

Coastal Schemes with Multiple Funders and Objectives FD2635

Case Study Report 8 Lyme Regis Environmental Improvements



Image courtesy of the Environment Agency 2010

This case study is one of 14 documents supporting the research project Coastal Schemes with Multiple Objectives and Funders - Case Studies FD2635, available from <http://tinyurl.com/6dzyusy>. This research was conducted in 2010/2011 by Maslen Environmental on behalf of Defra and the Environment Agency's Research and Development programme.

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1 Case Study: Lyme Regis Environmental Improvements

1.1 Introduction

1.1.1 Description

Lyme Regis is a coastal town in West Dorset situated 25 miles west of Dorchester and 25 miles east of Exeter. The town lies in Lyme Bay on the English Channel coast at the Dorset-Devon border. It is nicknamed 'The Pearl of Dorset' and in 2001 the length of coast was awarded United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Site status. The local economy relies heavily on tourism. The town's coastal slopes sit on ancient landslide complexes that can be re-activated by coastal erosion.



Figure 1. Completed seawall, beach and jetties. Image courtesy of the Environment Agency

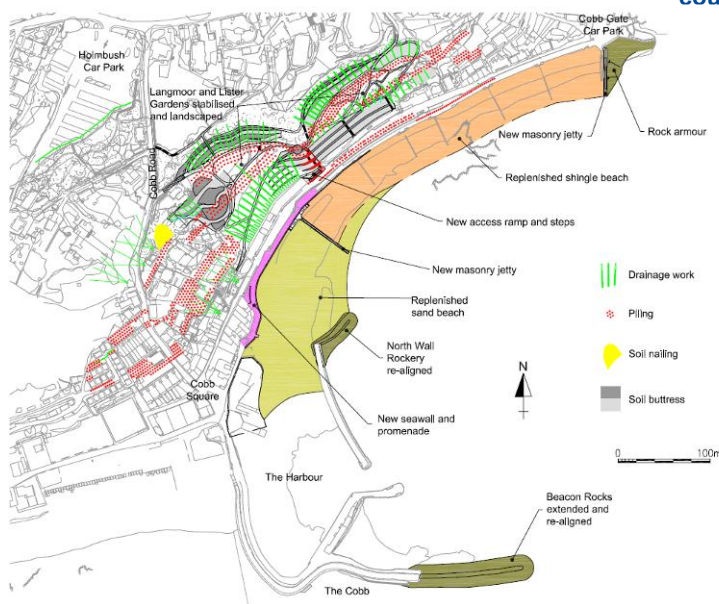


Figure 2. Map to show Phase II works. Image courtesy of the Environment Agency

During the 1990s, in consultation with the Lyme Regis Town Council, local representatives and Ministry of Agriculture, Food and Fisheries (MAFF now Department for Environment, Food and Rural Affairs (Defra)), West Dorset District Council (WDDC) initiated the Lyme Regis Environmental Improvements scheme. It aimed to provide long-term coastal protection for the town and to reduce damage and disruption caused by landslipping, through a phased programme of engineering works (see timeline **Error! Reference source not found.**). The work that has already been undertaken has seen Lyme Regis benefit from newly stocked sand and shingle beaches plus a new promenade, which stretches right around the sea front.

Phase I, completed in 1995, provided coastal protection at the eastern end of the sea front together with improved sewage management. At the time, WDDC were the sewerage agents and upgrades to sewerage and sewage treatment were undertaken as part of the scheme. This Phase involved close partnership working with South West Water (SWW). Phase I were awarded the Secretary of State's Special Commendation for Environmental Excellence at the British Construction Industry awards.

Phase II and Phase III, including viable elements of Phase III, was completed in 2007 in partnership with Dorset County Council's (DCC) Highway Authority, protected the main town frontage and stabilised coastal slopes (see **Error! Reference source not found.**). During 2006/2007 SWW were among a number of utilities companies who carried out repairs and rehabilitation to existing assets in the Cobb Road area.

Phase IV is the final phase of coastal protection works, including 390 metres of sea walls, rock armour, and stabilisation of the soft cliffs and coastal slopes, behind it at Church Cliff and East Cliff, to the east of the town. It also protects Charmouth Road and Church Street which are the main roads into the town. Phase IV has developed through an iterative process that has involved considerable public participation and consultation.

