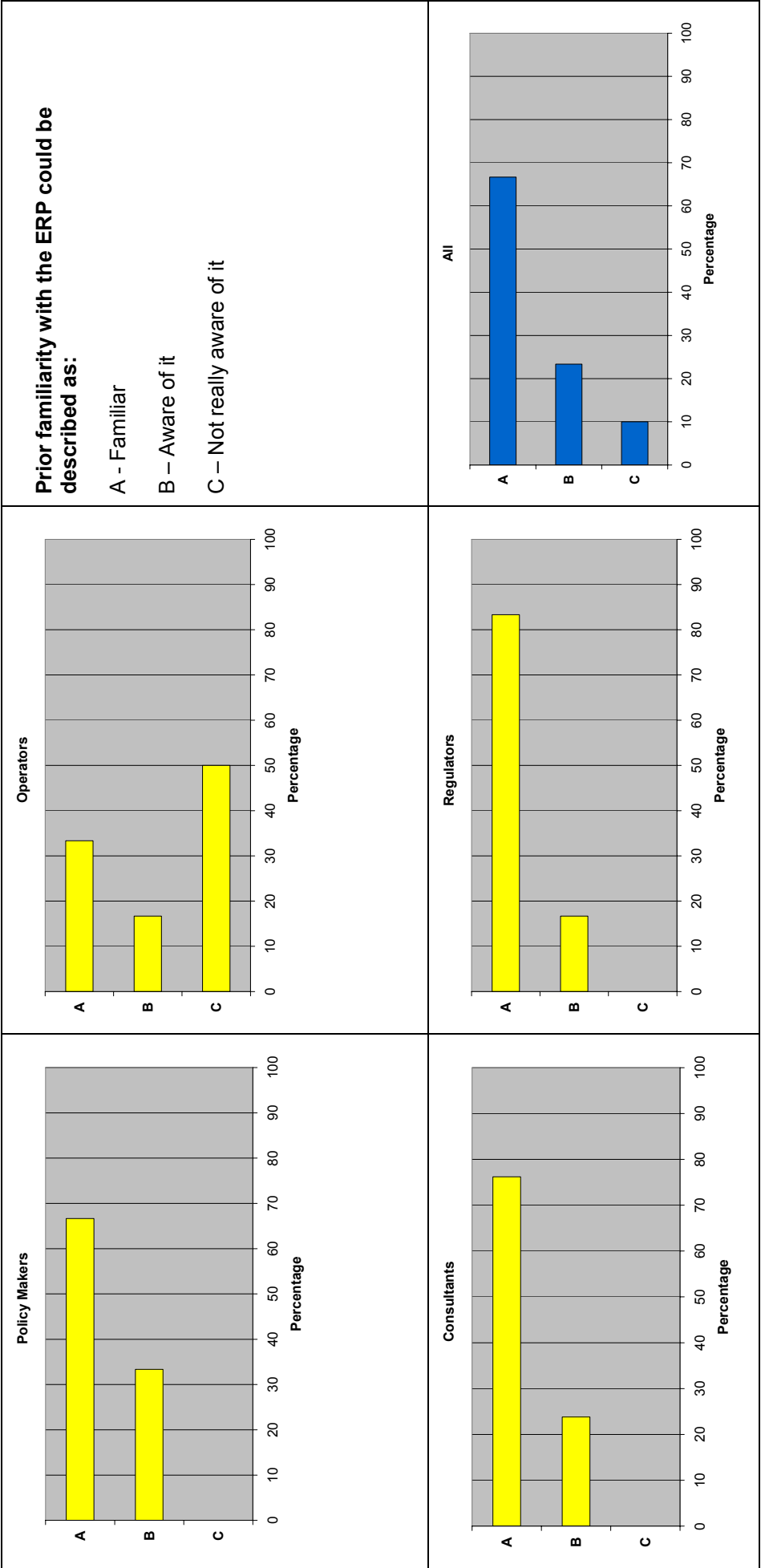


Figure 5.2 Familiarity with ERP

Notes: The terms “Policy Makers”, “Operators”, “Consultants” and “Regulators” are indicative only, representing the predominant roles of the consultees. The total number of consultees (All) is 30, distributed as follows: Policy Makers (25%), Operators (20%), Consultants (35%), Regulators (20%).

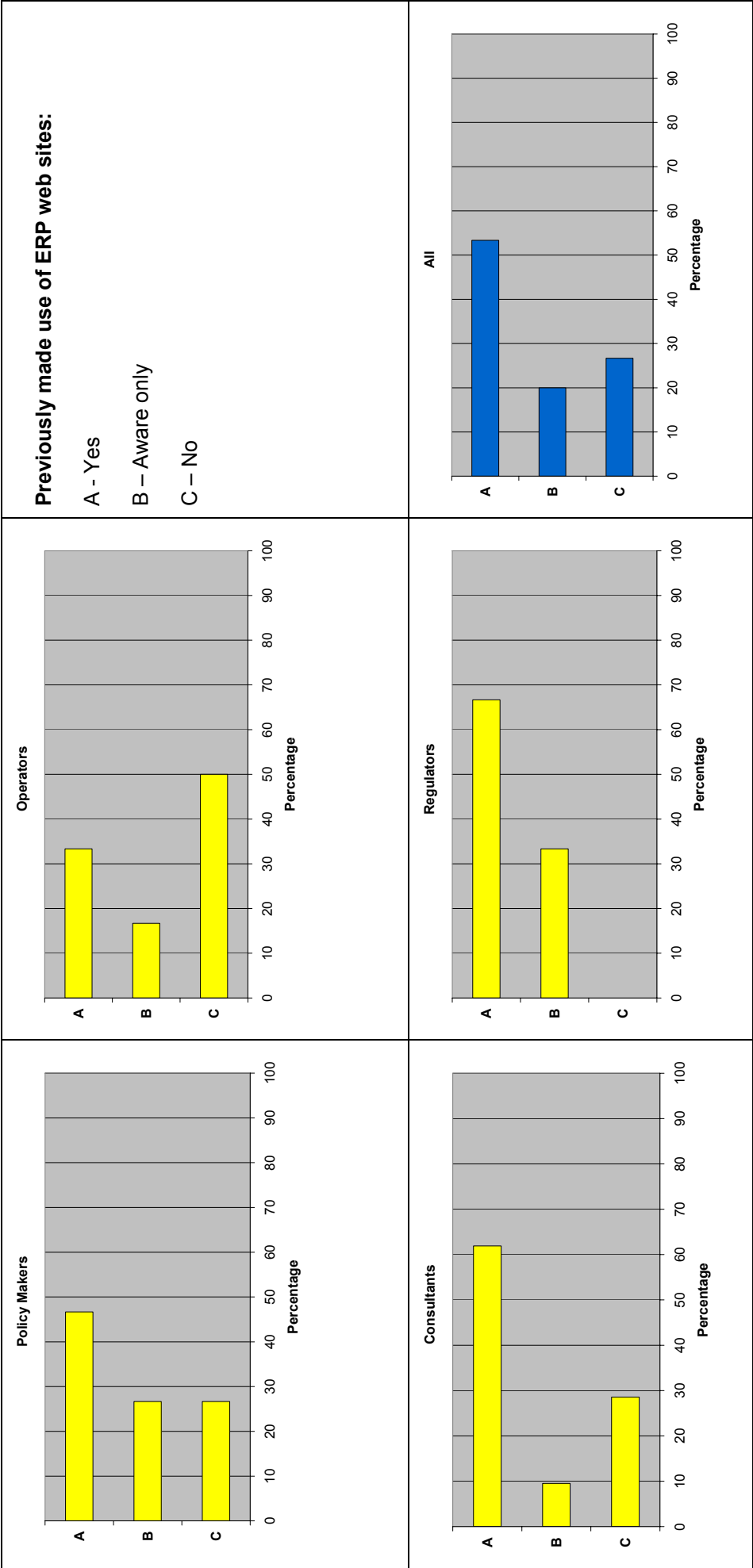


Figure 5.3 ERP web sites

Notes: The terms “Policy Makers”, “Operators”, “Consultants” and “Regulators” are indicative only, representing the predominant roles of the consultees. The total number of consultees (All) is 30, distributed as follows: Policy Makers (25%), Operators (20%), Consultants (35%), Regulators (20%).

