



**Study to Inform  
the Policy Review  
of the Aggregates  
Levy Sustainability  
Fund**

**For the Department  
for Environment,  
Food and Rural  
Affairs (Defra)**

**By  
London Economics**

**April 2006**

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Sustainability Fund**

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# 1 Terms of reference

Defra commissioned London Economics (LE) to conduct the current study in September 2005. Defra's terms of reference for this study can be summarised as follows:

Defra is to carry out a policy review of the Aggregates Levy Sustainability Fund in two parts. The first will examine what the Fund has achieved, whether it should continue beyond 2007 and, assuming it does, what it should do. Then if a decision is taken to continue the Fund, the second part would be to consider how the Fund should be delivered.

The output of this study will inform the first part.

The contract also states that the study should make recommendations on

In relation to the existing programme

- o The extent to which the funding so far has achieved its objectives
- o Whether it is providing good value for money

In relation to potential funding post-2007:

- o Whether the Fund has a role to play alongside other related policies
- o (if there is a role for the Fund) what the objectives of funding should be in the future and what activities would provide value for money in meeting those objectives, and over what period of time
- o What weight should be dedicated to each activity taking account of costs and benefits?
- o Other salient parts of the terms of reference include the following:

The views of representatives of communities affected by aggregates extraction, the aggregates industry, government, non-governmental organisations, and other experts in the relevant fields would be sought as part of this exercise.

In relation to the existing programme, consultants should focus on examining work undertaken since April 2004 but may consider work undertaken during the earlier period if this helps to meet the research objectives.

Consultants should either have or develop an understanding of how the fund relates to other relevant policies. In particular, consultants should take account of ongoing work to evaluate the Levy.

[The] consultants may wish to draw attention to any particular areas where the way the Fund is delivered has had or might in the future have a strong bearing on what it achieves.

## 2 Executive summary

### Introduction

This study for Defra has been undertaken by London Economics (LE). The study will contribute to Defra's review of the Aggregates Levy Sustainability Fund (ALSF). There are two main aims for this study. First, to review the extent to which the ALSF has achieved its objectives and the extent to which it is providing good value for money. Second, to consider what the objectives and main activities for the Fund should be if it is considered that it should have a continuing role beyond 2007.

In carrying out this study, LE has undertaken a number of activities. These include a survey of delivery partners and other stakeholders; interviews and a workshop with delivery partners and other stakeholders; analysis of Defra's ALSF project database; and a review of relevant documentary material.

The ALSF is a spending programme related to the aggregates industry that Defra runs by allocating monies to various delivery partners (DPs) under terms guiding their use. Both the ALSF and the aggregates levy, a levy on the commercial exploitation of primary aggregates in the UK, began in 2002. Spending over the four fiscal years 2002-3 to 2005-6 will total around £84 million. Over 1,200 ALSF projects were listed on Defra's database as at April 2006.

At present, Defra requires that ALSF funds be spent on one of four objectives:

- 1). To minimise demand for primary aggregates,
- 2). To promote environmentally friendly extraction and transport [of primary aggregates],
- 3). To address the environmental impacts of past aggregates extraction, and
- 4). To compensate local communities for the impacts of aggregates extraction.

The allocation of funds across these four objectives is summarised in Table 1.

<b>Table 1: ALSF spending by objective and project date</b> (Projects completed by December 15 2005)			
<b>Objective</b>	<b>Total grant (£m)</b>	<b>Share of total grant (%)</b>	<b>No. of projects</b>
1	4.6	9.6	75
2	16.2	34.1	240
3	26.8	56.2	499
4	0.06	0.1	6
<b>Total</b>	<b>47.59</b>	<b>100</b>	<b>820</b>

We take each of these objectives in turn discussing their achievements, their value for money and whether they should continue to be funded in their current form.

### **Objective 1 - Minimising demand for primary aggregates**

About half of Objective 1 (O1) funds were spent on capital grants with the remainder being spent on dissemination and research projects.

Capital grants to private firms have contributed to the construction of plant to convert construction and demolition waste into recycled and secondary aggregates (RSAs) with an annual productive capacity of 1.17 million tonnes. There is a risk that some of this capacity may have been made available by private firms even in the absence of the ALSF capital grants, but this is mitigated by the project selection criteria, which are designed to ensure that capital grants only subsidise investments that would not otherwise be made.

Research and dissemination projects do appear to have achieved a wider understanding of the uses of RSAs, though there was some suggestion that there was a need for further dissemination activity, particularly in relation to smaller organisations in the construction sector.

In practice, almost all O1 projects have aimed at increasing the volume and quality of recycled and secondary aggregates (RSAs) used in the UK. No projects have attempted to reduce the demand for primary aggregates by reducing the rate of new construction of buildings or roads.

Overall, we believe that expenditure on research and dissemination activities for O1 has been providing value for money. The position of capital grant expenditures is less clear. The extent of value for money achieved from these projects depends on the degree to which they provide necessary ongoing support to the Aggregates Levy in terms of assisting the industry response to the incentives provided by the Levy for reducing primary aggregates abstraction, and also the degree to which they were able to assist the industry in adjusting to the effects of the Aggregates Levy in the early phases of its introduction. Whilst the capital grants may have provided some value in the past whilst the industry was adjusting to the Levy, we think that this is less likely to continue to be the case.

We recommend the continued funding of research and dissemination activities under O1 and the cessation of capital grants, subject to consideration of whether capital grants aimed at improving the quality of RSAs in use may provide value.

### **Objective 2 - Promoting environmentally friendly extraction and transport**

Most of the O2 expenditure has been on research projects. Relatively small amounts have also been spent on dissemination and on transport projects.

Overall we conclude that the research and dissemination activity under O2 has been contributing positively to the promotion of environmentally friendly extraction and transport. In addition to research being disseminated, there are indications that some of it is beginning to have an affect on operational practices, though for many projects it is too early to assess this. None of the O2 transport projects listed on the Defra database had been completed at the time of review.

The selection procedures for the O2 transport projects involve a detailed quantitative ex ante assessment of value for money by the Department for Transport. These assessments suggest that high benefit to cost ratios are expected to be achieved through these projects. The value for money achieved by the O2 research and dissemination projects is less clear, though in general there is a view amongst stakeholders that value is being achieved from many of these projects. In some cases it was suggested that value could be improved by providing clearer objectives and benchmarks for research projects.

We recommend that O2 continue to be funded. We also make a number of more detailed recommendations for O2 including the collection of more detailed information about the environmental impacts of extraction with a view to using this as a basis for choosing which projects to fund and for monitoring outcomes in terms of environmental impacts. We also suggest a rewording of the objective to “reducing the environmental damage caused by current and future extraction of primary aggregates”.

### **Objective 3 - Addressing the environmental impacts of past aggregates extraction<sup>1</sup>**

The large majority of O3 expenditure was on site-based projects. Relatively small amounts were also spent on research and dissemination projects.

The site-based projects have contributed to O3 in a wide range of ways including, for example by making physical improvements to sites in respect of their biodiversity, geodiversity and archaeology; making improvements in specially designated areas, such as Sites of Special Scientific Interest; restoring historical monuments; improving site access; improving visitor facilities; and organising events and school visits.

The diversity of projects under O3 make it particularly difficult to draw general conclusions about value for money. Nevertheless, there have been a wide range of outputs from the expenditure and the project selection procedures that we reviewed also contribute to ensuring value for money.

We recommend that O3 continue to be funded and suggest the development of measures of the environmental damage caused by past aggregates

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<sup>1</sup> Prior to March 2005, O3 was defined as “to reduce the local effects of aggregate extraction”.

extraction. These could be used as a basis for targeting funding. We also suggest a rewording of the objective to “reduction of the environmental damage associated with past aggregates extraction”.

### **Objective 4 - Compensating local communities for the impacts of aggregates extraction**

O4 was introduced in March 2005 and by December 2005 only six projects had been completed, though a further 88 projects were under way. We judge that it is too soon to assess the achievements of expenditure under this objective. We note that expert bodies already exist to fund some of the projects being funded through O4 and suggest that coordination with these bodies may contribute to improving value for money.

### **Conclusions**

Overall, we recommend that funding of the ALSF should continue. We believe that funding should be available for at least a further three years. A shorter time period would be likely to cause difficulties for the project planning processes of the delivery partners and, as a consequence, might erode the value for money achievable.

In assessing both the achievement of objectives and the value for money obtained from ALSF expenditures we came across a number of difficulties. Whilst there was much information available from the Defra database and directly from delivery partners, it was sometimes difficult to link this back to the objectives. In order to address these issues we make a number of recommendations relating to the wording of objectives and the collection of further relevant data.

Drawing general conclusions about the value for money achieved through ALSF expenditures was difficult for a number of reasons. The main factors are inherent in the nature of the Fund – there is a large number of very different projects and the costs and benefits of each project will usually be very specific to the project. In some cases relevant information, such as visitor numbers, for example, had not been collected. Some stakeholders also raised concerns about value for money issues. These included uncertainty over funding levels and the way in which this impacts on the projects that are selected.

In addition to changes to Objectives 1 – 3, we also recommend the introduction of a new Objective 5. Many stakeholders expressed considerable interest in further funding of marine research, pointing to the relatively low existing knowledge base. We propose the title “Researching the marine environment relevant to marine aggregate extraction” for O5 with suggestions for more specific goals. We recommend that a correspondingly smaller share of total funding go to each of the four other objectives.

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## 3 Summary

This summary is a longer and considerably more detailed version of the preceding executive summary. It describes the origins of the Aggregates Levy Sustainability Fund (ALSF) and its objectives. We then describe our approach to answering the key questions of whether the fund has achieved its objectives and whether it has achieved value for money. We then summarise our findings. Finally, we list and explain our recommendations.

### 3.1 Origins of the ALSF

The ALSF was created at the same time as the aggregates levy. The Chancellor's Budget speech of March 2000 announced that the government would impose a levy on the sale of primary aggregates in the UK of £1.60 per tonne from April 1 2002. The Chancellor's speech did not mention the ALSF, but the 2000 Budget Report (BR 2000), released the same day, stated that:<sup>2</sup>

To further the Government's aim of shifting the burden of taxation from "goods" to "bads", the revenues from the levy will be fully recycled to the business community through a 0.1 percentage point reduction in employers' NICS and a new Sustainability Fund. The Government will be consulting shortly on how this fund can best be used to deliver local environmental improvements.

The "new Sustainability Fund" described was later renamed the Aggregates Levy Sustainability Fund. Like the levy, the ALSF began operation in April 2002. The quotation from BR 2000 above suggests that 'the business community' owns the funds within the ALSF. Legally, however, the government owns ALSF funds.

Section 4 below provides more detail on the history of the ALSF.

### 3.2 Objectives of the ALSF

The ALSF had three stated objectives from 2002 to 2005. A fourth objective was added starting in April 2005. Objectives 1 and 2 have been, since 2002:

Objective 1: To minimise demand for primary aggregates, and

Objective 2: To promote environmentally friendly extraction and transport [of primary aggregates]

The third objective was, from the start of the ALSF in 2002, as follows:

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<sup>2</sup> HM Treasury (2000) Ch. 6 para. 6.94.

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Objective 3: To reduce the local effects of aggregate extraction.<sup>3</sup>

The wording of objective 3 was changed in March 2005. The new wording is 'To address the environmental impacts of past aggregates extraction.'

Since April 2005, the ALSF has had the following fourth objective:

Objective 4: To compensate local communities for the impacts of aggregates extraction.

We make two points about these objectives. First, none includes a numerical target. Second, their implications are in places unclear. For example, it is not clear what quantity would represent a minimised demand for primary aggregate. Further, both the current objective 3 and objective 4 (O3 and O4) are quite general. We now explain the ALSF's four objectives in more detail.

In practice, almost all O1 projects have aimed at increasing the volume and quality of recycled and secondary aggregates (RSAs) used in the UK.

Projects under O2 have provided essentially three types of outputs:

- (i) Voluntary guidance to quarry operators on how to manage quarries in an environmentally friendly manner
- (ii) Work to establish what sites of archaeological interest could be damaged by further aggregates extraction, or to recover artefacts of historical or natural historic interest from quarries
- (iii) Work to establish a baseline of data on the effect of aggregate extraction or potential future extraction on the marine environment.

The current terms under which Defra grants ALSF funds to the largest O3 delivery partners (DPs), English Nature and the Countryside Agency, largely require them to spend funds to enhance the natural environment either in or near former quarry sites. Both DPs may also use up to 20% of their funding to "address impacts on active [quarry] sites" where such work goes beyond the requirements the planning system places on quarrying companies. In the past, O3 funds have been spent on a wider variety of projects, including grants to museums displaying artefacts found in quarries.

Objective 4 spending consists of grants by county councils to public goods of all sorts in the vicinity of quarries. Thus, O4 projects have included the sponsorship of theatrical productions and the construction of sports facilities and of footpaths.<sup>4</sup>

Section 5 analyses the ALSF's objectives further.

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<sup>3</sup> See Defra (2003), p. iii.

<sup>4</sup> In one case a Council has delivered a project under O3 and a continuation of the same project under O4.

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## 3.3 Methodology

We first describe our sources, and then the summary measures or principles we apply to answer our main questions of whether the ALSF has (i) achieved its objectives and (ii) achieved value for money.

### 3.3.1 Sources

The sources we have used include the following:

- o **Defra's ALSF project database.** The online version of this database changes regularly. We used a spreadsheet version Defra gave us in December 2005. This lists 1,141 projects, not all of them complete. It also includes variables that describe project activities and outputs.
- o **Questionnaire responses from delivery partners and other interested parties** including aggregates producers and NGOs. We received 32 responses.
- o **Interviews with delivery partners and other interested parties** including representatives of the aggregate producing industry and of the construction industry, and of NGOs.
- o **Case studies of 9 projects**, including at least two under each objective. We visited 4 of these projects, and interviewed a representative of the recipient body by telephone in one other case.
- o **Descriptions of delivery partners' project selection criteria**, including documentary evidence of these criteria, supplied by delivery partners.
- o **A range of other documents supplied by delivery partners** including material on the case study projects, stakeholder surveys and numerical summaries of programme outputs.
- o **Published reviews of ALSF land-based and marine research** commissioned from expert authors by Defra.
- o **Two submissions by an external expert**, Professor Ravindra Dhir of Dundee University. Professor Dhir has himself delivered research projects for WRAP under objective 1 of the ALSF.
- o **Other government documents and consultants' reports** including reports on related programmes.

### 3.3.2 Measures and principles

We now describe some measures and principles we use to assess the value for money represented by ALSF projects. We can construct 'ideal' measures for a minority of projects only, and even in these cases we rely on various assumptions. Thus, we also use other informative measures.

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- **The internal rate of return (IRR) on investments.** The IRR is the interest rate that would make the net present value of a project zero. Calculating an IRR requires information on the timing of all costs and benefits associated with a project.<sup>5</sup>
  - **The market failure principle.** This states that governments should intervene in private markets only to correct a breakdown in property rights that results in the mispricing of goods, where one source of such a breakdown could be insufficient information.
  - **The degree of support for projects from DPs and other interested parties.** Some of these interested parties were representatives of county councils. However, we only received views from the small minority of English counties that receive ALSF funds at present.
  - **Systems of accreditation by expert bodies.** In particular, we refer to systems of accrediting museums and cricket clubs. These systems were established by bodies independent of ALSF delivery partners.

Of these measures, the internal rate of return (IRR) is, in principle, ideal. The Treasury's Green Book (Treasury 2003b) establishes that public investments should be evaluated using a 3.5% real discount rate. Government departments typically calculate 'value-for-money' (VFM) ratios using this discount rate, so that a VFM of 1 implies an IRR of 3.5%. We note that the DfT sets a minimum VFM ratio of 1.5 for various transport grants, including ALSF transport grants, which would imply an IRR above 3.5% (see DfT 2006). Alternatively, one might wish to compare project IRRs to a typical real rate of return on risky assets, such as equities. The real rate of return on UK equities has averaged 5.4% over the long run.<sup>6</sup>

### 3.4 Findings - achievement of objectives

The absence of numerical targets attached to ALSF objectives makes it hard to assess whether the fund has achieved them. Therefore, we present findings on the kinds of outputs produced under each objective and, where possible, whether these outputs conform to initial expectations. We first make some general comments and then discuss each objective in turn. Section 5.5 below considers whether the ALSF has reduced the environmental costs of quarrying that were previous research identified.

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<sup>5</sup> Where, as is typical, government bodies use a 3.5% real discount rate to calculate a 'Value-for-money' ratio for a project, this implies a project with an IRR of 3.5% would have a 'Value-for-money' ratio of 1.

<sup>6</sup> Average annualised real rate of return on UK equities from 1900 to 2004, ABN AMRO/LBS (2005).

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### 3.4.1 General comments

We are not aware of any cases in which monies were spent but outputs not delivered. We are aware that, in a small number of cases, funds were withdrawn from sub-contractors because they did not produce the desired outputs. In a further small minority of cases, sub-contractors pulled out of contracts after being awarded grants.

Several DPs stated that, due to various constraints, they had been unable to produce as much output as they would have liked or had expected. These constraints were particularly their level of ALSF funding, uncertainties about their future funding, and their inability to carry ALSF funds across fiscal years. For example, DPs stated that their inability to carry funds across years had led them to shift away from projects that could be delayed by poor weather. DPs also stated that their uncertainty over their future funding and their inability to carry funds across years led them to shift away from spending on employee time and towards capital spending. Without numerical measures of what outputs were expected, we generally cannot assess the degree to which such constraints led to any shortfall in outputs.

### 3.4.2 Objective 1

#### *Capital grants*

ALSF grants to private firms have contributed to the construction of facilities capable of recycling around 1.17 million tonnes (mt) of construction and demolition waste annually. This is a lower capacity than WRAP had intended to fund, largely due to problems obtaining state aid clearance. WRAP (2004) states that the 980,000 tonnes of capacity created by 2004 represented 49% of WRAP's target for capacity created.

Whether this capacity will be fully used generally cannot yet be observed. This is because many of the facilities are either under construction or have recently been completed and are building up to full use. We have no reason to doubt that the full capacity will be used, however. A further relevant question is whether this capacity was truly additional to that the private sector would have constructed without the grants. WRAP's project selection criteria are intended to ensure that the capacity subsidised is truly additional (see section 13.1.1). However, documents supplied by WRAP and Defra imply they also believe the private sector would have built the subsidised capacity on its own, but only after some 15-20 years.

Using WRAP's assumptions about the counterfactual situation of no grants, we estimate in 9.2.1 that the plants subsidised by past and current ALSF grants would add about 13.9 million tonnes to the volume of RSAs used in England over time.

We believe WRAP's capital grants were in part intended to increase the quality of the RSAs in use as well as their quality. This study does not assess whether this was achieved.

### *Research*

The submission by our expert consultant, Professor Ravindra Dhir, provides some sense of the achievements of O1 research projects (see Annex 1). He argues that these projects have in general created a greater awareness of the uses of RSAs in applications such as cement and concrete. The land-based science co-ordinator's report (Cuesta 2006) is also generally favourable about the effect of this research on the eventual market use of RSAs. No quantitative data on the effect of O1 research on the market use of RSAs are available, though in fairness such an effect would always be hard to prove.

### *Dissemination*

A range of information is available from WRAP about their dissemination activities, such as the number of people who attended their conference events, and the attendees' evaluation of these events (see section 13.4.2). However, no numerical measures of the effect of these activities on behaviour are available. WRAP has a target for 20% of local authorities to be specifying RSAs in road maintenance contracts by March 2006. Work to assess whether this target has been achieved is currently underway but not yet available.

## **3.4.3 Objective 2**

### *Research and dissemination*

Some marine research projects under objective 2 have aimed at building a baseline of data about the marine environment. This may be a useful or even necessary task for promoting environmentally friendly extraction. However, we are not aware of any measurable index that shows how ALST marine research has increased the environmental friendliness of marine extraction. Defra's database contains fairly little information about the achievements of marine projects. The largest marine project is intended to survey 7,200km<sup>2</sup> of the seabed of the Eastern English Channel, an area with considerable aggregate deposits. This project is still ongoing but appears on track to meet its objectives.

Stakeholder surveys conducted in 2005 reveal some affects of MIRO's MIST and SAMP research projects on the behaviour of aggregate extractors and mineral planners (see section 14.2). 40% of industry respondents indicated that MIST had changed operational practice, though many others responded that it was too soon to tell whether practice would change. The changes mentioned included waste minimisation due to the use of technology that

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maps underground gravel deposits.<sup>7</sup> Other respondents mentioned a general increase in use of best practices through the goodquarry.com website.

The majority of respondents to the SAMP awareness survey stated that it was too soon to expect the programme to have changed operational behaviour. However, both representatives of aggregate extractors and MPAs reported using SAMP documents in the planning process, for example by making Environmental Impact Assessments easier.

Projects aimed at exploring archaeological sites of historic or natural zoological interest have had a range of outputs. These have included recovering and studying remains of prehistoric humans and animals found unexpectedly in quarry sites, and surveying a number of wrecks on the seabed that might be disturbed by future marine aggregate extraction to develop mitigation methodologies that could be used elsewhere. Table 15 and Table 16 provide more detail on projects of an archaeological nature.

### *Transport*

Defra's database does not list any completed ALSF transport projects, but lists 5 rail projects related to rail haulage that are either ongoing or planned to start soon. The DfT expects to grant £1m to these projects in fiscal year 2005-6. The largest grant, of £916,000, is designed to maintain an existing rail haulage facility and thus prevent the transfer of aggregate haulage from rail to road (see section 14.3.1). The DfT calculates the project will avert around 3 million lorry miles of aggregates transport annually for ten years.

Documents supplied by the DfT describe other ASLF projects it intended to fund in 2005-7. These included up to £1.8m for training of aggregate haulage drivers in 2005-7, a collaborate research project to minimise the environmental effect of aggregate transport, and up to £0.9m in 2005-6 for site specific advice regarding transport to aggregates companies. Since Defra's database does not list projects of these types, we are uncertain as to how much of the allocated funds were actually spent on these projects. Thus, this report does not study the achievements of these projects.

### **3.4.4 Objective 3**

Most of the information available about the achievements of O3 projects refers to projects conducted under the earlier version of this objective, 'reducing the local impacts of aggregates extraction'. Many O3 projects contributed to achieving this objective, while others improved land that had never been quarried or maximised the benefits of aggregates extraction by displaying artefacts found in quarries in museums.

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<sup>7</sup> This was a reference to MIRO's WARM-IT project, described at [http://www.miro.co.uk/projects/more\\_infos/rc177.htm](http://www.miro.co.uk/projects/more_infos/rc177.htm).

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A variety of numerical measures of outputs of O3 projects are available. Defra's database provides the following information:

- About 4,576 hectares of landscape have been restored or improved,
- 90 projects improved designated areas (such as national parks and Areas of Outstanding Natural Beauty),
- 40 projects restored biodiversity, and
- 154 monuments were restored.

While English Heritage and three country councils have distributed funds under O3 (see Table 20 and Table 21), the largest spenders of O3 funds have been English Nature and the Countryside Agency. English Nature provided the following additional quantification of the achievements of its projects:

- 880 geological sites were audited,
- 9,724 volunteers have been involved,
- An estimated 247,295 people have visited projects, and
- 44,389.6 metres of footpaths have been created.

The Countryside Agency provided measures of the achievements of its projects that included the following:

- 48 projects provided landscape improvement,
- 3,500 hectares of land were acquired for landscape restoration,
- 113 projects improved access and recreational facilities, and
- 89 projects specifically aimed at increasing understanding/awareness.

### 3.4.5 Objective 4

Since O4 spending began only in fiscal year 2005-6, few projects have been completed. The evidence earlier studies found of environmental damages caused by quarrying suggest that the £3.8m allocated to date would be too small to 'compensate local communities for the impacts of aggregates extraction' (DETR 1998, LE 1999). However, we believe the housing market may already have largely achieved this objective. In particular, where quarries existed before local residents purchased their properties or signed rental leases on them, a lower price of housing would compensate these buyers for any reduction in the local quality of life the quarry caused. By contrast, where quarries were started after local residents had purchased houses, the housing market would not compensate house owners for any nuisance caused. Rather, local house owners would tend to suffer both a reduction in the quality of their environment and a fall in the market value of their houses. This argument is developed in more detail in section 12.2.

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## 3.5 Findings - value for money

We first make some general comments, and then discuss each objective.

### *General comments*

The information available to the consultants to assess the value for money of ALSF projects varies widely. In some cases, it is possible to construct internal rates of return using a small number of assumptions. In other cases, the outputs of projects have been idiosyncratic and complex, so we have not been able to value them. In the absence of systematic evidence on the value of ALSF projects, gaining a wider picture of the value for money projects have represented would require a large number of case studies.

To gain an additional sense of the value for money project outputs have represented, we have examined several delivery partners' (DPs') project selection criteria. In general we found that these procedures represented due process, because a wide range of people, using clear and relevant criteria, assessed applications for grants. However, in some cases, we felt DPs could have benefited from a closer relationship with the national bodies expert in funding or accrediting particular types of applicant.

Despite the apparent soundness of these procedures, we were concerned that DPs may face a choice of allocating money to projects very quickly towards the end of a fiscal year, or losing it entirely. Such time pressures could detract from the value for money achieved, and the mid-term evaluation of the ALSF (Defra 2003) recommended the removal of this year-end constraint. Many DPs commented that funding uncertainty and inflexibility had reduced the value for money they had been able to achieve. We do not have appropriate measures with which to measure such effects. Records of the numbers of visitors to attractions such as museums funded by the ALSF would be particularly valuable in this regard, but appear not to exist in many cases.

### 3.5.1 Objective 1

#### *Capital Grants*

A case that past ALSF capital grants to firms building recycling capacity represent value for money could be based on either of two arguments:

- (i). The rates of either the aggregates levy or landfill tax provide insufficient incentive from a social perspective for the production of RSAs and the O1 capital grants led to additional RSA capacity being created, and
- (ii). The private sector had not fully adjusted to the levy at the time the grants were made, perhaps because of uncertainty over how long the levy would remain in force.

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Regarding the first argument, there have been widely varying measures of the relative environmental costs of primary extraction and recycling of construction and demolition waste (see section 13.1). We do not feel spending should be based on the premise that the rate of the aggregates levy provides a socially insufficient incentive to the production of RSAs until further research on this point has been conducted. There may be a case for subsidies to firms constructing recycling capacity in areas where primary aggregate extraction has a particularly high environmental cost. However, this has not been the rationale for O1 capital grants to date.

WRAP believe that their capital grants have led to the construction of additional recycling capacity in the short and medium run (Defra 2004). In the long run, however, WRAP believes the capacity they subsidise does not add to that the private sector would have created. There is little evidence on the timescale over which the subsidised capacity is additional to the counterfactual. Some representatives of the aggregates producing industry, however, were not confident that the subsidised capacity was additional in the short or medium run either. They argued that private firms would have to be strongly interested in recycling plants to construct business plans for them and thus become eligible for capital grants. Further, due to the influence of the aggregates levy, which was announced in 2000 and implemented in 2002, it is plausible that during the lifetime of the ALSF many private firms may have been planning to invest in recycling capacity.

Thus, overall there is little evidence as to whether the capacity created was additional to the counterfactual in the short or medium run, but there would appear to be some risk that additionality was limited.

Regarding the second argument, it is not clear that ALSF capital grants would have speeded up adjustment of recycling capacity to the levy, since the latter was announced in 2000. While uncertainty over the future of the levy could have reduced the rate of investment in recycling capacity, successive budget reports have argued that the levy has indeed induced greater investment in recycling capacity (see HM Treasury 2005). Further, uncertainty over future tax policy could in principle affect most investments in the economy.

We do not assess the value for money that O1 capital grants generated by increasing the value of RSAs used separately from the volume used. However, were private markets well informed, we would expect them to use RSAs optimally even without subsidies to particular types of plant. Were private markets poorly informed, information programmes would appear the appropriate response. Therefore, we do not see an obvious rationale for subsidies designed to increase the value of RSAs used.

### *Information dissemination*

We have fairly limited evidence with which to assess the value for money represented by O1 informational projects, because their effect on behaviour is not clear. However, we have received views from representatives of trade

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associations representing both producers of both primary and recycled aggregates and the construction industry. We have also reviewed previous campaigns to inform clients and contractors about RSAs.

Representatives of aggregate producers viewed O1 informational programmes as having had fairly limited value, since the UK's market for recycled aggregates was already well developed before 2002. While representatives of primary aggregate producers might be viewed as having an interest in suppressing information about alternative products, the same firms often produce both RSAs and primary aggregates.

Representatives of the construction industry viewed the value of O1 informational campaigns more favourably. One commented that these campaigns had achieved their objective of informing major clients and contractors about the uses of RSAs. A related comment was that additional value could now be best achieved by informing smaller clients. Some concern was voiced as to whether existing campaigns were well designed to reach smaller clients or contractors.

In assessing the achievements of ALSF informational campaigns about RSAs, we believe it is relevant that the government funded informational campaigns about RSAs prior to the ALSF. We believe that the existence of these prior programmes is likely to reduce the marginal value of the ALSF programmes, all else equal, because, if informational campaigns were achieving their objectives, the value of additional campaigns would fall over time.

### *Research*

Since the achievements of O1 research projects are hard to assess, the value for money they represent is also unclear. Our expert advisor Professor Ravindra Dhir suggests that this research has in general produced valuable information that has informed changes to the specification of products used in construction (see Annex 1). Some representatives of the aggregate producing industry were sceptical of the value of some past ALSF research projects, although they typically did not criticise specific projects.

## **3.5.2 Objective 2**

### *Research and dissemination projects*

This report does not quantify the value for money of non-transport O2 projects, for two reasons. First, no measures of the effect of much O2 work appear to be available. Second, where measures of achievement are available, quantifying the value of these achievements would require case-by-case analysis, typically involving surveys of public sentiment on how much they would be willing to pay to see a preserved artefact or in general for its preservation. We have not had sufficient resources to conduct such surveys.

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We now provide qualitative information on the value of O2 projects, by delivery partner.

Under O2, English Heritage (EH) has delivered projects that have recovered and preserved items of archaeological or historical interest from quarry sites. A range of information is available to suggest that this work had some value. For example, the 'Lynford Quarry' project identified and rescued remains of a mammoth and other animals. EH classifies these remains as 'internationally important', due to the rarity of the finds and their well-preserved state. Media attention to this find reinforces the sense that it was of wide interest.<sup>8</sup> Some methods have been developed to quantify the benefits of similar projects (EFTEC 2005). However, the benefits estimated tend to differ widely across projects, for example in line with the number of visitors to sites. We have very limited data on the number of visitors to any of the remains EH preserved through its O2 work.

Representatives of private industry gave mixed views on the value for money achieved by MIRO's O2 terrestrial research projects. Some industry representatives argued that MIRO's application-led approach meant that the research conduct was somewhat supplier-led, and that this reduced the value for money achieved. Several industry representatives stated that they would view efforts under O2 more favourably where they to have a clearer benchmark for what they were trying to achieve.

English Heritage, CEFAS, MIRO and the ODPM have all funded marine research projects under O2. The marine science co-ordinators' report commented positively on the value represented by these projects. The marine co-ordinator stressed that information from marine research projects was now being used to assess planning applications for rights for marine aggregate extraction.