The preliminary design of Phase IV – construction of sea wall and stabilisation of the soft cliffs and coastal slopes has been completed. Planning consent was granted in April 2010. The Project Appraisal Report (PAR), which is the application for Environment Agency approval and Defra grant aid, was submitted to the Environment Agency during May 2010. It has been considered by their Large Project Review Group (LPRG) and given technical approval. Working in partnership with Dorset County Council WDDC has started work on the appointment of consultants and contractors and, subject to receiving financial approval following receipt of tenders, expects to start the main contract, which is expected to take about two years to complete, in spring 2013 **Phase V** is the proposed strengthening and renovation of the Grade 1 listed Cobb harbour structures. Investigations have found that the structures are reasonably stable and that there is no immediate need for work for coastal defence purposes.

1.2 Objective Settings

1.2.1 Project Drivers

The local coastline is highly active on either side of the town. The area has a history of seawall collapses and landslides (see **Error! Reference source not found.** and **Error! Reference source not found.**). As a result of coastal erosion ancient landslips can be progressively reactivated (West Dorset District Council, 2010).

Throughout the centuries, people of Lyme Regis have built and rebuilt a series of hard engineering schemes along the foreshore, such as sea walls and jetties. Without these structures Lyme Regis would be lost to the sea and afflicted by destructive landslides. Where active major landslide systems are encroaching on the east of the town, a breach of the existing seawall would rapidly accelerate the rate of cliff regression.