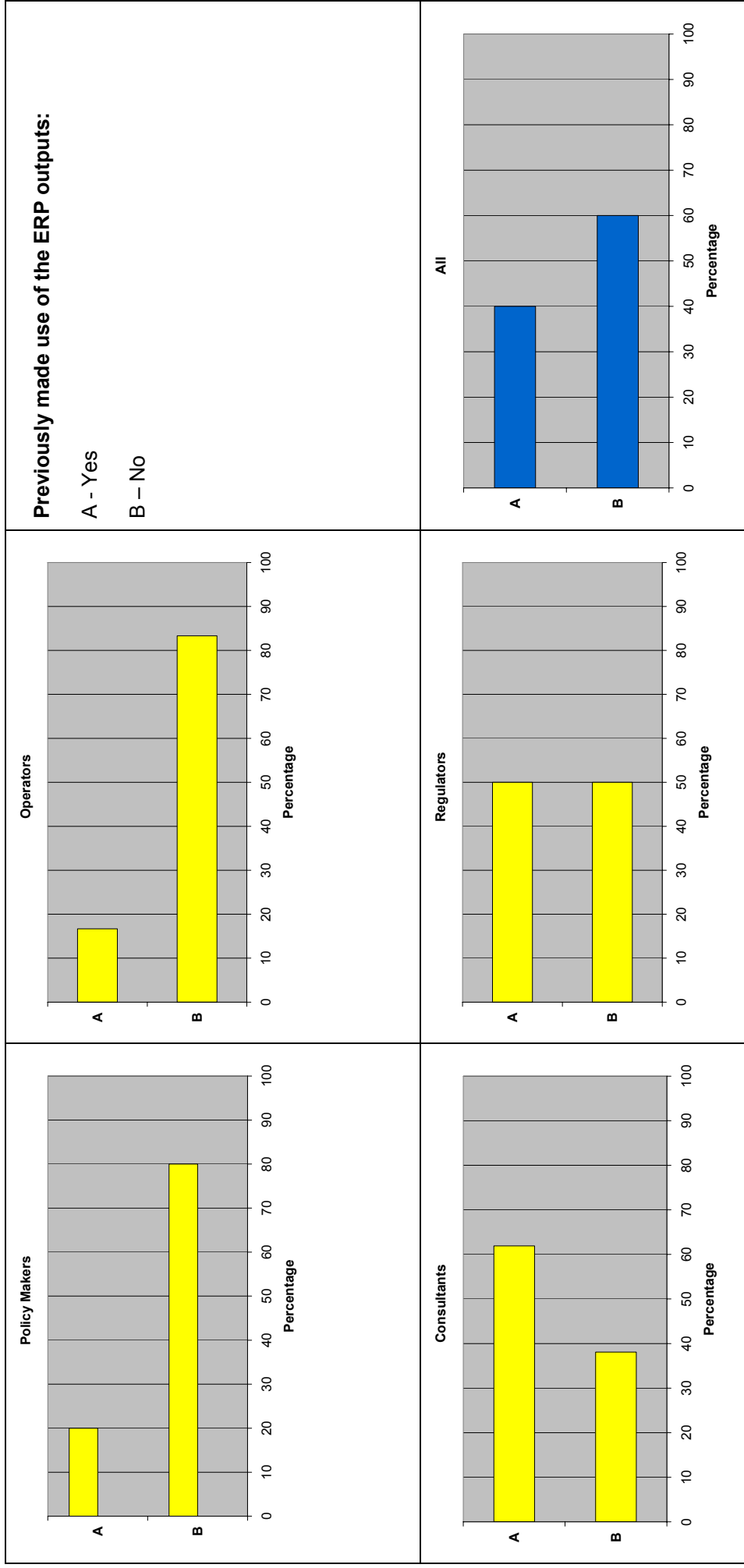


Figure 5.4 ERP Outputs

Notes: The terms “Policy Makers”, “Operators”, “Consultants” and “Regulators” are indicative only, representing the predominant roles of the consultees. The total number of consultees (All) is 30, distributed as follows: Policy Makers (25%), Operators (20%), Consultants (35%), Regulators (20%).

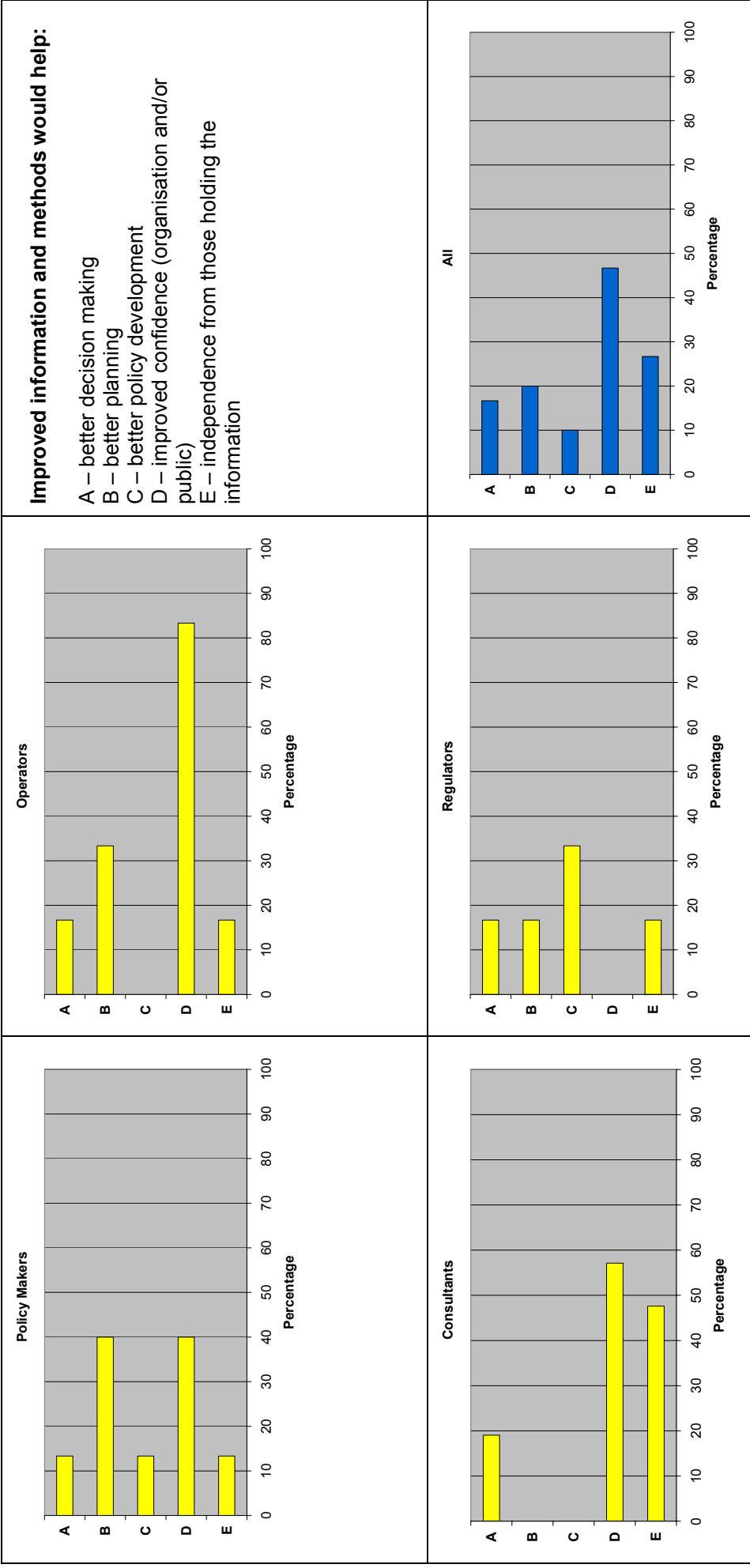


Figure 5.5 Motivation

Notes: The terms “Policy Makers”, “Operators”, “Consultants” and “Regulators” are indicative only, representing the predominant roles of the consultees. The total number of consultees (All) is 30, distributed as follows: Policy Makers (25%), Operators (35%), Consultants (20%), Regulators (20%).