A representative of the marine aggregate producing industry gave a qualified view of the value for money of past marine projects. Overall he supported the continuation of marine research if the relevant delivery partners retained past lessons on how to maximise the value spending achieves. He again argued that it was important for delivery partners to specify clearly what research they wanted to conduct, rather than turn to potential contractors and say "Here is a pot of money, how do you think we should spend it?" In this context this representative argued that English Heritage had achieved particular value for money with its marine research because it started with a clear idea of what research it wished to conduct.

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<sup>8</sup> For example, BBC Radio 4 ran a programme about this find, which can be heard at [http://www.bbc.co.uk/radio4/science/unearthingmysteries\\_20030805.shtml](http://www.bbc.co.uk/radio4/science/unearthingmysteries_20030805.shtml)

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### *Transport projects*

In principle, information supplied by the DfT provides a complete assessment of the value for money that current and planned future transport projects will achieve if they meet their objectives (see Table 18). Of the 5 transport projects in the database, the DfT calculates that 4 would have value-for-money (VFM) ratios in excess of 1.5, and thus IRRs well in excess of 3.5%. Data are missing for the other project.

The DfT also makes transport grants through its Sustainable Distribution Fund (SDF). In general, the DfT intends to allocate its limited funds to grant applicants according to a ranking of the VFM ratios that apply to each project. Like the DfT's ALSF funds, the SDF will only fund applications with a VFM of 1.5 or above (see DfT 2005). The existence of the SDF raises the question of whether forcing all aggregates-related applications to compete with other applications to the SDF would achieve more value for money than administering a fund for aggregates projects separately from the SDF.

We conducted a case study of by far the largest transport grant, representing £915,000 of the £1.114m in the 5 grants that appear in the database. The high IRR calculated for this project reflects on the assumption that the recipient firm will move aggregate transport off an existing rail facility and into lorries unless the firm receives this grant. We have no reason to doubt this assumption is correct. Since this is a crucial assumption, however, we feel it should be tested in any cases in which it is relevant.

### **3.5.3 Objective 3**

We first discuss 'Legacy site projects', which have consumed the majority of O3 spending, and then research and dissemination projects.

#### *Legacy site projects*

As we note above, O3 legacy site projects have had a variety of outputs in terms of increased flora and fauna, the preservation of important rock features (geodiversity), and increased access to the improved sites, not all of which are former quarries. We do not provide a monetary valuation of these improvements, however, since these outputs are hard to price, and vary greatly across sites.

In our meetings, representatives of English Nature, the Countryside Agency and the Cotswold Water Park made two plausible arguments as to why the outputs of O3 legacy site projects may represent value for money. First, they argued that the UK government, through its signature of the Kyoto treaty, is committed to achieving various biodiversity targets. ALSF O3 targets may represent the least costly method of achieving these targets. Second, some O3 projects consisted of advice to quarry operators on restoration plans, rather than paying for the restoration itself. Since this advice could induce private

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firms to conduct extra restoration work for free, it could represent considerable gain for little expenditure of ALSF funds.

Some projects delivered by county councils have aimed to improve the aesthetic properties of the countryside, through the construction of dry stone walls or the repair of stone barns (see section 15.2.3). Such projects are typically justified in terms of their aesthetic and historic value. We are somewhat concerned, however, that restoring stone buildings that sit empty once restored could represent poor value for money. We have not conducted the surveys of willingness to pay for the aesthetic value of the restorations that would be necessary to test this point.

### *Research and dissemination*

Some O3 grants have funded museums, museum galleries or visitor centres. We conducted two case studies of such grants (see section 15.2), in which we examined visitor numbers, the accreditation of museums by the Museums, Libraries and Archives Council, and efforts to publicise the museums. Since around 500 O3 projects have been completed to date, one cannot generalise about the value of all O3 projects from these two case studies.

Our findings from these case studies were fairly mixed. In one case the museum kept useful data on visitor numbers, but in the other the museum did not. The former receives a very large number of visitors, while we were worried that the latter received few visitors, despite its interesting displays. The former museum had accreditation from the MLAC, while the latter did not, and efforts to publicise the latter museum appeared rather thin.

Thus, in the case of the museum that kept records of visitors, though to the entire museum rather than the gallery funded by the ALSF, the ALSF grant plausibly had an IRR of over 3.5%, and could thus be described as representing good value for money. We had some concerns about the value for money of the other museums, which, in the absence of data on visitor numbers, we could not verify.

### **3.5.4 Objective 4**

Since objective 4 projects vary greatly, and Defra's database provides little information about them, case studies appear the best method of assessing the value for money they have achieved. Our two case studies of O4 projects, which are both grants to cricket clubs, appear in section 16.1. These two case studies cannot be considered representative of the more than 150 O4 projects listed in Defra's database, however.

Our impression of value for money from these grants was again rather mixed. Neither project has yet been completed, so no data are available on the use of the facilities that will be built or completed. In one case the recipient will require considerable extra funds beyond the ALSF grant to complete the facility. The potential for delay in the completion of this facility creates some

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risk to the value the ALSF grant will produce. The other project will be entirely funded by the ALSF grant and is this not at risk of late completion.

Our main concern with these grants, however, was that an expert national body, the England Cricket Board (ECB), has established a system of accreditation for cricket clubs that it uses to determine flows of development aid. In our two case studies, one club had accreditation as an ECB 'Focus Club', while the other did not. We were somewhat concerned that grants that do not take account of the policies established by expert national bodies could represent lower value for money than those that do.

### **3.6 Framework for recommendations**

Ideally, a framework for the future division of funds between ALSF objectives would use data on the internal rates of (social) return of marginal ALSF projects. However, these IRRs cannot be constructed for all marginal ALSF projects. This is in part because some goals of the ALSF, such as increasing the range of flora and fauna former quarry sites support, are hard to value.

Therefore, our framework for recommendations is a list of problems that we believe the ALSF could usefully attempt to solve. Under the market failure principle, we list only those problems to which we have reason to believe the private sector has not developed an optimal response already. We now list these problems by objective. We then suggest a means of prioritising between measures to solve these problems.

#### **3.6.1 List of relevant problems**

##### *Objective 1*

- o The private sector does not face the correct social incentive to spend on research into the uses of RSAs in construction, because a wide variety of users would benefit from the results of such research.
- o Some clients and contractors in the construction industry lack knowledge of the properties of RSAs in construction. In particular, some smaller clients have unfounded fears about the performance of RSAs.
- o Since the aggregates levy does not vary geographically, it does not create the correct social incentives for aggregate extraction in some areas of high environmental sensitivity. This problem could be reduced using purchases of mineral extraction permissions under objective 2.

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### **Objective 2**

- o Some existing mineral permissions were granted when the planning system required little restoration work, and hence the restoration requirements of quarry operators fall short of current standards.
- o Some new quarry permissions include restoration plans that do not reflect 'best practice' in terms of maximising the post-extraction benefits of each site, because quarry operators and Mineral Planning Authorities lack expertise in this 'best practice'.
- o Some quarries do not use best or optimal practice in reducing the environmental cost of cost of current aggregate extraction, in part because the aggregates levy does not tax environmental 'bads' directly.
- o There is a lack of baseline data on the resources in the marine environment that marine aggregate extraction might damage.
- o Information on the effect of marine aggregate extraction on the marine environment is limited.
- o In many circumstances, quarry operators may not have incentives to recover finds of historic or natural historic importance found in quarries.

### **Objective 3**

- o Some abandoned quarry sites were not restored to the levels that would be required under the current planning system.
- o The potential for former quarry sites to support biodiversity has not been optimised.

### **Objective 4**

- o People living near quarries may suffer more than the average UK citizen from the environmental costs of quarrying and may have moved to these areas before quarries were started.

## **3.6.2 Prioritisation between future ALSF objectives**

Since the budget of the ALSF is limited, it is necessary to prioritise between funding for its objectives. As a basis for this prioritisation, cost-benefit or value-for-money calculations are possible for some ALSF projects, such as the proposed rail freight grants. However, a full cost-benefit analysis is not possible across the entire ALSF, for the following three reasons:

- 1). Activities vary considerably within each objective
- 2). For some projects, little quantitative information is available about the value they generate, perhaps because this value (such as biodiversity) is intrinsically hard to value, or because data on use are not available

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- 3). The value generated by marginal projects may differ from that of average past projects

In the context of the infeasibility of a full cost-benefit analysis of the ALSF, the approach we take to constructing a framework for prioritisation between future ALSF objectives is based on Multi-Criteria Analysis (MCA). MCA is a means of combining several subjective views of the performance of a number of policy instruments in a logical and consistent way.

The results of our MCA should be understood in the context of the limitations of this approach. Because MCA is applied when full value-for-money information is not available, the inputs to an MCA will be somewhat judgemental and thus debatable (see Bana e Costa et al. 2003). Since MCA is based on subjective judgements, one could argue that it is not an adequate basis for policy making. However, in the absence of substantial data on the value for money of much ALSF activity, we believe future policy toward the ALSF will have to be based on subjective judgements. Ultimately, Defra may wish to base policy toward the ALSF on a more detailed MCA that draws on the views of a wide range of stakeholders. The MCA presented below should be understood as reflecting the subjective views of the team of LE consultants who prepared this report, based on their knowledge of the ALSF reflected in this report.

A further limitation of the MCA approach below is that we apply it to activities under the ALSF's proposed 5 future objectives. In some cases activities under a given objective differ substantially. Therefore Defra may wish in future to conduct an MCA based on a finer categorisation of ALSF projects.

We now explain our procedure for applying MCA to the 5 objectives of the ALSF we propose for the future, and describe our results.

### ***Multi-criteria analysis inputs***

We perform our multi-criteria analysis using the MACBETH software (Measuring Attractiveness by a Categorical Based Evaluation Technique) described by Bana e Costa et al. (2003). Other MCA software packages are available, although the process may be simply replicated using a generic spreadsheet programme.

Our inputs to this process are as follows:

- o Five criteria against which to rank the ALSF's 5 objectives
- o Importance weightings for each of these five criteria
- o Rankings of high, average or low for each objective against each criterion, with the implicit numerical weightings attached to these rankings

Table 2 below describes all these inputs to our multi-criteria analysis of the prioritisation in terms of funding of the ALSF's proposed 5 future objectives.

Table 2: Inputs to Multi-Criteria Analysis

Criterion	Relevance to core problems	Costs	Distinction from other government policy	Consistency with horizontal equity	Marginal benefit
Criterion weighting	16.13	24.52	19.95	11.73	27.67
ALSF Objective	Ranking of ALSF objective against criteria above				
1	High	Average	Low	Low	Low
2	High	High	Low	Average	High
3	Average	Average	High	Average	Average
4	Low	Low	Average	Low	Low
5	High	High	High	Average	High

Note: 'High', 'Average' and 'Low' rankings have attached weightings of 100, 50 and 1 respectively.

To explain these inputs, we choose the 5 criteria to reflect concerns that we feel are central to the operation of the ALSF. These include projects' marginal benefits and costs, which we believe are Defra's most important criteria for evaluating uses of government funds. However, other criteria are also important. Relevance to the core problems associated with aggregate extraction is of interest because the ALSF was created as part of a government strategy to reduce identified problems caused by the extraction of primary aggregates. Distinction from other government policy is also important, because there are other policies that have overlapping effects with the ALSF (see section 6). Further, the ALSF is not intended to fund obligations that the planning system would otherwise require of aggregates producers. Finally, consistency with horizontal equity is also of interest because Defra does not wish to create gold-plated public facilities in areas near quarries while areas further from quarries lack public facilities of equal standard.

The 'Criterion Weightings' were chosen by the authors to rank the criteria at approximately equal intervals, so that none dominates the others. As we note above, we believe marginal benefit is Defra's highest priority for ALSF projects.

We rank each objective as 'High', 'Average' and 'Low' against each criterion using our judgement based on our methods and principles of analysis described in section 3.3.2. We discuss why we assign the rankings shown in Table 2 above in section 17 below. In brief, however, since the criteria of marginal benefit and cost receive the greatest weight in our cost-benefit analysis, the comments we make on value for money in section 3.5 above are particularly important to our judgements. Our rankings of 'marginal benefit' reflects our judgement about how much further funding of ALSF projects would replicate the effect of other current government policies, but also our

judgements about the extent to which future funding of ALSF projects would replicate past efforts of these types.

### *Multi-criteria analysis results*

Using the approach described above, the results of our multi-criteria analysis are as shown in Table 3. The results are weights of overall importance on a scale of zero (lowest possible) to 100 (highest possible). Our inputs to the MCA process imply that future research into the marine environment is the most important priority for future funding. This reflects that projects to generate information in an area in which little exists are in principle of high marginal benefit, and also that marine research projects are typically expensive and exhibit returns to scale in their productivity.

**Table 3: Results of Multi-Criteria Analysis**

Future ALSF Objective	MCA Weighting
1: Minimise the demand for primary aggregates	29.11
2: Reduce the environmental damage caused by current and future aggregates extraction	74.44
3: Reduce the environmental damage caused by past aggregates extraction	60.38
4: Compensate local communities for the effects of aggregate extraction	16.68
5: Research into the marine environment relevant to aggregate extraction	94.2

Note: the MCA Weightings are on a scale of 0 (lowest possible) to 100 (highest possible).

## **3.7 Recommendations**

### **3.7.1 Continuation of the ALSF**

We recommend that some parts of the existing ALSF continue, so that the fund solves the problems listed above. In this sense, we recommend that the ALSF continue, at least for some period.

We have not been asked to make any recommendations for the length of time for which the ALSF should continue. However, we believe that were ALSF funding extended for a period shorter than three years, this might create such severe difficulties for DPs' planning processes that the value for money the ALSF achieved would fall to an unacceptably low level. Similarly, guaranteeing funding to DPs for a very long period would not appear an

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appropriate method of safeguarding the value for money government spending achieves.

### **3.7.2 Funding for different components of the ALSF**

We now list our recommendations for future tasks the ALSF should fund under each of its objectives. We explain these recommendations further in section 18. Section 3.7.3 lists some other activities the ALSF could fund in the future, but which we do not specifically recommend.

We list our recommendations by ALSF objective. We recommend renaming some objectives to focus more closely on problems that need to be solved. We recommend in particular that the ALSF focus on reducing environmental damage caused by aggregates extraction.

Some stakeholders suggested that future objectives should refer to the 'impacts' of aggregate extraction rather than 'damage' extraction causes. We feel this would be problematic, because if 'impacts' can be both positive and negative, it is not clear what verb an objective could use. It would not be appropriate in general to either 'reduce' or 'increase' such ambiguous 'impacts'. The present objective 3, "address the environmental impacts of aggregate extraction" could permit a very wide range of spending related to aggregates, but does not give a clear sense of what achievements this spending would deliver. Thus, we believe phrasing objectives in terms of 'reducing damage due to extraction' would provide a desirable direction and focus for future ALSF spending.

#### ***Objective 1***

- o End capital grants to firms creating recycling capacity. The case for subsidising the creation of new recycling capacity on a national basis appears weak in the presence of the aggregates levy. However, section 3.7.3 describes some more specific arguments for continued capital grants.
- o Continue funding research into uses of recycled and secondary aggregates. For the subset of projects from which industry will directly benefit, require industry to co-fund research projects at a 40% rate. For other projects, identify research topics using expert advice including industry advice. Use robust tendering procedures to create competition on price in project delivery.
- o Continue to disseminate the findings of this research programme.
- o Conduct a survey of awareness of the uses of RSAs among a relevant audience. Obtain views from WRAP, aggregate producing and construction industry trade associations on the significance of any knowledge gaps identified. If these gaps are widely viewed as significant, design an information programme that would close these knowledge

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gaps. Then test to see whether the target level of information or education had been achieved.

- o Ask the Institution for Civil Engineers, in cooperation with university engineering departments, to construct plans by which information on the qualities and uses of RSAs would be added to the syllabi of university degree courses in civil engineering.

### **Objective 2**

- o Rename this objective 'Reducing the environmental damage caused by current and future extraction of primary aggregates'.
- o Create numerical indices of the environmental damage caused by both primary aggregate extraction and recycling activities. This would require collecting data on environmental concerns such as air quality or noise pollution near quarries.
- o Collect data on the same indicators of environmental damage in non-quarrying areas, so as to assess the relative value of projects to improve the environment near quarries.
- o Fund projects that would contribute to changes in the indicators of environmental damage near quarries mentioned above. These projects could include buying permissions to extract aggregates from quarrying companies.
- o Assess changes in these indicators through time, and attempt to assess the contribution of ALSF spending to these changes.
- o Provide a reserve of funds to be used to recover artefacts of historical or natural historic importance that may be found in quarries.
- o Monitor the minimum value for money of grants made under the DfT's Sustainable Development Fund and ALSF transport fund during 2006-7.
- o Continue to fund the DfT's ALSF transport fund only if the minimum VFM achieved inside this fund is comparable to the minimum achieved within the SDF.

Also, explore the possibility of the following recommendations, which we have not appraised in detail:

- o Commission expert bodies such as 'Natural England' to construct a good-practice guide for both mineral planners and quarry operators in processing the restoration plans contained in new applications for permissions for mineral extraction.
- o Provide a specific level of advice (in terms of contact hours) to MPAs on implementing good practice in the selection of quarry restoration plans.

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- o Provide quarry operators with a specified amount of advice (in terms of on-site contact hours) on implementing good practice in quarry restoration.

We make no recommendations about other projects the DfT is pursuing with ALSF funds, as we have not examined their funding level, achievements or value (see section 3.4.3).

### **Objective 3**

- o Re-title this objective 'Reduction of the environmental damage associated with past aggregates extraction'.
- o Construct indices or other measures such as rating schemes of damage associated with past aggregates extraction. Some such indices may be provided by the ongoing study by Capita Symonds (2005) and by the QPA's forthcoming Sustainable Development Report.
- o Update these indices regularly.
- o Fund projects designed to achieve specific improvements in these indices.
- o Provide funding to Natural England (the new union of English Nature and the Countryside Agency) and English Heritage under terms that require them to reduce environmental damage due to past aggregates extraction, but do not require an improvement in these indices.

### **Objective 4**

We have reservations about objective 4 as currently titled. This spending raises questions about horizontal equity, since it provides facilities or services for communities near quarries that communities elsewhere would not obtain. We understand, however, that O4 spending is likely to continue, since the aggregates producing industry and the recipient county councils strongly support it. In this context, we provide recommendations for how the value for money achieved by O4 spending could be maximised, as follows:

- o Require that, where possible O4 delivery partners select projects with reference to the criteria of recognised expert organisations, such as Sport England or other national sports bodies in the case of grants to sports clubs and the MLAC in the case of grants to museums.
- o Require that, where possible O4 delivery partners ask locally available personnel from the expert bodies to comment on the value of candidate projects that fall under their area of expertise.

### **Objective 5**

- o Create a new objective to capture the marine elements of the ALSF. We suggest the title 'Research into the marine environment relevant to marine aggregate extraction'.

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- o Create numerical goals for this project, in terms of areas of sea or seabed to be mapped or explored to a certain level of definition.
  - o Fund delivery partners under the agreement that they meet these goals.
  - o Disseminate the findings of this research to the relevant MPA in an accessible form that could influence future planning applications.
  - o Fund projects that would reduce the environmental damage caused by marine aggregate extraction.

### **3.7.3 Other potential activities of the ALSF**

There may, subject to further evidence, be an argument for the ALSF to fund activities beyond those we recommend above. We describe these below. We feel we have too little data at present to recommend these activities. The first is a type of O1 capital grants, while the second does not fit clearly under any of the ALSF's current objectives.

#### ***Objective 1 Capital grants***

Subject to further evidence, there may also be a case for capital grants to increase the quality of RSAs in use. However, we are not aware of an argument other than poor information that would explain why the private sector would not use RSAs in an optimal manner without such grants. Were a lack of information the key problem, we suggest that informational programmes would be the appropriate policy remedy.

#### ***Remedies to problem of quarry fines***

We understand that work is underway to assess problems associated with quarry fines. These 'fines' are small pieces of primary aggregate that are generated as a by-product of the extraction and production of other types of aggregate. For example, fines are produced during quarry blasting, through the crushing of larger graded aggregates, or from sand and gravel operations as silts from sand processing. While some fines have higher-grade applications, where fines are sold, this is typically for low-value uses.

The quarrying industry has argued (QPA 2003) that the aggregates levy has reduced the potential for quarry fines to be sold, with the result that deposits of fines accumulate in quarries and obstruct operator's access to new rock.

There is interest on the part of both aggregates companies and some ALSF delivery bodies in undertaking work to reduce the problem of quarry fines. This report does not assess the case for such projects, because we do not have details of specific proposals of this type, and because the results of current work to assess the size of any problem associated with quarry fines are not yet available.

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## 4 History of the ALSF

To describe the origins of the ALSF in context, we first describe the origins of the aggregates levy. We then describe the origins of the levy, and then comment on the clarity of the government's original goals for the ALSF.

### *Origins of the Aggregates Levy*

The introduction of the aggregates levy involved different stages: initial research on externalities caused by aggregate extraction and transport, a proposal by the QPA for a fund but no levy, and the government's implementation of both a levy and fund in April 2002.

The commissioning of research on the environmental cost of aggregate extraction was announced in the 1997 Budget Report (BR). Two pieces of independent research by London Economics subsequently found that significant environmental costs were associated with quarrying, such as noise, dust, visual intrusion, loss of amenity and damage to biodiversity.<sup>9</sup> In response, the government urged the industry to remedy such damages.

The Quarry Products Association (QPA) replied to the government with a package of proposed measures in QPA (1999). The package included '30 green commitments' on producers' part to reduce the environmental costs of aggregate extraction without the implementation of a tax. Importantly in the context of the ALSF, the QPA's package included a proposal for an industry-funded Sustainability Fund of £30m per year to fund a variety of projects linked to aggregates extraction.

The government rejected the QPA's proposals, and announced in the 2000 Budget Report that it would implement an aggregates levy in April 2002 at a rate of £1.60 per tonne of aggregate used in the UK. The 2000 BR also announced the creation of the ALSF from April 2002, as section 3.1 notes.

### *Development of Objectives for the ALSF*

The Treasury's consultation in 2000 as to how the ALSF should be spent received a wide range of responses.<sup>10</sup> Respondents suggested that the primary aims of the fund should be to reduce the amount of primary aggregate extracted, overcome market barriers and promote increased use of alternative materials. It was also proposed that the fund should sponsor research into marine aggregate extraction, more sustainable construction practices and promoting increased biodiversity. Many respondents felt,

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<sup>9</sup> The references section lists these reports as DETR (1998) and London Economics (1999).

<sup>10</sup> Available at: [http://www.hm-treasury.gov.uk/consultations\\_and\\_legislation/summary\\_of\\_responses\\_for\\_the\\_sustainability\\_fund\\_under\\_the\\_aggregates\\_levy\\_package\\_consultation/consult\\_susfund\\_index.cfm](http://www.hm-treasury.gov.uk/consultations_and_legislation/summary_of_responses_for_the_sustainability_fund_under_the_aggregates_levy_package_consultation/consult_susfund_index.cfm)

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however, that the fund should not be used to support activities that were properly the responsibility of the quarrying industry, such as providing support for environmentally friendly quarrying practices and local community projects.

The objectives the Treasury announced for the ALSF at its inception in 2002 were generally similar to those suggested in the consultation process. The 2002 BR stated that the Fund had three objectives:

- o minimising demand for primary aggregates by promoting greater use of alternatives and supporting more sustainable practices in construction,
- o promoting environmentally friendly extraction and transport, including funding projects on cleaner and quieter lorry transport and encouraging the use of rail and water transport, and
- o reducing the local effects of aggregate extraction including funding of biodiversity projects and the conservation of geological features.

The 2002 BR assigned the ALSF £29.3m each year in England for an initial period of two years.

### *Extension of the ALSF*

The 2003 Pre Budget Report stated that<sup>11</sup>:

DEFRA has completed a review of the operation of the Aggregates Levy Sustainability Fund. This concluded that there are strong economic arguments to support the continuation of the Fund as a targeted intervention to address the environmental costs of aggregates extraction. ...The Fund will therefore be continued for a further three years with the current level of funding, with a review to be carried out in the final year.

Defra's review mentioned in the statement above is the Mid Term Evaluation (MTE) of the ALSF, which this study refers to as Defra (2003). The latter concluded that there was, as of 2003, little evidence base with which to assess the effectiveness of the ALSF in achieving its objectives, but that there was a robust economic rationale for the continuation of the ALSF.

It is not entirely clear from Defra (2003) what the rationale for the ALSF was. It argues at one point that the ALSF was required to complement the aggregates levy, on the grounds that the levy did not reverse the past environmental costs of aggregates extraction. An alternative case was advanced that O1 spending was required because the rate of the aggregates levy did not vary geographically, while the marginal rate of environmental damage caused by extraction did.

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<sup>11</sup> HM Treasury (2003), Ch. 7 para. 7.68.

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### *Recommendations in the MTE*

The MTE (Defra 2003) makes several recommendations, which can be summarized as follows:

- The ALSF should be maintained at the present allocation level for a further 3 years
- After 3 years there should be an evaluation of the fund's impacts against its anticipated outcomes
- Following the evaluation, there should be a review of the fund's objectives and delivery structure and [implicitly] of whether the fund should continue
- A programme should be developed to deliver against the fund's second objective as soon as possible
- Mineral Planning Authorities should become directly involved in the identification and selection of projects
- The Local Authority pilot project should be extended and should draw resources directly from the ALSF Mineral Planning Authorities
- Delivery partners should be allowed to carry funds into the next financial year if necessary
- The possibility of gaining clearance for the whole ALSF programme from State Aid regulations should be explored
- Defra should significantly increase resources for strategic management, monitoring and evaluation of the fund, to achieve adequate funding of these activities
- Defra should monitor the outcome of programme spend against the ALSF's objectives together with the distributing bodies
- There should be a review of all spending on research to date
- Priorities should be identified for future research spending
- A proposal for greater integration of the MPAs into the ALSF should be devised, and
- A Steering Group, chaired by Defra, should be established for the entire ALSF programme.

Defra's Terms of Reference for the current study state that "The mid-term evaluation concentrated on the organization and management of the fund and its recommendations were implemented." Indeed, most of the implementations above appear to have been implemented. The recommendation that delivery partners be allowed to carry funds over into the following fiscal year has not been implemented, however.

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## 5 Objectives of the ALSF

The stated objectives of the ALSF provide fairly little sense of the aims of specific projects (see section 3.2). To give a better sense of the meanings of the ALSF's objectives in practice, this section describes the terms of Defra's Memoranda of Understanding (MoU) with ALSF delivery partners for fiscal year 2005-6.<sup>12</sup> We include only 4 of the 18 MoUs for county councils, but believe these 4 to be representative of the remaining 14 county council MoUs.

This section then considers the extent to which the ALSF has reduced the environmental impacts of current aggregate extraction that were identified in research prior to the introduction of the aggregates levy (DETR 1998, LE 1999, QPA 1999). The activities of the ALSF have been informed by this research, although reducing the environmental cost of current aggregate extraction has clearly been only one of several objectives of the ALSF.

### 5.1 Objective One

Defra's objective 1 (O1) for the ALSF is 'to minimise the demand for primary aggregates.' In practice, almost all O1 projects have aimed at increasing the volume and quality of recycled and secondary aggregates (RSAs) used in the UK. An increase in the market use of RSAs is, indeed, likely to reduce the demand for primary aggregates below what it would otherwise have been.

No projects have attempted to reduce the demand for primary aggregates by reducing the rate of new construction of buildings or roads. The Barker Review of Housing Policy (HM Treasury 2004) does not mention the damage caused by aggregate extraction as an influence on decisions to permit new construction.

#### 5.1.1 Memoranda of Understanding for 2005-6

##### *WRAP*

In its MoU with Defra, WRAP agrees to contribute to O1 by supporting projects that overcome market barriers to the use of RSAs and promote their use. The MoU requires WRAP's activities to include:

- o Providing incentives to business to increase the supply and quality of RSAs,
- o Raising awareness in the construction supply chain of the potential of using RSAs,

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<sup>12</sup> Defra (2003) Table 1.2 summarises the MoUs for fiscal years 2002-3 and 2003-4.

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- o Disseminating advice and information on standards, specifications and best practice for the recovery and use of RSAs,
  - o Cooperating with the Construction Sector Unit of DTI in identifying and developing research projects aimed at supporting the greater use of RSAs.

Furthermore, the MoU requires that projects be:

- o Additional to any mineral operator's obligations through planning conditions or otherwise,
- o Additional to projects that would otherwise have received funding in the absence of ALSF funding, and
- o Delivered in England.

## 5.2 Objective Two

Objective 2 (O2) is to promote environmentally friendly extraction and transport. In practice, some projects have attempted to collect baseline data on the marine environment and on the effect of marine aggregates extraction on it.

### 5.2.1 Memoranda of Understanding for 2005-6

#### *MIRO-MIST*

MIRO's MoU for the MIST programme states that MIST is to provide a mechanism for defining research requirements and implementing research, development and demonstration projects in accordance with O2. Specifically, the objective of MIST is 'to reduce the environmental effects of mineral extraction through development, promotion and implementation of sustainable technologies'.

MIRO's MoU requires that it act as follows to achieve this objective:

- o Establish research priorities and opportunities through consultation with stakeholder groups and awareness of emerging technologies,
- o Provide co-funding for research, development & demonstration projects that support the objectives and scope of MIST
- o Operate on a co-funding basis aimed at encouraging contributions from other sources to optimise the value delivered from MIST projects,
- o Promote dissemination of research outputs and support for the application of new procedures/technologies developed through MIST projects, and
- o Co-ordinate with other ALSF Distributing Bodies to optimise value from related activities.

The MoU also states that:

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It is anticipated that projects funded through MIST will lead to a significant advance in the development of technologies, methodologies and approaches to reducing the environmental effect of aggregate extraction in England.<sup>13</sup>

### ***ODPM- SAMP***

ODPM's MoU with Defra sets the following specific objectives for SAMP:

- o Improving the information base and understanding of aggregates and environmental constraints, onshore and offshore, so to facilitate the future identification of more sustainable options for extraction,
- o Improving and disseminating environmental management practices that reduce impacts,
- o Contributing to the provision of information and examples of good practices to stakeholders, including the encouragement of better liaison between minerals operators and local communities.

### ***English Heritage***

English Heritage's (EH's) MoU with Defra requires that EH uses ALSF funds to support projects that reduce the impact of aggregate extraction upon the historic environment. The MoU requires that EH focus on:

- o Developing the capacity to manage aggregate extraction landscapes in the future,
- o Delivering to public and professional audiences the full benefits of knowledge gained through past work in advance of aggregates extraction,
- o Reducing the physical impacts of current extraction where these lie beyond current planning controls and the normal obligations placed on minerals operators,
- o Addressing the effects of old mineral planning permissions,
- o Promoting understanding of the conservation issues arising from the impacts of aggregates extraction on the historic environment.