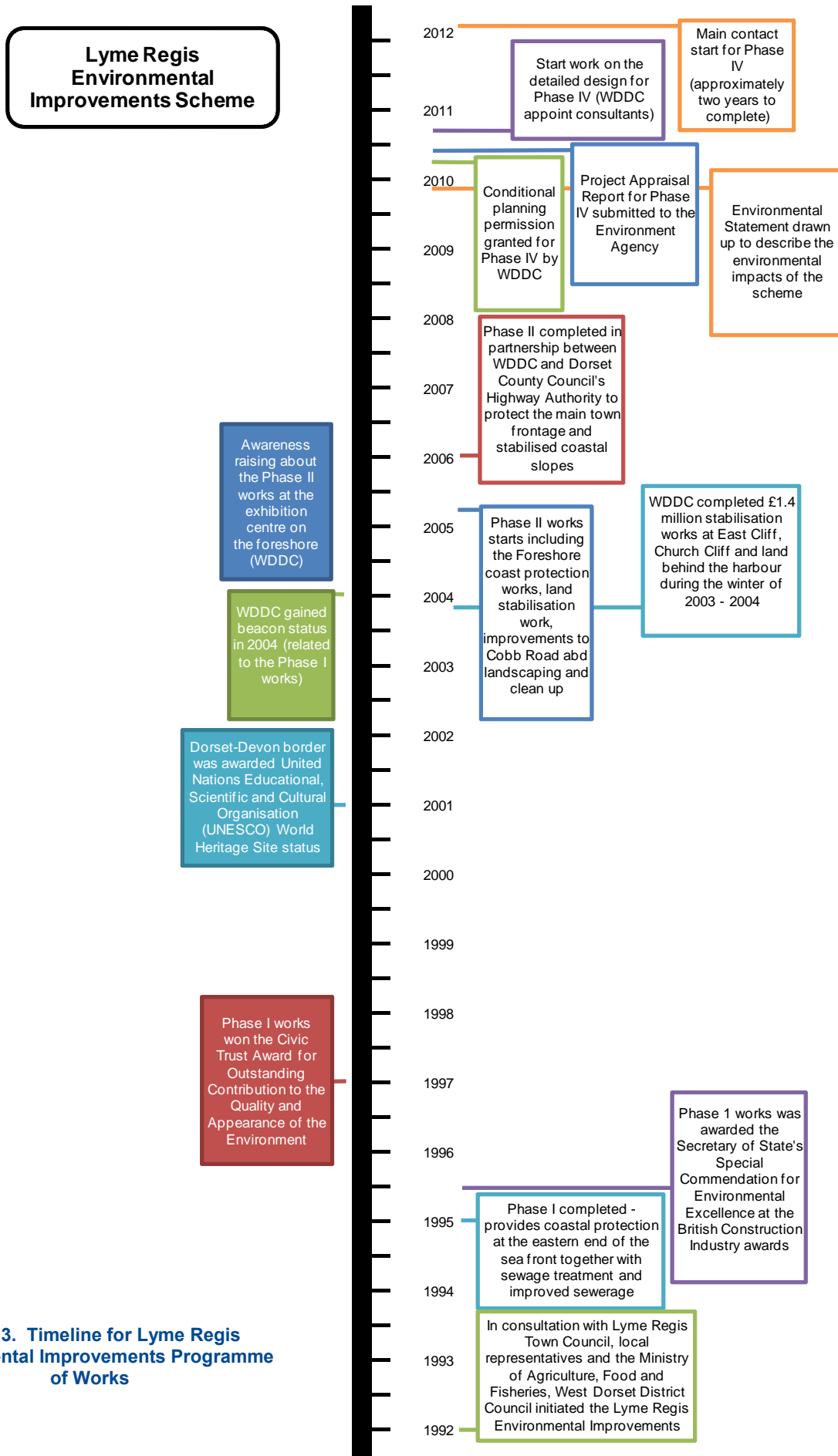


Figure 3. Timeline for Lyme Regis Environmental Improvements Programme of Works

Extensive research over time undertaken by WDDC has supported the phased approach and the immediate need for Phase IV to:

- Prevent the long-term deterioration of existing coast protection structures including the Marine Parade sea wall which is being seriously undermined;
- The beaches are in decline and not receiving any more material to protect the foreshore from erosion;
- Stability analysis indicates that large landslides could occur on the hillside at any time; and
- Ground instruments show ongoing widespread movement over parts of the landslide systems (West Dorset District Council, 2010b).

1.2.2 Partnership Objectives

WDDC is the Coastal Protection Authority and has the statutory power and responsibility to carry out works. Without the scheme Lyme Regis properties and land would be lost to the sea and affected by destructive landslides. WDDC have a financial interest as a partner because they own Charmouth Road Car Park within an area which will be protected by Phase IV works and will be exposed to significant financial risks if these do not proceed.

To overcome the challenges and to develop a scheme, a partnership was developed between DCC and WDDC in the early 1990s. There were significant problems with movement on Cobb Road (see **Error! Reference source not found.**) and during the early 2000s WDDC negotiated with DCC for financial contributions for the stabilisation and improvements of Cobb Road as part of the Phase II works.

As highway authority, DCC is responsible for Charmouth Road and Church Street, which takes 60% of the vehicles entering the town. DCC recognises that contributions towards Phase IV works will provide protection from major ground movements for approximately 60-years (the design life of the scheme).



Figure 4. Coastal Erosion 1962. Images courtesy of the Environment Agency

Lyme Regis Town Council are landowners' and their priority was to protect their land from erosion and landslides.

The utilities company (SWW, gas utilities and Western Power Distribution (WPD)) will be disrupted by the coastal slippage and have been involved as partners throughout.

As well as their major involvement in Phase I, SWW have cooperated and coordinated repairs and replacement of their assets as part of the Phase II works. The public sewers affected by the Phase IV works are relatively small diameter and non-critical. However, SWW are happy to cooperate with any additional investigations necessary to determine the condition of sewers in the area affected and to implement any necessary repairs and rehabilitation to maximise asset life. This is particularly important contribution as leaking

water mains and sewers may add to ground instability or contaminate groundwater drains. The gas utilities have also been cooperative coordinating their replacement of mains at the same time as construction of Phase II works.

1.2.3 Project Objectives

In a do-nothing scenario within 50 years 144 properties would be destroyed, a further 342 properties would lose their access and/or services and 2,700 properties would lose their gas supply. Approximately, 900m of the A3052 Charmouth Road/Church Street, the main vehicle access into the town, and its utilities would also be lost (West Dorset District Council, 2010). Therefore, the scheme objective is to delay these consequences by building a scheme with a 60 year design life.

In the early Phases of works the objectives focused on environmental improvements and dealing with the untreated sewage outfalls into the river and on the beach.

1.3 Partnerships

1.3.1 Building the Partnership



Figure 5. Cliff House 1962 (left) and the Cobb (right). Images courtesy of the Environment Agency

Throughout the programme of works WDDC lead the schemes and worked with DCC, the Environment Agency, Lyme Regis Town Council and the utilities companies (South West Water, WPD). The partnership was developed through early engagement with the key partners and bringing them on board with the approach.