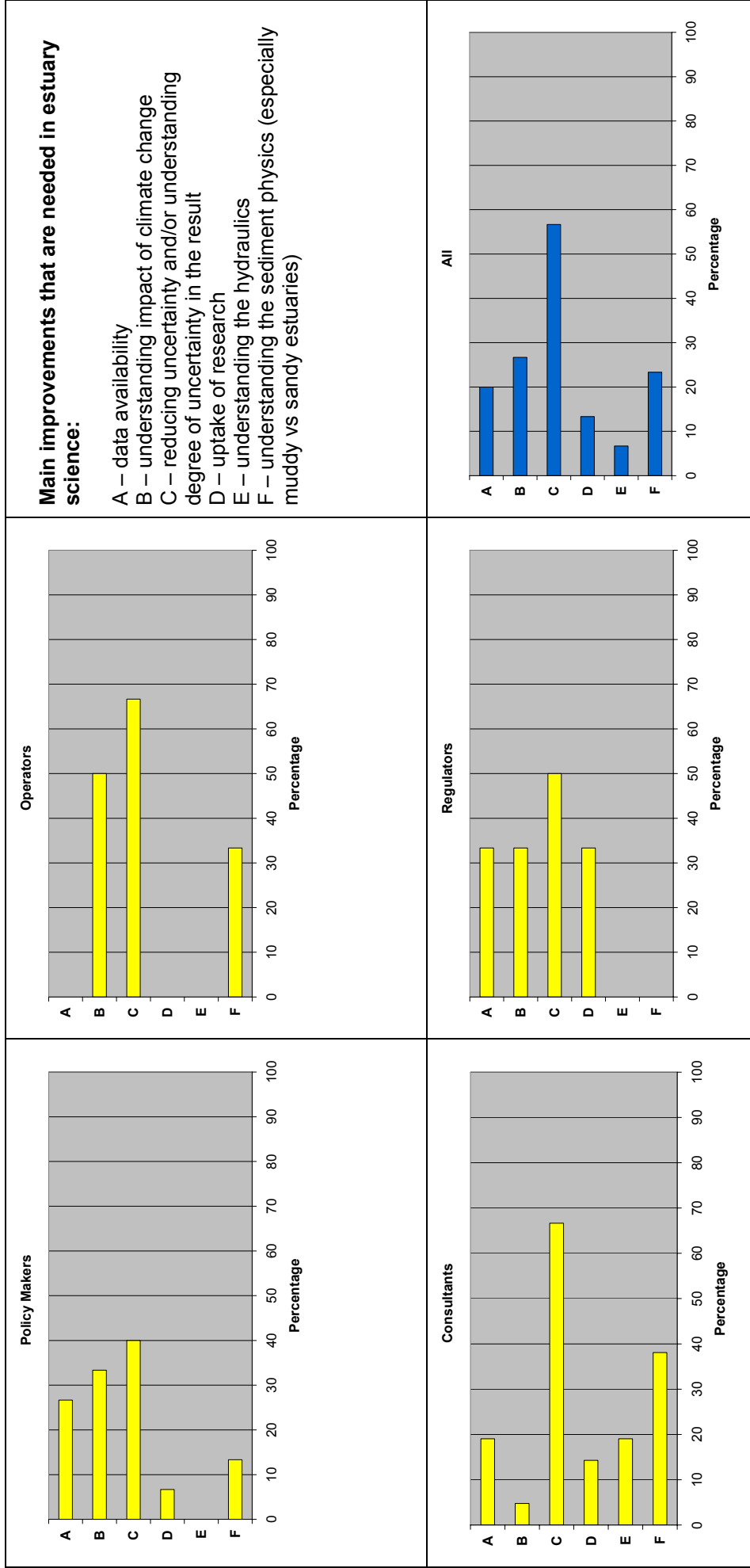


Figure 5.6 Improvements Needed

Notes: The terms “Policy Makers”, “Operators”, “Consultants”, and “Regulators” are indicative only, representing the predominant roles of the consultees. The total number of consultees (All) is 30, distributed as follows: Policy Makers (25%), Operators (20%), Consultants (35%), Regulators (20%).

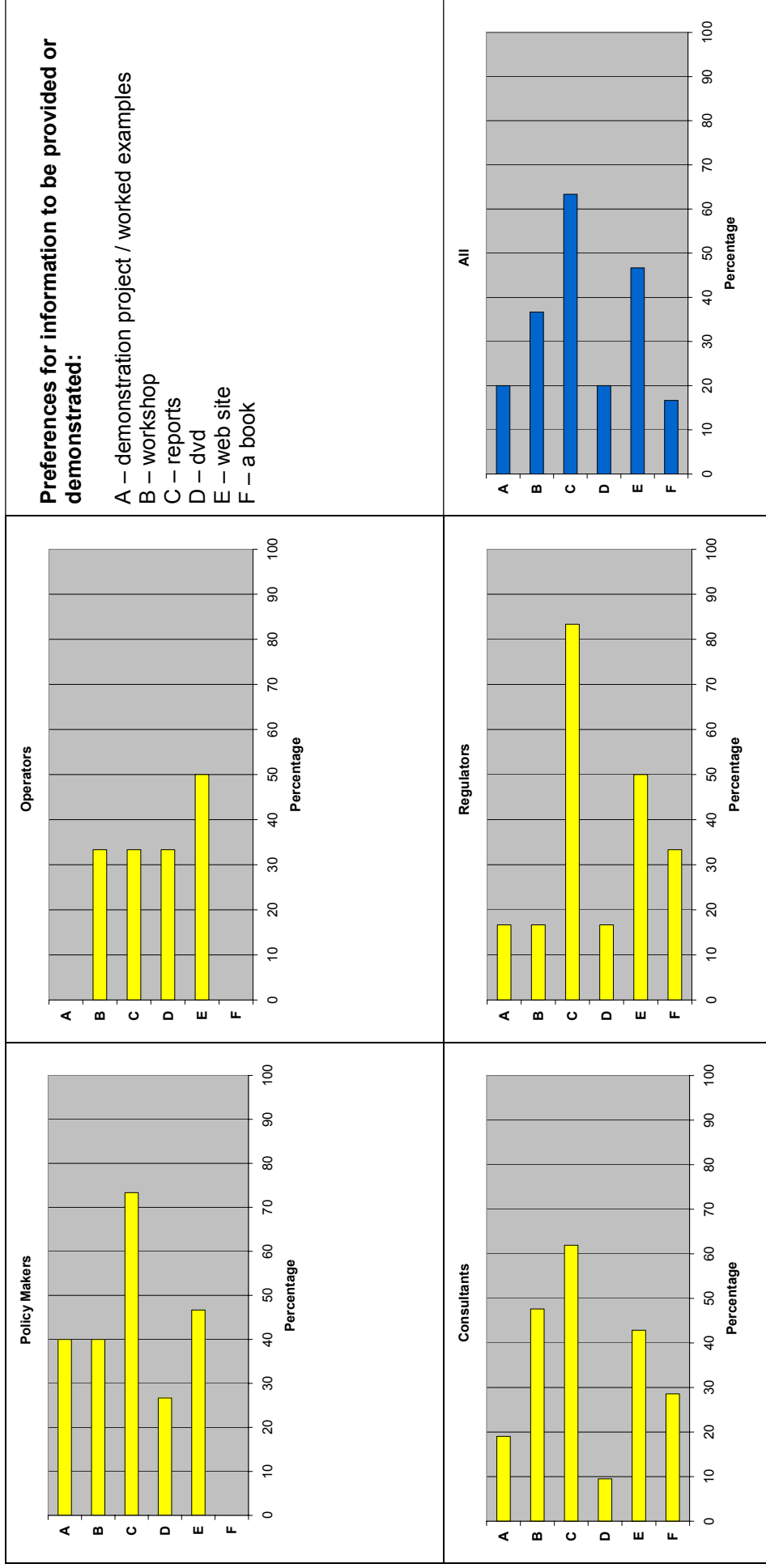


Figure 5.7 Dissemination

Notes: The terms “Policy Makers”, “Operators”, “Consultants” and “Regulators” are indicative only, representing the predominant roles of the consultees. The total number of consultees (All) is 30, distributed as follows: Policy Makers (25%), Operators (20%), Consultants (35%), Regulators (20%).

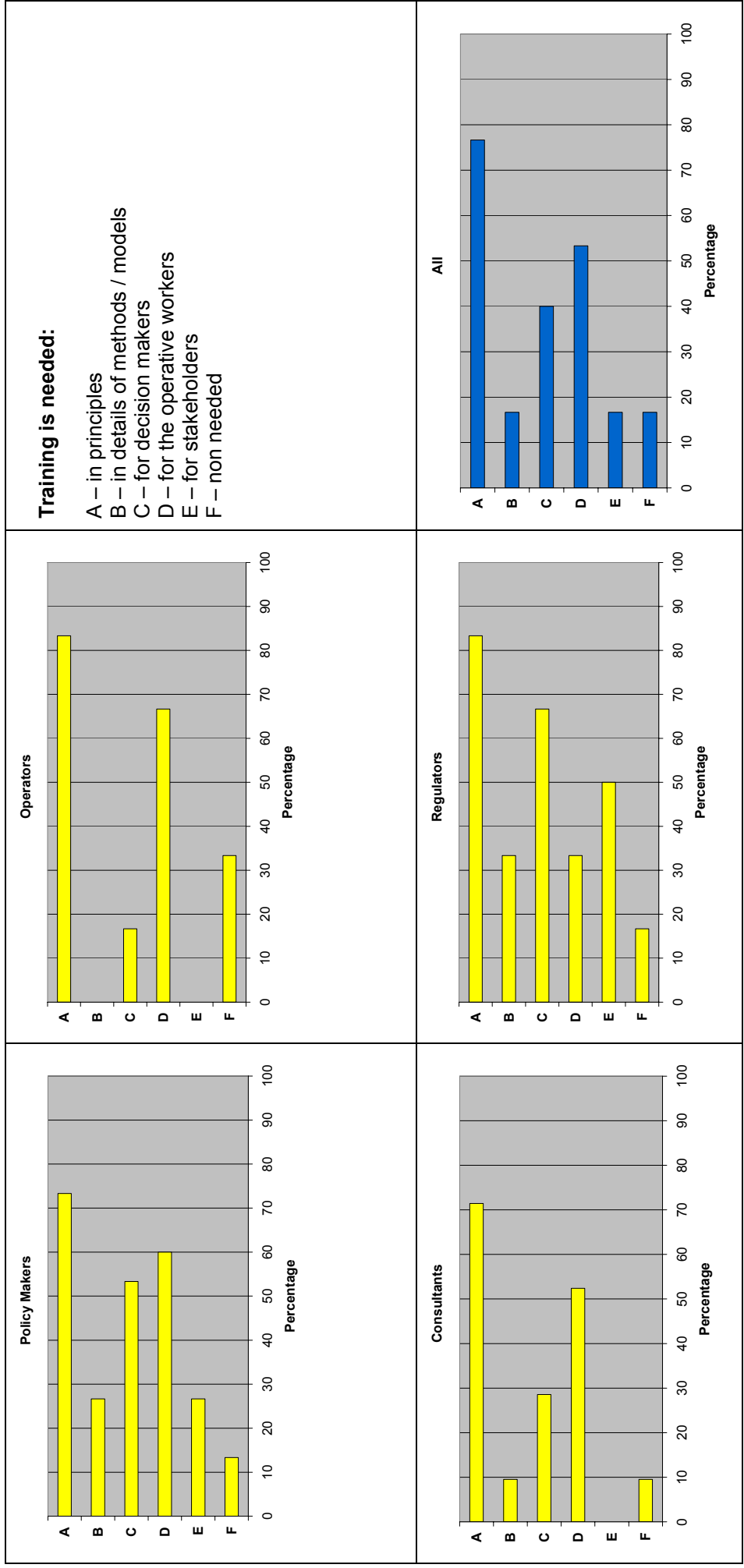


Figure 5.8 Training

Notes: The terms “Policy Makers”, “Operators”, “Consultants” and “Regulators” are indicative only, representing the predominant roles of the consultees. The total number of consultees (All) is 30, distributed as follows: Policy Makers (25%), Operators (20%), Consultants (35%), Regulators (20%).