EH's MoU permits it to fund a variety of activities, including:

- o Strategic research on the character, scale and geographical distribution of the historical environment and of the potential impacts of aggregate extraction on it. In particular the collection, mapping and analysis of data on aggregates permissions and collection of baseline information necessary for improving future management,
- o Support for the development of management and conservation strategies for the historic environment in aggregate producing areas,

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<sup>13</sup> MoU between MIRO and DEFRA (2005-6).

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- o Collection of baseline information and characterisation of the resources in the marine historic environment; techniques of prediction and evaluation; mitigation strategies; training, awareness and information exchange,
  - o Research to characterise the resource and to develop evaluation frameworks, predictive tools and mitigation strategies on the archaeology of the Quaternary Period,
  - o Projects to raise awareness, to improve the quality of historic environment work undertaken in response to aggregate extraction, and to develop and promote the uptake of best practice,
  - o Supporting the operation of the planning system through assistance with the excavation, analysis and dissemination of unexpected archaeological discoveries subject to English Heritage's normal conditions,
  - o Analysis and dissemination of important data from past work undertaken in response to aggregate extraction, and
  - o Dissemination projects on conservation issues arising from the impacts of aggregates extraction on the historic environment and on the knowledge gains from work related to aggregate extraction.

### ***English Nature- Marine Projects***

English Nature's (EN's) MoU requires that, in the marine and coastal context, EN contribute to O2 by awarding grants that conserve marine biodiversity. Projects are required to address the impact of the past extraction of aggregates on:

- o Wildlife habitats, species and geology
- o The potential access to green space for recreation and learning, or
- o The environment in general (for instance, water and air quality, noise or disturbance).

Furthermore, projects must be additional to any mineral operator's statutory obligations through planning conditions or otherwise.

Annex A to the MoU requires EN to address the conservation of marine biodiversity features by:

- o Increasing the knowledge of the extent and quality of the nature conservation resource associated with marine sand and gravel habitats,
- o Increasing the understanding of how the nature conservation resource associated with sand and gravel can be managed or enhanced prior to and during extraction,
- o Increasing the understanding of how sand and gravel areas can recover and be managed post-extraction,
- o Addressing social or environmental legacy of current or historic extraction,

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- o Raising awareness of the nature conservation interest of sand and gravel, or
  - o Integrating knowledge of the sand and gravel resource and the impacts of marine aggregate extraction.

### ***English Nature and Countryside Agency - Terrestrial Projects***

While the main bodies of the MoUs for both English Nature (EN) and the Countryside Agency (the CA) require each delivery partner to deliver terrestrial projects only under objective 3, an addendum permits both DPs to spend up to 20% of the ALSF funds allocated to them for terrestrial projects for 2005-6 and 2006-7 "to support projects which address impacts on active [aggregate extraction] sites where it can be clearly demonstrated that any work funded is above and beyond statutory requirements." The use of funds on active sites is closer to objective 2 than objective 3.

We understand that EN and the CA intend to use this 20% of funding to lobby and help quarrying companies to leave extraction sites in a condition that will maximise their value in terms of biodiversity and geodiversity.

### ***CEFAS***

The MoU with Defra states that CEFAS is to contribute to O2 by supporting projects that:

- o Reduce the local effects of marine aggregate extraction,
- o Promote environmentally friendly practices for the extraction of marine aggregate
- o Undertake strategic research into the environmental consequences of marine aggregate extraction, or
- o Reduce the environmental impacts of using marine aggregate in coastal protection schemes.

### ***Department for Transport***

The DfT's MoU with Defra requires the DfT to reduce the impact of aggregates extraction on the environment by supporting transport projects aiming at objective 2. The MoU requires that each project demonstrably contribute to mitigating one or more of the transport externalities identified by the London Economics report of September 1997 (DETR 1998):

- o Noise nuisance;
- o Smoke, fumes and other atmospheric pollution;
- o Hazard and congestion;
- o Vibration and damage (or fear of damage) to property;

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- o Dust and dirt on the roads, verges and hedgerows;
  - o Spillage on the highway; busy roads may cause severance of communities, footpaths etc; and
  - o Threat felt by other road users from heavy goods vehicles.

The projects are to focus on:

- o Freight facilities grants to facilitate aggregate transport by rail or water rather than by road. This is expected to reduce road traffic levels, vehicle noise, exhaust emissions and global warming emissions.
- o Best practice dissemination to help truck and quarry operators to reduce their environmental footprint through known methods.
- o Driver training programmes to improve the skills of drivers of aggregate trucks.
- o Funding a programme for truck operators to improve their efficiency.

### 5.3 Objective Three

In 2002, Defra defined O3 to be 'to reduce the local effects of aggregate extraction.' Defra changed this wording in March 2005, from which point O3 has been 'to address the environmental impacts of past aggregates extraction'.

#### 5.3.1 Memoranda of Understanding for 2005-6

##### *English Heritage*

In its MoU with Defra, English Heritage agrees to deliver under O3 by means of the following activities:

- o Buying-out of old mineral planning permissions with inadequate environmental conditions and assistance with developing appropriate conservation and restitution strategies
- o Repair/conservation of specific sites, monuments, buildings and landscapes physically damaged by past aggregates extraction
- o Conservation of industrial remains associated with specific aggregates extraction sites
- o Local education, interpretation, outreach and community involvement, and capacity building

Furthermore, EH's MoU states that:

English Heritage has a commitment to promote access to, and understanding and enjoyment of, the historic environment and will seek to ensure that all projects funded under its ALSF scheme, wherever

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possible, address these aims through programmes of education, interpretation, outreach and community involvement.

### *English Nature-Land Projects*

The main body of English Nature's (EN's) MoU requires that EN's land projects contribute to O3. The specific aims are to:

- o Increase biodiversity,
- o Conserve geological features,
- o Address the effects of old mineral planning permissions on biodiversity and geoconservation, and
- o Produce benefits for biodiversity and geoconservation.

The MoU requires that EN give priority to projects producing the maximum realistic community benefits in the given environment.

Annex A of the MoU states that EN's terrestrial projects must increase or enhance biodiversity through:

- o Habitat creation/restoration,
- o Species conservation/enhancement,
- o Projects that link biodiversity schemes, sites and habitats,
- o Project Officers focused on delivering biodiversity benefits,
- o Contributing to national and local Biodiversity Action Plans (BAPs),
- o Support for development of Company Biodiversity Action Plans (BAPs) for the minerals extraction industry,
- o Research, as part of a larger project, which the project then applies,
- o Greater access to biodiversity data information through support to Local Records Centres, or
- o Land purchase, as part of a larger project with clear community benefits, and/or where there is a threat to habitats or species from future aggregate extraction.

EN's land projects are also required to conserve geological features through:

- o Project Officers to work with Regionally Important Geological and Geomorphological Sites (RIGS) groups,
- o Site assessment, leading to site management (paths, steps, face clearance, necessary health and safety work),
- o Ongoing management and monitoring,
- o Land purchase, as part of a larger project with clear community benefits, and/or where there is a threat to geological features from future aggregate extraction,

- 
- o Local Geodiversity Action Plans (GAPS),
  - o Project Officers focused on delivering geological conservation,
  - o Support for development of Company Geodiversity Action Plans, or
  - o Recovery of specimens unearthed during quarrying.

### *The Countryside Agency*

The Countryside Agency's (the CA's) MoU states only that the CA is to contribute to objective 3 by improving access to land from which aggregates have been extracted or by improving such sites and the surrounding areas.

## **5.4 Objective Four**

Objective 4 (O4) is 'to compensate local communities for the impacts of aggregates extraction'. O4 is best characterized as spending on public goods of all sorts in the vicinity of quarries. The difference between O3 and O4 is hard to discern in some cases. For example, one DP has delivered a project under O3 and a continuation of the same project under O4 (see section 15.2.3).

### **5.4.1 Memoranda of Understanding for 2005-6**

#### *Somerset County Council*

The MoU for Somerset County Council (SCC) states that, consistent with objective 4, SCC will provide financial support to projects in the county that:

- o Compensate communities suffering the impact of aggregates extraction (including transport),
- o Consist of works or other activities that would not otherwise be achieved as a result of the legal or statutory obligations of mineral operators, landowners or statutory undertakers, and
- o Show evidence of support from local community organisations, Parish Councils, environmental organisations and special interest groups.

#### *Derbyshire County Council*

The MoU for Derbyshire County Council (DCC) permits DCC to deliver projects under O4 that will benefit communities suffering the impact of aggregates extraction (including transport) across all Derbyshire with the exception of the city of Derby.

DCC's MoU requires that it prioritise projects in the areas of:

- o Wirksworth/Middleton by Wirksworth and Cromford

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- o Buxton (including Sterndale Moor, Harpur Hill, Doveholes and Peak Dale)
  - o Whitwell/Creswell
  - o The Trent/Lower Derwent Valleys
  - o Stanton in the Peak
  - o Stoney Middleton Dale, and
  - o The Hope Valley.

### ***Leicestershire County Council***

The MoU for Leicestershire County Council (LCC) requires that, consistent with objective 4, LCC provide financial support to projects in the County that:

- o Compensate communities suffering the impact of aggregates extraction (including transport), and
- o Consist of works or other activities that would not otherwise be achieved as a result of the legal or statutory obligations of mineral operators, landowners or statutory undertakers.

### ***Nottinghamshire County Council***

Nottinghamshire CC's MoU states that, consistent with objective 4, it will award grants from the ALSF for projects that specifically target communities within 2km of mineral extraction sites and any known extraction routes. It commits to prioritising among applications on the basis of detrimental impact to the communities concerned and of public benefit of the project delivered.

## **5.5 Relation of ALSF objectives to costs of current aggregate extraction**

It is interesting to consider whether ALSF projects have reduced the costs of current aggregate extraction that were identified in reports that were influential in the creation of the aggregates levy.

Some types of environmental disturbance caused by current extraction, as identified by London Economics (1999), are listed in the first column of Table 4. The second column lists the proportion of the environmental costs associated with aggregates extraction that the LE study attributed to each type of disturbance.

The QPA, in its 'New Deal' proposal (QPA 1999), argued that its proposed Sustainability Fund could reduce each type of environmental cost of quarrying identified in the LE study. The reductions in cost it claimed could be achieved are listed in the third column of Table 4 below. The claimed

reductions in cost are allocated rather similarly across types to the estimated total costs of current extraction.

<b>Table 4: Evaluation of proportion of total environmental cost attributable to each source of impact</b>		
<b>Source</b>	<b>Evaluated proportion (%)</b>	<b>New Deal improvement (£m)</b>
Transport	23	22
Noise/ Vibration	7.5	7
Dust	9.6	9
Visual Impact	11.2	10
Adverse effects on nature	20.3	19
Adverse effects on recreation	7.5	24
Reduction in property prices	6.4	
Uncertainty about future operations	6.4	
Others, including possible future waste disposal and children's safety	7.5	
Source: QPA (1999)		
Note: percentages may not add to 100 due to rounding.		

A full assessment of the effect of ALSF spending on the environmental costs identified in Table 4 would require at the least a repeat of the surveys conducted in the earlier studies. In fact, such survey responses might well not be consisted over time. Thus, a more reliable guide would be data on lorry-miles of aggregate haulage or of dust or noise generation from quarries. In general, such objective measures of the cost of quarrying appear not to exist. Thus, we now consider in a more qualitative manner the extent to which work under each objective of the ALSF has reduced the perceived costs listed above.

Spending under the ALSF's O1 may have reduced the local environmental costs of primary extraction by reducing the volume of extraction. It may have had this effect by inducing greater use of recycled and secondary aggregates (RSAs) in place of primary aggregates. As section 9.2.1 notes, O1 capital grants have contributed to recycling facilities with a total annual capacity of 1.17 million tonnes (mt). The actual effect of O1 spending on the volume of RSAs in use is difficult to determine, however. Recycling activities also impose some environmental costs, however, so the total effect of O1 spending on environmental costs is unclear.

Under the ALSF's objective 2, MIRO has delivered some projects that have attempted to reduce the disturbance to local communities generated by dust and blasting. These projects have typically involved the application of new

and cleaner technologies to the blasting process. No data on the effect of these projects or on general trends in disturbance due to dust and noise appear to be available, however. Further, English Heritage has delivered projects that reduced the effect of aggregate extraction on the historic environment, for example by paying for the recovery of prehistoric human and animal remains from quarry sites.

The ALSF appears to have had fairly little effect on the costs of road haulage of aggregates. While Defra's database lists 5 grants to rail haulage facilities, none have yet been completed (see Table 18). By far the largest of these grants is to maintain an existing rail haulage facility, without which haulage currently conducted by rail might have moved to roads (see section 14.3.1). Thus, this grant would not reduce the environmental costs of aggregate extraction identified in previous studies, but rather prevent them from increasing. We understand that the DfT has also spent ALSF funds on some other projects, including driver training in safety and fuel-efficient driving (SAFED). However, we do not have data on the spending or outputs of these other projects.

Over half of ALSF spending has been directed to objective 3, which in its two versions has been to reduce the environmental impacts of all and, since April 2005, of past aggregates extraction. Before April 2005, it is not clear how much O3 spending has attempted to reduce the environmental costs associated with current extraction. Some projects did have such an effect, while others, such as subsidies to museum galleries, did not. In 2005-6, English Nature and the Countryside Agency have been constrained to spend only 20% of their ALSF funds on active sites (see section 5.2.1).

In conclusion, it is difficult to state how far the ALSF has reduced the environmental costs of current extraction identified in earlier studies. We lack the data on the effects of ALSF projects that would be required to make such a judgement. However, it is important to note that many of the costs of current extraction earlier studies identified were related to the road haulage of aggregates. The ALSF does not appear to have reduced the road haulage of aggregates to date, although some current and future grants are intended to do so, as Table 18 describes.

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## 6 Related policies

Several government policies are likely to contribute towards the achievement of the objectives of the ALSF. Therefore it is important to consider whether the ALSF fills a gap in the existing range of policies toward aggregates.

We now list, for each objective of the ALSF, policies that may contribute toward achieving them:

Objective 1: To minimise demand for primary aggregates

*Landfill tax, aggregates levy, past aggregates information services*

Objective 2: To promote environmentally friendly extraction and transport [of primary aggregates]

*Minerals planning system*

Objective 3: To address the environmental impacts of past aggregates extraction.

*Landfill tax credit scheme*

Objective 4: To compensate local communities for the impacts of aggregates extraction.

*Landfill tax credit scheme*

This section now briefly describes each of the government policies listed above. We conclude that the role of the levy raises serious questions about the additional value produced by ALSF objective 1 spending.

This section does not discuss actions by private actors such as primary aggregate producers. However, we are aware that the aggregates industry makes efforts that could be described as contributing to objectives 2 and 3. One example of such efforts is the QPA's new Sustainable Development Strategy (see QPA 2006).

### 6.1 The Landfill Tax

A tax on disposal of waste to landfill was introduced in October 1996. This tax is relevant to the aggregates industry because the construction industry faces a choice between depositing construction and demolition waste (C&DW) in landfill sites and recycling it into a recycled aggregate (RSA). Thus, the imposition of the landfill tax created an incentive to recycle C&DW. One would thus expect the tax to reduce the market output of primary aggregates.

The rate of landfill tax on deposits of inert waste such as C&DW has remained constant since 1996 at £2 per tonne. The rate on landfill deposits of 'standard' waste is currently £18 per tonne. However, the Landfill Tax Credit

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Scheme enables landfill site operators to receive a 90% tax credit on donations they make to environmental project of up to 6% of their landfill tax liability.

## 6.2 The Aggregates Levy

As section 3.1 notes, the UK government announced in March 2000 that, from April 2002, it would introduce a levy or tax on the commercial exploitation of primary aggregates in the UK of £1.60 per tonne. The aggregates levy was indeed introduced in April 2002. The levy was subject to a rebate scheme in Northern Ireland.

The government's decision to introduce the aggregates levy followed its commissioning of research into the environmental costs of aggregate extraction (DETR 1998, London Economics 1999). This research found that the extraction of primary aggregates had several environmental costs, including the emission of noise and dust from quarries, the visual intrusion of quarries into the landscape, and the noise and vibration caused by lorries transporting aggregates.

In the context of these findings on the environmental costs of primary extraction, the government argued for an aggregates levy on the basis of the conventional economic theory of a 'Pigovian tax'. Such a tax is designed to force producers to face the true social cost of producing each additional unit of output. In the theoretical case that the tax is designed correctly, it will induce producers to reduce their output to a level that is socially optimal. Thus, in this case there would be no need for other policies to change the level of primary aggregate the private sector consumed. In practice, it is very difficult to set a Pigovian tax at the 'correct' level, since information is often lacking, and the correct level would also vary by area and perhaps by other variables such as time also.

This point of economic theory, and its practical limitations, is relevant to the value of ALSF spending under objective 1, 'minimising the demand for primary aggregates'. Were the levy the theoretically correct or optimal tax, there would be no need for other government interventions in the market for primary aggregates. However, the likelihood that the levy does not meet the theoretical attributes of an optimal tax may create a case for other interventions. Along these lines, the mid-term evaluation of the ALSF (Defra 2003) argued that regional variation in the environmental cost of aggregates extraction, and the uniformity of the aggregates levy throughout Great Britain, created a rationale for ALSF activities. However, the current wording of the ALSF's O1 does not mention a focus on such geographical variation.

The aggregates levy must be expected to induce some increase in the supply of RSAs. This is because the levy taxes the sale of primary aggregates, but not that of alternative products such as RSAs. Indeed, the 2005 Budget Report (HM Treasury 2005) quotes survey evidence that the announcement and introduction of the levy had increased the private supply of RSAs.

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### 6.3 Previous aggregate information programmes

Government funds were spent on some aggregates information programmes prior to the creation of the ALSF. In particular, the Symonds Group delivered the Aggregates Advisory Service (AAS) from 1997 to 1999 (as described in DETR 1999). Viridis then operated the Aggregates Information Service (AIS) from December 2001 to February 2003 (as described in Viridis 2003). The Viridis report argues that “The AIS and its predecessor the AAS played an important role in informing the construction industry of the possibilities of using secondary and recycled aggregates, thus helping to achieve the government's vision of sustainable construction.”

An important question for our study is how similar WRAP's AggRegain service, funded under the ALSF's objective 1, is to the AIS and AAS. There appear points of both similarity and difference. For example, Viridis (2003) states that “AggRegain is a more ordered and comprehensive information resource than the AIS. However, much of the information held by the AIS could form the basis of some of the databases for the AggRegain web site.” We understand that this judgement from 2003 predates many further developments and expansions of the AggRegain service, however.

There were some points of similarity between the three services. All three are or were web-based information systems that encouraged the use of RSAs. Like the AAS, AggRegain offers a telephone helpline services for specific enquiries (the AIS only answered e-mail enquiries). Further, the three services have provided some of the same documents. For example, Viridis (2003) notes that “The original digests from the AAS were posted on the AIS web site” in 2001 and that, in 2003, “The AAS and AIS digests were handed over to WRAP and installed on the AggRegain website”. The existence of these points of similarity, however, does not imply that AggRegain is substantially the same service as the AAS or AIS. Indeed we understand that AggRegain is a more sophisticated and comprehensive service.

The value for money of the AAS and AIS services cannot directly be deduced from data on their use, since both services were free. However, the AAS Monitoring Survey asked users how much they would be prepared to pay for the AAS enquiry service. The AAS report then compared the estimated costs per telephone enquiry of operating the system with the willingness-to-pay values indicated in the responses. The result was that the running costs were greatly larger than what consumers would have been willing to pay and than in any other broadly comparable service (DETR 1999). We reiterate that this report studied the AAS and not the current AggRegain service.

The AAS was funded by the then Department of Environment, Transport and the Regions. The AIS was funded by a grant from the RMC Environment Funds under the Landfill Tax Credit Scheme, with additional funding from the Office of the Deputy Prime Minister.

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## 6.4 The minerals planning system

The overall goals of the minerals planning system are to secure the adequate supply of primary aggregates and to minimise the environmental costs of the extraction of primary aggregates. Thus, the planning system places various restrictions on how quarry operators may behave during the course of extraction. It also places some restrictions on how operators must leave sites after extraction has finished. There is some concern that many planning permissions for aggregates extraction were granted some time ago, when restrictions on operators' behaviour were much lighter than is currently the case (see Council for National Parks and Friends of the Peak District 2004).

We now describe some key documents describing the minerals planning system in England. We then consider the degree to which work under the ALSF's objectives 2 and 3 can add value given the contributions of the planning system to these objectives.

### *Key documents of the minerals planning system*

Two key documents that set planning guidance for the provision of minerals in England are Minerals Policy Statements 1 and 2 (MPS1 and MPS2). The current draft version of Annex 1 to MPS1 specifically addresses aggregates policy issues (ODPM 2005b). It defines the main objectives of aggregates planning policy to be as follows:

- To conserve aggregate resources by the appropriate provision and phasing of supply and to safeguard specific resources of aggregates which are, or may become, of economic importance,
- To minimise the waste of aggregates and to encourage the use of alternatives to primary aggregate,
- To reduce damaging environmental impacts during the extraction and processing of primary aggregate and the production of alternatives,
- To preserve or enhance the overall quality of the environment once extraction has ceased, especially in protect areas,
- To reduce the environmental impacts of the movement of aggregates and encourage movement by water and rail and, where appropriate, provision of new facilities for this purpose, and
- To encourage the supply of marine dredged sand and gravel to the extent that environmentally acceptable sources can be identified and exploited.

MPS2<sup>14</sup> describes the policies and considerations in relation to the environmental effects of minerals extraction that the government expects MPAs to follow. Specifically, it sets out how MPAs should minimise any

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<sup>14</sup> ODPM (2005c).

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significant adverse environmental effects that may arise from minerals extraction by:

- o Framing policies in development plans,
- o Considering planning applications, and
- o Considering reviews of planning consents under the provisions of the Environment Act 1995.

### ***Role for the ALSF in the context of the minerals planning system***

Since much of the minerals planning system (MPS) could be described as contributing to the achievement of the ALSF's objectives 2 and 3, it would be natural to ask whether the ALSF can achieve value for money in the context of the MPS. In recognition of the potential for overlap with the MPS, Defra has designed the Memoranda of Understanding of some ALSF delivery partners to ensure that public funds do not pay for actions the MPS requires of quarry owners (see section 3.4.3).

We are aware of four arguments for why there may be a role for spending under objectives 2 and 3 of the ALSF in the context of the MPS. These are

- 1) To create a baseline of data on the environmental effects of granting new permissions,
- 2) To restore the condition of restoration of sites granted permission some time ago to the conditions of restoration the current planning system requires,
- 3) To co-ordinate the activities of neighbouring MPAs so that the pattern of new permissions granted across authorities creates the minimal environmental damage, and
- 4) To share the expertise of national organisations with local MPAs.

We now give a brief assessment of these arguments. A full assessment of these arguments would require more time than was available for this study.

Regarding argument (1), both the ODPM and marine aggregate extractors expressed an interest in further work to construct a baseline of data on the marine environment relevant to aggregates extraction. Some O2 ALSF projects have aimed to establish a baseline of data on archaeological remains relevant to new aggregates planning permissions on land. The overall sense we gained from the ODPM was that they considered that an adequate baseline of data on terrestrial permissions now existed.

Regarding argument (2), Capita Symonds is currently conducting research on the number of sites that require restoration and for which no private company retains responsibility. Defra commissioned this work using ALSF funds. We have seen the interim report of this study, which drew on the responses to a survey of 51 of the 157 MPAs in England. The overall sense of

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this interim report was that there were fairly few sites that could benefit from restoration.

Regarding argument 3, representatives of English Nature and the Countryside Agency (EN & CA) argued to us that coordination of policy toward new planning permissions by neighbouring MPAs could achieve significant environmental benefits. This was particularly the case with permissions for new gravel quarries, since quarrying companies seek new permissions for these fairly shallow quarries at a considerable rate. In the region of the Cotswold Water Park (CWP), disused quarries fill with water, so the pattern of permissions for new quarries defines the future distribution of lakes. One past ALSF project produced a plan for the coordination of future gravel quarry permissions across the Gloucestershire and Wiltshire borders.<sup>15</sup> We have not evaluated the strength of EN and CA's argument for benefits from the coordination of policies across MPAs.

Regarding argument (4), EN and CA argued that MPAs could benefit from their expertise in screening the site restoration plans in aggregate companies' applications for new quarrying permissions. They stressed that the restoration plans contained in current applications were often fairly simple and capable of significant improvement from the perspective of supporting diversity. For example, lakes with gently sloping shores will support more natural life than lakes with steeply sloping shores, because reeds, which only grow in shallow water, will support a variety of fauna in much the same way as a hedgerow. Further, EN & CA suggest that restored sites contain a large main lake and a separate small lake or pond, since the pond will support a different range of fauna. While representatives of EN, the CA and the CWP made a plausible case that MPAs could benefit from their expertise in designing and screening restoration plans, we have not interviewed MPAs on this subject, and thus are not in a position to fully evaluate this argument.

## 6.5 The Landfill Tax Credit Scheme

The Landfill Tax Credit Scheme (LTCS) was introduced with the landfill tax in 1996. The LTCS encourages landfill operators (LO's) to support qualifying public projects by giving them a 90 per cent tax credit against their donations to these projects. These donations are capped at 6 per cent of the LO's landfill tax liability. Thus, the LTCS encourages partnerships between landfill operators, their local communities and the voluntary and public sectors.

Landfill tax credits must be spent in compliance with the landfill tax regulations and with LTCS objectives. Table 5 summarizes LTCS spending to date, and breaks spending down by objective.

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<sup>15</sup> This project was entitled 'Futurescapes in the Cotswold Water Park.'

There is potential for overlap between projects funded by the LTCS and the ALSF. For example, a forerunner to WRAP's AggRegain website was partly funded by the LTCS (see section 6.3). LTCS grants have also been made to the Cotswold Water Park, the Museum of London and the National Stone Centre in Derbyshire, all of which have also received ALSF grants. The LTCS has also funded some research similar to that funded under O1 of the ALSF (see Annex 1). The LTCS database also lists 207 grants to cricket clubs and 1,321 grants for improvement of village halls, types of projects that have also received some of the smaller ALSF grants.

Some ALSF delivery partners also receive LTCS funding. For example, the Derbyshire Environmental Trust, which manages the ALSF for Derbyshire County Council, has delivered 219 projects that have received LTCS funding. 172 of these provided or maintained public amenities and parks, rather similarly to Derbyshire County Council's ALSF projects.

<b>Table 5: Projects funded by the Landfill Tax Credit Scheme</b>		
<b>Total Donations (£m)</b>		800
<b>Total spending to date (£m)</b>		630
<b>Spending breakdown per objective</b>		
	Objective	Spending (£m)
A	Projects that involve reclaiming land, the use of which has been prevented by some previous activity	22.8
B	Projects that reduce or prevent pollution on land	1.8
C*/ CC*	Projects that encourage sustainable waste management through research, education or information dissemination/ Projects that encourage the development of products from waste or markets for recycled products through research, education or information dissemination	249
D	Projects that provide or maintain public amenities or parks within 10 miles of a landfill site	307
DA	Delivery of biodiversity conservation for UK species habitats	0.38
E	Projects to restore or repair buildings for religious worship, or of architectural or historical interest within 10 miles of a landfill site	46.2
F	Projects that fund the cost of administrative, financial or other services supplied to other enrolled environmental bodies	2.5
Source: Landfill Tax Credit Scheme website: <a href="http://www.ltcs.org.uk/">http://www.ltcs.org.uk/</a> , accessed February 27 2006.		
* Objects c and c.c of the landfill tax regulations were removed on the 1st April 2003		

## 6.6 Conclusion

Several government policies contribute to achieving the objectives of the ALSF. A relevant question is then whether the ALSF can provide value for

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money by conducting efforts additional to these other policies. We now briefly summarise what we learn about this potential for value from the descriptions of the other policies above.

### ***Objective 1***

The existence of the landfill tax and aggregates levy poses problems for the potential value of capital grants to firms constructing facilities to recycle construction and demolition wastes. Special arguments would be needed to justify a capital grants programme in this context. The fact that dissemination activities under O1 are similar to these pursued under past aggregates information programmes also creates the possibility that the value of continuing programmes of the same sort may be low. Representatives of the construction industry with whom we spoke felt there would be continued value in some continued programmes of information about RSAs, but with a changed focus from past programmes (see section 9.2.2).

### ***Objective 2***

Representatives of English Nature, the Countryside Agency and English Heritage argued strongly that there was scope for valuable work on active extraction sites despite the existence of the minerals planning system. EN and CA have both successfully lobbied Defra to change their Memoranda of Understanding to permit such work. We have seen some evidence in support of this view, and none to contradict it.

Several stakeholders suggested that the lack of baseline information about the marine environment provided a rationale for marine research that would support the marine minerals planning system. This appears to be a widely accepted view. We presume that at some point the marine planning system would be well informed and thus that the value of further marine research would fall, however.

### ***Objective 3***

The fact that the Landfill Tax Credit Scheme is an alternative source of funding for some of the recipients of ALSF O3 funds raises a question as to the value of additional work funded by the ALSF. Delivery partners receiving O3 funds believed there was scope for valuable work of this type. However, representatives of aggregate producers did not believe there was a major problem relating to abandoned former quarry sites to solve. Ongoing research work by Capita Symonds is intended to resolve this question.

### ***Objective 4***

While the Landfill Tax Credit Scheme is not designed to compensate communities for any damages created by aggregate extraction, in practice it

funds some of the same projects or types of projects as ALSF O4 funding. This raises some question over the value of ALSF O4 spending.

## 7 ALSF delivery partners

This section briefly describes the ALSF's delivery partners. These bodies are best understood as budget holders of parts of the ALSF, since fund activities are often application-led and thus delivered by other contractors.

Spending by each delivery partner as it appears in Defra's database is shown in Table 8. This table omits some county councils, for which no projects appear in the database. Allocations to county councils under objective 4 of the ALSF, starting in fiscal year 2005-6, are summarised in Table 27.

### *CEFAS*

CEFAS, the Centre for Environment, Fisheries and Aquatic Science, became an ALSF delivery partner starting in the 2004-5 fiscal year. It delivers projects researching the marine environment under the ALSF's objective 2.

### *Cornwall County Council*

Cornwall County Council started delivering ALSF projects in the fiscal year 2005-6. It delivers projects under objective 4.

### *Countryside Agency*

The Countryside Agency has been a delivery partner since the inception of the ALSF programme in 2002. Nominally, it has delivered projects under objective 3 only, though its current MoU allows it to spend 20% of its funding on current extraction sites. As of December 15 2005, it had delivered the highest total grant amount in completed projects of all delivery partners.

### *Cumbria County Council*

Cumbria County Council became a delivery partner in the 2005-6 fiscal year. It delivers local community projects under objective 4 of the ALSF.

### *Derbyshire County Council*

Derbyshire County Council is one of three county councils that delivered ALSF grants prior to fiscal year 2005-6. Its ALSF objective has changed from objective 3 prior to 2005-6 to objective 4 thereafter.

### *Devon County Council*

Devon County Council became a delivery partner in the 2005-6 fiscal year. It delivers local community projects under objective 4 of the ALSF.

***DfT***

The Department for Transport delivers ALSF grants under objective 2. Defra's database reports that the DfT has allocated a total of £0.1m to projects underway and £0.99m to future projects, but no funds to completed projects.

