

Assessing Opportunities for Financial Intervention



Task 4 Report Annex 6

for
North Norfolk District Council



RPA
August 2008

Assessing Opportunities for Financial Investment

Task 4 Report: Annex 6

prepared for

North Norfolk District Council

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RPA REPORT – ASSURED QUALITY	
Project: Ref/Title	J610/NNDC
Approach:	In accordance with the Brief and Contract
Report Status:	Task 4 Final Report
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Report approved for issue by:	John Ash, Technical Director
Date:	27 August 2008

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1. INTRODUCTION

1.1 Overall Description of the Project

The coastline in North Norfolk is around 45 miles in length, a large proportion of which is designated as Area of Outstanding Natural Beauty (AONB) and Heritage Coast. The population is around 100,000 living in 200 distinct communities¹.

The final version of the Kelling to Lowestoft Shoreline Management Plan (SMP²) was produced in 2006 and largely reflects the shift in Government policy to being more in keeping with natural processes. As a result, there are numerous recommendations of no active intervention and retreat. The potential for significant social and community issues has made it difficult for North Norfolk District Council (NNDC) to accept the results. Instead, NNDC has identified a number of conditions for acceptance within the overall aim of developing a positive vision and addressing the consequences of coastal change.

The overall aim of this study is to derive data and support a strategy for the long-term management of the North Norfolk coast. It is intended to cover areas where knowledge is absent or limited, or to help develop other policy tools.

This objective is to be achieved through four specific study areas that are required to provide the necessary evidence to support bids for resources and to indicate the most feasible options to assist in implementation of processes to adapt to climate change. This report presents the approach and findings of Task 4, which is to assess the possible effectiveness and viability of underwriting properties at risk.

1.2 Objectives of Task 4

The objective of Task 4 is to investigate the feasibility of possible options, such as outright purchase, buy and lease, underwriting values and to assess the financial viability of each.

1.3 Overview of Task 4

Task 4 draws upon the findings of Task 2, in particular, but also engagement (during both Tasks 2 and 3). The actions required to complete this study are:

- identification of options for financial intervention;
- assessment of costs of each option; and
- assessment of implications of each option.

¹ NNDC (2003): **Economic Development Strategy to 2007**.

² Halcrow *et al* (2006): **Kelling to Lowestoft Ness Shoreline Management Plan**, First Review Final Report, November 2006.

This report involves an assessment of the cost implications of a wide range of adaptation options (where adaptation is identified as a process of managing the impacts of coastal change on communities and individuals, in advance of erosion or realignment, with the aim of reducing the risk and mitigating the adverse effects). As a result, the report contains a lot of monetary information with this reported as both undiscounted and discounted costs. Undiscounted costs reflect the ‘actual’ estimated costs that may be incurred by implementing an adaptation option and do not take into account the time when those costs are incurred. Discounting is defined in the HM Treasury Green Book³ as ‘a technique to compare costs and benefits that occur in different time periods...based on the principle that, generally, people prefer to receive goods and services now rather than later’. Thus, the discounted costs reflect the timing of the costs with those costs incurred further into the future reduced using the Treasury recommended discount rate of 3.5%⁴. Although this report is not intended as a detailed economic analysis, some of the discussions required to support the estimation of the costs of the adaptation options do assume some knowledge of economic principles.

1.4 Organisation of the Task Report

This Task 4 Report is organised as follows:

- Section 2 sets out the approach followed;
- the key findings are discussed in Section 3; and
- Section 4 provides a summary of Task 4.

The report sets out the findings of Task 4 only, with links to work undertaken in other tasks, as appropriate. The Final Report for the study as a whole will provide full discussion on the linkages between the tasks and the overall implications.

³ HM Treasury (2003): **Appraisal and Evaluation in Central Government (The Green Book)**, Treasury Guidance, London: TSO.

⁴ In fact, the discount rate proposed by HM Treasury declines over time such that it is 3.5% between years 0 and 30, 3% between years 31 and 75 and 2.5% from year 75. This project only estimates costs over the next 100 years (i.e. from year 0 to year 99), such that changes in the discount rate beyond year 99 are not relevant.

2. APPROACH

2.1 Overview

The approach to Task 4 includes six key stages:

- Stage 1: identification of a wide range of potential adaptation options;
- Stage 2: assessment of the potential implementation of the wide range of options, with screening of those options considered problematic;
- Stage 3: assessment of the costs of the baseline (do-nothing) option at the local (and wider) scale;
- Stage 4: assessment of the impacts of the adaptation options, including costs and benefits;
- Stage 5: identification and assessment of packages of options that could be combined to provide workable and beneficial options (compared with the baseline); and
- Stage 6: recommendation of those options that may provide a positive step for residents, local communities, NNDC, council taxpayers within NNDC and taxpayers within England and Wales.

2.2 Stage 1: Identification of Potential Adaptation Options

The aim of Stage 1 is to identify as many options as possible to provide a long-list of possible adaptation options. At this stage, the option identification was a free thinking exercise designed to provide as wide a range of options as possible. Thus, no consideration was given on whether the options could be implemented, whether they would be too expensive or whether they would be politically or locally acceptable.

Options were grouped into one of three categories to reflect the different type of approaches that could be taken:

1. options that involve removing the property;
2. options that involve continued use of the property (or land); and
3. options that involve moving the property.

Many of the options identified could be readily expanded into a number of sub-options, reflecting different approaches to implementation, different methods of valuing properties, whether they were associated with the property alone, land alone or property and land, etc.