Appendices

Appendix 1 Objectives of FD2119: Development and Dissemination of the Estuary Research Programme

The scope of the project is summarised by its objectives, as set out below:

1. To define and specify the components of an enhanced Estuary Impact Assessment System (EIAS) as the means by which results and tools arising from ERP2 are delivered to users.
2. To scope out the form of an integrated Estuary Management system (EMS).
3. To scope out the next generation of estuary modelling tools necessary to deliver the EMS.
4. To assess the needs of Operating Authorities, the flood management industry and other organisations involved in estuary management, to understand who wants/needs to know about the outputs and the best way to disseminate the tools that the programme is producing.
5. To disseminate these via a web site and face-to-face at a workshop and two training events.

Appendix 2 List of consultees with whom discussions took place

The following list indicates the consultees for FD2119 agreed with the Environment Agency and Defra. The project FD2117 was also tasked with undertaking consultation and hence some of the consultees have been approached with joint requests for their views and experience on the Estuaries Research Programme. The consultation has been handled by HRW (HR Wallingford) or ABPmer (ABP Marine Environmental Research) as noted. The results of the FD2117 consultation will be reported separately as part of that project

Organisation Type	Dept/ Company/ Interest	Main contact for consultation or coordinator for multiple consultees	FD2119	Joint FD2119/ FD2117
DEFRA	R & D Dissemination Officer	Jule Harries		ABPmer
	Marine Environment	Paul Leonard		ABPmer
		Paul Murby		ABPmer
CONSULTANTS	Atkins	Jon McCue	HRW	
	Royal Haskoning	Greg Guthrie	HRW	
	Jacobs Babtie	Ray Traynor	HRW	
	HR Wallingford	Mike Dearnaley	HRW	
	Halcrow Group	Nigel Pontee	HRW	
	Black and Veatch	David Keiller	HRW	
	Mouchel Parkman	John Pos	HRW	
	Delft Hydraulics	Andries Roelfzema	HRW	
	Independent	Richard Young	HRW	
	Independent	Mike Thorn		HRW
ENVIRONMENT AGENCY	Policy (FD2119 Project Officer)	Kate Marks		HRW
	TE 2100	Megan Linwood	HRW	
	Wales, Operations	Tim England	HRW	
	Policy Development	Craig Elliot		HRW
	R&D MAR	Suresh Surendran		HRW
	R&D SAM	Chrissie Mitchell	HRW	
	Humber Operations	Helen Richardson	HRW	
	Habitat	Duncan Huggett		ABPmer
	Coastal Policy	Steve Worrall		ABPmer
	Coastal Policy	Karen Thomas		ABPmer
Shoreline Management	Gemma Costin	HRW		
Humber Estuary	Philip Winn		HRW	
CEFAS	Regulatory Assessment	Andrew Birchenough	HRW	
NATURAL ENGLAND	Estuaries Conservation	Roger Morris		HRW
PORTS	Harwich Haven	John Brien	HRW	
	ABP Grimsby Assistant Port Manager	Roger Arundale		ABPmer
	ABP Sustainable Development Manager	Peter Barham		ABPmer
TEACHING	Southampton University	Rob Nicholls		ABPmer

Appendix 3 Sample discussion points

The following note was issued to consultees in advance of the discussions.

1. What are your interests in estuaries – general or site specific?
2. Were you aware of the Estuaries Research Programme (ERP) before this contact?
3. Were you aware of the various web sites conveying details of estuary research? – e.g. the Estuary Guide: www.estuary-guide.net/links.asp
4. Have you used any of the products of the programme (or EMPHASYS) before? If so, which, and in what ways were they useful?
5. In what areas do you think that our understanding of estuary morphology should be improved?
6. How might an improved knowledge help you? What would you like to see?
7. How would you want that information conveyed to you?
8. What tools would you like to use?
9. What training would be useful to you and your colleagues?

Appendix 4 Pen pictures of the ERP projects

Estuaries Research Programme (ERP)

This should be read in conjunction with the ERP timeline chart produced by Defra –see end of this Appendix. For more information visit the web sites given or <http://www.defra.gov.uk/enviro/fcd/research/>

FD1006 Estuary Process and Morphology Scoping Study

This was the original scoping study produced by a consortium led by HR Wallingford which came up with a costed programme of research over a period of 10 years. The programme of research was designed to come up with an Estuary Management System containing physical, ecological, social, economic factors. The report produced was SR478 (HR Wallingford).

W5-010 Predicting extreme water levels in estuaries

The overall objective of the study led by Halcrow with University of Bristol, was to develop rigorous but practicable methods for the real-time forecasting of extreme water levels in estuaries, suitable for incorporation into existing Environment Agency flood warning systems.

FD1401 ERP Phase 1 also known as EMPHASYS

EMPHASYS stood for Estuarine Morphology and Processes Holistic Assessment System. This large multi-partnered project was led by HR Wallingford and delivered three reports and a database. The reports were on a Mark 1 Estuary Impact Assessment System, a comprehensive technical report on modelling and data based assessments of estuaries, recommendations for Phase 2. End project workshop. Available from the web at <http://www.hrwallingford.co.uk/projects/ERP/>

FD2002 Futurecoast

This project was delivered by a team led by Halcrow and produced behavioural statements for coasts and estuaries, a geomorphological manual, assessment of future shoreline behaviour under assumptions of unconstrained (i.e. assuming no defences or management practices) and managed (i.e. assuming present management practices continue indefinitely) future scenarios. A video fly-by around the coastline of England and Wales was also completed in 2001. The report is available as an interactive CD ROM and there is also an accompanying Aerial Photograph CD with the digital video.

FD2102 Tidal river bathymetry

This project covered the collection of bathymetry in the River Humber in 2001.

FD2108 BSEIM scoping study

This project was delivered by a team led by Cascade Consulting and scoped the requirements for successful simulation of Broad Scale Ecosystem Impact Modelling. This will require tools that can predict the changes in hydraulic, hydrodynamic, geomorphological and ecological systems and the interactions and feedback loops between each. The simulation of geomorphological change and dynamic ecological consequence require significant levels of investigation and testing, for both freshwater and estuarine/coastal systems.

FD2115 Research Plan

This project was completed by Jon French (UCL), Michael Owen and Dominic Reeve (Plymouth) and delivered a report reviewing Phase 1 of the ERP and presented some detailed ways forward for ERP in Phase 2 including a prioritised 3-5 year programme of estuarine R&D and suggested linkages with other programmes.

FD2110 ERP1 Uptake and dissemination

This project was led by Royal Haskoning and the project team produced a public estuaries database, some training materials and a report on how to deal with data building on CIRIA project work done by HR Wallingford and LSE. The estuaries database 2003 is hosted by British Oceanographic Data Centre http://www.bodc.ac.uk/products/external_products/estuaries/

FD1905 ERP2 EstProc

This was led by HR Wallingford and the consortium delivered three reports – one on algorithms for implementing into your own models for hydrodynamic, sediment and ecological aspects. Also there was a metadata report to allow people to trace the data and there was a synthesis report bringing together the good science under one report cover. This is available at www.estproc.net as well as the Defra web.

FD2308 Joint probability – dependence mapping and best practice

This was led by HR Wallingford. This mapped the dependence around Britain for all pairs of variables relevant to flood risk. This filled a gap that delayed the take up of joint probability methods.

FD2107 ERP1 Hybrid estuary model development (to complete in 2007)

The consortium led by POL brought together top down and bottom up process models into a hybrid approach. The approach developed allows the time development aspects of bottom up models to be implemented in a longer term fashion using top down derived targets. There are tests on various estuaries including the Thames. The project finishes at the end June 2007. See web at <http://www.pol.ac.uk/erp/>

WS-0706 Saltmarsh management manual

This was led by Royal Haskoning and has led to an update to the earlier saltmarsh management manual. It is delivered by a web site available at <http://www.saltmarshmanagementmanual.co.uk/>

SC030224 MDSF2 RASP Inception (to complete in 2008)

This project on the Modelling and Decision Support Framework (MDSF) was led by HR Wallingford with Halcrow and University of Middlesex. It dealt with the management of assets within a risk based framework. The MDSF was developed in 2001 to provide a tool for quantifying economic and social impacts of flooding at catchment scale for present day conditions, future scenarios and with flood management options. It has been applied widely for flood/erosion risk assessment as part of the Catchment Flood Management Plan (CFMP) and Shoreline Management Plan (SMP) programmes and has also been used on strategy studies and schemes. MDSF2 is ongoing and due to finish in 2008. For more information see <http://www.mdsf.co.uk/>

**SC040018 Performance Based Asset Management System Phase 2
(to complete in 2007)**

This project is led by HR Wallingford and is related to the management of assets within a risk based framework. This builds on Phase 1 which provided a scoping study that included a review of needs, conceptual framework and initial evaluation of the concept. The focus of the present project is to develop methods to support performance-based and risk-based management of the flood defence assets belonging to the Agency and others. The programme supports the provision of improved inspection, maintenance, operation and management of flood defence systems through the identification of appropriate management interventions to provide a desirable reduction in flood risk.