***Doncaster County Council***

Doncaster County Council became a delivery partner in the 2005-6 fiscal year. It delivers local community projects under objective 4 of the ALSF.

***DTI***

The Department for Trade and Industry has delivered projects under objective 1 of the ALSF. We understand that the DTI ceased delivering ALSF funds at the end of March 2005.

***Durham County Council***

Durham County Council became a delivery partner in the 2005-6 fiscal year. It delivers local community projects under objective 4 of the ALSF.

***English Heritage***

English Heritage has been a delivery partner since the start of the ALSF in 2002. It is the largest delivery partner by total allocated grant amount, for a total value of £16.66m. It delivers research and dissemination projects under objective 2 and legacy projects under objective 3.

***English Nature***

English Nature is one of the three largest ALSF delivery partners, and has delivered ALSF grants since the scheme's inception. It delivers marine projects under objective 2 and terrestrial work under objective 3.

***Essex County Council***

Essex County Council (ECC) became a delivery partner in the 2005-6 fiscal year, and delivers projects under objective 4.

***Gloucestershire County Council***

Gloucestershire County Council became a delivery partner in the 2005-6 fiscal year. It delivers projects under objective 4 of the ALSF.

***Lancashire County Council***

Lancashire County Council became a delivery partner in the 2005-6 fiscal year. It delivers projects under objective 4 of the ALSF.

***Leicestershire County Council***

Leicestershire County Council is one of three County Councils that delivered ALSF grants prior to the 2005-6 fiscal year. Its ALSF objective has changed from O3 prior to 2005-6 to O4 thereafter.

***Lincolnshire County Council***

Lincolnshire County Council became a delivery partner in the 2005-6 fiscal year. It delivers projects under objective 4 of the ALSF.

***MIRO***

The Mineral Industry Research Organization (MIRO) has been a delivery partner since the inception of the ALSF. It aims to develop and implement sustainable technologies for aggregate production under objective 2.

***North Somerset County Council***

North Somerset County Council became a delivery partner in the 2005-6 fiscal year. It delivers projects under objective 4 of the ALSF.

***North Yorkshire County Council***

North Yorkshire County Council became a delivery partner in the 2005-6 fiscal year. It delivers projects under objective 4 of the ALSF.

***Nottinghamshire County Council***

Nottinghamshire County Council became a delivery partner in the 2005-6 fiscal year. It delivers projects under objective 4 of the ALSF.

***ODPM***

The ODPM is responsible for setting thematic priorities for the Sustainable land won and marine dredged Aggregate Mineral programme (SAMP). ODPM has conferred responsibility for the management of SAMP to MIRO. SAMP projects aim at objective 2 of the ALSF.

***Shropshire County Council***

Shropshire County Council became a delivery partner in the 2005-6 fiscal year. It delivers projects under objective 4 of the ALSF.

***Somerset County Council***

Somerset County Council is one of three County Councils that have delivered ALSF grants prior to the 2005-6 fiscal year. Its ALSF objective has changed from objective 3 prior to 2005-6 to objective 4 thereafter.

***South Gloucestershire***

South Gloucestershire County Council became a delivery partner in the 2005-6 fiscal year. It delivers projects under objective 4 of the ALSF.

***Staffordshire County Council***

Staffordshire County Council became a delivery partner in the 2005-6 fiscal year. It delivers projects under objective 4 of the ALSF.

***WRAP***

The Waste and Resource Action Programme (WRAP) is the main delivery partner responsible for objective 1 of the ALSF. Its ALSF projects have aimed to promote greater use of recycled and secondary aggregates.

## 8 Overview of ALSF spending

This section describes total allocations to the ALSF and total spending within the ALSF, and then breaks this spending down by ALSF objective, marine and terrestrial status, delivery partner, and project timing.

### *Total allocations to the ALSF*

Several government publications state that the Treasury allocates £29.3m annually to the ALSF for England.<sup>16</sup> However, Treasury's actual allocation to Defra for the ALSF is difficult to establish. The DfT told us, for example, that the Treasury had withdrawn a planned £1m allocation for water-based aggregates transport projects in 2005-6. Defra's annual spending varies widely on a year-by-year basis<sup>17</sup>, so one cannot deduce Treasury's allocation of ALSF funds to Defra from Defra's annual spending.

An annual allocation of £29.3m would imply a total allocation to Defra of £117.3m up to the end of fiscal year 2005-2006.

### *Total ALSF spending*

Defra has provided the information on total annual spending within the ALSF contained in Table 6. The 2003-4 spending total was quoted in an answer to a parliamentary question.<sup>18</sup>

<b>Table 6: Annual ALSF spending</b>	
<b>Fiscal Year</b>	<b>Total spending (£)</b>
2002-2003	17,903,842
2003-2004	19,184,481
2004-2005	19,542,428
2005-2006 (maximum)	26,750,000
<b>Total</b>	<b>83,380,751</b>
Source: Defra. Totals are rounded to the nearest pound.	

<sup>16</sup> For example, the Defra news release of March 30 2005 at <http://www.defra.gov.uk/news/2005/050330b.htm>

<sup>17</sup> As an illustration, see Defra (2005), Chapter 7, table 1. Direct link: <http://www.defra.gov.uk/corporate/deprep/2005/chapter7.pdf>

<sup>18</sup> See <http://www.publications.parliament.uk/pa/ld200405/ldhansrd/pdvn/lds05/text/50221w11.htm>.

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We understand that spending in 2005-6 may be lower than the maximum of £26.75m written in delivery partners' (DPs) Memoranda of Understanding (MoUs) with Defra. Some funds available for 2005-6 have not yet been allocated to projects, and some may remain unspent by the end of the current fiscal year. Thus, £83.4m represents the maximum possible level of ALSF spending between April 1 2002 and April 1 2006.

Further tables in this report use the version of Defra's project database supplied to London Economics on December 15 2005. We are aware of some errors in this database. We believe that these errors in the database are not crucial to our main findings or recommendations. This is because they do not greatly affect change our characterisation of the ALSF or our ability to assess its achievements or value for money. However, it is necessary to state that any of our analysis that uses the database may be subject to some errors.

One type of error leads to an overstatement of ALSF spending. This is that, in a minority of cases, the same projects appear twice in the database. We believe this error is likely to lead the database to overstate spending by roughly £2m.

Some projects' start or finish dates are missing in the database. In some cases, this means we cannot tell whether a project is completed, ongoing or yet to start. We summarise projects with unclear timing separately below.<sup>19</sup>

### *Spending by objective*

We now break ALSF spending down by objective. It is sometimes hard to allocate projects to ALSF objectives using the database. While the database contains an 'objective' variable, this is missing for many projects, particularly those that started before 2004.<sup>20</sup> This report uses an allocation of projects to objectives that Defra suggested. This allocation appears accurate in the vast majority of cases, though not in all.

Table 7 below summarises spending by ALSF objective and project date, subject to the caveats listed above.

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<sup>19</sup> For 56 projects in the database, no start or finish date was listed. For 5 projects, a start date before December 15 2005 was entered, but the finish date was missing. These projects could be either complete or current. For 1 project, the start date was missing but the finish date was March 31<sup>st</sup> 2006. This project could be either current or future.

<sup>20</sup> Of 1,140 projects in the database, 496 have no objective listed, of which 410 started before April 2004.

<b>Table 7: ALSF spending by objective and project date</b>			
<b>Objective</b>	<b>Total grant (£m)</b>	<b>Share of total grant (%)</b>	<b>No. of projects</b>
<b>Projects completed by December 15 2005</b>			
1	4.6	9.6	75
2	16.2	34.1	240
3	26.8	56.2	499
4	0.06	0.1	6
<b>Total</b>	<b>47.59</b>	<b>100</b>	<b>820</b>
<b>Projects still underway on December 15 2005</b>			
2	14.4	68.3	96
3	5.5	26.1	72
4	1.2	5.6	88
<b>Total</b>	<b>21.1</b>	<b>100</b>	<b>256</b>
<b>Projects scheduled to begin after December 15 2005</b>			
2	0.99	100	2
4	0	0	1
<b>Total</b>	<b>0.99</b>	<b>100</b>	<b>3</b>
<b>Projects where timing is unclear in the database<sup>1</sup></b>			
1	0.47	25	2
2	0.42	22.1	3
3	0.47	25	4
4	0.53	27.9	53
<b>Total</b>	<b>1.89</b>	<b>100</b>	<b>62</b>
<b>Grand Total</b>	<b>71.5</b>	<b>100</b>	<b>1,141</b>
Source: Defra project database, December 15 <sup>th</sup> 2005.			
Notes: 1 Includes one project starting before Dec 15 2005 but with no finish date.			

### *Spending by delivery partner*

Table 8 below shows spending by delivery partner (DP) and project date. Some county councils allocated funds starting in 2005-6 do not appear in this table, because Defra's database contained no projects they had sponsored as of December 15 2005. We expect these councils will have sponsored projects by the end of the 2005-6 fiscal year. Section 7 lists all the ALSF DPs.

Table 8 shows that English Heritage has distributed the most ALSF funds to date. EH representatives state that this resulted from Defra's decision to reallocate funds that other DPs could not spend to EH, rather than the fund's original memoranda of understanding.

<b>Table 8: ALSF spending by delivery partner and project date</b>					
<b>Delivery partner<sup>1</sup></b>	<b>Total spending (£m) by project status on December 15 2005</b>				
	<b>Completed</b>	<b>Underway</b>	<b>Planned future start</b>	<b>Timing unclear from database</b>	<b>Total</b>
CEFAS	0.21	2.2	0	0	<b>2.38</b>
Cornwall CC	0.01	0.1	0	0	<b>0.1</b>
Countryside Agency	12.13	1.6	0	0.4	<b>14.08</b>
DTI	1.09	0	0	0	<b>1.09</b>
Derbyshire CC	0.69	0.6	0	0	<b>1.29</b>
DfT	0	0.1	0.99	0	<b>1.12</b>
English Heritage	11.32	5.3	0	0	<b>16.66</b>
English Nature	10.77	3.5	0	0.1	<b>14.36</b>
Essex CC	0	0	0	0.1	<b>0.11</b>
Gloucestershire CC	0	0.1	0	0	<b>0.11</b>
Lancashire CC	0.02	0	0	0.3	<b>0.32</b>
Leicestershire CC	0.82	0	0	0	<b>0.86</b>
MIRO2	4.31	2.6	0	0	<b>6.91</b>
North Somerset CC	0	0.1	0	0	<b>0.09</b>
ODPM	2.26	4.6	0	0.4	<b>7.28</b>
Somerset CC	0.5	0.3	0	0	<b>0.82</b>
Staffordshire CC	0	0	0	0	<b>0.04</b>
WRAP	3.46	0	0	0.5	<b>3.93</b>
<b>Total</b>	<b>47.59</b>	<b>21.1</b>	<b>0.99</b>	<b>1.9</b>	<b>71.55</b>

Source: Defra database December 15 2005. Note 1: CC denotes a county council.  
 2 We understand that the figures for MIRO are incorrect due to errors in this version of Defra's database. MIRO state that the correct figures for their projects are: Completed £2.59m, Underway £2.97m and Total £5.56m. As we note above, we are aware of several fairly minor errors in this version of the database. Time did not permit us to redo all our Tables using a version of the database Defra had corrected.

### *Spending by marine/terrestrial status*

Table 9 below breaks down spending by projects' marine or terrestrial status.<sup>21</sup> It indicates that 7% of funding on completed projects, and 22% of funding on projects currently underway, has been devoted to marine projects.

<sup>21</sup> Defra's database includes a 'marine' variable coded 0, 1, 2 or 3. We report projects coded '0' as 'Not Specified' in Table 9, although from inspection most of these projects appear to be terrestrial.

<b>Table 9: ALSF spending by marine/terrestrial status and date</b>			
<b>Marine/Terrestrial</b>	<b>Total grant (£m)</b>	<b>Share of total grant (%)</b>	<b>No. of projects</b>
<b>Projects completed by December 15 2005</b>			
Not specified	3.04	6.39	62
Marine	3.38	7.10	41
Terrestrial	40.61	85.34	711
Coastal	0.56	1.17	6
<b>Total</b>	<b>47.59</b>	<b>100</b>	<b>820</b>
<b>Projects still underway on December 15 2005</b>			
Not specified	0.43	2.04	31
Marine	4.73	22.43	19
Terrestrial	15.88	75.33	205
Coastal	0.04	0.2	1
<b>Total</b>	<b>21.1</b>	<b>100</b>	<b>256</b>
<b>Projects scheduled to begin after December 15 2005</b>			
Terrestrial	0.99	100	3
<b>Total</b>	<b>0.99</b>	<b>100</b>	<b>3</b>
<b>Projects with missing or erroneous start or finish dates</b>			
Not specified	0.78	41.4	13
Marine	0.2	10.7	1
Terrestrial	0.91	47.9	48
<b>Total</b>	<b>1.89</b>	<b>100</b>	<b>62</b>
<b>Grand Total</b>	<b>71.5</b>	<b>100</b>	<b>1,141</b>
Source: Defra project database, December 15 <sup>th</sup> 2005.			

## 9 Achievement of objective 1

Objective 1 is to 'minimise the demand for primary aggregates'. This section describes the projects funded under this objective, and then considers the extent to which they have achieved it.

### 9.1 Type of projects funded

O1 projects have consisted of capital grants to companies constructing recycling facilities, research and dissemination, as Table 10 shows.

<b>Table 10: Number of projects and spending under objective 1 by project type</b>		
<b>Project type</b>	<b>Number of projects</b>	<b>Grant Amount (£m)</b>
Capital grants under first objective	17	2.24
Dissemination project	27	1.04
Research project	31	1.27
<b>Total</b>	<b>75</b>	<b>4.55</b>

Source: Defra ALSF Database, December 15 2005, projects completed by this date only.

The project descriptions contained in the database give a better sense of the type of projects conducted under O1. Table 11 below lists the titles of the largest 5 projects (by ALSF grant) either completed or ongoing on December 15 2005. Details of other O1 projects are available through the website listed in the references as (Defra 2006).

**Table 11: Largest five objective 1 projects by grant  
Complete or ongoing projects only**

Title	Description	Grant (£m)	Timing
Development of CD+ACY-EW Facility at TK Lynskey	Development of Construction, Demolition and Excavation Waste Facility at TK Lynskey Excavations Ltd, Rotherham, to produce high quality recycled aggregates	0.57	Complete
WBB Processing Ball Clay Waste	Washing and screening ball clay waste to produce fine recycled aggregate	0.30	Complete
Eastern Waste - Crushing, Screening and Infrastructure	Crushing and screening of C&D waste to produce recycled aggregates	0.23	Complete
Developing Case Studies for AggRegain	Provide case studies for wide range of RSAs applications to be published on AggRegain website	0.21	Complete
Promotional Campaign for Local Authority Highways Maintenance	A series of workshops to provide those involved in the use of RSAs with sufficient information to change existing practices	0.20	Complete

Source: Defra ALSF database December 15 2005. All the projects listed were delivered by WRAP.

## 9.2 Achievement of objective

Two difficulties are apparent in assessing whether O1 spending has achieved its stated objective of 'minimising the demand for primary aggregates':

- (i). The demand curve for primary aggregates is generally unobservable
- (ii). It is impossible to place a figure on 'minimised demand'

In response to these difficulties, we interpret O1 as being to 'reduce the volume of primary aggregates traded below what it would otherwise have been'.<sup>22</sup> This implies that an increase in the volume of primary aggregates consumed over time, such as that forecast by the ODPM,<sup>23</sup> need not imply that O1 projects had failed to meet their objective.

We consider the effect of O1 projects on primary aggregate extraction to be roughly the opposite of their effect on the volume of RSAs used. Thus, we assume that additional RSAs displace primary aggregates one-for-one in consumption.

<sup>22</sup> Consistent with point (ii), WRAP has described its objective as being to reduce demand for primary aggregates. See note 4 at [http://www.aggregain.org.uk/news/aggregates\\_2.html](http://www.aggregain.org.uk/news/aggregates_2.html).

<sup>23</sup> ODPM National and Regional Guidelines for Aggregates Provision in England 2001-2016, November 2005, at <http://www.odpm.gov.uk/index.asp?id=1161539>.

Using the assumptions above, we assess the achievement of O1 projects in terms of their effect on the volume of RSAs used in England. Our focus on the effect of O1 projects on RSA *volumes* may ignore some effects on the *value* of RSAs used. However, the difficulties in assessing the effect of projects on volumes alone are significant. Further, Defra's database contains data on RSA volumes but not quality at the subsidised plants.

We now discuss the effect of capital grants, research projects and dissemination projects separately.

### 9.2.1 Capital grants

We analyse the effect of O1 capital grants using Defra's database and information about trends in the market for RSAs. Section 13.4.1 below provides a case study of a single O1 capital grant.

Defra's database lists 19 O1 capital grants, of which

- o 17 had been completed by December 15 2005, and
- o 2 are listed as having started in 2004, but have no finish date.

Table 12 shows the information the database provides on these 19 grants.<sup>24</sup>

<b>Table 12: Detail on capital grants under objective 1</b>		
<b>Variable</b>	<b>Projects completed by Dec 2005</b>	<b>All projects</b>
Total grant (£m)	2.24	2.71
	<b>Capacities (millions of tonnes)</b>	
Total capacity	1.027	1.169
Capacity predicted to be used in first year	0.796	0.912
Source: Defra ALSF Database, December 15 2005.		

We conclude from Table 12 that O1 capital grants have contributed to facilities that either have or will process roughly 1.2 million tonnes (mt) of RSAs per year once the projects are completed and the recipient firms use the facilities to their typical long-run capacity.

This information, however, is insufficient to tell the effect of capital grants on the volume of RSAs traded. This is for two reasons:

- (1) Many of the plants created have been completed recently and are not yet expected to run at their typical 'full use' capacity. Thus, we do not

<sup>24</sup> The database also includes the variable 'Capacity actually used in first year', but this would not appear helpful at present because in several cases it reflects the capacity used in the time since project completion, which is only a few months in some cases.

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know how long the recycling capacity will be used at less than this 'full use' volume.

- (2) We do not know how much of this capacity the private sector would have created all this new recycling capacity without the grant scheme.

To explain point (1), the finish dates of the 17 completed capital grants range from June 2003 to June 2005. A plant completed in January 2004 was not expected to reach full use until the end of 2005,<sup>25</sup> so some other plants cannot yet be expected to be running at full capacity. The timing of these plants' build-up to full use is of particular relevance in assessing the social rate of return of the grants made.

To explain point (2), contacts in the aggregates industry suggested that the recipients of ALSF grants would have had to have business models for recycling plants to be interested in constructing them. Thus, they argued, the recipients of ALSF grants for these facilities were likely to have had a strong interest in building these plants even without the grants.

It is difficult to know whether the private sector would have constructed the recycling capacity to which O1 grants contributed in the absence of the grants. Therefore, below we analyse a range of scenarios for the possible effect of these grants on the volume of RSAs used. These scenarios range from 'no effect' to the more optimistic of WRAP's own estimates.

To give a sense of which scenario is more plausible, we now discuss contemporary trends in the market for RSAs. The volume of recycled aggregates used in Great Britain has risen dramatically over the last 20 years, as Figure 1 shows. According to the European Aggregates Association (UEPG 2005), in 2003 the UK was the leader within Europe in the use of RSAs. Of all aggregates used in the UK, 21% are recycled. The country with the next highest percentage is Switzerland, where 11% are recycled.

Contributory factors to the increase in the use of recycled aggregates in the UK could include the introduction of the landfill tax and of the aggregates levy, as we discuss in section 6. The 2005 Budget Report cites evidence of the effect of the levy on recycling capacity, stating

"When surveyed, expanding recycled aggregate businesses gave the levy as the most frequent reason for growth [between 2001 and 2003].<sup>26</sup>

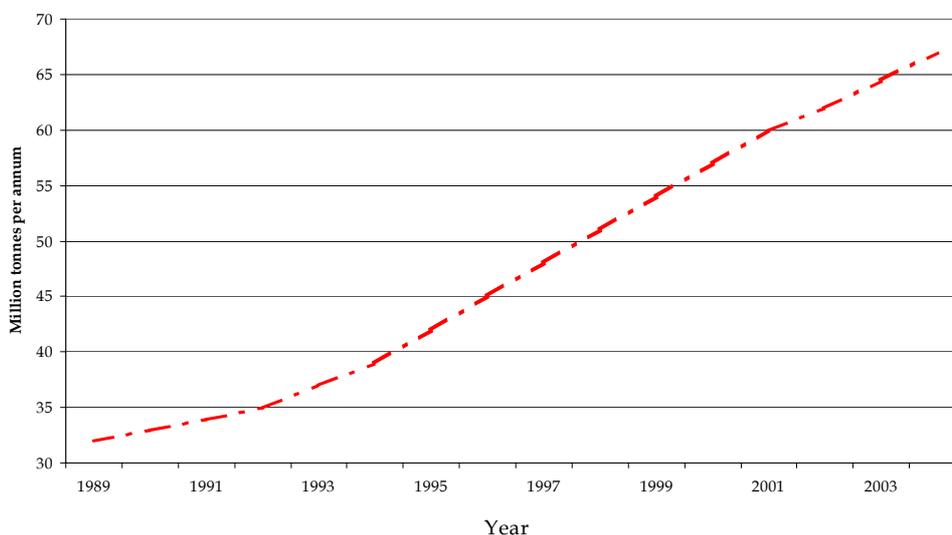
However, distinguishing the effect of the landfill tax and aggregates levy from that of a general trend toward greater use of RSAs is a hard task. Figure 1 suggests such a trend existed before the introduction of either tax.

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<sup>25</sup> See the news releases on the grant to TK Lynskey at <http://www.prnewswire.co.uk/cgi/news/release?id=115559> and [http://www.redox.nl/index.php?id=1727&tx\\_ttnews%5BbackPid%5D=1724&no\\_cache=1&tx\\_ttnews%5Btt\\_news%5D=100](http://www.redox.nl/index.php?id=1727&tx_ttnews%5BbackPid%5D=1724&no_cache=1&tx_ttnews%5Btt_news%5D=100)

<sup>26</sup> Budget 2005, paragraph 7.62, at [http://www.hm-treasury.gov.uk/media/AA7/59/bud05\\_chap07\\_171.pdf](http://www.hm-treasury.gov.uk/media/AA7/59/bud05_chap07_171.pdf)

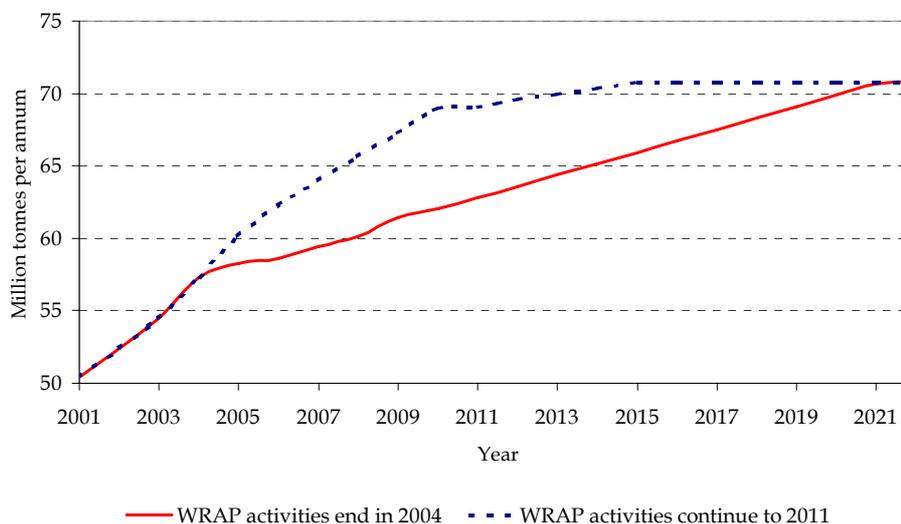
**Figure 1: Volume of recycled aggregates sold in Great Britain**



Source: QPA interpolation of ODPM data

While these background data suggest recycling capacity may have increased substantially since 2002 even without WRAP's capital grants, the effect of these grants remains unclear. WRAP's selection criteria are designed to ensure that grants lead to additional capacity being created. These criteria require that grants fund investments that would not otherwise be viable.

We understand that WRAP believe their O1 ALSF projects, including capital grants, research and dissemination, will increase the market supply of RSAs only up to 2022, or more generally in the medium term. Our sources for this view are our interviews with WRAP and an unpublished Defra (2004) working paper to which WRAP contributed. The paper includes Figure 2 below, which shows predicted paths of the supply of RSAs in England under the assumptions that (i) WRAP's ALSF projects had ended in April 2004 and (ii) WRAP's ALSF projects continued up to April 2011. These forecasts imply the continuation of WRAP's ALSF projects from 2004 to 2011 would increase the use of RSAs by a total of 69.1 million tonnes from 2005 to 2021.

**Figure 2: WRAP forecasts of annual RSA supply in England**

Source: Defra (2004).

To summarise the disparate views of WRAP and of primary aggregate producers, Table 13 describes three possible scenarios for the effect of WRAP's past and current O1 capital grants on the volume of RSAs sold in England. In each scenario, we assume the capital grants induce no additional supply of aggregates before 2005 or after 2021. WRAP also makes these assumptions in its forecast of the effect of its entire ALSF programme, as Figure 2 shows.

**Table 13: Scenarios of effect of capital grants on RSA sales**

Annual additional RSAs sold	Scenario		
	Gradual Catch-Up	Gradual Build-Up and Catch-Up	No Effect
Before 2005	0	0	0
2005-2010	1.17mt	Rising from zero to 1.17mt	0
2011-2021	Declining from 11.7mt to zero	Declining from 1.17mt to zero	0
After 2022	0	0	0
<b>Total additional volume (mt)</b>	<b>13.9</b>	<b>11.6</b>	<b>0</b>

Source: LE calculations based on Defra (2004).

We now describe each scenario briefly.

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- o Under the 'Gradual Catch-Up' scenario, 1.17 mt of volume is added in each year from 2005-2010. In subsequent years, we assume the private sector would have added much of this volume even without the capital grants. The rate of private catch-up of this 1 mt volume is the same as that WRAP assume for the effects of their entire ALSF programme.
  - o Under the 'Gradual Build-Up and Catch-Up' scenario, a maximum of 1.17 mt of RSA volume is added in 2010. During 2005-2009, less volume is added because the new capacity is only slowly brought into use. The rate at which this occurs is the same as that implied by WRAP's forecast of the effect of their entire ALSF programme. The incidence of the 1.17 mt of volume then declines after 2010 as in the previous scenario.
  - o Under the 'No Effect' scenario suggested by primary producers, none of the volume of RSAs traded by firms receiving O1 capital grants is additional to the volume they or other private producers would have traded in the absence of the capital grants.

The total amount of additional RSA volume under each scenario is shown in the last row of Table 13. The totals range from 0-13.9 mt. WRAP's forecast of the effect of their entire ALSF programme suggests they believe in either the 'Gradual Catch-Up' or 'Gradual Build-Up and Catch-Up' scenarios. In this context we view the addition of 13.9 mt of RSA volume over time as an 'upper bound' estimate of the effect of past and current O1 capital grants on the volume of RSAs sold in England.

### 9.2.2 Research and dissemination projects

The effect of O1 research and dissemination projects on the volume and quality of RSAs sold is hard to assess. This is partly because:

- o Research and dissemination projects would affect demand for RSAs indirectly, and
- o It is not clear to what extent the outcomes pursued by such O1 projects would have occurred in any case without their assistance.

To gain a sense of the efficacy of O1 research and dissemination activities, we examined documents published by the ODPM and the report of the report of the ALSF's Land-Based Science Co-ordinator (Cuesta 2006). We also sought views from several bodies representing parts of the UK construction industry. The first two responses we received from the construction industry were both from qualified civil engineers who are members of the Institution of Civil Engineers (ICE). We also received a statement from the ICE overall.

#### *Views of the Construction Confederation*

The Construction Confederation is an umbrella trade association for the UK construction industry. It represents around 5,000 companies, who are responsible for over 75% of the industry's turnover. Member bodies of the

Construction Confederation include the Civil Engineering Contractors Association, the Major Contractors Group, and the National Contractors' Federation.

We received views of the Construction Confederation from one of its directors. These views should be interpreted as those of the Confederation overall, however, as this director had canvassed views from the environment managers of several major construction companies. These respondents made essentially two points.

The first point was that larger contractors are now fully aware of the uses of RSAs and the issues surrounding them. In this sense, the Confederation members thought WRAP's AggRegain website had achieved an objective, but remained a very useful tool that should be maintained.

The second point was that there would be continuing value in targeting clients of construction projects to increase their confidence in the uses of RSAs in construction. Respondents thought some clients' suspicions about RSAs effectively created a barrier to their use. Respondents thought major clients such as the DfT's Highways Agency and local authority highways agencies were now fully informed about the properties of RSAs, but that smaller clients, including other personnel within local authorities, were not.

#### *Views of a member of the ICE Waste Board*

We also received views from a civil engineer who is a member of the ICE's Waste Board and has considerable experience in waste management. This respondent had in the past run O1 dissemination projects, including informational seminars, for WRAP. His current employer also performs work for the ALSF, both for WRAP and under other contracts.

This respondent made three made points: on the level of awareness of WRAP activities, on WRAP's methods of information distribution, and on the continuing need for O1 dissemination activities.

Regarding awareness of WRAP's dissemination activities, this respondent suggested awareness in the construction industry might be limited to major clients and suppliers. He suggested a contributory factor might be WRAP's reliance on the industry finding its own way to WRAP seminars and websites. While major clients and suppliers would find these resources, personnel in small and medium-sized enterprises may be less likely to, for example, search the web for information and thus find WRAP resources.

To confirm or dispel these concerns, this respondent suggested that WRAP conduct an awareness survey to gauge industry knowledge of its programmes. He was not aware of a recent survey WRAP survey of this type. He thought WRAP had started appropriately by setting up its Aggregates Forum, but that this had again tended to represent major actors in the aggregates market rather than minor actors.

Regarding the methods by which WRAP distributes information, this respondent suggested it would be logical to make this information part of the syllabus for university degrees in civil engineering. Were this to be done, one could eventually become confident that most qualified civil engineers were fully aware of the properties of RSAs.

The respondent also made some more technical comments about the means by which information was available through the AggRegain website. He noted that many AggRegain pages were set up on a question-and-answer basis, which is helpful for a first-time user. However, he argued this structure made it harder for repeat users to find the particular pages they wanted. The respondent noted that, as an older engineer, he preferred to have a hard copy of any relevant information, and thus wished to be able to quickly identify documents within AggRegain and print them.

The respondent also commented on the continuing need for dissemination activities regarding recycled aggregates. Overall he felt there was a continuing need, since new people continuously entered the construction industry. As a civil engineer he used WRAP guidance notes available through AggRegain, and thought these needed to be regularly updated. As noted above, he suggested many smaller construction firms might not be aware of all the properties of RSAs, and suggested there might be a continuing need for WRAP to go out and find such firms.