1.3.2 Partnership Working and Governance

The project partners agreed the content of work to be carried out. The key partners shared responsibility in addressing problems as they occurred. There were formal agreements with SWW on Phase I and DCC on Phase II. DCC's 20% contribution towards Phase IV has been agreed by a resolution of their full Council and will be covered by a formal agreement.

In the early 1990s, the Lyme Regis Voluntary Advisory Panel was formed including anglers, retired engineers, town councillors and geologists. This developed over time to form the Lyme Regis Coastal Forum. WDDC are invited by DCC as members to sit on this forum. The forum is used as a mechanism to consult with the public. It was felt there have been significant improvements made to the scheme by engaging with local people.

During the design and construction of Phase II the project team held regular meetings with local advisory groups including the highway authority and, emergency services, residents, traders and the town council. During the lead in work for Phase IV, the Environment Agency, Natural England and DCC ecologists and World Heritage Site staff attended regular progress meetings with WDDC and their consultants.

1.4 Approvals, Planning Context and Legislation

- Designations include the World Heritage Site status and Specialist Area of Conservation (European Designation) of the vegetated sea cliff. Therefore, care was taken with liaison with Natural England to adhere to Habitats Regulations. An Environmental Statement was drawn up in December 2009 to describe the environmental impacts of the scheme and this includes the ecology and landscape mitigation plan;
- Conditional planning permission for Phase IV works (reference 1/D/10/00077) was granted by WDDC in 14 April 2010;
- On the 9 June 2010 the proposed Lyme Regis Environmental Improvements - Phase IV scheme was presented by WDDC and its consulting engineers to the NRG (now the LPRG) of the Environment Agency. This followed the issue of the PAR to the Environment Agency on 30 April 2010. Technical approval was issued on 23 February 2011; and
- Flood and Environmental Protection Act (FEPA) marine works licence, CPA consent, land drainage discharge consents, Crown Estates permission for works on the foreshore and protect species (Dormice) license.

1.5 Funding Arrangements

As a lead WDDC's project team have examined the funding requirements for each of the phases individually, as if they were separate projects. All the contributions have been paid to WDDC and they have acted as the administrator of the funding, paying for project costs including the contractors. There has been a degree of success in winning contributions from both public and private sectors. The key funding contributors were considered partners by WDDC.

On all phases of work WDDC contributes, either towards the development works or during the implementation stages. For all the Phases of work the WDDC tries to get contributions and cooperation from utilities. It was felt that: "Asking for contributions is hopeless, there is nothing in their funding arrangements that would encourage them to assist without significant benefits accruing. However, it is important to get their contribution as partners in the scheme" (Browning, 2010b).

In summary, the funding and contributions breakdown for each of the Phases is as follows:

Phase I

This Phase was jointly funded, about equally by Defra FDGiA and the water company South West Water. SWW also provided in-kind contribution in terms of staff time and provided sewage treatment facilities.

Phase II and Phase III

Total cost is approximately £26,000,000. Phase 2 works were primarily funded by Defra (£23million), an additional £1.5million was contributions from DCC, £10,000 from Lyme Regis Town Council and WDDC contributed £1.0 million from its reserves, covering the costs they could not recover in grant or contributions.

Phase IV

From the start of the project development, Defra/Environment Agency made it clear that they did not consider the coastal slope stabilisation works (about 20% of the estimated costs) as qualifying for a coastal protection grant and that financial contributions will be required towards the coastal slope stabilisation works elements of the scheme.

The development costs up to submission of the planning application were funded by Defra FDGiA of £1,100,000, WDDC contribution of £103,000 (this includes staff time) and DCC contribution of £87,000.

The appraisal period for the economic analysis as part of the PAR report is 100 years from the end of the construction. The results of the analysis are summarised in **Error! Reference source not found.** The benefits values taken for additional travel and loss of tourist amenity are conservative (they only represent 5% of the total that has been allocated to Phase IV) and the benefit-cost ratio is considered robust. The OM score shown in **Error! Reference source not found.** with the contributions is 7.35 without the external contribution it would reduce to 5.78. There have been benefits that have not been taken into account in the OM scores such as WDDC being awarded for conservation efforts.

| Description | Phase IV project |
|---|------------------|
| Benefit-cost ratio (B/C) | 4.46 |
| Outcome Measures (OM) where not zero | |
| OM1 (Economic Benefits) | 0.0233 |
| OM2b (Households protected from significant risk) | 0.0885 |
| Total OM Score | 7.35 |