**FD2117 ERP2 Estuary Simulators Development (EstSim)
(to complete in 2007)**

The consortium led by ABPmer worked on the delivery of comprehensive reports on the behavioural properties estuaries based on the classification of estuaries into seven types. Each estuary type has some common geomorphological elements. There are reports and there will be a web based demonstrator for this estuary behaviour. The project finishes at the end June 2007. See web at <http://www.pol.ac.uk/erp/>

FD2116 ERP2 Review of Geomorphological Concepts

This HR Wallingford led team produced a large text book on estuary geomorphology including information on the steps required in setting up a conceptual model and on the pulling together of data based analysis and modelling approaches to arrive a consensus through Expert Geomorphological Assessment. This was disseminated at a workshop in London and has been published by Defra.

**FD2119 Uptake and ERP3 Scoping
(to complete in 2008)**

This is the subject of the present project. It is aimed at delivering an enhanced EIAS building on all the research done to date and recognising the role of EMPHASYS and the estuary guide by ABPmer www.estuary-guide.net We have used the consultation to inform the formulation of the enhanced website. There will also be work completed on the scoping of the requirements of the future programme to deliver the Estuary Management System. The project is due to finish in early 2008.

Richard Whitehouse
HR Wallingford
13 April 2007

Following 2 pages: Description and timeline of ERP, Defra 2005

ESTUARIES RESEARCH PROGRAMME: Delivering an holistic approach to estuary management

- 3 Phase Programme
- Long-term Programme
- Cross-cutting
- Inter-disciplinary
- Linkages to non-R&D work
- Relevant to wide range of users
- Variety of outputs
- **Phase 1 (Complete)** - tested performance of existing models; collated and scientifically evaluated existing capability; developed prototype Estuary Impact Assessment System (EIAS)
- **Phase 2 (Underway)** – further development of the most promising models; acquisition of new data and their subsequent interpretation; production of interactive software, guidance notes, manuals, reports, and reviews; workshops and open days to disseminate results and outputs; scoping study for future updating of the EIAS
- **Phase 3 (Not started yet)** – may include the development of novel models based on new research and data (including socio-economics and legislation) to deliver an holistic Estuary Management System (EMS).
- **Funding Organisations:**
 - Defra (MAFF)
 - Environment Agency
 - English Nature
 - Natural Environment Research Council
 - Engineering and Physical Sciences Research Council
- **Research Organisations Involved:**

ABP Research and Consultancy	Mouchel Parkman
British Geological Society	Newcastle University
Centre for Environment Fisheries and Aquaculture Science	Plymouth Marine Laboratory
Centre for Ecology and Hydrology	Posford Haskoning
Conlan Consultancy	Proudman Oceanographic Laboratory
Institute of Terrestrial Ecology	Sir William Halcrow & Partners Ltd
HR Wallingford	University of London
Prof Keith Dyer	University of Southampton
	WLJ Delft Hydraulics (The Netherlands)

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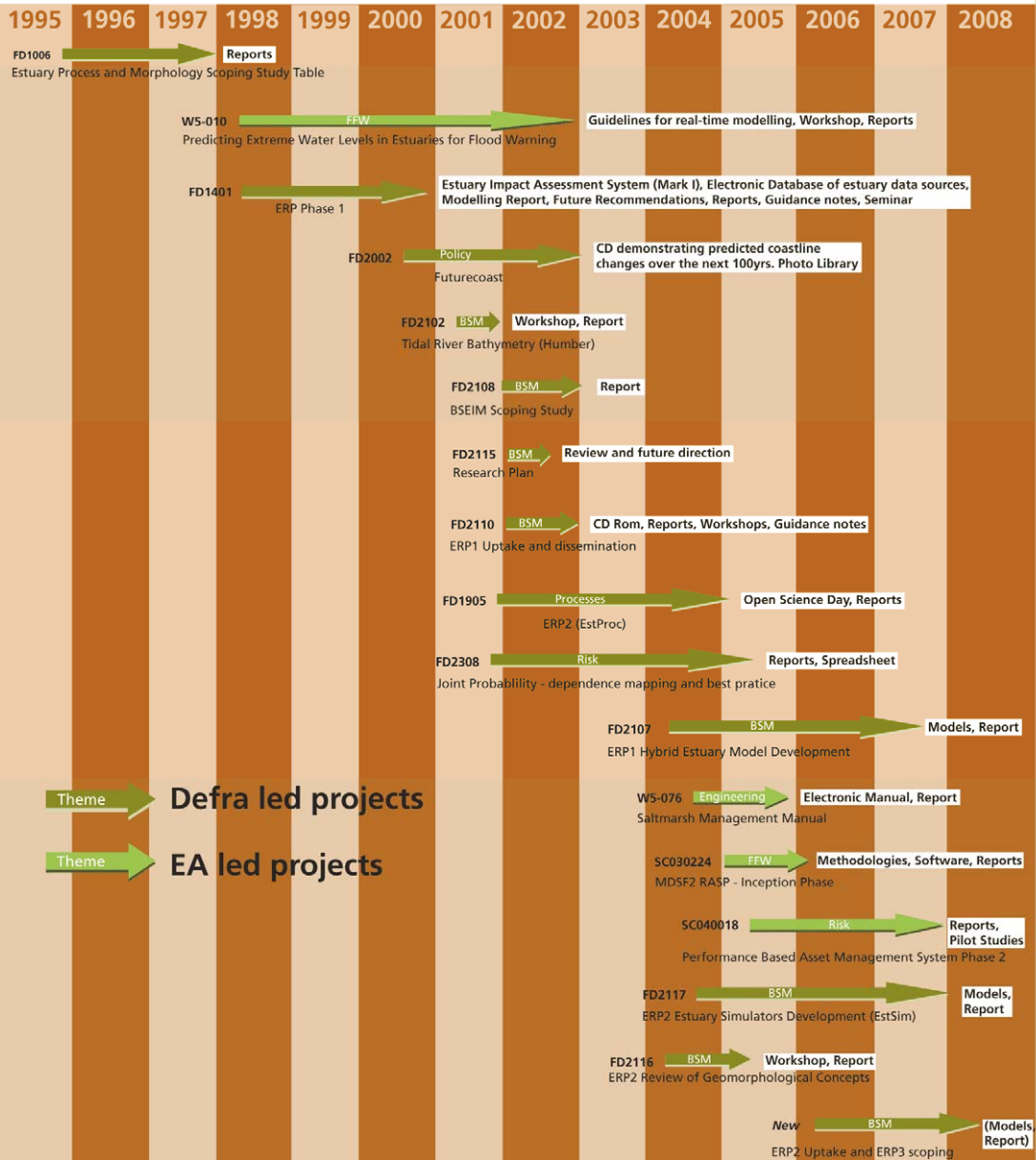
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ESTUARIES RESEARCH PROGRAMME:

Projects and Outputs

(see accompanying literature for more details)



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Appendix 5 Conference Consultation (2-5 July 07)

A5.1 Introduction

During discussion on the first draft of this report, it was decided to include a separate but allied consultation exercise, derived from a questionnaire available to delegates at two events in York in July 2007:

- (i) Estuaries Research Programme Phase 2 Dissemination Day 2 July;
- (ii) Flood and Coastal Erosion Risk Management Conference 3-5 July.

The exercise was designed around the outputs from the Initial Consultation, as described in the core part of this report. A questionnaire was prepared, based on response categories 1, and 4 to 8, from Table 4.1 (i.e. six questions in total). The questionnaire is reproduced in Appendix A5.7.

Delegates were invited and encouraged to complete a questionnaire. Appendix A5.8 lists the consultees. The consultee base thus differed from that of the Initial Consultation as there was no deliberate attempt to capture those known to be involved in the industry (and hence likely to have former familiarity with ERP1). However, the nature of both events and the motivation of those completing questionnaires might suggest an inclination towards prior knowledge or involvement in estuary management of one form or another.

A5.2 Distribution of consultees into groups

The questionnaire asked for the Job Title/Role of the consultee. From this we can usually suppose the category of the consultee in terms of the roles identified in Section 4, i.e:

- **Policy makers** – e.g: public sector Policy Makers; R&D programme managers;
- **Operators** – e.g: port managers and engineers; public sector regional defence and estuary managers;
- **Consultants** – e.g: private sector consultants and advisors;
- **Regulators** – e.g: environmental regulators from both public and private sectors.

In the Initial Consultation there was just one consultee from academia who, for the purposes of the data analysis, was classified as 50% Consultant and 50% Policy Maker. In the case of the Conference Consultation there were several academics. To make a fairer comparison therefore, Table A5.1 shows the distribution of consultees by number and percentage, with academics identified as a separate group. The grouping of consultees as indicated here is necessarily very approximate as the consultees are from a wide range of backgrounds (wider than Initial Consultation); the allocation to particular groups is therefore made according to the individual's nature of work or role, as opposed to that of their respective organisation or, indeed, their job title.

Table A5.1 Distribution of Consultees

	Group					
	Policy Makers	Operators	Consultants	Regulators	Academics	All
Initial Consultation No.	7	6	10	6	1	30
%	23%	20%	33%	20%	3%	100%
Conference Consultation No.	4	6	13	0	4	27
%	15%	22%	48%	0%	15%	100%

Arguably, the Initial Consultation yielded the more equitable spread of end-user groups through selection, than the Conference Consultation did through voluntary participation.