### *Views of the ICE*

We received the following statement from the ICE overall:

The ICE is generally supportive of WRAP's aims of increasing the degree to which construction and demolition waste (C&DW) is recycled rather than deposited in landfills. In this context the ICE is particularly keen to drive the production of higher value C&DW recyclate. Overall, the ICE is attempting to move the construction industry from thinking of C&DW as 'waste' towards thinking of it as a resource. The ICE has developed its own resource efficiency initiative, the philosophy of which is summarised in its publication *The Case for a Resource Management Strategy*. That report sets out the logic for a strategy based on the CO<sub>2</sub> impact of treatment and recovery options. The ICE wishes to improve its links with WRAP, so that the two bodies can coordinate and not duplicate efforts. The ICE also wishes to promote efforts to increase the efficiency with which other resources, besides aggregates, are used. However, experience in developing strategies to use aggregates efficiently is often useful in thinking about how to use other resources efficiently.

### *Views of the ODPM*

The ODPM has a published position on the potential size of the market for RSAs in England. Discussing its forecast of June 2005 of future aggregates use in England, (ODPM 2005a) notes that:

[We assume] alternative aggregates will meet, but not exceed, the target for England of 60mt per annum by 2011. This target is set out in the guidelines for aggregates provision published in June 2003. The target takes account of the fact that it will become progressively more difficult to increase the use of construction and demolition waste as aggregate any further.

The same document forecasts that 56 mt of 'alternative aggregate' (or RSA) will be used in England in 2006. According to this view, therefore, the efficacy of WRAP's ALSF projects in increasing the use of RSAs either has fallen or will fall to zero fairly soon. WRAP's projects might still be able to increase the value of the RSAs used in construction, however.

We also interviewed a representative of the ODPM on the likely efficacy of various parts of the ALSF. This representative thought that there was a continued need for WRAP dissemination projects about RSAs, but that this need would decline in a few years. This appears a more positive view of the efficacy of WRAP's programmes than is implied by the ODPM's forecasts.

### *Views of the Land-Based Science Coordinator*

The report of the ALSF's Land-Based Science Coordinator (Cuesta 2006) describes O1 research and dissemination activities, but contains no quantified sense of their achievements. It notes that WRAP has a target that 20% of local authorities be specifying RSAs in road maintenance contracts (thus, permitting their use) by March 2006. WRAP has confirmed that statistical work to examine whether this target has been met is underway, but not yet available.

More qualitatively, the report quotes interview responses that O1 research and dissemination projects have increased clients' confidence in the use of RSAs.

## **9.2.3 Conclusion**

The degree to which current and past O1 capital grants have achieved their goals is quite difficult to establish. WRAP's own forecasts suggest these capital grants will increase total use of RSAs in England by up to 13.9mt between 2005 and 2021. However, representatives of primary aggregate producers suggested the true effect would be lower, since the private sector might have added this recycling capacity even without the grants. WRAP's project selection criteria are designed to ensure that capital grants only subsidise investments that would not otherwise be made, but it is not clear how successful these criteria have been in the face of the apparent strong

incentives for applicants to misrepresent the circumstances of their bids. We reiterate that our analysis has only focused on the effect of O1 projects on RSA volumes, and therefore omits any effect of these projects on the value of the applications in which RSAs are used.

Only qualitative evidence appears available on the effect of O1 research and dissemination activities. Representatives of the construction industry thought that dissemination activities had been useful in informing major contractors and clients about the uses of RSAs, and that this represented an objective achieved. These representatives suggested that some smaller clients and suppliers of construction contracts might remain less than fully informed about the true properties of RSAs, however.

Evidence that clients and suppliers in the UK construction industry are relatively well informed about the uses of recycled aggregates is the size of the UK market for RSAs. This is much larger than those elsewhere in the EU, and has grown significantly over time.

## 10 Achievement of objective 2

Objective 2 is to 'promote environmentally friendly aggregates extraction.' We first describe the projects funded under this objective, and then consider the extent to which they have achieved this objective.

### 10.1 Type of projects delivered

Table 14 describes spending on O2 projects by project type. The majority of O2 spending has been on research projects. Defra's database does not list any completed transport projects, but does list some current and planned future projects.

<b>Table 14: Spending on objective 2 by project type and date</b>					
<b>Project type</b>	<b>Completed</b>	<b>Ongoing</b>	<b>Future</b>	<b>Unspecified</b>	<b>Total Grant (£m)</b>
Dissemination project	2.39	0.3	0	0	2.69
Research project	13.83	14.00	0	0.39	28.22
Transport project	0	0.1	0.98	0.03	1.11
<b>Total</b>	<b>16.22</b>	<b>14.40</b>	<b>0.98</b>	<b>0.42</b>	<b>32.02</b>

Source: Defra project database December 15 2005.

The project descriptions in the database give a better sense of the types of projects conducted under O2. Table 15 below lists the titles of the largest 5 projects (by ALSF grant) either completed or ongoing on December 15 2005.

**Table 15: Largest five objective 2 projects by ALSF grant**

Title	Description	Delivery Partner	Grant (£m)
Eastern English Channel large-scale seabed habitat mapping	Provide broad-scale habitat maps for an extensive area of the Eastern English Channel to support sustainable management of offshore resources.	CEFAS	1.05
Developing an Objective Birdstrike Risk Assessment Model	Developing a model to inform environmental assessment policy regarding planning applications for mineral workings near airports.	ODPM	0.51
Seabed Prehistory 2: Archaeology and Marine Aggregates	Project to better understand the presence, extent, character and importance of prehistoric seabed deposits in the North Sea and English Channel.	ODPM	0.48
Wrecks on the Seabed	Provide industry, regulators and contractors with a framework for the incremental, decision-oriented investigation of wreck sites	English Heritage	0.46
Lynford Quarry	Remains of mammoth and other prehistoric animals were found in the quarry. These were retrieved and studied.	English Heritage	0.46

Source: Defra ALSF Database December 15 2005. Note: the sample is all O2 projects either complete or ongoing on December 15 2005. All the listed projects were in fact ongoing as of that date.

Table 15 lists only two projects delivered by English Heritage, a major O2 delivery partner. Table 16 summarizes thematic priorities and displays additional examples of O2 projects delivered by English Heritage.

<b>Table 16: Examples of English Heritage objective 2 projects</b>		
<b>Project</b>		<b>Grant (£ '000s)</b>
<b>Resource management: assisting the planning process</b>		
<i>Characterizing the potential of aggregates deposits</i>	Late Quaternary landscape history of the Swale-Ure Washlands.	105
<i>Planning for future extraction</i>	The Greater Thames survey of mineral extraction sites to inform current and future extraction on the archaeological potential of sites.	54
<b>Education and outreach/ Dissemination/ Community projects</b>		
Alderley Sandhills Project: to gain new perspectives on the transformation of domestic life and consumer culture in the Industrial Era brought about by the intensification of the extraction industries.		128.14
Characterizing, Modelling and Managing the Buried Landscape in the Vale of Pickering.		278.8
<b>Unexpected Discoveries</b>		
Discovery of evidence of Late Bronze Age/ Early Iron age activity in a quarry at Hartshill Copse, Berkshire		105.5
<b>Maritime and Fluvial archaeology</b>		
<i>Fluvial</i>	Trent Valley Survey 2003, to develop research into archaeology of river Trent and to make the results available to a wide audience	249.2
<i>Landscape Evolution</i>	A reassessment of the archaeological potential of continental shelves, to study what could be found under the sea which used to be on firm land due to lower sea levels at the time.	70.3

## 10.2 Achievement of objective

We first discuss the achievements of research and dissemination activities jointly, and then the intended future achievements of transport projects.

### 10.2.1 Research and dissemination projects

Under a literal interpretation of objective 2 (O2), the delivery of promotional activities themselves would imply that the objective had been achieved. Presumably, however, Defra wishes these promotional activities to achieve changes 'on the ground' by changing the behaviour of quarrying companies.

We divide our discussion on the outputs of O2 research and dissemination projects into quantitative and qualitative sections.

### Quantitative indicators

Sources available to give a quantitative sense of the outputs of these projects include Defra's database and MIRO's stakeholder awareness surveys. Our case study of a large marine research project (see section 14.3.2) also quantifies some of its outputs.

Defra's database provides the information on the achievements of O2 projects summarised in Table 17 below. This confirms that O2 projects have undertaken research and dissemination activities. The involvement of the mineral (aggregate extraction) industry in many projects suggests that many of the funded projects were relevant to the industry, and the 'Knowledge gap identified' variable indicates that some projects have increased the knowledge or understanding of areas delivery partners identified as requiring research. However, neither the database nor the Land-Based Science Co-ordinator's Report (Cuesta 2006) reveals how much O2 projects have changed the industry's behaviour.<sup>27</sup>

**Table 17: Descriptive variables for objective 2 projects by date**

Variable	Number of projects answering yes				
	Completed	Current	Future	Unspecified	Total
Local authority involvement	93	57	0	1	151
Mineral industry involvement	110	73	0	2	185
Knowledge gap identified	130	89	0	1	220
Peer Review <sup>1</sup>	1	0	0	0	1
Dissemination audience identified	133	86	0	2	221
Dissemination undertaken	119	54	0	2	175
Dissemination completed	52	0	0	1	53
Results available on web	112	36	0	1	149
Results presented at a conference	108	42	0	2	152

Source: Defra ALSF Database, December 15 2005.

Note: 1: English Heritage noted that the data on peer review of projects is artificially low for their projects because they found the database unclear and lacking in guidance on how this field should be completed.

MIRO conducted surveys of the awareness of relevant stakeholders of its MIST and SAMP programmes in March 2005 (see section 14.2). 40% of industry respondents indicated that MIST had changed operational practice,

<sup>27</sup> Cuesta (2006) discusses broadly defined research conducted under ALSF objectives 1, 2 and 3. The Executive Summary states "For the reasons explained in this report, the realisation of ... benefits from research-based projects is almost invariably delayed beyond the timescale of the projects themselves, and is dependent upon the take up of good practice recommendations. It is, however, very likely that those benefits will eventually be seen." Thus, this review makes little claim about the achievements of ALSF research activities.

though many others responded that it was too soon to tell whether practice would change. The changes mentioned included improved use of gravel resources and consequent waste minimisation to the use of mapping technology that maps underground deposits.<sup>28</sup> Other respondents mentioned a general increase in use of industry best practices due to access to the goodquarry.com website.

The majority of respondents to the SAMP awareness survey stated that it was too soon to expect the programme to have changed operational behaviour. However, both representatives of aggregate extractors and MPAs reported using SAMP documents in the planning process.

### *Qualitative evidence*

Qualitative information available to the consultants on the achievement of O2 projects includes the results of in-person interviews, questionnaire responses and the reports of the land-based and marine science co-ordinators.

Delivery partners for the land-based portion of O2 argued that many of their information packs and websites had been well received. They also argued that their project selection policies tend to ensure that projects had many feasible goals and represented value for money.

Industry representatives also thought that land-based information dissemination work under O2 had been valuable. Some, however, thought there was a need for objective indices of the achievements of O2 work in reducing environmental damage. Some industry contacts also stressed an interest in continued work to transfer aggregate haulage from road to rail, though others suggested that there was a limited potential to switch from road haulage to other modes of transport.

Regarding marine projects, on the marine side, one industry representative wrote that the ALSF had been 'moderately effective in reducing the environmental damage of each tonne of aggregates extracted offshore'. Another argued that, while he saw value in some past marine projects, he was concerned that the information produced had been widely used. In particular, he argued that marine ALSF projects should either increase or decrease public concern about marine extraction, but that this 'feedback loop' from the ALSF to planning was missing.

The reports of both the land and marine science coordinators argue that the quality of past projects has varied. Both co-ordinators argue there is an ongoing need for research activity. The land-based co-ordinator recommends a move to fewer, larger projects. Other stakeholders agreed with this suggestion, and argued that a commitment to a long-term funding stream

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<sup>28</sup> This was a reference to MIRO's WARM-IT project, described at [http://www.miro.co.uk/projects/more\\_infos/rc177.htm](http://www.miro.co.uk/projects/more_infos/rc177.htm).

was particularly important for marine research, since meaningful projects could take several years.

### 10.2.2 Expected achievements of transport projects

Defra's database does not list any completed transport projects, though it lists 5 current or future projects. We have also received information about other DfT projects, including the SAFED driver education programme, but have little information on their achievements or spending. Defra and the DfT have supplied quantitative information about the outputs of the projects listed in the database and their value for money, as assessed using the DfT's standard criteria. Table 18 shows this information.

<b>Table 18: Details of current and future rail freight grants</b>			
<b>Recipient</b>	<b>Grant (£)</b>	<b>Tonnage Capacity (t)</b>	<b>Value for Money</b>
Yeoman Aggregates	13,824	14,400	1.51
EMR - Lincoln	28,286	n. a.	2.76
Lafarge Aggregates Limited	84,800	80,000	3.18
Mendip Rail	71,300	230,000	4.23
Day Group	915,972	314,524*	12.05

Source: Defra's Database and DfT.  
 Note: Tonnage Capacity is defined as the maximum yearly capacity expected for 2006/07 of the subsidised facility.  
 \* This figure is the average total annual amount of aggregates processed by the facility.  
 Value for Money is defined as environmental benefits / project grant. Environmental benefits are calculated with the DfT 'Environmental Benefit Calculator', which estimates benefits on the basis of the number of miles and amount of tonnes removed from the road.

Section 14.3.1 provides a case study of the grant to Day Group. Limited information is available to us on the other four projects. We note, however, that the DfT has stated that applications to its Sustainable Distribution Fund (SDF) should achieve a value-for-money (VFM) ratio of at least 1.5 (DfT 2006). The VFM represented by the grant to Yeoman Aggregates might provoke some concern were this lower than the typical VFM achieved by grants within the SDF. We recommend in section 3.7.2 that Defra monitor the typical value-for-money achieved by ALSF transport grants and DfT grants made through the SDF.

### 10.2.3 Conclusion

The best information we have on the effect of O2 projects on industry behaviour is provided by MIRO's stakeholder surveys. In their responses, some representatives of aggregate producers and MPAs stated that outputs of O2 projects had changed operational behaviour, though many stated that no changes in behaviour could yet be observed.

English Heritage has delivered many projects of an archaeological nature under O2, and others involving marine research. These have produced varied outputs, including the recovery of prehistoric remains from quarries and the provision of better information about resources that aggregate extraction might affect.

Qualitative information on the achievement of O2 projects suggests that in general terrestrial dissemination projects have been well received. On the marine side, industry suggested that research has had some effect in reducing the environmental damages of quarries, but that information produced should be more widely used.

## 11 Achievement of objective 3

The description below includes projects funded up until April 2005 under the previously worded objective 3 (reduce the local impacts of aggregates extraction) and the new objective 3, 'Addressing the environmental impacts of past aggregates extraction' since then.

### 11.1 Type of projects delivered

The Defra database divides O3 projects into three types - dissemination, research and legacy site projects. Table 19 shows the number of projects of each type and the totals spent on them. 10 projects in the database are listed under the project type 'Fourth objective local community project', but since they were completed prior to the introduction of O4 in April 2005, we believe they should be classified as O3.

**Table 19: Number of completed projects and spending under objective 3 by project type**

Project type	Number of projects	Grant Amount (£m)
Dissemination project	13	0.46
Research project	8	0.48
Third objective 'legacy' site project	468	25.59
Fourth objective local community project	10	0.22
<b>Total</b>	<b>499</b>	<b>26.75</b>

Source: Defra ALSF Database, December 15 2005, projects completed by this date only.

Table 20 breaks down O3 spending by delivery partner and project date.

<b>Table 20: Total spending on objective 3 by delivery partner</b>					
<b>Distributing bodies</b>	<b>Grant Amount (£m)</b>				
	Finished projects	Current projects	Future projects	Status unknown	<b>All projects</b>
Countryside Agency	12.13	1.59	-	0.36	<b>14.08</b>
English Nature	10.25	3.48	-	0.11	<b>13.84</b>
English Heritage	2.40	0.44	-	-	<b>2.84</b>
Leicestershire County Council	0.82	-	-	-	<b>0.82</b>
Derbyshire County Council	.69				<b>.69</b>
Somerset County Council	0.47	-	-	-	<b>0.47</b>
<b>Total</b>	<b>26.75</b>	<b>5.51</b>	<b>0.00</b>	<b>0.47</b>	<b>32.73</b>

Source: Defra ALSF Database, December 15 2005.

Project descriptions in the database give a better sense of the type of O2 projects conducted. Table 21 below lists the titles of the largest five projects (by ALSF grant) either completed or ongoing on December 15 2005.

<b>Table 21: Largest five objective 3 projects by grant amount</b>				
<b>Title</b>	<b>Description</b>	<b>Delivery Partner</b>	<b>Grant (£m)</b>	<b>Timing</b>
Listening Devices Phase 1	Restoring three concrete sound mirrors in Kent, built between the World Wars to detect approaching enemy aircraft but abandoned before WWII because of the development of radar.	English Heritage	0.49	Complete
Gwithian Dunes Restoration	Purchase of mineral rights to an area of coastal dunes used for sand extraction under 1949 permission. The project cover habitat restoration and access	English Nature	0.35	Complete
Magical Meadows	To facilitate creation, restoration & management of Magnesium Limestone grassland. Also to raise public awareness and build links with quarry companies, communities & other professionals.	English Nature	0.32	Ongoing
Lower Moor Farm	Purchase of farm to improve management of neutral grassland hay meadow.	English Nature	0.29	Ongoing

Source: Defra ALSF database December 15 2005. Note: sample includes only projects complete or ongoing as of this date.

## 11.2 Achievement of objective

Since neither version of O3 contains a numerical target, it is very difficult to assess whether ALSF projects have achieved this objective. We can, however provide quantitative information on the achievements of some O3 projects.

Defra's database, and subsequent corrections by delivery partners, provide the information on the achievements of O3 projects summarised in Table 22 below. These data indicate that O3 projects have contributed to improving 4,576 hectares of different kinds of valuable environment, and that several projects have contributed to restoring historical buildings, biodiversity and community structures.

<b>Table 22: Achievements of objective 3 legacy projects</b>			
<b>Type of improvement</b>	<b>Finished projects</b>	<b>Current projects</b>	<b>All projects</b>
	<b>Land improved (hectares)</b>		
Biodiversity	1,409	961	2,370
Geodiversity	40	-	40
Amenity	1,171*	2,166	3,337
<b>Total</b>	<b>1,449</b>	<b>3,127</b>	<b>4,576</b>
<b>Contributing to protecting/ improving</b>	<b>Number of projects</b>		
Sites of Special Scientific Interest	43	30	73
SAC/NNR/SPA/Ramsar interest	16	9	25
Areas of outstanding Natural Beauty	19	6	25
One or more of the above	57	33	90
<b>Other</b>			
No. of historical monuments restored	49	105	154
No. of projects restoring biodiversity	26	14	40
No. of projects focussed on site interpretation	41	14	56**
No. of projects involving restoration of a community structure	6	1	7
No. of projects reducing impact of extraction on amenity	95	12	107
Notes: * 14 projects, covering 1,117 hectares, are classified under both biodiversity and amenity; ** in the case of one observation the delivery status is unknown.			
Source: Defra ALSF Database, December 15 2005, and subsequent corrections by delivery partners.			

English Nature and the Countryside Agency (EN and CA) supplied further information on the achievement of their O3 projects. Table 23 provides details of the achievements of EN projects. These details, apart from the areas of land improved (in the first row), are not available in Defra's database.

<b>Table 23: Outputs of English Nature projects April 2002 - March 2005</b>					
<b>Biodiversity Projects (Ha of land)</b>					
Recreated	Restored	Managed	Purchased	Opened to public	
1,341.87	2,986.96	9,540.48	740.43	2,154.23	
<b>Geodiversity Projects (No. of)</b>					
Geological sites included	Rock faces cleared or exposed	Geological sites audited	New RIGS declared	Geological specimens recovered	Projects contributing to LGAPs
1,650	45	880	173	119	37
<b>Staff and volunteers (No. of)</b>					
Project Officer posts created	New volunteers		Total volunteers	Volunteer event days	
62	2,609		9,742	3,140	
<b>School visits (No. of)</b>					
Primary school visits	Primary school pupils	Secondary school visits	Secondary school pupils	College visits	College students
598	45,112	101	1,757	47	973
<b>Events and visitors (No. of)</b>					
Guided walks	Talks/lectures	Other events	Estimated attendees	Increase in visitor numbers	Projects involving aggregate operators
1,257	512	558	247,295	73,398	70
<b>Access improvements</b>					
Footpaths/ boardwalks created (m)	No. of gates/stiles installed		No. of hides/ viewing platforms erected	New fencing installed (m)	
44,389.60	238		91	84,628	
<b>Publicity activities (No. of)</b>					
Press releases	Interpretation boards	Leaflets produced	Leaflets distributed	Websites created	People made aware of ALSF
424	369	178	507,470	57	7,499,096
Source: English Nature, Annex A of response to LE's questionnaire.					

Similarly, Table 24 describes the outputs of the Countryside Agency's ALSF projects. Much of this information is additional to that available through Defra's database, as summarised in Table 22.

<b>Table 24: Outputs of Countryside Agency projects, 2002-2006</b>	
No. of projects providing landscape improvements	48
No. of projects improving designated areas (National Parks, AONBs, etc.)	51
Hectares of land acquired for landscape restoration	3,500
No. of projects involving direct involvement of the industry	50
No. of projects providing improved access and recreational facilities	133
No. of projects providing improvement of disabled access	129
No. of projects involving local volunteers	77
No. of volunteers involved	5,000
No. of projects specifically aimed at increasing understanding / awareness	89
Source: Countryside Agency, January 2005	

### 11.2.1 Conclusion

Projects delivered under O3 have had a wide range of achievements, some of which we describe above. It is important to note that not all the land improved by O3 projects had formerly been quarried. Thus, while O3 projects generally provided environmental benefits in the region of former quarry sites, they cannot all be characterised as remedying problems related to abandoned quarries.

We also describe three case studies of O3 projects in section 15.2. Our case studies of museum displays funded by O3 left us with a mixed impression: while the one in London appeared to receive a large number of visitors, it was not clear to us how many people visited another museum outside London, which did not keep visitor numbers.

## 12 Achievement of objective 4

Objective 4 of the ALSF is 'Compensating local communities for the impacts of aggregates extraction'. We now describe activities under O4, and then briefly consider whether these activities have achieved this objective.

### 12.1 Types of projects funded

Table 25 gives an overview of the number of projects and spending on O4 by project date. Defra's database and rules for allocating projects to objectives imply that only £60,000 had been spent on O4 projects completed by December 15 2005. A further 10 projects are listed in the database as 'Fourth objective local community projects' apparently in error, since they were finished before the fiscal year 2005-6 and are therefore considered under O3.

<b>Table 25: Number of projects and spending under objective 4 by date</b>		
<b>Project Date</b>	<b>Number of projects</b>	<b>Grant amount (£m)</b>
Completed	6	0.06
Current	88	1.17
Future	1	0
Unspecified	53	0.53
<b>Total</b>	<b>148</b>	<b>1.76</b>

Defra ALSF Database, December 15 2005.

Table 26 lists the 5 largest ALSF grants made under O4.

<b>Table 26: Largest five objective 4 projects by grant amount</b>			
<b>Title</b>	<b>Description</b>	<b>Delivering County</b>	<b>Grant (£m)</b>
Watergate Footbridge, Hope	Creation of a footbridge to enable joining of two footpaths.	Derbyshire	0.06
Aston on Trent Memorial Hall	Refurbishment of 1920's hall/scout hut.	Derbyshire	0.05
East Mendip Study Centre	Design of a new Science study centre facility.	Somerset	0.05
Bonsall Field Barn Project	Restoration of field barns in and around Bonsall.	Derbyshire	0.05
Bugsworth Basin - Repair of Wharf Walls	Repair of wharf walls of the Upper Basin.	Derbyshire	0.05

Source: Defra ALSF database December 15 2005. All projects listed were ongoing as of this date.

More informatively, Table 27 describes the allocations Defra has made to delivery partners to spend on O4 projects. These allocations were all made to county councils for the 2005-6 fiscal year.<sup>29</sup> The total allocation is £3.81m.

<b>Table 27: Allocations to objective 4 delivery partners, 2005-6</b>	
<b>Delivery Partner (County Council)</b>	<b>Allocation (£ '000s)</b>
Somerset	440
Derbyshire	440
Leicestershire	440
North Yorkshire	410
Staffordshire	280
Cumbria	200
North Somerset	87.4
South Gloucestershire	102.6
Lancashire	190
Devon	160
Essex	150
Lincolnshire	140
Durham	140
Doncaster	140
Shropshire	130
Cornwall	120
Nottinghamshire	120
Gloucestershire	120
<b>Total</b>	<b>£3.81m</b>
Source: Defra	

We note that these grants are made not in the form of cash payments to individuals, but rather are used to fund projects suggested by local individuals and selected by a panel set up by the local authority.

The database contains two value-for-money indicators for 78 of the 148 O4 projects. These are 'local authority involvement' and 'mineral industry involvement'. Table 28 lists these descriptive variables by project date.

<sup>29</sup> The Defra database contains some projects in fiscal year 2004-5 that are described as 'Fourth objective local community projects. This would appear

**Table 28: Descriptive variables for objective 4 projects by date**

	<b>Completed</b>	<b>Current</b>	<b>Future</b>	<b>Unspecified</b>	<b>Total</b>
Local Authority Involvement	3	25	1	43	<b>72</b>
Mineral Industry Involvement	1	5			<b>6</b>
<b>Total</b>	<b>4</b>	<b>30</b>	<b>1</b>	<b>43</b>	<b>78</b>

Source: Defra ALSF database December 15 2005.

## 12.2 Achievement of objective

We judge that it is too early to assess whether O4 spending has reached its objective, although clearly spending to date has been small relative to the possible environmental costs associated with aggregates extraction identified in past work (DETR 1998, LE 1999).

We believe, however, that compensation for local residents may already have been largely achieved by a lower market price of housing for residents living near quarries. This argument is based on a simple economic model of the housing market. Such a model predicts that local residents who purchased their houses after the quarry had been established would be compensated for any negative environmental impact of the quarry by a lower purchase price of their house. We note that LE (1999) used variation in house prices as a source of data on the severity of negative effects of quarrying. This model also applies to renters. If tenants had signed a lease after a local quarry had been created, market forces would tend to mean their rent compensated these tenants for any negative consequences of the quarry.

Within this simple housing model, residents who had purchased their houses before a quarry was built nearby would, by contrast, receive a heavy negative effect from this development. They would suffer both negative environmental effects of quarrying and a lower house price.

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## 13 Value for money - objective 1

In this section, we first discuss value of capital grants to firms that were constructing recycling capacity. This discussion includes some analysis of WRAP's criteria for selecting which applicants for grants received them. We then discuss the value achieved by O1 research and dissemination projects. Finally, we provide two case studies of O1 projects, one a capital grant and the other a dissemination project.

### 13.1 Capital grants

The value for money of these grants depends on (i) the degree to which the grants have or will lead to an increase in the volume of RSAs consumed over the lifetimes of the plants constructed and (ii) the social value of this increased volume.

As we discuss in section 9.2.1, the effect of these grants on RSA volume is disputed, but has a plausible maximum of 13.9 million tonnes over time.

To argue that an increase in the volume of RSAs consumed in the UK would be socially beneficial, one would have to assume one of the following:

- A. The aggregates levy produces a socially suboptimal incentive for the construction of recycling capacity.
- B. The private sector had not fully adjusted to the imposition of the aggregates levy when the capital grants were awarded.
- C. O1 capital grants correct the problem that the aggregates levy does not vary around the country in line with the marginal social cost of primary aggregate extraction.

Regarding point A, the levy provide a suboptimal incentive to the production of RSAs if the environmental cost of the production and haulage of an additional tonne of primary aggregate extraction exceeds the environmental cost of the production and haulage of an additional tonne of RSA (from construction and demolition waste) by more than the £1.60 rate of the levy.

Evidence on the difference between the environmental costs of primary aggregate extraction and RSA production and haulage is fairly scarce. Defra (2004) summarises this evidence as follows:

DETR undertook research on the environmental costs and benefits of the supply of aggregates in 2 phases...The phase 1 study (April 1998) valued the local impacts of primary aggregate at £4.77 per tonne and of recycled aggregate at £1.06 per tonne. The phase 2 study (May 1999) valued the local impacts of crushed rock quarries at 34p per tonne, sand and gravel quarries at £1.96 and of recycling plants at £9.57. (This estimate for recycling was introduced in the study with caveats because the sample size was not sufficiently large to make it robust)...

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This makes it clear that there is uncertainty surrounding the valuation of environmental costs of primary and alternative aggregate use: in fact it has been a controversial and even emotional subject over the last six years!

The lack of robust evidence on the environmental costs of primary extraction and RSA production and haulage makes it difficult to argue point A above.

It is also difficult to argue that point (B) was the case. This is because the Chancellor announced that he would introduce the aggregates levy from April 1 2002 more than two years earlier, in his budget speech of March 21 2000. One would expect that adjustment of recycling capacity would be considerable over these two years, and the 2005 Budget Report argues that this was indeed the case (see section 9.2.1).

Previous research has found that the public's willingness to pay for aggregate extraction to cease is particularly high for extraction that occurs in national parks (DETR 1998). Work by informed NGOs has also emphasized the potential damage caused by aggregate extraction in national parks (CNP and Friends of the Peak District 2004). However, we do not believe past O1 capital grants were targeted at particular areas of the country.

We conclude on the basis of the evidence above that it is difficult to make a case for the value for money represented by past O1 capital grants. Some value may have been achieved if the private sector's adjustment to the levy was incomplete at the time of the grants. We would expect industry to adjust increasingly to the levy over time, however.

### **13.1.1 Selection criteria for capital grants**

The procedures WRAP uses to select which firms applying for capital grants receive them are of particular interest. As section 3.4.2 notes, representatives of the aggregates producing industry suggested that some firms would have made the subsidised investments in recycling capacity even had no grants been available. In this case the grants would have achieved no value for government money. WRAP's project selection criteria, however, are designed to ensure that grants are only made to firms that would not build the new capacity in the absence of the grants.

WRAP provided us with a description of its project selection procedures. These require that WRAP staff complete technical and commercial summaries of each proposal received, and forward these to an independent panel of non-WRAP employees, which selects successful projects. A non-executive director from WRAP chairs the panel.

WRAP's procedures direct the evaluation panel to use several criteria to assess applications, of which the first three in order of descending importance are as follows:

- o Overall value for money offered,
- o Demonstration that the viability of the total investment in the facility is dependent on the intervention provided by the [grant] support, and
- o Financial robustness of the proposal.

We did not find it clear from the documents WRAP supplied how firms would demonstrate that the ALSF grant was necessary to the viability of the investment.

WRAP's procedures also dictate that the maximum amount of the grant cannot exceed 30% of the 'total eligible capital cost of the facility'. To see what this has meant in practice, Defra's database indicates that for the 19 past and current capital grants, the average ALSF grant has been £142,865, or 29% of the average 'total project value' of £495,279.

We have no evidence as to whether WRAP's project selection criteria were successful or otherwise in ensuring that capital grants did only go to firms that would not otherwise have created the subsidised recycling facilities. We can conclude only that WRAP were aware of the potential problem of making grants that created no "additionality" and had taken steps to prevent this occurring.