Table 1-1. Benefits and Costs of Preferred Option Phase IV

The scheme is valued at £21.35million (see **Error! Reference source not found.**). Defra have approved a grant sum of £16,846,000. Currently proposed contributions towards implementation are:

- WDDC have committed a lump sum of £600,000, which it expects, over a period of several years to be recovered in S106 developer contributions. WDDC is aware that it may not be able to recover all its other Phase IV costs in grants and contributions (WDDC, 2010c); and
- For the protection of highways DCC will provide 20% of outturn costs i.e up to £4,269,600 (the Environment Agency technical approval records the contributions as proposed in the PAR/grant application).

Utility companies (such as SWW and WPD) have been asked to coordinate any work on their assets with the Phase IV scheme and to consider making a financial contribution reflecting the value of their assets that will be protected. Initial responses from utility companies indicated that contributions are unlikely because their risk management and asset management planning systems appear to provide no means for them to assess and recover such payments. NRG suggested that WDDC contacts the service and utility companies at director level. Thus, further approaches to both South West Water and WPD) have been made at director levels, however, the situation remains the same.

| Approval | Sum |
|------------------------|--------------------|
| Pre-construction Costs | £1,346,000 |
| Construction Costs | £13,077,000 |
| Optimistic Bias | £6,923,000 |
| Approved sum | £21,346,000 |
| Contributions | (4,500,000) |
| Defra grant sum | £16,846,000 |

Table 1-2. Approval Sum for Phase IV

Phase V

WDDC are currently seeking contributions for the Phase V works, which involve upgrades to Cobb harbour structure. This Phase of works relates to the conservation of heritage structures rather than coastal defence. English Nature was approached for a contribution for the works on the pavements but they suggested that they did not have the money to contribute.

1.6 Lessons Learnt

- The main lessons learnt include early engagement in the 1990s with the Town Council and local people and the development of a phased series of actions;
- The partnership was developed through early engagement with key partners and bringing them on board with a long term approach;
- It was felt that the partnership working between the councils and utility companies has been successful through early involvement in the programme of works required which could be integrated with their own now coastal erosion requirements;
- WDDC found that both DCC and SWW have been good partners and very cooperative;
- Phase I works were awarded the Secretary of State's Special Commendation for Environmental Excellence at the British Construction Industry awards. The works also won a 1997 Civic Trust Award for Outstanding Contribution to the Quality and Appearance of the Environment and helped the WDDC gain Government beacon status in 2004;
- Phase II took a risk management approach with risks identified early on and a process was put in place to prevent and reduce the degree of risk. Risks owners were nominated for different aspects of the schemes i.e. health and safety was managed by the contractors and environmental risks were managed by an environmental clerk at the Environment Agency;
- Phase II of the scheme has worked well despite the project going over-budget by £6 million pounds. A key reason for this overspend relates to the high quality outputs that were insisted upon. There were also significant variations to original approvals such as the demolition of houses and changes to seabed works. This risk is partly borne by Environment Agency and Defra who agreed on the funding for the variations alongside DCC;
- For the protection of highways and coastal stabilisation works as part of Phase IV DCC will provide 20% of outturn costs i.e up to £4,269,600. This 20% approach caused problems for NRG who wanted a fixed figure rather than a percentage;
- The joint task force of the Environment Agency, the Department for Energy and Climate Change, the industry Regulator Ofgem and Distribution network Operators (including WPD), developed benchmarks appropriate for the protection of key infrastructure against major flooding and sea inundation. This culminated in the publication of ETR138 - 'Resilience of flooding of grid and primary substations'. This should be read in conjunction with approaching utility and service providers;

- NRG suggested that WDDC contacts the service and utility companies for contributions at director level. However, there appeared to be no practical mechanisms in place for them to contribute to the programme of works;
- The funding for Phase IV works are not yet secure and there would be significant political and economic risks locally if the funding was not secured. Therefore, there would be significant local community disappointment and the political consequences of not proceeding with the plans;
- Across all the programme of works the schemes were delivered to programme. This was described as being helpful for the purpose of NRG approval; and
- Members of the town council have suggested that trade in the western end of the town has increased by about 20% since the completion of Phase II. This relates to the improved beach and walkway along the back of the beach, which have attracted many more people to the town.

1.7 References

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