A5.3 Collated results

As the consultee groups are rather less well distributed than in the case of the Initial Consultation (e.g. no Regulators), the value of examining the trends according to each consultee group is reduced, and could be misleading. Results are, therefore, given for the “All” category only.

To facilitate comparison with the Initial Consultation results, the two sets are shown side-by-side in Figures A5.1, A5.2 and A5.3. Each page gives two response category results.

A5.4 Factors potentially affecting analysis of the Conference Consultation

The Initial Consultation and the Conference Consultation used quite different mechanisms to derive opinion, though both culminate in the same style of output. On the one hand, the Initial Consultation used open discussion based around broad ideas and questions; from that discussion, unprompted thoughts and suggestions were proffered by the consultees. Those suggestions, when collated, were translated into the various prompts that were used to collate and compare responses (Table 4.1). The Conference Consultation, on the other hand, started with those prompts as possible (or alternative) responses to the six parts of the questionnaire. Thus, in the second approach the consultees had a range of given answers from which to choose, including some which they might not have considered had they not been presented so. This approach was ideal for the environment in which it was applied as it enabled consultees to respond quickly between conference sessions, or in other spare moments.

Using two different approaches must, in turn, affect the results by virtue of the methodology. The following factors are identified as being relevant:

(a) *Consultee base*: Table A5.1 shows that the Conference Consultation captured a different distribution of consultees (user groups) to that of the Initial Consultation. The Conference Consultation has a greater proportion of

Consultants relative to other groups, and no Regulators at all. Being aware of this imbalance we can interpret the results accordingly, cross-referencing to the Initial Consultation as appropriate to see if or how the results might be affected.

(b) Tick box approach – effect of volume of response: By having the answers (prompts) presented to them, in the case of the Conference Consultation, it is likely that consultees will respond to a greater number of prompts, simply because ideas are exposed which might not otherwise have occurred to them. This could lead to a flatter response, i.e. one in which more boxes are ticked overall. We can easily measure the potential for this by comparing the “volume” of responses (equal to the total percentage of responses to each question) between the two consultation exercises. Table A5.2 shows the results of this comparison. Of the four questions offering multiple choice answers (Q3 to Q6), the first three indicate a higher volume of response from the Conference Consultation. It is possible that the consultees became more wised-up to the pattern of the exercise as they move through it and react by applying greater discretion in their response to the later questions (or they were anxious to get to the next conference session!). Nevertheless, there does appear to be an influence due to the nature of how the second (and first) consultation was conducted; being aware of this potential, we can allow for a measure of response flattening in our interpretation.

(c) Tick box approach – effect of ordering the prompts: the thinking described in the last paragraph can be taken a step further by considering the order in which the prompts appear under each question. It is conceivable (albeit somewhat cynically) that, presented with a series of possible answers, a consultee might begin to tick all those that they do not disagree with; realising (subconsciously) that this approach does not demonstrate much discretion, they then apply more discretion to the later prompts in a given question. This tendency would lead to a kind of “front loading” of the response such that, for a given question, the earlier listed prompts tend to be ticked in subconscious preference to the later ones. We can gauge this by considering the “centre of gravity” of each question’s response; this can be thought of as the position in the list of prompts where the equivalent “volume” of responses would be located to yield the same overall distribution of weight, as demonstrated by the following two examples: (i) in a question with five possible responses (A to E), all the responses are located under the fourth prompt D – so, the centre of gravity is 4.0; (ii) in a question with six possible responses (A to F), the responses are evenly distributed into the each of the prompts – the centre of gravity is 3.5 (i.e. between the third and fourth responses, C and D). Table A5.2 shows the “centre of gravity” both for the Initial Consultation and the Conference Consultation. With one marginal exception, in every other case the Conference Consultation yields a lesser centre of gravity, thus suggesting the potential for the responses to be front loaded. Being aware of this potential, we can allow for a measure of front loading in our interpretation.

Table A5.2 Factors relevant to Tick box approach

Question		1	2	3	4	5	6
No. of Prompts		2	2*	5	6	6	6
Volume (total %)							
Initial Consultation = a		139	100*	118	146	204	221
Conference Consultation = b		126	100*	226	289	244	215
	b/a	0.91	1.00	1.92	1.98	1.20	0.97
Centre of Gravity (prompt position)							
Initial Consultation = c		1.5	1.6	3.5	3.3	3.43	2.9
Conference Consultation = d		1.4	1.5	2.5	3.2	3.45	2.6
	d/c	0.93	0.94	0.71	0.97	1.00	0.89

Questions:

1. Interests in estuaries are:
2. Previously made use of ERP outputs:
3. Improved information and methods would help:
4. Main improvements that are needed in estuary science:
5. Preferences for information to be provided or demonstrated:
6. Training is needed:

Note* the answers to this question are mutually exclusive

A5.5 Interpretation

A5.5.1 Q1 – Interests

Figure A5.1 shows the results for the question:

Interests in estuaries are:

The results are similar to those yielded by the Initial Consultation but with a slightly fewer consultees' interests being in connection with specific estuary sites.

A5.5.2 Q2 – ERP Outputs

Figure A5.1 shows the results for the question:

Previously made use of ERP outputs:

The answers to this question are exclusive (i.e. they add up to 100%).

The Conference Consultation yields a near 50-50 split between those who had previously made use of ERP and those who had not. The results indicate rather more using ERP than in the case of the Initial Consultation. This bias is not likely to be due to front end loading, rather than the make up of the consultee base corresponding to each of the consultation exercises. In the case of the Initial Consultation, previous use of ERP outputs was strong amongst the Consultants and Regulators; notwithstanding the fact that there were no

Regulators identified in the Conference Consultation, the combined percentages are more or less the same for each consultation exercise. However, the higher percentage of academics responding to the Conference Consultation is probably responsible for the higher percentage of ERP users in the Conference case (all voted for answer A).

Allowing for the factors just discussed, the Conference Consultation broadly agrees with that of the Initial Consultation.

A5.5.3 Q3 – Motivation

Figure A5.2 shows the results for the question:

Improved information and methods would help:

This is the first multiple choice question. The plots shown in Figure A5.2 and the data given in Table A5.2 suggest a rather flat overall response, i.e. most consultees agreeing with most prompts, with the potential for front loading of answers. Thus we see that “better decision making” (A) is the most wanted prompt, whereas it ranked fourth out of five, in the Initial Consultation.

However, the originally most favoured prompt “improved confidence” (D) still ranked second in the Conference returns. Given its low physical position in the list of possible answers (4/5) we can suppose that if front loading was affecting the result it would act in a negative way, i.e. suppressing the number of votes. Thus we can conclude that “improved confidence” remains a very strong motivation for improved information and methods in estuary science and management.

Consultees were also asked to volunteer “other” ways in which improved information and methods would help them. Although 34% of consultees completed this entry, about half of these were suggested improvements, or belonged to other questions (wherein they are considered). Of those that answered in terms of the intended context of the question – i.e. how improvements would help them (do their job), the following are noted:

- to characterise estuaries;
- to effect better modelling;
- to publicise and effect easier access to data;
- professional development.

A5.5.4 Q4 – Improvements needed

Figure A5.2 shows the results for the question:

Main improvements that are needed in estuary science:

As with Q3, this question appears to have generated quite a flat response and there is potential for front loading.

As with Q3, the first prompt, “data availability” (A) is (jointly) the most voted for prompt. The previously most voted for prompt “reducing uncertainty and/or

understanding degree of uncertainty” (C) ranks third in the Conference Consultation, being marginally behind prompts A and B. Hence it can be concluded that this remains a strong preference.

“Climate change” (B) is, in both case, the second ranked (or joint equal) preference.

The last prompt in the list, “understanding the sediment physics” (F), though fourth in ranking, attracted a poll of 44% of consultees. Given its low physical position in the list of possible answers (6/6) we can suppose that if front loading was affecting the result it would act in a negative way, i.e. suppressing the number of votes. Thus we can conclude that “understanding the sediment physics” remains a moderately strong preference in the improvement category.

As with the Initial Consultation, “uptake of research” (D) and “understanding the hydraulics” (E) are the lowest (or joint lowest) ranked improvements asked for.

The results of the Conference Consultation broadly follow the patterns of the Initial Consultation except in the case of the first prompt “data availability” (A) which scored highest in the later exercise whilst previously being ranked second lowest. This shift in response could be due to a genuine consensus desire for this area to be improved, but could be influenced by front end loading of the questionnaire.

Consultees were also asked to volunteer “other” main improvements needed in estuary science. Including suggestions made elsewhere on the forms, this prompt returned answers equating to 18% of the consultee base. The following are mentioned:

- better evidence and appropriate innovation;
- a route map and logical framework on use and integration of models;
- understanding qualitative methods;
- ecological impact (understanding).

A5.5.5 Q5 – Dissemination

Figure A5.3 shows the results for the question:

Preferences for information to be provided or demonstrated:

This question inadvertently invited a slightly different kind of response to the others – it was the only question that contained the word *preferences*. Hence, in this way, the consultees were encouraged to apply more discretion to their answers, rather than ticking all prompts that they did not disagree with. This reflects in the “volume” of responses which Table A5.2 shows to be quite close to that of the Initial Consultation, together with effectively the same “centre of gravity”. Arguably, this question most closely resembles the outcome of discussions from the earlier consultation exercise.