## 13.2 Research projects

We have fairly limited information with which to assess the value for money achieved by O1 research projects, particularly because the impacts of these projects are unclear (see section 9.2.2). We rely, therefore, on the views of our expert consultant Professor Ravindra Dhir of Dundee University (see Annex 1) and on the comments we received from representatives of the aggregate producing industry.

Professor Dhir, whose Concrete Technology Unit (CTU) at the University of Dundee is a contractor for some O1 research projects, comments that O1 research projects have created a range of useful information on the uses and properties of RSAs. He also argues that the value achieved by research into uses of RSAs is maximised when industry co-funds projects and does so in cash rather than an imputed value of time or data only. For example, he notes that industry stakeholders took a more active role in research for which they had made cash contributions.

The CTU has also conducted research projects into the uses of various RSAs with funding from the DTI and from the Landfill Tax Credit Scheme. Thus, the ALSF is not the only source of funds for research of this type.

We received mixed comments from industry representatives on the value of O1 research projects. Most industry representatives argued that some but not all projects had been valuable, but declined to be more specific.

## 13.3 Dissemination projects

The value of O1 dissemination projects depends on the degree to which the information provided was of use to the aggregates and construction industries. We summarise the comments we received from industry representatives on this point in section 9.2.2 above. These comments include both positive and negative points.

Overall we feel that the positive comments from the construction industry suggested that past dissemination work under O1 had been of some value. We are concerned,

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however, that the value achieved by effective information programmes is likely to fall over time as relevant market actors become informed. While there may be an ongoing need to educate new entrants to the construction industry about RSAs, this would appear to be a task for universities and professional associations.

In the absence of survey evidence about the state of knowledge of RSAs among clients and contractors, it is not clear what value for money O1 informational programmes would achieve after 2007. However, since similar information projects had gone on for some time before the ALSF (see section 6.3), by 2007 it would appear appropriate to conduct new research into what information gaps remained.

## 13.4 Case studies

### 13.4.1 Capital grant to TK Lynskey

This project was a grant from WRAP to TK Lynskey Excavations (TKL) for the development of a new processing facility to produce graded recycled aggregates from construction, demolition and excavation waste (CDEW). TKL is a private company based in Wath-upon-Deerne, Rotherham. Its main areas of business activity include earthworks contracting, demolition contracting and plant hire.

This section describes the financial arrangements of the project and the recycling facility, and compares the actual and expected outcomes of the project. It then discusses the value for money of this project under several scenarios, and identifies the key environmental costs under which the project would represent value for money at conventional discount rates.

WRAP's total ALSF grant to TLK was of £574,000, while the total cost of the project amounted to just under £2,000,000. The ALSF grant was awarded in six instalments, starting in March 2003 and ending in January 2004.

The recycling facility itself contains a recycling centre equipped with an advanced segregation and processing system manufactured by the Dutch-based company Redox.<sup>30</sup> Redox specialises in producing separating and cleaning equipment for recycling of various kinds of materials, including aggregates.<sup>31</sup> The items to which WRAP's ALSF grant contributed include a 210m<sup>2</sup> building, various plants for crushing, screening and recycling, some excavator and shovelling machines, and some storage and fencing equipment. The TK centre is intended to process material from TKL's own demolition and remediation business, as well as from other waste producers in the area, such as utility companies, major house-building companies and local authorities.<sup>32</sup>

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<sup>30</sup> See the page on WRAP website: <http://www.wrap.org.uk/news/stateoftheart.html>

<sup>31</sup> See the Redox website at <http://www.redox.nl/index.php?id=16>

<sup>32</sup> This information is from documents supplied by WRAP.

The tonnages of production of RSA to which TK Lynskey had committed and which the facility produced during its first three years of operation are shown in Table 29. When fully used, the facility is expected to produce 140,000 tonnes of RSA per year. The facility has not been and was not expected to be used at this capacity to date. However, Table 29 shows that the facility produced a larger tonnage than that TK Lynskey had promised in 2004 and 2005. Thus, we have no reason to doubt that it will reach the 140,000 tonne annual output predicted from 2006 onwards.

<b>Table 29: RSA tonnages committed and processed by TK Lynskey</b>					
<b>Year</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Tonnage commitment	52,000	79,000	140,000	140,000	140,000
Actual tonnage output	72,923	88,955	-	-	-

Source: WRAP.

We assess the value for money of this project on the basis of the internal rate of return (IRR) on the capital grant. This rate depends on what assumptions are made on (i) the counterfactual of private-sector production of RSA without this grant and (ii) the value of the environmental benefits of producing RSAs. We consider the effects of changing both assumptions on the IRR of the grant. For simplicity, we assume the facility will cease operation in 2022. The calculations below are robust to moderate changes in the assumed lifespan of the facility.

The counterfactual of how much RSA the private sector would have produced without this WRAP grant, either at TK Lynskey or another nearby plant, cannot be observed. We consider two scenarios for the 'additionality' of TK Lynskey's production of RSA. In the first scenario, all the output produced until 2022 is assumed additional to the counterfactual. In the second scenario, all the RSA produced is additional to the counterfactual until 2010. We assume that, after 2010, the private sector would gradually have developed this capacity even without this grant, so that the additionality of TK Lynskey's output falls to zero in 2022. This path of private-sector catch-up is designed to mimic WRAP's assumptions about the likely long-run effect of their entire capital grant programme (see section 9.2.1). In both scenarios, we assume that TK Lynskey would not have built the facility without the WRAP grant of £574,000. Thus, £574,000 is the social cost of the project.

We define the environmental benefits of producing RSA as the difference between the environmental cost of producing one additional tonne of primary aggregates and the environmental cost of producing one additional tonne of RSA. Below we calculate the threshold values of this difference at which the grant to TK Lynskey would start to represent value for money. There is little evidence on the actual difference between the environmental costs of additional primary extraction and RSA production (see section 13.1 above).

We make the key assumption that the supply of additional RSA is socially valuable if primary production is more costly than RSA production by at least £1.60 per tonne. This is because the aggregates levy taxes primary production at this rate. Implicit in

this assumption is the view that the private sector had already adjusted to the aggregates levy when TK Lynskey's RSA output started in 2004. We make this assumption on the basis of the evidence we cite in section 9.2.1 above. Were we to assume the private sector had not fully adjusted to the levy in 2004, it plausibly would have done so soon thereafter.

The internal rates of return (IRRs) shown in Table 30 are calculated on the basis of the assumptions described above. Since Green Book (HM Treasury 2003b) uses a 3.5% real discount rate, a key question is whether these IRRs exceed 3.5%. Row 1 shows that, under the scenario that TK Lynskey's output is fully additional to the counterfactual, the cost of primary extraction would have to exceed the cost of RSA production by £1.92 for the capital grant to have an IRR of 3.5%. Row 2 shows that under the scenario that the private sector would have developed the subsidised capacity after 2010 even without the grant, this threshold difference between the rates of environmental damage is £2.05 per tonne. Rows 3 and 4 show that, were the difference between these costs greater, the IRR of the grant would also be very high.

<b>Table 30: Internal rate of return on capital grant to TK Lynskey under several scenarios</b>			
Row	Environmental cost of extraction - Environmental cost of recycling (£)	Assumption on incidence of RSA volume	
		Complete until 2022, zero thereafter	Declines to zero 2010-2022
1	1.92	3.5	
2	2.05		3.5
3	5	55.91	55.31
4	10	114.04	113.93

Source: LE calculations using figures supplied by WRAP and assumptions described in text.

### **Conclusion**

The discussion above, including the calculations shown in Table 30, suggest that the value for money represented by the capital grant to TK Lynskey depends critically on the degree to which the extraction of an additional tonne is considered more environmentally costly than the supply of an additional tonne of RSAs. Since the aggregates levy of £1.60 was announced in 2000, we consider that the difference between these environmental costs would have to exceed £1.60 for such a capital grant to achieve social value. Essentially, the grant is worthwhile if the levy is too low by 32p-45p per tonne.

The calculation above does not account for the fact that, had the TK Lynskey plant not existed, additional construction and demolition waste (C&DW) would have been deposited in landfills. This is because, although the use of landfills might be considered socially damaging, there has been a tax on deposits of inert waste such as C&DW of £3 per tonne since 1996 (although a tax credit scheme applies). Unless the rate of the landfill tax is considered suboptimally low, there would be no social value from averting landfill deposits and tax payments.

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### 13.4.2 Promotional campaign for Local Authority Highways Maintenance

This project consisted of 10 workshops run from January to March 2005 across England to help local authorities maximize the use of RSAs in highways and street maintenance. The cost of the project was entirely covered by a WRAP ALSF grant of £200,000. The recipients were two consultancies, the Building Research Establishment (BRE) and the Transport Research Laboratory (TRL). The BRE is a private firm that provides a range of consultancy, testing and commissioned research services on all aspects of the built environment and associated industries. The TRL is also a private firm that provides research, consultancy, advice and testing for all aspects of transport. We draw most of the information in this section from WRAP's report on this project, which we list in the references as WRAP (2005).

All 10 events were managed by the BRE and TRL, had the same format, and hosted speakers from the highways, recycling and procurement industry. These included representatives from TRL, BRE and Capita Symonds. The format included a presentation and a workshop for each of the following topics:

- o Welcome and introduction
- o Recycling in a Local Highway Works - applications and types of RSAs
- o Procurement and specifying recycled content - good practice, the use of tender and contract clauses and forward planning in specifying recycled in local authority contracts for highway maintenance
- o Making Recycling Work in the Local Authority Environment - on local authority corporate objectives, the difficulties of making recycling work, a strategy for reusable materials
- o Specifications to Encourage Recycling - information on specifications and how to describe materials in terms of fitness for purpose
- o Using Composting in Landscaping Works - on the benefits of compost and its applications and on the benefits of other recycled products including mulch and plastic
- o Summary of the day

There are several indicators of the achievements of this project. WRAP documents show that 553 delegates in total registered for the 10 events, with 478 attending. Of the 553, 53% were from local authorities. 89 of the authorities represented were English, 9 Welsh, 4 Scottish and the Isle of Man was also represented. Defra's database states that the project involved low assimilation of existing relevant material but produced advice notes for industry and professionals.

74% of attendees also responded to a feedback form on the content and quality of the events. Summary results from the feedback are summarized in Table 31.

<b>Table 31: Feedback on WRAP dissemination events</b>				
	<b>Type of activity</b>	<b>Average: contents (Out of 5)</b>	<b>Average: quality (Out of 5)</b>	<b>Combined average (Out of 10)</b>
Welcome and introduction		3.88	3.93	7.81
Recycling in local authority highway works	Presentation	3.96	3.94	7.91
Procurement and specifying recycled content	Presentation	3.74	3.72	7.47
Local Authorities procurement practices	Workshop	3.6	3.62	7.22
Making recycling work in the LA environment	Presentation	4.02	4.05	8.08
Regional Speaker	Presentation	3.88	3.86	7.75
Procurement options	Workshop	3.51	3.58	7.09
Specifications to encourage recycling	Presentation	3.96	3.8	7.76
Specifications for recycling	Workshop	3.61	3.61	7.22
Using composts in landscaping works	Presentation	3.44	3.5	6.94
Regional Speaker	Presentation	4	3.93	7.93
Final Summary		4.09	4.15	8.23

Source: WRAP (2005).  
 Note Respondents gave scores from 1 to 5 (1= poor; 5=excellent) for both contents and quality of each activity. The combined average is the sum of the contents and quality averages for the activity.

### ***Conclusion on value for money***

The best evidence we have to assess the value of this project is the views of representatives of the construction industry reported in section 9.2.2. One of the representatives quoted in that section had delivered very similar projects to this for WRAP. The respondents thought that overall this type of project had been useful in informing major contractors such as Local Authority Highways agencies of the properties and uses of RSAs.

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## 14 Value for money - objective 2

This section discusses the value for money of O2 projects, drawing on

- o The project selection criteria of O2 delivery partners,
- o MIRO's stakeholder awareness surveys, and
- o Case studies of two O2 projects.

We discuss Defra's database indicators for O2 in section 10 above. That discussion concluded that these indicators provide some information on outputs of projects, but little information on their value.

Thus, overall limited information is available on the value for money achieved by O2 research and dissemination projects. However, well-developed indicators of value-for-money are available for the transport projects planned for the future under O2. One of our case studies is of the largest of these planned grants.

### 14.1 Project selection criteria

#### 14.1.1 English Heritage

We gathered information on English Heritage's project selection procedures by means of an interview with EH representatives and of EH documents. According to this material, EH employs the same evaluation processes for ALSF projects as for its entire Historic Environment Commission programme. There are two different types of project commissioning procedures: application led and EH-led. Both procedures treat projects on an individual basis, with no involvement of a project evaluation board.

Under the application-led procedure, EH receives applications for funding for individual projects. The applicant formulates an outline for the proposal, which is sent to the relevant experts (in most cases within English Heritage) who compare it against EH resource eligibility and Defra objectives and strategic plans. Proposals can be and often are rejected at this stage. Accepted proposals moves into a second stage, where EH provides funds for a more detailed project design.

In the second procedure project proposals are initiated within EH. EH identifies topics and compile project briefs, which are then sent out for tenders. The winning organizations then define the details of the projects and receive EH funding, but the scale, scope, budget and output of the projects are set by EH and already included in the tender.

EH does not include external consultation or a project evaluation board in its evaluation process. Each proposal is treated individually on a rolling basis, and is matched against the availability of resources. Applicants are usually encouraged to seek external expert advice at a very early stage, so to embed it in the project

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proposal. Once the applications are received, EH seeks advice from its own experts on the necessity and value of the proposed project. Sometimes external experts, usually academics, play a role at the very early stages of the process by formulating specific research agendas to be pursued further.

Defra is required to approve any project that exceeds £0.5m in its value. In the case of research projects, any project larger than £250,000 needs to be approved by the EH Advisory Committee (EHAC). Otherwise, the Head of the Historic Environment Commission can sign off projects up to £250,000.

### *Conclusion*

The combination of application-led and EH-internal commissioning procedures suggests that EH considers a diverse range of projects. This is likely to mean that funded projects reflect a wide range of judgements on projects' relevance, interest and value. However, a diversity of views alone does not guarantee value for money. Therefore, it appears sensible that EH's selection criteria require second opinions on large projects. Overall, we believe these procedures represent a 'due process' mechanism of selecting projects on the basis of their value for money.

## **14.1.2 MIRO**

Since MIRO's project selection criteria for the MIST and SAMP programmes are similar, we first describe each process, and then make a joint comment on the merits of both.

### *MIST*

The MIST project selection process comprises three stages: establishing thematic priorities, inviting proposals, and selecting projects. We briefly describe each stage of the selection process below. It is important to note that MIRO manages the MIST selection process, but decisions on thematic priorities and successful projects are the responsibility of a Proposal Evaluation Panel (PEP). This panel consists of selected representatives from a range of stakeholder groups in the aggregates industry: ODPM, aggregate companies, trade associations representing aggregates producers, Mineral Planning Authorities, English Nature, the Royal Society for the Protection of Birds, English Heritage, WRAP, the Health and Safety Executive, the Environment Agency and the the ALSF land-based science coordinator.

The PEP establishes thematic priorities for MIST each fiscal year, after establishing what funds it has to spend. MIRO asks the members of the MIST PEP to define thematic priorities that are related to MIRO's Memorandum of Understanding with Defra. MIRO remains external to the decision process, but assembles the comments of the PEP members into a document that is sent to potential applicants.

MIRO subsequently issues an invitation for interested parties to apply for MIST funding for projects that would meet some or all of the thematic priorities. This is an open call, with any organisation able to submit a proposal within a thematic priority

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by the stated deadline. MIRO requires that all projects have a minimum of 50% of their total eligible costs met by the project consortium, which typically includes firms that produce primary aggregates.

As proposals are received, MIRO reviews them to check for compliance with the general application rules. The PEP subsequently selects which projects will receive funding. MIRO plays a neutral role in this process, and only records the majority vote of the panel members. The PEP uses the following criteria to evaluate proposals: relevance of the proposal to the themes specified in the call for proposals; clear achievable aims and objectives; soundly structured work programme; suitable timing of phases of work; adequate management arrangements; suitably qualified and experienced team; clear deliverables and dissemination plan, and overall value for money. Selected projects may be required to revise their costs, scope or project partners or even combine with other proposals to gain support.

### **14.1.3 MIRO/ODPM - SAMP**

The procedure SAMP uses to select projects is similar to the one employed for the MIST programme, in that it comprises the same three phases: establishing themes, inviting proposals, and selecting projects. The ODPM is responsible only for the first stage of the process, and MIRO manages the rest. We now briefly describe the process.

With the advice of a project evaluation panel, ODPM has set the following thematic priorities for SAMP: impacts of aggregate extraction on the marine environment; basis for regional and local environmental assessments of aggregates policies; dissemination of good practices for community involvement and liaison in respect of aggregates operations; preparation and dissemination of training information to stakeholders in the aggregates planning process, and development and initial implementation of advice on good practices in environmental management of aggregate sites for small and medium sized enterprises.

On the basis of these themes, SAMP issues a call for proposals. A Project Evaluation Panel organised by MIRO then reviews the proposals received and decides which projects to undertake. The criteria used are the following: relevance to the 5 themes specified in the call for proposals; clear achievable aim and objectives; soundly structured work programme; suitable timing of phases of work; adequate management arrangements; suitably qualified and experienced team; clear deliverables and dissemination plan, and overall value for money.

#### ***Evaluation of MIST and SAMP project selection criteria***

We now discuss the merits of three aspects of the MIST and SAMP selection criteria; the degree to which the process is led by applicants, the range of personnel sitting on Project Evaluation Panels, and the requirement for industry co-financing.

Opinions we received differed on the value of MIRO's application-led approach to project selection. Representatives of MIRO suggested this approach tended to

maximise value for money by creating incentives for experts to reveal their own information or ideas. Some industry contacts, however, argued that this approach prejudiced value for money because MIRO's programmes lacked central direction and a strong sense of what had to be achieved. Both arguments appear to make some logical sense.

The co-existence of industry representatives and environmental agencies in the PEP suggests that MIRO is likely to select only projects that are both supported by the industry and have real environmental impacts.

Additionally, the 50% co-funding requirement implies that project have received support from various sources. This requirement appears well designed to ensure the value for money of the projects selected. We understand from our contacts with MIRO, however, that co-funding is often not in the form of cash, but rather in the form of a value imputed to data and time. We suggest that if co funding was actually in the form of cash, this would be a signal of even greater widespread support for funded projects. This is also the sense of Professor Dhir's comments on O1 research projects with cash co-financing (see Annex 1).

## 14.2 Evaluations of stakeholder awareness

### *MIRO - MIST*

In June 2005 MIRO published the results of an evaluation study conducted as an element of the management of the Mineral Industry Sustainable Technology (MIST) Programme. The primary objective of this study was to determine to what extent knowledge of both the programme and the outputs from the research projects have penetrated the aggregate sector, and the effect the programme has had on the practices of stakeholder groups involved in the aggregate extraction industry. In addition the exercise also sought feedback on the dissemination vehicles of the Programme and an understanding on how these might be improved.

The primary research instrument utilised to generate both qualitative and quantitative information was a semi-structured interview with several standardised questions. The survey comprised 51 such interviews with individuals from identified stakeholders groups with an interest in aggregates extraction. The majority of respondents represented aggregate extraction companies, but others were representatives of mineral planning authorities, research organisations, or other stakeholders.

The main results can be summarises in the following statistics:

- o 94% of respondents had knowledge of the ALSF
- o 78% of respondents had knowledge of MIST
- o 22% of responses indicated that MIST had changed operational practice. Within the industry stakeholder group this figure increases to approximately 40%.

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- o 50% of interviewees considered that MIST had improved the relationship between different stakeholder groups. 16 % thought MIST had not improved this relationship.

Respondents also included recommendations for the future of MIRO, which can be summarized as follows:

- 1) Improvements in dissemination: information should be brief and to the point.
- 2) Ideas for future projects: more research and development should be devoted to the control and minimisation of fugitive dust and its impact on the local environment.
- 3) Improvements to the management of the Programme: a coordinated approach by Distributing Bodies to the selection of projects being funded would generate clearer and more consistent project outputs

### **MIRO- SAMP**

This survey was commissioned by ODPM in March 2005 to investigate the impact of the first phase of the Sustainable Land –Won and Marine Dredged Aggregate Minerals Programme (SAMP) and to collect recommendations for further research. Results from the survey were intended to be used to help inform the design of a future independent evaluation of the programme.

The survey consisted of 25 face-to-face and 25 telephone/email structured interviews with key stakeholders in the industry. The 50 stakeholders contacted included representatives from industrial organisations, minerals planning, consultancy, teaching establishments, ALSF distributing bodies and the general public.

The main results can be summarised in the following statistics:

- o 100% of respondents were aware of the ALSF and 90% of SAMP.
- o The majority of respondents (figure not specified) said that SAMP research projects had not changed operational practice and stated that it was too early to expect changes.
- o A large number of respondents (figure not specified) gave a positive response on SAMP dissemination activity.

Respondents identified several issues on which SAMP should improve:

- o Improved dissemination: some planning officers were not aware of projects that are of potential benefit and some small quarries had no knowledge of SAMP.
- o Research should be expanded, generally to include more projects on the thematic areas that have already been addressed.
- o Management should be improved, especially on the marine sector through the establishment of a marine steering group.

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- o The selection process should be improved: tenders should be more detailed on project requirements and a pre selection phase should be introduced to allow promising applications to develop proposals further through funding from SAMP.

## 14.3 Case studies

### 14.3.1 Rail freight grant to Day Group

This sub-section contains

- o A description of the DfT grant
- o An explanation of DfT's calculation of the grant's value for money,
- o Some comments on the key determinants of this projected value for money.

#### *Project description*

This project aims to redevelop the current aggregate rail unloading system at Day Group's facility at Purley, Surrey. Day Group Ltd. is an aggregate company that extracts a total of 314,524 tonnes of aggregates from a quarry in Kent and another in Somerset, sending material from both by rail to its Purley facility. The Department for Transport (DfT) has offered an ALSF grant of £915,972 to Day Group; the agreed capital costs of the project amount to £3,663,888, and the total cost of the project is £4,268,000. Defra's database lists the start date of the project as being in March 2006, but the DfT told us this work was largely complete as of March 2006 and expected to pay the full grant in the fiscal year 2005-6.

We studied this project using Defra's database, materials supplied by the DfT, conversations with DfT personnel, and Day Group's response to our questionnaire.

As we note above, the project is intended to maintain a present system for transporting aggregates by rail. A document supplied by the DfT notes that Day Group has stated that without renovation, the current rail operations system will gradually reduce and eventually cease, resulting in the transport of aggregates reverting from rail to road. The proposed redevelopment of the facility is also expected to increase its capacity to unload aggregates.<sup>33</sup>

#### *Value for money*

The DfT has an established method for calculating the value for money of investments in transport infrastructure. Its method is to (i) estimate the net present

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<sup>33</sup> This is particularly because the new facility is designed to remove the need for locomotives to circle from one end of the train to the other between journeys. Due to this and other improvements over the existing system, the DfT expects the time required to unload an 18-wagon train using the new facility will be less than that required for a 12-wagon train using the current facility.

value of a project's environmental benefits, using an interest rate assumption and (ii) divide these benefits by the costs. We explain how this method works for the Day Group grant below. We then calculate an alternative indicator of value for money, the internal rate of return. An advantage of using internal rates of return is that no assumption about interest rates is necessary.

The DfT's method for calculating environmental benefits of investments in transport infrastructure has two steps. These are: (i) the benefits in each year of the plant's life are calculated, and (ii) the benefits in each year are discounted back to the present to form a net present value (NPV) of the investment. We now describe each step as it relates to the grant to Day Group. Table 32 below also summarises this calculation.

The DfT calculates the environmental benefits in each year of the facility's life as follows. The plant is estimated to prevent a number of lorry journeys carrying aggregates from Day's Torr and Cliffe quarries to Purley. This number is based on current rail haulage tonnages and an assumed average lorry load of 28 tonnes. Column B of Table 32 shows the estimated annual lorry journeys foregone. The DfT then calculates an environmental benefit of each lorry journey averted on a route-specific basis, using geographical data on, for example, the number of urban miles in each route.<sup>34</sup> Column C shows the costs per lorry journey of Day's quarry-railhead routes. The annual value of the journeys averted, shown in column D, is thus the product of the journeys in column B and the costs per journey in column C.

The DfT calculates the net present value of the Day Group facility by assuming that the annual benefits calculated as above are constant and that the facility will have a lifespan of 10 years. The annual benefits in each of these 10 years are discounted back to the present using a discount rate of 3.5%. The net present value of the journeys foregone on each route is shown in column E of Table 32. We have verified this NPV ourselves using the DfT's assumptions. These net present values sum to the £11,033,800 mentioned above. A DfT document also mentions that the financial appraisal of the grant estimated a 'residual value of the assets in continued operation' after 10 years of £1,547,311. This residual value does not form part of the DfT's estimated NPV of the project, however.

As we note above, the DfT calculates the value for money of investments in transport infrastructure as the ratio of the NPV of environmental benefits over grant awarded. In the case of the Day Group grant, this is

$$\mathbf{Vfm} = \text{NPV (benefits)} / \text{grant} = 11,033,800 / 915,972 = \mathbf{12.05}$$

This calculation implicitly assumes that Day Group would not have redeveloped this facility at all without this grant.

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<sup>34</sup> The DfT's 'environmental benefit calculator' can be accessed on line at <http://www.dft-eb-calculator.co.uk/>. This software determines the environmental benefit on the basis of the distance travelled and other parameters.

**Table 32: Expected environmental benefits of freight facility grant to Day Group**

A. Origin	B. Benefit per lorry journey (£)	C. Yearly number of lorry journeys	D. Yearly nominal benefit (£)	E. Net Present Value of stream of benefits over 10 years (discount: 3.5%)
Torr	53.52	20,300	1,086,479	9,035,816.05
Cliffe	20.09	11,961	240,240	1,997,983.81
<b>Total</b>				<b>11,033,800</b>

Source: DfT calculations.

An alternative method of calculating the value for money this grant represents would be to construct the internal rate of return (IRR) of the grant. The IRR is the interest rate that would make the net present value of the project, including both costs and benefits, equal to zero. The IRR for the Day Group grant is 145%. This very high IRR reflects the assumption that no investment or rail haulage would take place without the ALSF grant. The IRR of the entire £4.268m investment is 28.6%.

### **Conclusion**

The value for money represented by the DfT's grant to Day Group would appear to be very large. The internal rate of return of the grant, using the DfT's assumptions, is a massive 145%. This calculation relies particularly on two assumptions:

- o Use of the Purley rail terminal would cease immediately without the £4.3m investment
- o The £4.3m investment will only occur in the presence of the £915,972 ALSF grant.

We presume that the DfT has tested the validity of these assumptions. Since they are central to the value for money the grant represents, we recommend the DfT continues to test the validity of similar assumptions when evaluating transport grants.

### **14.3.2 Eastern English Channel large-scale seabed habitat mapping**

This project aims to produce a regional scale habitat map of an extensive part of the Eastern English Channel, which includes proposed areas of aggregate dredging. The project is funded through an ALSF grant of £1,052,704 awarded from CEFAS to the British Geological Survey (BGS). The start date in Defra's database is 17 September 2004, but the MEPF website states that due to contractual issues the project did not fully start until January 2005. The envisaged finish date is 31 March 2007.

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The mapping and interpretation of seabed habitats planned in this project covers a 7,200km<sup>2</sup> area of the Eastern English Channel.<sup>35</sup> The project plans to collect new data using modern high-resolution survey systems. It is designed to use an inter-disciplinary approach, integrating geological, geophysical and biological data and interpretations. The project comprises various stages, including: an initial review of all the relevant scientific data for the Eastern English Channel; new surveys using high-resolution geophysical systems; interpretation of new data, and comparison with old data. By September 2005, the geological survey had completed 4,085.3 km of line, which produced about 600 Gb of data (MEPF 2005).

According to material from Defra's database and the MEPF website, the immediate drivers for this project are the discovery of substantial aggregate resources in this area and the requirement to manage the sustainable extraction of this resource and minimize potential impacts. Reportedly, the outputs produced by the project will support the integrated management of seabed resources in the area and provide a better basis for marine spatial planning. It is intended that outputs will be disseminated directly to stakeholders via the web, reports, scientific publications, multimedia and other means. It is also intended that the results will be made available in GIS format so to be used by government, aggregate and fishery industries and other bodies as an informational basis. The project management plan to disseminate findings at the Science Museum in London (MEPF 2005).

Due to the technical nature of this project, we do not assess its value for money. The Marine ALSF Science Review provides some informed comments on its value. These include that, despite larger spending on seabed mapping of biological resources than of geological resources, the definition of the types of biological communities in UK waters is still at a broad scale level. Consequently, the review states that:

In our view, significant additional funding is required to support a major geo-referenced seabed resource mapping exercise for UK coastal waters in general, and for areas likely to be affected by marine aggregates dredging and other infrastructure in particular.

Given that some areas such as the outer Bristol Channel, the Eastern English Channel and parts of the southern North Sea are target areas for marine aggregate dredging, these areas should be prioritised for an integrated approach to the development of a marine spatial plan (...).<sup>36</sup>

The tender process for this project conformed to MEPF practice, under which tenders are issued for specific projects in a highly structured manner. Material supplied by

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<sup>35</sup> MEPF website <http://www.alsf-mepf.org.uk/default.htm>

<sup>36</sup> Newell, R.C. (2005); p. 18.

CEFAS indicates this grant was awarded to the BGS because its proposal had the best methodology and most adequately addressed the objectives defined by Defra.

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## 15 Value for money - objective 3

This section evaluates the value for money of O3 projects on the basis of delivery partner's project selection criteria and individual projects case studies. Section 11 above discusses the extensive quantitative information on the achievements of O3 projects available from Defra's database and documents supplied by English Nature and the Countryside Agency. Since the achievements of O3 projects are highly idiosyncratic, we believe a case-study approach is the most productive in assessing their value for money.

### 15.1 Project selection criteria

We now discuss the project selection criteria used by the Countryside Agency and by Derbyshire County Council under O3. We note that, starting in the fiscal year 2005-6, Derbyshire County Council has delivered funds under O4 rather than O3.

#### 15.1.1 The Countryside Agency

The Countryside Agency's (CA's) response to our questionnaire states that successful projects must satisfy three areas: they must be eligible for co-funding, reduce the impacts of aggregate extraction and satisfy some additional criteria. We now briefly describe the three areas in turn.

Since the CA offers a maximum funding level of 75% of the total project value, applicants must seek co-funding from other sources. For this reason, several other organizations have been involved in the CA's project selection and funding processes. Some of these are: English Nature, English Heritage, Mineral Planning Authorities and the aggregates industry.

Although there are no specific rules regarding proximity to an extraction site, projects must focus on reducing impacts on areas or communities directly affected from aggregates extraction and its associated activities to be eligible for ALSF funding.

Projects must satisfy several additional conditions: the benefits to landscape, communities and informal recreation or amenity must be clearly defined, and must be beyond those that would accrue from any statutory and other responsibilities of the operators, landowners or other authorities; projects must be linked to addressing the impacts of past current or future extraction sites and activities; outputs from projects must be deliverable within the period specified in the grant offer letter, and applicants must involve local communities in planning and implementing their projects, and should ideally involve the local aggregates industry operators.

The CA carries out several checks during the life of a project and at the completion of a project to ensure that the expected outcomes are properly realised before making the final payment of grant. The CA is currently seeking repayment of grant for the one project that did not achieve the envisaged benefits.

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### *Consultants' evaluation of these criteria*

The consultants believe that the involvement of a large number of organizations in the CA's selection procedures is likely to enhance the value for money of projects. Also, the presence of continuous checks during the lifetime of projects appears likely to ensure that projects deliver the expected outcomes and value.

One of our case studies is of a grant the CA made under O3 to the Cotswolds Water Park Society for the construction of an exhibition, café and shop facility (see section 15.2). The exhibition part is not accredited by the Museums, Library and Archives Council (MLAC), and publicity work for the exhibition has been somewhat limited. We feel that, where relevant, it would be advisable for CA's selection process to refer to accreditation systems set up by expert bodies such as the MLAC.

### **15.1.2 Derbyshire County Council**

We gathered information on DCC selection procedures by means of an interview with DCC representatives and material they provided. The DCC employs an application-led method. The DCC solicits applications widely. Applications come from a range of sources. These include District Authorities, Parish Councils, Village Hall management commissions and the quarrying industry. 3 quarry operators have so far carried out DCC ALSF projects.

The DCC evaluates grants applications through an Application Assessment Sheet, which includes the following scoring criteria:

- o Impact of aggregate extraction
- o Scope of compensation provision
- o Community support and involvement
- o Level of public access/ benefits
- o Feasibility of implementation
- o Value for money
- o Long term maintenance
- o Quality of design
- o Compliance with LA's environmental objectives

Projects need not be within any radius from quarries to be eligible for funding. Each criterion receives an individual score ranging from 0 to 4, which is then weighted to find an overall project score. This overall score and the geographical location of the project become the basis for the final decisions.

The evaluation panel is composed of 8 members, including DCC Cabinet members, Derbyshire Environmental Trust members, industry representatives and a representative from the Peak District National Park.

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### *Consultants' evaluation of these criteria*

Several elements of DCC's selection process suggest it meets a due process test. These are the presence of industry representatives in the evaluation panel, the requirement for co-funding, and the absence of restrictions to proximity of quarries.

One of our case studies, in section 16.1.2 below, describes a grant DCC made under objective 4 to a cricket club. We note that this club is not accredited by the England Cricket Board (ECB), although the club is active and runs several youth teams. We feel that, where possible, it would be advisable for DCC's selection process to make use of the accreditation systems set up by expert bodies such as the ECB. On a less formal level, we suggest DCC would be well advised to consult local experts on specific types of applicant, such as, in this case, the Development Officer of Derbyshire Country Cricket Club.

## **15.2 Case studies**

This section examines three O3 projects, of which two were museums. Before analysing the two museum projects, we first summarize the Museums, Library and Archives Council museum accreditation system, to which we refer below.

### *MLAC museum accreditation system*

The Museums, Library and Archives Council (MLAC) is a non-departmental public body sponsored by the Department for Culture, Media and Sport. One of its main roles is to administer an accreditation scheme in order to set minimum standards for museums and galleries in the UK. To receive accreditation, museums must show that they fulfil the MLAC's standards in the areas of:

- o Governance and museum management,
- o User services,
- o Visitor facilities, and
- o Collections management

The standards are uniform nation-wide, but the assessment of whether a museum deserves accreditation is handled regionally.

The MLAC conducted research on the effect of accreditation on museums in 2003. This report surveyed accredited museums on the effect they perceived from accreditation (MLAC 2003). The survey found that many museums found MLAC accreditation useful when approaching new potential donors, but that it had little effect on their relationship with existing donors.

### **15.2.1 Cotswolds Water Park Sustainability Centre**

The Cotswold Water Park (CWP) Sustainability Centre project concerns the construction of an environmentally friendly building, which presently hosts a

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café/souvenir shop and an exhibition/educational area. The Countryside Agency funded this project through a grant to the Cotswolds Water Park Society (CWPS). The CWPS is a charity dedicated to improving the environment of the CWP for its residents and visitors. This section describes the Centre and its contents. The café/shop area appears to have little relevance to aggregates extraction; consequently we focus the description on the exhibition area. We also explain the difficulties involved in evaluating the value for money of this project. These relate to a lack of quantifiable information.

The Sustainability Centre project was carried out between June 1<sup>st</sup> 2002 and April 1<sup>st</sup> 2004. Its total cost was £470,000, of which £249,000 was an ALSF grant. We understand that the ALSF grant funded the wood structure of the building only.

Both the structure and contents of the Centre are intended to reflect sustainable design. The Centre is made of oak wood and is powered by a roof solar panel system and a heat pump that recycles rainwater. According to the Countryside Agency's website<sup>37</sup>:

ALSF is part-funding an innovative Sustainability Centre to serve as the hub of the 40sq mile area, including its park and ride network. The building will incorporate the latest sustainable construction techniques and will showcase the recreational, educational and biodiversity gains achieved by quarry restoration.

Part of the exhibition area contains illustrative panels on the solar technology system used in the building. These also include a digital counter that measures the amount of power produced by the solar roof. This digital counter was, however, not funded through ALSF grants.

The rest of the exhibition area displays several archaeological items found in quarries and a plastic model with information panels on the CWP area.

The archaeological finds on display include various ammonites, a mammoth skull (without tusks) and a mammoth tusk. These items were recovered during aggregates extraction in the area. Most of these original objects are on display without glass protection, so that visitors are free to touch them. The mammoth skull, which the CWP states<sup>38</sup> is 50,000 years old, is kept in a glass showcase.

The plastic model of the area is a large colour map of the Cotswolds area, to which informative decorations and description tags have been added to mark places of local importance. For example, a miniature model of a Raptor (stealth) fighter plane has been placed on the point in the map where the RAF Fairford base is located. The map marks aggregates extraction areas. The information panels describe the landscapes and the types of activities available in the CWP region.

Assessment of this project's value for money is difficult in the absence of data on how much it is used. Defra's database does not contain any value-for-money indicators for this project. The CWPS stated that it has no record of visitor attendance at the

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<sup>37</sup> [http://www.countryside.gov.uk/CountrysideForTowns/aggregatesLevy/Western\\_Case\\_Studies\\_Archive.asp](http://www.countryside.gov.uk/CountrysideForTowns/aggregatesLevy/Western_Case_Studies_Archive.asp)

<sup>38</sup> CWP website: <http://www.waterpark.org/gateway.html>

Centre. Admission is free, so visitor numbers cannot be deduced from ticket revenues. While schools do visit the Centre, there is no record of the number of school pupils who have visited. During the roughly 20 minutes we spent in the building, between 3 and 4pm on a Wednesday, the café/ shop area was busy. Nonetheless, we were the only visitors in the exhibition area.

The value for money of the Centre may be reduced by a lack of spending to publicize it and to organise visits from schools. The CWPS informed us that it had not published an informational leaflet to publicise the Centre due to a lack of funds. However, the CWP website provides some information on the Centre.<sup>39</sup> Additionally, the CWPS stated that it does not have a formal programme of organising school visits to the Centre, although some schools do visit. The lack of a formal programme is due to a lack of funds to employ a (part-time) Education Officer to arrange and guide tours, although the employment of such an Officer remains an ambition of the CWPS. Additionally, the Centre does not have MLAC accreditation.

### 15.2.2 London before London gallery - Museum of London

This project was a grant from English Heritage of £303,250 from its ALSF funds to the Museum of London (MoL) to help create the 'London before London' Gallery (LbLG). The creation of the gallery cost £650,000 in total. The LbLG is one of seven permanent galleries at the MoL. Entry to the museum is largely free.<sup>40</sup> The gallery is designed to inform visitors of the natural environment and human habitation of what is now London prior to the arrival of the Romans. Some of the objects displayed in the gallery were found in quarries. Defra's database states that the project started on June 1 2002 and finished on April 1 2004, although EH state that the finish date was in fact the date of the gallery's opening in October 2002.

In this section we first describe the gallery, the MoL's accreditation status, and then some data about the museum and gallery that are useful in assessing its value for money. We gathered the information presented here from several sources: MoL documents; an interview with two MoL curators, one of whom had responsibility for the design of the LbLG; the Museums, Libraries and Archives Council, and from a professional review of the LbLG (Museums Journal 2002).

#### *The gallery*

The Museum of London curators we interviewed stated that the gallery had four main goals:

- o Show that the landscape of the London area underwent massive changes over time, particularly due to the ice ages,

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<sup>39</sup> <http://www.waterpark.org/gateway.html>

<sup>40</sup> The Museum received no admission revenue in 2003 and £189,000 in 2004. Since there were 380,000 visitors in 2003-4, this suggests that most paid nothing to visit.

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- o Emphasize the centrality of the river Thames to human life in the prehistoric period,
  - o Counteract the conception that local humans were highly primitive before the arrival of the Romans, and
  - o Show that prehistory dates back beyond the Roman period.

The LbLG is divided into seven chronologically arranged sections displaying information panels and relevant archeological finds or replicas. The sections are as follows:

- o Shaping the land (450,000 – 38,000 BC)
- o Moveable feasts (38,000 – 4,000 BC)
- o Carving out a home (4,000 – 1,500 BC)
- o Dividing the spoils (1,500 – 700 BC)
- o Moving beyond the valley (700 BC – 50 AD)
- o A new start? (AD 50 onwards)

An additional section, 'The Great River' spans the entire period from 450,000 BC to 50 AD.

The gallery contains panels describing periods in the prehistory of 'London' and the stage human development had reached in each period. Some panels also display poems commissioned by the MoL describing what life would have been like in pre-Roman 'London'.

Several archaeological objects are on display, some of which are original and some replicas. The original pieces include the skull of an aurochs, a bronze shield and several flints. Most of the original pieces are kept in showcases; however, some flints are displayed without protection and it is possible for visitors to touch them. The replicas are mostly of originals kept in the British Museum.

### ***The Museum of London's MLAC accreditation***

The Museum of London is a member of MLAC as a 'Fully Accredited Museum'. The citation on the MLAC's website reads that organisations awarded with this title:

- Have achieved approved standards in museum management, collection care and public services,
- Are suitable homes for collections, which are part of our common heritage,
- Are worthy to receive support from public sources.<sup>41</sup>

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<sup>41</sup> The MLAC lists its accredited members and defined the accreditation award at:

[http://www.mla.gov.uk/webdav/harmonise?Page/@id=73&Document/@id=19074&Section\[@stateId\\_eq\\_left\\_hand\\_root\]/@id=4332](http://www.mla.gov.uk/webdav/harmonise?Page/@id=73&Document/@id=19074&Section[@stateId_eq_left_hand_root]/@id=4332)

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The MoL is a body accountable to the Government and the Corporation of London for its management of public money.

### *Data on value for money*

We now discuss data on use of the museum and gallery, and the curators' concerns that visitor numbers gave an imperfect picture of the value of the museum and gallery. We also discuss a review of the gallery in a professional journal.

The Museum of London keeps data on visitors to the museum overall but not to the LbL gallery specifically. The MoL Annual Report for 2002-3 states:

Museum attendance has improved greatly on the previous year. This year's total was 362,685, a 16% increase on 2001-2 and 25% over the target set for the year. The increase can be attributed to a number of internal and external factors: the Museum's events programme; the opening of the London before London Gallery (...).<sup>42</sup>

The number of visitors in 2003-4 increased to 381,582, of whom 103,528 were children (MoL 2003-4).

No official record of school visits is kept but the number of school bookings is available. The LbLG operates an official booking system by which groups can reserve the gallery for private use. MoL records show that, between January 1<sup>st</sup> and December 31<sup>st</sup> 2005 the gallery was booked on 41 occasions with a total attendance of 1,425 visitors. Of these, 1,135 belonged to school groups.

In our interview, museum curators argued that visitor numbers were not entirely indicative of the value of a gallery or museum. For example, they suggested that they could increase the number of visitors to the museum by creating a 'Jack the Ripper' gallery or other exhibit of popular interest but little historical value. In this context, the data cited above on the number of school visits are useful, since they are likely to indicate that teachers feel the gallery has educational value. The curators stated that schools were unlikely to visit the gallery as an aid to students' history studies, since prehistory is not part of the National Curriculum. However, they stated that schools did visit the gallery as an aid to students' geography studies.

A review of the London before London gallery by a university reader in public archaeology has been published in a professional journal (Museums Journal 2002). This review does not grade the gallery or assign any 'value-for-money' score. The review is positive overall, concluding

The display...is a brave attempt to display the remote past to a wider audience...This gallery...is by far the best display of archaeology in the capital. The MoL should be congratulated on its vision and determination to produce such a display.

The review also makes several minor criticisms. One is that "it is a shame that [the Battersea Shield on display] is a replica from the British Museum rather

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<sup>42</sup> Museum of London (2003), p. 12.

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than the original.” Another is that “I was irritated by the text labels and the inconsistency of display, and I could not see how the wall-mounted models of sites would make sense to many visitors.”

### **Conclusion**

To assess the value for money of the London before London gallery in a numerical sense, one would need the following information:

- o The number of visitors to the gallery each year
- o A measure of the value of each visit, such as visitors’ total willingness to pay for their visits to the gallery,
- o The cost of keeping the gallery open each year in terms of energy and salaries
- o The expected lifetime of the gallery.

We do not possess these three pieces of data, but it is useful to make this calculation using conservative estimates. Since the museum receives around 380,000 visitors per year, it is plausible that 100,000 people visit the LbLG each year. We make the conservative assumptions that each visit to the gallery has a value of £1, that the annual running cost of the gallery is £50,000, and that the gallery lasts for 20 years. The internal rate of return on the £650,000 spent on the gallery would then be 4.1%. More generally, one can think of this as being the return on the initial cost of the gallery if the annual excess of visitor value over running costs is £50,000 for 20 years.

The numbers in the calculation above are arguable. However, this calculation shows that the creation of the gallery would be considered to represent value for money under quite conservative assumptions. This is largely because the Museum of London receives many visitors each year.

Other evidence suggesting has value includes that:

- (i) The Museum of London has MLAC accreditation, and
- (ii) The gallery is booked a significant number of times per year by schools.

Thus, overall we feel the London before London gallery is likely to represent value for money. The fairly minor criticisms made in the professional review (Museums Journal 2002) suggest areas where the value for money of the gallery could be increased.

### **15.2.3 Bonsall Field Barn Project – Phases I and II**

The Bonsall Field barn project concerns the restoration of stone field barns adjacent to Bonsall Lane, near Matlock, Derbyshire. Derbyshire County Council delivered this project in two phases. The first phase started on September 1 2004 and ended March 31 2005; the second phase started on July 13<sup>th</sup> 2005 and is still ongoing. The envisaged end date is March 31<sup>st</sup> 2007. According to Defra’s databases, phase 1 of this project aims at objective 3 of the ALSF, while phase 2 aims at objective 4.

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ALSF grants amounted to £14,049 for phase I and £50,000 for phase II; the total value of the project is £20,000 for phase 1 and £60,000 for phase 2. The difference between grant amount and project value implies that the project received co-funding. In fact, Derbyshire County Council's (DCC) Annual Report for Defra mentions that the grant award is equivalent to 85% of the total project cost. The recipient of the grants is a voluntary group called the 'Bonsall Field Barn Project', and we understand that co-funding for the project was received in the form of volunteers' time.

According to Defra's website the Bonsall area has long been affected by quarrying and it is likely that blasting and vibration from heavy lorries have contributed to the decline of the barns. There are around 70 such derelict field barns in Bonsall. Reportedly, the inspiration for the project was the Yorkshire Dales National Park Barns & Walls Conservation Project, which restored over a thousand such barns.

The three barns that have been restored in phase 1 are all within two miles of Grange Mill quarry and are visible from other local footpaths and highways. According to DCC, it is estimated that around 12,000 people visit the Bonsall area each year. The barns are all owned by local people who have agreed to participate to the scheme.

Phase 2 is the continuation of the previous year's project. According to Defra's website, the barns will be restored sympathetically using reclaimed materials wherever possible. Defra's website also states that the recipient voluntary group will then work with landowners to encourage utilisation of the restored barns for mainly agricultural purposes and possibly as camping barns.

DCC's Annual Report lists the following reasons why the project was funded:

- Bonsall Lane is affected by aggregates extraction and continues to be used for transporting aggregates.
- The scheme reduces the impact of aggregates extraction to the extent that the barns being adjacent to the public highway have probably been damaged, at least in part, by the impact of aggregates traffic and will be restored.
- The scheme has local community support.

The Bonsall Field Barn Project hosts a website<sup>43</sup> containing: a photo gallery of barns; a brochure on the importance of barns and on the value of their restoration, and links to barn-related issues. The brochure contains the following quote from the Chairman of English Heritage, Sir Neil Cossons: '...it is clear the widespread dereliction of these buildings ... could irrevocably damage irreplaceable historic assets, could impair the quality of the wider landscape, and could diminish the appeal of the countryside for inhabitants and visitors alike. Doing nothing should therefore not be an option'.

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<sup>43</sup> <http://www.bonsallfieldbarnproject.org/index.php>

### *Conclusion*

Overall the value for money of this project is hard to assess because to date the restored barns are not used and sit empty. The value of this project thus consists in the increase in the well being of passers-by from seeing restored rather than dilapidated barns. We have not attempted to measure this change in well being. Defra's database contains 5 value-for-money indicators for this project, but we did not find these informative about the value of the project.<sup>44</sup> We are somewhat concerned, however, that since the barns are not used once restored, the value for money the restoration work represents may be limited.

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<sup>44</sup> The following are the available indicators with the respective answers: Local Authority Involvement= NO; Mineral Industry Involvement=NO; Removal of threat caused by current extraction to amenity=YES; Does the project consider recycled material? NO; does the project contribute to protecting/improving AONBs? YES.

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## 16 Value for money - objective 4

This section first makes some general points about the value for money of objective 4 (O4) projects. Since O4 projects can involve almost any public good in the vicinity of a quarry, it is hard to discuss the value for money of all of them in any detail. Therefore, we then discuss some case studies of O4 projects, which we believe provide some important lessons for this objective of the ALSF overall. As discussed in section 12, Defra's database provides little information on the achievements or value for money of O4 projects.

### 16.1 Case studies

We opted to conduct case studies of objective 4 ALSF grants to cricket clubs, since these are easily compared and understood by the consultants. Below we summarise

- o The England Cricket Board's Focus Club system of rating cricket clubs
- o The ALSF grant made to the Playing Field and Allotment Charity in Poulton, Gloucestershire (on whose grounds Poulton Cricket and Football clubs play), and
- o The ALSF grant made to Dove Holes Cricket Club, in the village of Dove Holes near Buxton, Derbyshire.

#### *The England Cricket Board 'Focus Clubs' Scheme*

The England Cricket Board's (ECB's) 'Focus Club' scheme is designed to identify which clubs deserve additional support from the ECB. The ECB's website explains:

The 38 County Boards have undergone an intensive two-year planning process to identify 1,453 Focus Clubs nationwide.

A Focus Club is one that has been identified for a clear strategic reason, and one that is committed to long-term junior development. Each Focus Club will be expected to do various things by ECB in return for ECB resources.<sup>45</sup>

It might also be said that the ECB requires clubs without the 'Focus Club' designation to fulfil various criteria so as to gain this designation. For example, running an extensive junior programme requires a considerable number of qualified coaches.

The Focus Clubs scheme is relevant to the case studies below because Poulton is one of 23 Focus Clubs in Gloucestershire, while Dove Holes is not one of the 25 Focus Clubs in Derbyshire.<sup>46</sup>

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<sup>45</sup> The ECB describes its 'Focus Club' programme at <http://www.ecb.co.uk/ecb/development/focus-clubs,497,BP.html>.

<sup>46</sup> The ECB verified both numbers of Focus Clubs and the status of Poulton and Dove Holes.

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### 16.1.1 Sports pavilion at Poulton, Gloucestershire

This grant for £20,000 was made by Gloucestershire County Council using its O4 ALSF funds. The expected cost of the pavilion overall is £261,000; the ALSF grant leaves the recipient Cricket Club short of almost £100,000 to finish the pavilion.

We studied this project through a visit to the site of the pavilion in Poulton, near Cirencester, in Gloucestershire, hosted by the President of Poulton Cricket Club (Poulton CC), who is also the President of Poulton Parish Council. We have also studied documentation on the pavilion project and the Poulton CC website.

We believe the key points to be made about this project are as follows:

- The pavilion appears likely to provide good value for money if and when it is completed, since active football and cricket clubs will use it. A building within which players can change clothes and wash highly important for a sports club, and the existing pavilion is an old temporary structure that is clearly inadequate.
- The fact that Poulton is a Focus Club suggests the pavilion will be well used by young cricket players.
- The design of the pavilion has been approved by Sport England, who contributed funds if certain design changes were made. These requests included that the pavilion have four changing rooms and particular types of access for the disabled. Changes to the pavilion design to meet these requirements are likely to add to the cost of constructing the pavilion.
- The pavilion is not finished and Poulton CC is applying for around £100,000 to complete it. It is thus possible that the pavilion will be unfinished for some time. Such delays will reduce the net present value of the social benefit from the pavilion.
- The pavilion appears likely to be used more by men than women, although the Poulton CC chairman told us the club was planning to start a ladies' team.

From the points above, we conclude that the pavilion project meets many of the criteria one might hope for in a grant to a sports club. We had some concerns, however, which we now discuss.

The risk of the pavilion remaining unfinished for some period poses a threat to the value for money the ALSF grant achieves, however. The fact that Poulton Cricket Club requires further funds to finish the building reflects that no single government body had taken a dominant role in ensuring the pavilion was completed.

Regarding use of the pavilion by women, we do not feel the use of a facility more by one sex than another should preclude government funding such a facility. However, we suggest it would be sensible to ask a club in receipt of public funds to establish targets for female use of its facilities and a strategy for achieving these targets.

Defra's database includes only one value for money indicator for this project, namely that a local authority was involved. This is not, however, useful in assessing the value for money this project represents.

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### 16.1.2 Improvements to cricket ground at Dove Holes, Derbyshire

This grant for £28,000 was made by Derbyshire County Council using its O4 ALSF funds. The total cost of the project is £33,529. The grant is for the construction of two outdoor cricket nets at Dove Holes Cricket Club (DHCC), with some landscaping of the surrounding area. These nets are a practice facility.<sup>47</sup> The club would use these outdoor nets between April and September only, and the club already uses alternative indoor nets in a local school at other times of the year.

Dove Holes Cricket Club (DHCC) has all the funds necessary to build the nets in hand, but have not started work on their construction. They intend to construct the nets by April 2006.

We gathered information about this project through Defra's online database, the DHCC website, and through a telephone conversation with a member of the club's committee. We did not visit the club in person because the facility has not been built yet.

We suggest key points to be made about this grant are as follows:

- o The England Cricket Board does not designate Dove Holes as a Focus Club, though the club does run youth teams.
- o DHCC already have a viable pavilion. They built a new pavilion recently without seeking funds from Sport England or meeting that organisation's design requirements.
- o The practice facility, though useful, is not necessary for the club to play competitive matches in the same way as is a viable pavilion.
- o The facility will be used in the summer months only.
- o Since the club has all necessary funds in hand, and the project in total is a small one, there appears little risk that the construction of the facility will be delayed.
- o The facility will be used more by men than women, though DHCC are attempting to start a ladies' team.
- o The use made of this facility cannot be observed because it does not yet exist. The fact that DHCC runs many teams suggests the facility would gain considerable use. However, from the consultants' experience of club cricket, we believe the facility may not be heavily used.

To explain our last point about use of this facility, cricket players' time is limited, so they may devote for example 6 hours per week to the game. Competitive cricket matches last 5-6 hours, and can only be played outdoors in the summer (typically at weekends). Training sessions can be held outdoors in the summer or indoors in the winter, and typically last 2 hours per session.

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<sup>47</sup> For specialists, the nets would have Astroturf surfaces and thus would not be subject to weather damage in the same way as nets with grass surfaces.

Given this situation, an outdoor practice facility that can only be used in the summer may be relatively lightly used. This is because players who might wish to use it may have little time to do so since they will likely already be committed to playing for 5-6 hours at the weekend.

Any conclusion about the use of this facility must rely on actual data on the use of the facility once it has been built. However, we suggest there is a risk that this grant may not represent as high value for money as potential grants to other cricket clubs, because the England Cricket Board does not recognise DHCC as a Focus Club.

### **16.1.3 Conclusion**

We were somewhat concerned that current O4 grants to sports clubs did not make use of the accreditation systems established by national bodies with expertise in this area. Were grants under O4 to be made with no reference to the criteria of such organisations, they could eventually represent poor value for money. This is because clubs with relatively low membership or without a recommended number of qualified coaches could obtain better resources than more deserving clubs due to the fact that they were based near quarries.

In practice, it might be difficult for O4 delivery partners to interpret the accreditation systems of national bodies such as the England Cricket Board and the degree to which grants to various clubs would represent value for money. However, O4 delivery partners could consult, for example, the Development Officer of the local Country Cricket Club to see how potential grants would fit into existing county-wide funding programmes.

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## 17 Framework for allocating funding between objectives

This section explains the judgements we make in Table 2 above on the performance ranking of activities under each of 5 criteria relevant to an evaluation of how ALSF funds should be spent in future. As section 3.6.2 explains, we use judgemental rankings of ALSF objectives against these 5 criteria because we do not possess the data necessary to conduct a full cost-benefit analysis of the ALSF. For example, we do not possess data on the value of the knowledge gained from mapping the seabed, although a variety of interested parties have expressed some interest in the continuation of such research.

We now describe our rankings of ALSF objectives against each of the 5 criteria. We refer to some of the different activities conducted under each objective. A full discussion of the performance of each project or type of project would be unfeasibly long, however.

### *Objective 1*

We understand that the ALSF was designed to ameliorate core problems related to aggregates extraction including but not limited to the costs of current extraction identified in previous research (DETR 1998, LE 1999). Thus, we judge the reduction of demand for primary aggregates to have 'High' relevance to this core problem. It would be sensible, however, for future policy to take note of any environmental damage caused by the production of recycled and secondary aggregates also.

We describe the cost of O1 projects as 'Average' because, although the cost of capital grants is often quite large, the cost of marginal information programmes appears quite low, particularly now that the AggRegain website exists.

We judge that O1 projects have 'Low' distinction from other government policies, however, because their effect would appear to be very similar to that the landfill tax and aggregates levy were designed to have. There is also some question as to whether current O1 informational activities replicate those pursued by previous aggregate information programmes.

We judge that O1 programmes have 'Low' consistency with horizontal equity. This is because, while we do not have evidence that would determine whether companies receiving capital grants to build recycling plants would have done so without these grants, we believe there is a possibility that they would have done so. Had this been the case, the grants would have been straight transfers to these firms, which would cause concerns for the horizontal equity of this spending.

We judge that the marginal benefit of O1 programmes is also 'Low' because of concerns about the degree to which the capacity created by O1 capital grants is truly additional to what would otherwise be built, and our concerns over the degree to which informational programmes can remain productive when they have been pursued for some time in the past, both within the ALSF and outside it.

### **Objective 2**

Objective 2 appears to have 'High' relevance to the core problems identified in previous research because this research found the transport of aggregates by lorry to be the largest source of environmental damage of current extraction. Previous research also found that destruction of the natural environment by current extraction was of considerable public concern. Those projects by English Nature and the Countryside agency that deal with active sites essentially respond to this concern and should therefore, we suggest, be described as falling under objective 2, rather than objective 3 as at present.

We judge that O2 projects have 'High' cost because the cost of rail freight grants is often high. There has been, however, considerable variation in the size of past rail freight grants (see Table 18).

We judge that objective 2 projects have 'Low' distinction from other government policies because the work pursued by English Nature and the Countryside Agency is quite similar to that MPAs are in principle supposed to conduct under the planning system. EN and CA have made arguments as to why they are able to add value to the work MPAs perform, however (see section 6.4).

We judge that O2 spending has 'Average' consistency with horizontal equity because we are not aware of any significant concerns over the equity of this spending.

We judge that O2 spending has 'High' marginal benefit because we recommend that future work under O2 include the production of 'good practice' guides that would transfer knowledge of quarry restoration plans from English Nature and the CA to MPAs. Such knowledge transfer would appear to present possibilities for a high value for money. Additionally, the DfT calculated that some at least of the transport grants would achieve a high value for money.

### **Objective 3**

We judge that objective 3 has 'Average' relevance to the core goals of the ALSF because O3 projects are designed to improve former quarry sites, not active sites. Previous research emphasized the costs of current aggregate extraction. We note that Capita Symonds (2005) is studying the need for restoration work in abandoned quarries. We interpret their interim report as finding surprisingly little need for such work.

We judge that O3 has 'Average' costs because the restoration plans for individual quarries do not appear to be very expensive. Past O3 projects have been of a variety of sizes, but some of the larger ones have been to subsidise the construction of museum displays. We recommend that Defra focus future O3 work more closely on reducing the damage caused by past extraction 'on the ground'.

We judge that O3 has a 'High' distinction from other government policies because we are not aware of specific policies to restore former quarries. In practice we are aware of some overlap in funding between the ALSF for O3 projects and the Landfill Tax Credit Scheme, however.

We judge that O3 has 'Average' consistency with horizontal equity again because we are not aware of specific concerns on this point.

We judge that O3 will have 'Average' marginal benefits because we believe there is likely to be a continuing marginal value in the restoration of the natural environment. Thus, were O3 projects focused on such 'on the ground' policies, one would not expect their marginal benefit to fall rapidly in the same way as informational programmes that had succeeded in transmitting the relevant information.

#### **Objective 4**

As we note in section 3.5.4 above, we have several reservations about the ALSF's current O4, particularly because we suspect the workings of the housing market may already have compensated many residents of areas near quarries for any environmental disturbances they suffer from these quarries. We now explain our judgements against the criteria listed in Table 2 in detail.

We judge that O4 projects have 'Low' relevance to the core problems the ALSF is designed to reduce because the original research into the costs of aggregate extraction did not envisage a compensation scheme for local residents. The fact that ALSF O4 funding has been so low until this point also suggests this objective was rather tangential to the original goals of the ALSF.

We judge that O4 spending has low costs because the maximum size of projects to date has been small.

We judge that O4 spending has an 'Average' distinction from other government policies because we are not aware of other policies of a similar compensatory nature. In fact, monies paid through the Landfill Tax Credit Scheme do fund many rather similar projects to those funded through the ALSF's objective 4, though LTCS funds can also be spent in urban areas.

We judge that O4 spending has a 'Low' consistency with horizontal equity because we believe that residents of many localities throughout the UK could find some aspect of their environment for which they felt compensation would be justified. Indeed representatives of communities near quarries cited a wide variety of ills for which they felt compensation was merited, including the weight of traffic from people using the Cotswold Water Park for water sport and other types of recreation. Thus, people living near quarries would not appear to have a particularly strong case for government compensation.

We judge that O4 spending has 'Low' marginal value because, although some projects may be worthwhile, it is not clear that they solve particular pressing problems. Some representatives of the aggregates industry also told us privately that they were worried about the value of public spending near quarries because such areas are fairly sparsely populated.