The highest three ranked preferences are: “web site” (E); “workshops” (B); and “reports” (C). This was also the case with the Initial Consultation except that the

ranking was (C), (E), and (B). It might also be noted that the lowest ranked three preferences “demonstration project/worked example” (A), “dvd” (D); and “a book “(F) were same in both consultations exercises.

Perhaps the most striking aspect of this comparison is the very high vote for web sites in the case of the Conference Consultation, especially given its low position (5/6) in the list of prompts (i.e. not aided by any front loading). This outcome needs to be recognised in the overall consideration of dissemination.

Consultees were also asked to volunteer “other” preferences for information to be provided or demonstrated. Including suggestions made elsewhere on the forms, this prompt returned answers equating to 18% of the consultee base. The following are mentioned:

- guidance integrated into EA process documents;
- newsletter or journal;
- European project;
- material that can be used at a local level.

A5.5.6 Q6 – Training

Figure A5.3 shows the results for the question:

Training is needed:

Table A5.2 shows that the Conference Consultation yielded nearly the same volume of responses as the Initial Consultation (actually slightly less), whilst the “centre of gravity” implies some front loading. However, the latter might be also be weighted by consultees’ reluctance to tick the last prompt, “non needed” (F), on a form they have put their name to!

Taking the Conference Consultation results at face value, we see that “training in principles” (A) is the highest ranked prompt, as indeed it was with the Initial Consultation. However, unlike the earlier consultation, it is followed closely by training “in details of methods/models” (B).

Perhaps the most significant results from the Conference Consultation are those relating to prompts (C) and (D): training is needed for “decision makers”, and/or for the “operative workers”, ranked in that order. This represented a reversal of the response to the Initial Consultation. A possible explanation for this is that the conference consultees attached a different meaning to the term “operatives” than was intended (i.e. all those involved in the day-to-day science, engineering and management of estuaries). Coined for the purposes of the Initial Consultation (to represent a wide range of project specific workers), the term “Operatives” was hardly, if at all, used by the initial consultees themselves. Otherwise, there is no obvious explanation for the difference between the two consultation exercises on this one issue. For the avoidance of doubt, the importance of training in respect of Decision Makers should be recognised in the overall consideration of dissemination.

Consultees were also asked to volunteer “other” suggestions for training. Including suggestions made elsewhere on the forms, this prompt returned answers equating to 12% of the consultee base. The following are mentioned:

- Need to convey the relevance of training to a particular user;
- Support for MSc courses on estuary morphology, practicals etc.

A5.6 Summing up

The Conference Consultation has provided a useful addendum to the more comprehensive Initial Consultation conducted earlier in the year.

As the two exercises were conducted in quite different ways, inevitably the different results they yield are partly conditioned by the manner in which they were derived. Whilst clearly, the Conference results will be influenced by having a different consultee base, it is also thought that they could be affected as a result of “response flattening” (a tendency to tick more boxes when the various options are presented to you), and “front loading” (a tendency to tick more of the earlier boxes in a questionnaire).

The results have been assessed, being mindful of the potential biases mentioned in the paragraph above. Qualitatively, if not quantitatively, the Conference Consultation has returned similar outcomes to the Initial Consultation exercise. Even allowing for potential biases, the following outcomes are regarded as significant additions to those gathered in the earlier exercise:

- There is a consensus of opinion in favour of a web site, especially one providing a central/nodal function;
- There is a need to consider the training of decision makers on a par with that of the operative workers, with training tailored to suit the particular needs.

A5.7 Conference Questionnaire

Development and Dissemination of the Estuaries Research Programme

How you can help: The stand provides the results of an initial consultation exercise. We would like to extend this to a wider audience and would appreciate your views. If you would like to contribute to this valuable exercise we would greatly appreciate a few minutes of your time in completing this form. Please circle the answers you feel best fit your needs.

Name:	Organisation:	Job Title / Role
1. Your interests in estuaries are: A – Generic B – Specific to particular sites		
2. Have you previously made use of the ERP outputs? A – Yes B – No		
3. How would improved information and methods help you? A – better decision making B – better planning C – better policy development D – improved confidence (organisation and/or public) E – independence from those holding the information F – Other.....		
4. The main improvements needed in estuary science are: A – data availability B – understanding impact of climate change C – reducing uncertainty and/or understanding degree of uncertainty in the result D - Uptake of research E - Understanding the hydraulics F - Understanding the sediment physics (esp. sandy vs muddy estuaries) G – Other.....		
5. How would you like information to be provided or demonstrated: A – demonstration projects/worked examples B – workshop C – reports D – dvd E – web site F – a book G – Other.....		
6. What training do you consider is needed? A – in principles B – in details of methods/models C – for decision makers D - for the operative workers E – for stakeholders F – non needed G – Other.....		

A5.8 List of Conference Consultees

The following lists the consultees from both July events.

Organisation Type	Dept/ Company/ Interest	Consultee
LABORATORIES	POL	Andy Lane
	POL	John Huthnance
	Channel Coastal Observatory	Travis Mason
CONSULTANTS	Jacobs UK Ltd	Duncan Wishart
	Royal Haskoning	Greg Guthrie
	Halcrow Group Ltd	Hakeem Johnson
	Mott Macdonald	Rosalind Turner
	Cascade	Kieran Conlan
	ABP Mer	Paul Norton
ENVIRONMENT AGENCY	Strategic and Development Planning	Lee Swift
	Asset Investment and Planning	Craig Jones
	External Funding	Ed Clegg
	Flood Risk Mapping	Keith Nursey
	R&D MAR	Suresh Surendran
	Hydromorphology	Niall Phelan
	TE 2100	Owen Tarrant
	TE 2100 Team Leader	Phil Shaw Tilak Peiris
RESEARCH ASSOCIATIONS	CIRIA	Nick Bean
INSURANCE	Norwich Union	Eleanor Bruun Susana Elliot
TEACHING	Southampton University	Rob Nicholls
	Liverpool University	Brian O'Connor
	Plymouth University	Dominic Reeve
	Newcastle University	Mike Walkden
LOCAL / WATER AUTHORITIES	Severn Trent	Tim Farr
	Purbeck DC	Mike Goater
	Sefton BC	Graham Lymbery

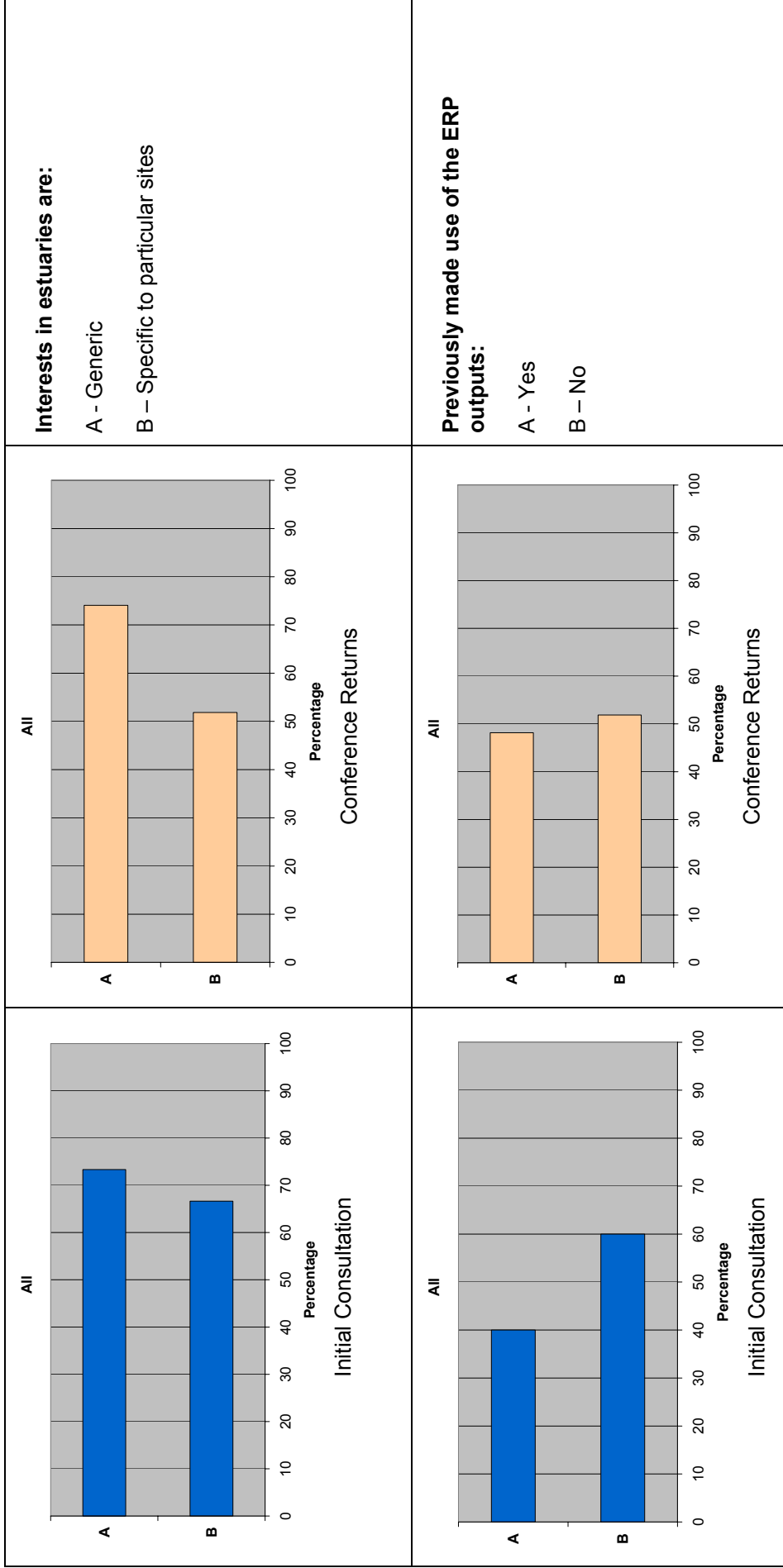


Figure A.1 Interests and Previous Use of ERP Outputs– Initial Consultation and Conference Returns

Notes: The total numbers of consultees (All) are Initial Consultation: 30, Conference Consultation: 27.