### *Objective 5*

We judge that the relevance of research into the marine environment is of 'High' relevance to the core problems the ALSF is designed to solve because we believe the damage to the marine environment caused by current aggregate extraction is of fairly widespread concern. We note, however, that a fairly small minority of primary aggregates are extracted at sea.

We judge that marine research projects have 'High' costs because several informed parties have stated that there are likely to be returns to scale in marine research. It is indeed plausible that projects that require taking ships to sea before work can start would have high fixed costs, low marginal costs and thus returns to scale.

Marine research appears to have 'High' distinction from other government policies because we are not aware of other policies to map or research the seabed. Part of the rationale for ALSF marine research is indeed that there has not been prior research and thus that knowledge of the marine environment relevant to aggregate extraction is fairly limited.

We judge that O5 has 'Average' consistency with horizontal equity again because we are not aware of specific concerns on this point.

Finally, we judge that O5 spending would have 'High' marginal benefit, at least initially, because a variety of stakeholders have told us that the extent of knowledge of the marine environment related to aggregate extraction is fairly low. However, as O5 work assembles this knowledge, one would expect the marginal value of marine research to fall fairly sharply. ALSF work would not appear to have reached this point as yet, because marine research only began in 2004.

## 18 Explanation of detailed recommendations

This section provides more detail on our recommendations for future activities under each project. We list these recommendations in section 3.7.2. Below we provide more detail only on those recommendations we believe are not clearly explained in that section.

### 18.1 Objective 1

- o End capital grants to firms creating recycling capacity.

We are concerned that the policy of capital grants to firms constructing recycling capacity is designed to maximise rather than optimise the volume of material recycled. If the aggregates levy is at the correct level, the private sector has fully adjusted to the imposition of the levy, and in general private markets make optimal investment decisions, one would expect the volume of recycling capacity created by the private sector to be optimal.

It could be argued that the rate of the levy is too low. Evidence on the socially correct level of the levy is highly disputed. Unless there is better evidence on this point, however, there would appear little rationale for a further policy of capital grants. Additionally, UK policy generally entrusts investment decisions to private markets, in the belief that commercial decision-makers have the correct incentives to take account of all relevant information. This general assumption would support a policy of encouraging investment through targeted taxes and information campaigns, but not through subsidies to specific firms.

- o Continue funding research into uses of recycled and secondary aggregates. Require that industry co-fund all research projects at a 40% rate.

The public good property of basic research provides a rationale for public subsidy of research projects. However, some safeguards for value for money are advisable in a context where the true value of the research is hard to understand by anyone but the person providing it. In this context, a requirement for industry co-funding is useful. Our expert advisor strongly supports this requirement of co-funding, based on his experience of delivering research projects for a variety of bodies, including WRAP under its O1 ALSF programme (see Annex 1).

- o Conduct a survey of awareness of the uses of RSAs among a relevant audience in which knowledge about the uses of RSAs is plausibly poor. Obtain views from both WRAP and a trade association representing the construction industry on the significance of the knowledge gaps identified, if any. Design an information programme that would close these knowledge gaps. Then test to see whether the target level of information or education had been achieved.

The achievements of past informational programmes about RSAs will tend to reduce the value that can be expected from a continuation of such programmes. Thus, we

believe it is important to base each continuation of funding for such programmes on current or recent evidence of gaps in market participants' knowledge of RSAs.

- o Ask the Institution for Civil Engineers, in cooperation with university engineering departments, to draw up plans by which information on the qualities and uses of RSAs would be added to the syllabi of university degree courses in civil engineering.

Ultimately one would expect a problem of a lack of knowledge about RSAs to be solved through the training system for engineers. Thus, placing this subject on university syllabi would eventually remove the need for other information campaigns about RSAs.

We understand that work is underway to assess the scale of problems associated with quarry fines. A decision on the correct policy response must await the completion of this work. Presumably any response to this problem would examine carefully arguments as to why private markets are not dealing with quarry fines in an optimal way. Such arguments would have to rely on a specific failure in markets or in government policy.

## 18.2 Objective 2

- o Rename this objective 'Reducing the environmental damage caused by current and future extraction of primary aggregates'.

We felt it was important to focus work under this objective on achievements rather than activities.

- o Create numerical indices of the environmental damage caused by both primary aggregate extraction and recycling activities. This would require collecting data both across the country and through time on environmental concerns such as air quality or noise pollution near quarries.

We believe the assembly of such data would be necessary to establish the effect of work under O2.

- o Collect data on the same indicators of environmental damage in non-quarrying areas, so as to assess the relative value of projects to improve the environment near quarries.
- o Fund projects that would contribute to changes in the indicators of environmental damage near quarries mentioned above. These projects could include buying permissions to extract aggregates from quarrying companies.

Again, we believe this structure for O2 would ensure that work was directed towards specific measurable achievements.

- o Commission expert bodies such as 'Natural England' to construct a good practice guide for both mineral planners and quarry operators in processing the restoration plans contained in new applications for permissions for mineral extraction.

Representatives of English Nature and the Countryside Agency argued that they had specific expertise relating to quarry restoration plans that MPAs and quarry operators lacked. If so, it would be natural to ask them to transfer this expertise as far as is possible in an accessible form.

- o Provide a specific level of advice (in terms of contact hours) to MPAs on implementing good practice in the selection of quarry restoration plans.
- o Provide quarry operators with a specified amount of advice (in terms of on-site contact hours) on implementing good practice in quarry restoration.

Representatives of EN and CA argued that in-person contact was necessary to ensure both MPAs and quarry operators understood the advice they received on restoration plans and felt confident implementing it. In this case it would be sensible to require a minimum level of contact with MPAs and quarry operators to advise on each plan.

- o Provide a reserve of funds to be used to recover artefacts of historical or natural historic importance that may be found in quarries over the course of each year.

Representatives of English Heritage stressed that artefacts of historic or natural historic interest were found in quarries in an unpredictable fashion. Timely recovery of these artefacts thus required that a reserve of funds be available for such projects.

### 18.3 Objective 3

Below we comment on the first four recommendations jointly.

- o Re-title this objective 'Reduction of the environmental damage associated with past aggregates extraction'.
- o Construct indices or other measures such as rating schemes of damage associated with past aggregates extraction. Some such indices may be provided by the ongoing study by Capita Symonds (2005) and by the QPA's forthcoming Sustainable Development Report.
- o Update these indices regularly.
- o Set numerical targets for improvement of these indices and fund DPs to meet these targets.

Overall we felt that O3 should be more focused on solving specific problems. The use of numerical targets would allow a clear assessment of whether objectives had indeed been achieved.

- o Provide additional funding to Natural England and English Heritage under terms that require them to fund achieve objective 3 but place no geographical restriction on where these funds be spent.

Some of the goals of objective 3 projects are important but very hard to quantify. For example, the historic interest of unique prehistoric remains is hard to assess until they have been placed in a museum. Similarly, the effect of landscape

improvements on bird life may be hard and expensive to quantify. Since 'Natural England' and English Heritage are expert bodies within their respective fields, Defra can to some extent rely on their expertise to deliver beneficial projects. It is possible that restricting the projects that these bodies can fund geographically reduces the value for money of the projects they are able to deliver, however. Representatives of both EN and EH made comments to the effect that this had been the case in the past. In this case, removing such geographic restrictions would tend to improve the value for money achieved.

## 18.4 Objective 4

We comment on both recommendations jointly below.

- o Require that, where possible O4 delivery partners select projects with reference to the criteria of recognised expert organisations, such as Sport England or other national sports bodies in the case of grants to sports clubs and the MLAC in the case of grants to museums.
- o Require that, where possible O4 delivery partners ask locally available personnel from the expert bodies to comment on the value of candidate projects that fall under their area of expertise.

We were concerned that expert bodies already existed to fund some of the projects currently being funded by O4 delivery partners. On the basis of our case studies (see section 16.1), we felt that O4 delivery partners could make more use of these bodies' expertise than they did at present. Further, were O4 funds directed to projects that met the objectives of national expert bodies, this would tend to reduce the degree to which O4 spending creates problems of horizontal equity.

## 18.5 Objective 5

- o Create a new objective to capture the marine elements of the ALSF. We suggest the title 'Researching the marine environment relevant to marine aggregate extraction'.

Many stakeholders expressed considerable interest in further funding of marine research. However, their typical argument for doing so was that little information on the effect of aggregate extraction on the marine environment was available. We do not believe work to create such an information baseline fits well under any of the ALSF's existing 4 objectives, so we recommend a new title be created for this type of work.

- o Create numerical goals for this project, in terms of areas of sea or seabed to be mapped or explored to a certain level of definition.
- o Fund delivery partners under the agreement that they meet these goals.

As we argue above for other objectives, we feel it would be appropriate to specify numerical targets for ALSF marine research so that the degree to which the research programme had met its objectives could be clearly analysed.

- o Disseminate the findings of this research to the relevant MPA in an accessible form that could influence future planning applications.

We received a complaint from a representative of a company that extracts marine aggregates that the effects of ALSF marine research did not appear to be informing the planning system for marine extraction. In particular, this representative felt that the planning system should take account of the finding that marine extraction was not as harmful to the environment as had previously been feared.

Although some stakeholders disagreed that the results of marine research had been insufficiently absorbed into the planning system, most agreed that such absorption was an important goal. It should be noted in this context that ALSF marine projects only began in March 2004, and hence few have been completed to date. Thus, it might not be reasonable to expect that their findings would have had a strong effect on policy decisions by early 2006.

- o Fund projects that would reduce the rate of environmental damage caused by marine aggregate extraction.

We recognise that some valuable marine research may not fit under the heading of mapping the marine environment, and we are not opposed to projects that would reduce the rate of damage of the marine environment. Where possible, we would recommend that such projects aim at identifiable numerical targets, so that the achievements of future ALSF projects can be more easily assessed than is in many cases possible at present.

## 19 Future procedures to maximise value for money

A variety of stakeholders raised concerns over the value for money the ALSF achieves. Their concerns can be divided into three types: over funding uncertainty and inflexibility, over conflicts of interest between project applicants and selectors, and over selection procedures with an inbuilt preference for certain types of delivering body.

This section briefly describes each concern and suggests means by which Defra may wish to respond to these concerns in the interests of ensuring the value for money ALSF spending achieves.

### *Effects of funding uncertainty and inflexibility*

As described in section 3.4.1, many delivery partners stressed that their uncertainty over funding levels within and across years and their inability to carry ALSF funds across fiscal years reduced the degree to which they were able to achieve their objectives. It also led them to change the type of projects they pursued, particularly away from projects requiring employee time to projects requiring capital spending. To the extent that DP's original intentions were sound, this type of substitution effect would be expected to reduce the value for money the fund achieved.

We understand that Defra are not in a position to allow funds to be carried across fiscal years due to constraints imposed by the Treasury. To the extent that Defra has any ability to provide guarantees of funding levels in advance, however, the views we have received from delivery partners suggest this would be highly beneficial in supporting the value for money the ALSF achieves.

The adoption of numerical targets for future ALSF work will tend to create an incentive for Defra to maintain a stable and predictable stream of funding to the DPs. This is because the use of numerical targets would make the adverse effects of any unpredictability of funding more clearly visible than they are at present.

### *Conflicts of interest in selection processes*

Some stakeholders voiced two concerns over potential conflicts of interest in project selection. The first was that CEFAS undertakes the simultaneous roles of delivery partner and contractor. The second was that members of MIRO's selection panels were associated with some of the contractors bidding for project funding. Both MIRO and CEFAS told us that they had adopted specific measures to prevent such potential conflicts of interests from becoming actual conflicts, however.

It would appear feasible for delivery partners to adopt and adhere to sensible rules on potential conflicts of interest in project selection. One would expect the adoption of clear numerical goals for the ALSF would tend to reduce such conflicts, however, since project selection would become a slightly more mechanical process of selecting bodies that could credibly deliver the numerical targets at least cost.

***Preferences for particular types of delivery body***

We also received a complaint from a commercial firm that it found bidding for English Nature's projects hard, due to rules English Nature imposes on how much of bidders' total cost can be allocated to various cost components such as salaries and overheads. The complainant argued these rules impeded all commercial bodies in applying for projects, while favouring NGOs and charities.

We have not investigated this issue in detail. However, to the extent that the ALSF exists to deliver defined achievements, one would not wish DPs to discriminate between applicants for work on grounds other than their ability to complete work and the price they charge. We believe English Nature's preference for some kinds of bidder may have reflected a concern that the benefits of funding would otherwise accrue to better-organised communities. To the extent that the goals of ALSF spending can be clearly defined ex ante, the effect of the project selection process on who benefits from spending will tend to decrease.

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## **Annex 1. Value for money in objective 1 research**

The following assessment of value for money in O1 research was submitted by Professor Ravindra Dhir, who acted as an expert consultant on this project. Professor Dhir is Director of the Concrete Technology Unit (CTU) at the University of Dundee, which receives ALSF funding through WRAP.

### **A1.1 Introduction**

Objective 1 for the ALSF is to “minimise the demand for primary aggregates”. In practice this has tended to generate a number of research projects aimed at increasing the volume and quantity of recycled and secondary aggregates (RSAs). Indeed, it is reasonable to assume that any increase in the uptake of RSA would directly result in reduction of demand for primary aggregates as a percentage of the total. Research of this nature falls within the general theme of materials technology, of which the Concrete Technology Unit (CTU), University of Dundee, has considerable experience.

Research into materials technology carried out at the CTU has been funded through a variety of means, which in this instance, has been classified into the following models and used for examining the potential industry co-funding research under Objective 1 of the ALSF:

- o Government and stakeholders co-funding (both cash and in-kind)
- o Government funding only
- o Government and stakeholders co-funding (in-kind only)
- o Industry funding only (both cash and in-kind).

Examples of research carried out under the above models are listed in Tables Table 33 to Table 35 and described in sections A1.2 to A1.5. In general, the research that generated the greatest long-term impacts on the construction industry were the projects carried out with government and stakeholders co-funding (cash and in-kind) with at least 50% of the funding supplied by the stakeholders (i.e. industry and other interested parties).

Indeed, the preferred model of the CTU is to obtain a minimum of 50% funding for research from the stakeholders (with a minimum of 30% being a cash contribution and the remaining 20% in-kind as necessary). The CTU has never had a problem in generating 30% (or more) cash contribution for funding. Indeed the Steering Committees that resulted from the stakeholders collaborating with the projects in this manner are the main reason for the greater perceived usefulness of the research outputs. Furthermore, feedback

received by the CTU is that industry accepts that they must fund research and that they consider co-funding as a workable model.

Clearly, research outputs cannot be solely measured in terms of increased use of materials as these are significantly influenced by other effects and market forces. Thus the measurement of successful research in this instance can be judged based on: (i) increased stakeholder ownership of the output data, (ii) changes and additions in standards, (iii) amendments to acknowledged application documents, (iv) changes in methods of practice and perhaps (v) publication in major journals.

## **A1.2 Government and stakeholders co-funding (cash and in-kind)**

Three project subject areas are cited in this category (see Table 33) with each research yielding tangible outcomes. Value for the government (public) investment is demonstrated, using a multiplier gained for the government's funding through collaborating with industry. It should be noted that in this case an average 2.7 multiplier was realised.

### **A1.2.1 Recycled Aggregates Research**

This development was funded in three stages (a, b and c), based on successful outcomes of the project at each stage. It also led to industry funding an additional item of work (see section A1.5.3) costing £40k.

#### ***2.1(a) Recycled Concrete Aggregate for use in BS 5328 Designated Mixes***

This project carried out between 1996-1998 was undertaken to examine and develop methods for the use of recycled concrete aggregate (RCA) in BS 5328 designated concrete mixes. The project was funded by the DETR under the Pil scheme with support from 7 industrial partners. The project was the first of its kind and clearly demonstrated the current boundaries of technology with regard to the use of RCA in new concrete construction.

<b>Table 33: Examples of research projects with government and stakeholder co-funding (both cash and in-kind)</b>						
<b>Project</b>		<b>Funding, £k (as %)</b>				<b>Industrial Partners (No. of)</b>
<b>No.</b>	<b>Title</b>	<b>Total</b>	<b>Government</b>	<b>Industrial</b>		
				<b>Cash</b>	<b>In-kind</b>	
2.1(a)	Recycled concrete aggregate for use in BS 5328 designated mixes	125	50 [DETR] (40)	45.5 (36)	29.5 (24)	7
2.1(b)	Resolving application issues with the use of recycled aggregate	170	60 [DETR] (35)	70 (41)	40 (24)	9
2.1(c)	Demonstration project utilising coarse recycled aggregates	104	30 [DETR] (29)	54 (52)	20 (19)	9
2.2	Development of a performance specification for carbonation Resistance	156	69 [DETR] (44)	75 (48)	12 (8)	8
2.3	BS EN 450 fly ash and BS 3892: part 2 pfa for reducing damaging ASR	135	45 [DOE] (33)	71.5 (53)	18.5 (14)	6
	<b>Total</b>	<b>690</b>	<b>254 (37%)</b>	<b>316 (46)</b>	<b>120 (17)</b>	<b>7.8 average</b>

### *2.1(b) Resolving Application issues with the use of recycled aggregate*

Following the above project it was realised that a number of application issues relating to use of RCA were outstanding: for example potentially harmful impurities such as chlorides, alkali-silica gel or high alumina cement were a concern to industry. This 2.5-year project was carried out with funding under the DETR PiI scheme and industry co-funding.

### *2.1(c) Demonstration project utilising coarse recycled aggregates*

This third project provided case studies demonstrating use of the technology in practice. This 2-year project was carried out with funding under the DETR PiI scheme, with heavy industry co-funding.

## **A1.2.2 Development of a performance specification for carbonation resistance**

This project, funded under the DETR PiI scheme with 56% industry funding, developed a UK reference mix and improved the basic CE carbonation test to enable concrete performance to be compared under simulated natural conditions considered typical for UK and continental Europe. It led to the development of a new benchmark for assessing relative performance of concrete that is compatible with emerging changes in the use of blended cements. It would indirectly extend the use of fly ash and ggbs. Again, as for the recycled aggregates research, the project persuaded UK industry to fund

two further projects (one starting in 2003, and the other in 2006) both of £80k value (cash £60k, in-kind £20k): see section A1.5.4. Upon completion of the projects the findings will feed into revisions of CEN standards.

### **A1.2.3 BS EN 450 fly ash and BS 3892: Part 2 PFA reducing damaging ASR**

This study established whether the control of ASR was feasible using the full-range of PFAs available in the UK. The project allowed validation of accelerated tests and formulated guidelines for minimising ASR through use of PFA.

### **A1.2.4 Typical outputs**

The research projects described above have generated research that has:

- o Had sufficient stakeholder input to be able to be used by CEN and BSI working groups to develop criteria for the use of RCA.
- o Been sequentially developed; for example the Industrial partners on the first RCA project worked with the CTU to ensure that all the research, necessary for ensuring RCA could be used, was carried out.
- o Had sufficient stakeholder input that CEN were able to directly use the work to develop draft reference test methods for measuring carbonation
- o Been built upon by industrial partners funding additional research projects to investigate matters in more detail (e.g. RCA in high strength concrete, and further current research funded by QPA and BCA into test methods for carbonation).
- o Been adopted internationally and led to research collaboration between the CTU and other research organisations in other countries.
- o Been published in important and frequently cited papers in the *Proceedings of the Institution of Civil Engineers: Structures and Buildings* and a number of papers published by RILEM *Materials and Structures* (1 for RCA research and 2 for carbonation research).

## **A1.3 Government funding only**

Four projects are cited in this category (see Table 34). Although each research project established clear outcomes, their industry take-up remained minimal for a long time.

<b>Table 34: Examples of research projects with government funding only</b>			
<b>Project</b>			
<b>No.</b>	<b>Title</b>	<b>Funding (£k)</b>	<b>Source</b>
3.1	Feasibility study of processing non-Portland binder materials to improve concrete performance	100	EPSRC/ROPA
3.2	Suitability of glass cullet as a cement component in concrete	35	EPSRC
3.3	Developing a quantitative risk-based maintenance strategy for coastal concrete structures	213	EPSRC
3.4	ASR testing on recycled aggregates – Guidance on alkali limits and reactivity	59	WRAP
	<b>Total</b>	<b>407</b>	

### **A1.3.1 Feasibility study of processing non-Portland binder materials to improve concrete performance**

This EPSRC/ROPA funded project explored the potential for post-production processing of PFA and ggbs to generate finer particles and establish whether this maximised their use in concrete. This was a 2-year project.

### **A1.3.2 Suitability of glass cullet as a cement component in concrete**

This EPSRC project of nine-month duration, one of the first of its kind, investigated the feasibility of using recycled glass in concrete, and showed that finely-ground glass could be used as a cement component.

### **A1.3.3 Developing a quantitative risk-based maintenance strategy for coastal concrete structures**

This 3-year EPSRC project was undertaken by colleagues within the Division of Civil Engineering. It aimed at equipping coastal engineers with a rational, process-based tool to assess coastal infrastructure and thereby provide a cost-effective management scheme.

### **A1.3.4 ASR testing on recycled aggregates – guidance on alkali limits and reactivity**

This project awarded to the CTU by WRAP in July 2004, required investigation of a number of recycled and secondary aggregates to ascertain

guidance on the risk of alkali-silica reaction. There was no requirement by WRAP for any match cash or in-kind match funding by the stakeholders.

### A1.3.5 Typical Outputs

The four research projects described above have generated research that:

- o Was considered suitable for further research with funding from industry. It generally being felt that the above projects developed research that was not of direct significance to stakeholders, but was of a nature that could be easily developed upon. To date this has been the case for Project 3.2, see section A1.3.2.
- o Research papers published in important and frequently cited journals, including the American Concrete Institute's *Materials Journal* and *Structures Journal*, and the American Society of Civil Engineering's *Materials in Civil Engineering*.

## A1.4 Government and stakeholder co-funding (in-kind only)

Two projects appear in this category (see Table 35). Both were funded under the DETR/PiI scheme with a 50% in-kind contribution from the BCA.

<b>Table 35: Examples of projects carried out under government and stakeholder co-funding without cash contributions from stakeholders</b>						
<b>Project</b>		<b>Funding, £k (as %)</b>				<b>Industrial Partners (No. of)</b>
<b>No.</b>	<b>Title</b>	<b>Total</b>	<b>Government</b>	<b>Industrial</b>		
				<b>Cash</b>	<b>In-kind</b>	
4.1	Guidance on Competitive and Sustainable Concrete Construction	50	25 [DTI]	-	25	1
4.2	Targeted Technology Transfer: Use of Admixtures in Concrete Construction	198	99 [DTI]	-	99	4
<b>Total</b>		<b>248</b>	<b>124 (50)</b>	<b>-</b>	<b>124 (50)</b>	<b>2.5 average</b>

### A1.4.1 Guidance on competitive and sustainable concrete construction

This 1-year project was undertaken to discover whether use of modern concrete solutions were sufficiently influencing the engineering properties of concrete to warrant modifications to current design procedures.

### A1.4.2 Targeted technology transfer: use of admixtures in concrete construction

This research project was undertaken to identify and examine the factors that inhibit the adoption of concrete admixtures technology within the UK construction industry and to identify means by which the situation could be addressed. A national survey was undertaken followed by a series of seminars. The project ended with identification for a need for technical guidance and case studies. This was a 2 year project at a cost of £98k with 50% each in cash and in-kind (BCA with 3 other industry partners).

### A1.4.3 Typical outputs

Neither of these projects created the type of outputs that would be expected, and neither did they generate further research or have any significant impact on industry. The projects did lead to:

- Research papers published in academic journals: *Structural Engineer*, *Magazine of Concrete Research* and *RILEM Materials and Structures* (all for Competitive and Sustainable Concrete Construction).

## A1.5 Industry funding only

Five project subject areas are cited in this category (Table 36). All were 100% industry funded (both cash and in-kind).

Table 36: Examples of projects with industry funding only					
No.	Project Title	Funding, £k (as %)			Industrial Partners (No. of)
		Total	Industrial		
			Cash	In-kind	
5.1	The Role of Cement Content in the Specification of Concrete Durability	200	114 (57)	86 (43)	7
5.2	Sustainable recycling solution to the glass cullet surplus: Closing the Loop	50	32.5 (65)	17.5 (35)	10
5.3	High strength RCA concrete	40	30 (75)	10 (25)	9
5.4	Development of carbonation CEN standard	80	60 (75)	20 (25)	5
5.5	Development of carbonation and chloride ingress standards	80	60 (75)	20 (25)	5
	<b>Total</b>	<b>450</b>	<b>296.5 (66)</b>	<b>153.5 (34)</b>	<b>7.2 average</b>

### **A1.5.1 The role of cement content in the specification of concrete durability**

The project was mainly supported by the BSI with additional cash and in-kind funding from 6 industrial partners. 57% of the total funding was in cash. The project (3 years duration) was concerned with establishing whether there was any justification for maintaining minimum cement contents in concrete specifications.

### **A1.5.2 Realising a high value sustainable recycling solution to the glass cullet surplus: Closing the Loop**

This project completed a series of previously EPSRC/Government/industry research projects carried out to investigate the potential of recycled glass for use in concrete. The project was of 3 years duration at a cost of £50k.

### **A1.5.3 High strength RCA**

This project was funded by industry to complement the government funded research projects described in section A1.2.1. The project is, like Project 5.2, an example of how enlisting the support of stakeholders to fund government-led research projects can lead to Industry establishing good relationships with research bodies and generating further research.

### **A1.5.4 Carbonation and chloride ingress standards**

These studies were a direct result of the DETR/Industry co-funded project on "Development of a Performance Specification for Carbonation Resistance". These two 3-year projects will develop a thorough understanding of carbonation and chloride ingress, thus creating an informed basis for the use of recycled materials and fly ash.

### **A1.5.5 Typical outputs**

These projects led to outputs that:

- o Led to fundamental changes in the way that BSI specifies minimum cement contents, and consequently major changes in industry practice.
- o Had sufficient stakeholder impact that development of draft standards for the use of recycled glass in concrete are now likely to take shape.
- o Would help to create greater use of pozzolanic materials through both understanding of carbonation and chloride ingress.

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- o Were published as important and frequently cited papers in the *Proceedings of the Institution of Civil Engineers: Structures and Buildings*, and *RILEM Materials and Structures*.

## A1.6 Consequences of industry co-funding

Based on outputs from research carried out under the various funding models, the CTU preferred model for future ALSF projects must be government and stakeholder co-funding. The reasons for this are:

- o Better value for money for the government.
- o Greater stakeholder contribution leading to immediate and noticeable outputs for industry and changes in practice.
- o Acceptance and take-up of the research by BSI and CEN and thereby faster uptake of the project outcomes.
- o Further research funding being made available to develop methods, techniques and technologies to the greater benefit of stakeholders.
- o The increased presence of industrial representatives at Project Steering Committee meetings: indeed, rough data indicates that organisations attend 50% more meetings when they have contributed cash.

Additionally, co-funding encourages research organisations to engage with industry – as a result the research is forced to face full on the practical problems that exist.

Several lessons that can be learnt from generating co-funding for projects:

- o Industry is most willing to invest in research that has immediate applications (or returns). This is the type of research typically funded by government departments, and of the type applicable to O1 of the ALSF.
- o Combining representation from all sectors of industry puts stakeholders more at ease with the objectives of the research. Indeed, one concern often raised is that industry has little incentive to invest in knowledge that is made publicly available. This has not been noticed in CTU research because of the tendency to have a number of project partners. As a result there is a pooling of knowledge as opposed to a company funding knowledge to the benefit of opposition.
- o The outcomes/outputs of co-funding research need to be clearly identified and achievable. A major obstacle to obtaining co-funding is that companies are unwilling to take monetary risks on research projects that have little chance of achieving their final outcomes.
- o Stakeholders should be entitled to have equal ownership of the intellectual properties. This must be stressed to prevent a misconception that research organisations are too money-hungry for a return on intellectual property. Indeed, in most instances Defra and DTI make

specific provision in research contracts to prevent research organisations having sole ownership of intellectual properties.

Clearly, much of the above discussion is concerned with research similar to that which may be funded under Objective 1 of the ALSF: this would not include fundamental, long-term research acting as a building block for more applied research. Indeed, single companies show a distinct unwillingness to invest in this type of research, and the preferred model of industry and stakeholder co-funding is most likely unsuitable for this fundamental research. However, since research of this type is usually funded through research councils (e.g. EPSRC) and not directly from government departments it is of little concern to funding under Objective 1.

## **A1.7 Concluding Remarks**

As a rule, and as a preferred model, Government departments should fund no more than 50% of any research project, unless it has immediate effects for the public good. This has clearly been shown to be a workable and progressive model. Moreover, as most funding is for industry benefit it is realistic that industry funds at least 50% of project (with a minimum of 30% being a cash contribution and the remaining 20% in-kind, if necessary). This has been demonstrated to be attainable.

By encouraging industry to co-fund research, it has been noted that this creates a strategy for further research and development. Indeed, a number of companies and organisations often encourage the CTU to carry out further research by providing funding. This allows for a step-wise development of knowledge that can lead to clearer outputs, which are of greater benefit to industry. The alternative is a model in which funding is diffused across a wide range of projects with little common development between them: this is not considered to be the most effective way of using public money.

## **Annex 2. List of questionnaire respondents**

We sent three versions of a questionnaire to different types of ALSF 'stakeholders'. These were

Delivery partners from years before 2005-6

Delivery partners entering the fund in 2005-6

Other interested bodies

In some cases questionnaire recipients circulated the questionnaire to other interested bodies. For example, the QPA and BAA circulated the questionnaire to their members. We received responses from the following 32 groups:

BAA

BAA (John Baxter)  
BMPA  
Cornwall CC  
Countryside Agency  
Cumbria CC  
Day Group  
Derbyshire CC  
Doulting Parish Council  
English Heritage  
English Nature  
Frome District Scout Council  
Gloucestershire CC  
Holcombe Playing Fields  
Institute of Field Archaeologists  
Lancashire County Council  
Leicestershire CC  
Leigh-on-Mendip Parish Council  
MIRO  
Nether Kellet Parish Council  
North Somerset CC  
ODPM  
Poole Keynes Village Hall Committee  
Raymond Brown Construction Ltd (only a couple of remarks)  
Somerset Keynes Village Hall  
Somerset CC  
Poulton Cricket Club  
South Gloucestershire CC  
Tarmac  
WBB Minerals  
Westbury sub Mendip Parish Council  
WRAP

## Annex 3. Interview summary

LE interviewed representatives of the following organisations:

- o Delivery Partners: CEFAS, Derbyshire County Council, English Heritage, MIRO, WRAP, ODPM, English Nature and the Countryside Agency.
- o Other interested parties: British Aggregates Association, Council for National Parks, Quarry Products Association, British Marine Aggregates Producers' Association,<sup>48</sup> Cuesta Consulting (Dr. Alan Thompson), Cotswold Water Park Society, Museum of London, Constructors' Confederation.

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<sup>48</sup> We interviewed a representative of the BMAPA by telephone; this was a separate interview to that with the QPA, despite the BMAPA being a constituent body of the QPA.