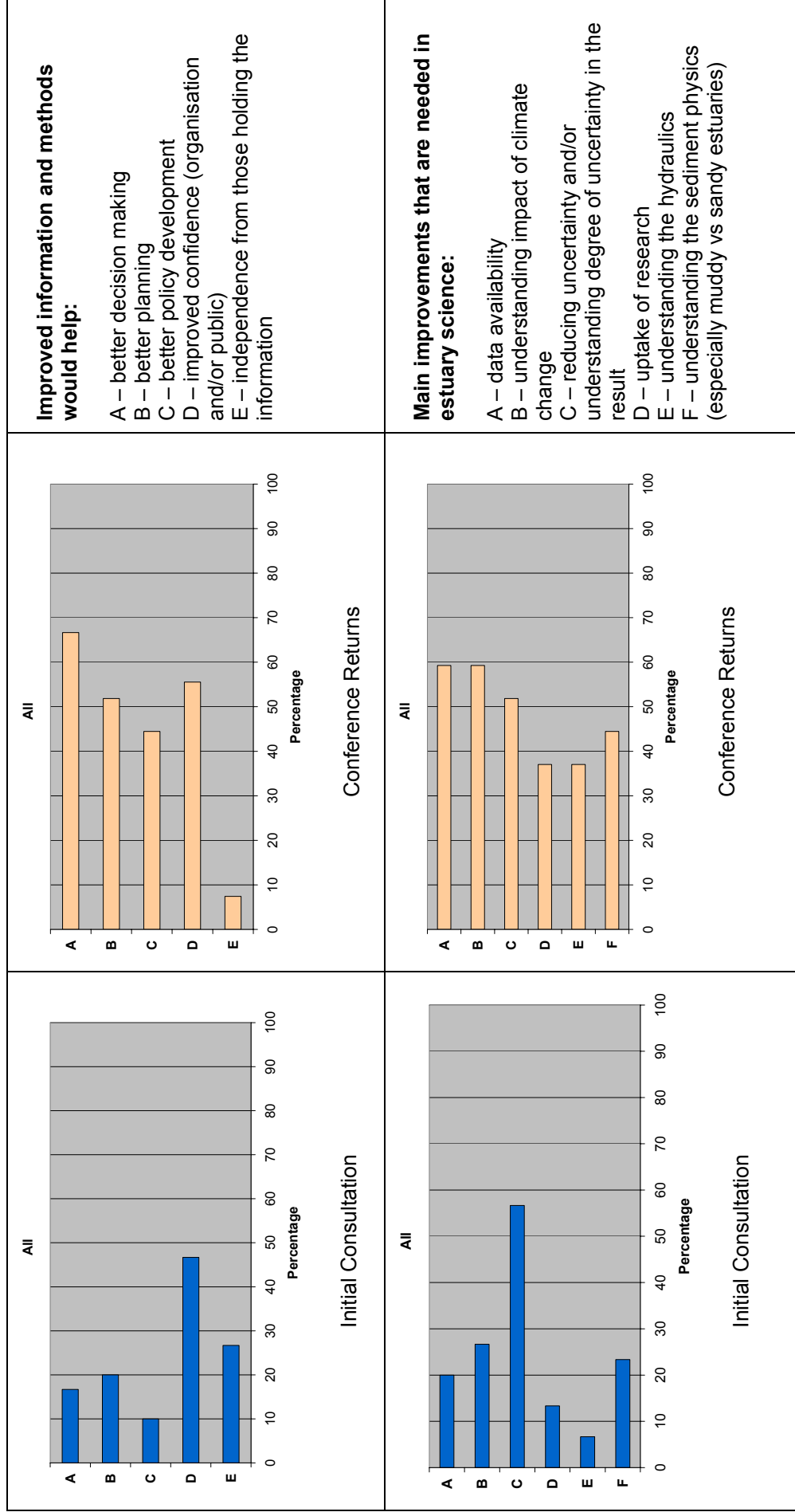


Figure A.2 Motivation and Improvements Needed – Initial Consultation and Conference Returns

Notes: The total numbers of consultees (All) are Initial Consultation: 30, Conference Consultation: 27.

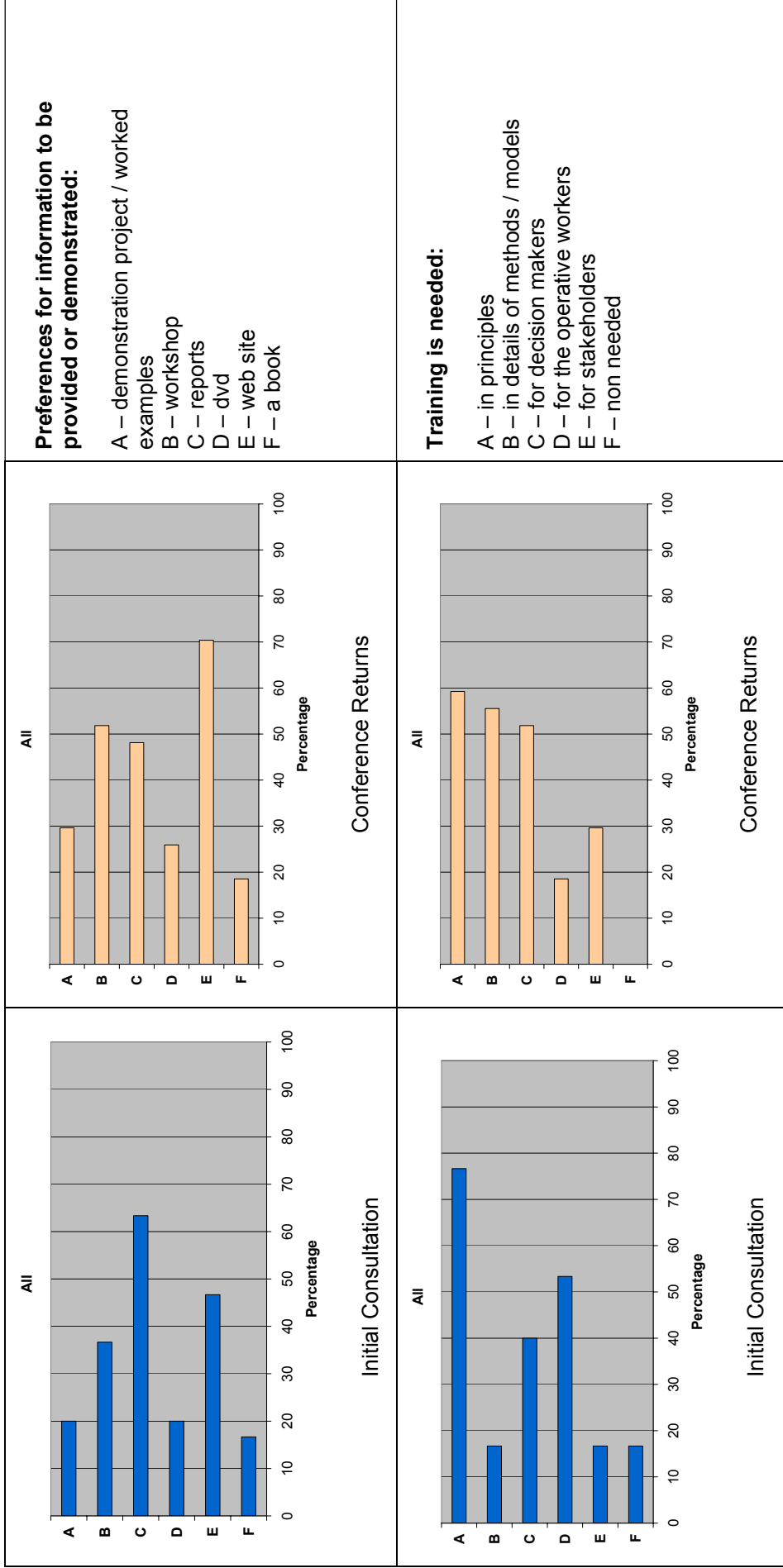


Figure A.3 Dissemination and Training – Initial Consultation and Conference Returns

Notes: The total numbers of consultees (All) are Initial Consultation: 30, Conference Consultation: 27.

Appendix 6 Abbreviations used in the report

EAG Estuaries Advisory Group

EMPHASYS Estuarine Morphology and Processes Holistic Assessment System

ERP Estuaries Research Programme

FEPA The Food and Environment Protection Act (1985)

WFD Water Framework Directive

LOIS Land-Ocean Interaction Study

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