2.3 Stage 2: Assessment of the Implementation of the Adaptation Options

2.3.1 Factors Affecting Potential for Implementation

The extent to which each option can be implemented depends on a number of different factors:

- attractiveness of the option to a potential funder (including, for options involving private funders, the potential return on their investment);
- attractiveness of the option to the property owner; and
- any key implementation issues that could affect the viability of the option (e.g. by making it complex to organise and run).

2.3.2 Attractiveness of the Option to Potential Funders

There are three different types of funder:

- public funders, i.e. options that require funding from central or local government such that they would have to provide net social benefits;
- private funders, i.e. options that require funding from investors, housing associations, etc. such that they need to provide a potential return to be attractive. Attractiveness to lenders (e.g. mortgage providers) is also important as this may determine whether an option can be delivered; and
- charities, i.e. options that could be funded by charities or donations and which would attract people to ‘give’.

Any options that are unlikely to attract funding or that would be prohibitively expensive are screened out. The information used for screening is based mainly on the experience and expertise of our project team.

2.3.3 Attractiveness of the Option to Property Owners

Those options that are not attractive to property owners are unlikely to be taken up, such that any investment made (either from public or private funds) would not be used in a cost-effective manner. It is important that any options proposed as part of the Task 4 report have the potential to use any available funds to maximise the benefits (both to individuals and society more generally). Therefore, any options that are unlikely to be attractive to property owners are screened out. The information used for screening is derived from workshops held with stakeholders as well as the experience and expertise of our project team.

2.3.4 Key Implementation Issues

As part of the assessment of the potential implementation of the long-list of options, consideration has been given to other factors that could contribute to making the options complex to organise or understand. Such factors may reduce the potential attractiveness of the options to funders or property owners if they are not addressed.

These factors are identified in the assessment of the potential for implementation of each option and include issues such as:

- legal implications;
- difficulty in estimating a price/value to offer to property owners;
- knock-on issues that may arise, e.g. if at risk properties are let to vulnerable members of the community;
- need for clear guidelines over what needs to happen, who can take advantage of the option (and when), which land uses are appropriate, or timing of events;
- acceptance issues of using public money for private ‘gain’; and
- how to publicise the option and generate interest without encouraging intervention by those who have identified an opportunity to profit from the options.

Again, the information on such issues is based on the experience and expertise of the project team and comments received from the stakeholder workshops. No options are screened out on the basis of these issues, although some options are identified as only being possible when combined with others.

2.4 Stage 3: Assessment of the Baseline Costs

The baseline option assumes that no adaptation options are implemented, where this is equivalent to the existing situation. As a result, there will be impacts on the property owners themselves (from a loss of capital invested in their property or business). There will also be wider impacts, on the local community, on NNDC and on UK plc.

The assessment of the baseline costs involves identifying, in detail, the likely impacts of the baseline option on the stakeholders and quantifying them where possible. This is an important stage as it is apparent that the do-nothing option is not a no-cost option, particularly at the local level. It is only by identifying and assessing the costs of the baseline that the true costs of the adaptation options can be determined and, thus, a full and fair options appraisal can be undertaken. The quantification and estimation of monetary costs associated with the baseline have been informed by data from the NNDC Housing Options service.

The description and quantification of the impacts is used as the basis for assessing each of the possible implementation options. As well as allowing the relative merits of each option to be assessed, this provides the basis for determining which options could be implemented as stand-alone options (i.e. would address all of the impacts) and which would have to be combined into packages of options (i.e. where each option within the package addresses only a subset of all the impacts).

2.5 Stage 4: Assessment of the Impacts of the Adaptation Options

Those options that are not attractive to either funders or property owners (or both) are screened out as part of Stage 2. Stage 4 involves comparing all of the remaining options against the baseline (defined in Stage 3) to provide an indication of their likely costs (negative benefits) and benefits. Where possible, the costs and benefits

are quantified. As with the baseline assessment, four different stakeholder groups are considered (property owners, communities, NNDC and UK plc). This provides a comprehensive assessment of each option and identifies where there are issues arising under the baseline that are not addressed. Any additional costs and benefits associated with each option are also identified.

The appraisal of options is undertaken using an Appraisal Summary Table (AST) where all of the impacts under the baseline and each option are presented alongside each other for easy comparison. All of the assumptions made are also included in the AST such that it forms a complete record of the assessment of the adaptation options.

The results of the appraisal are used to identify a rank order of adaptation options as well as to identify where there are residual negative impacts not addressed by any one option. This information forms the basis for the development of packages of options in Stage 5.

2.6 Stage 5: Identification and Assessment of Packages of Options

Stage 5 involves packaging the options together such that the residual impacts identified in the assessment of options can be minimised and that the benefits can be maximised. Wherever possible, potential synergies between options are identified that would provide more benefits than just the sum of the benefits of the two (or more) independent options. The overall benefits and costs of each package of options is then compared back to the descriptions in the AST for the independent options and revised for each package of options. This provides the basis for identifying which packages of options are likely to be the ‘best’ (i.e. those that offer the greatest potential benefits and the least residual negative impacts).

2.7 Stage 6: Recommendation of the Best Options

The appraisal of the packages of options in Stage 5 will provide an overall assessment of the costs and benefits, all compared against the baseline. Stage 6 sets out which packages of options are likely to be preferred. The recommendation also includes areas where more information is needed before one package of measures can be clearly identified as the ‘best’. The additional information needed is described along with possible approaches by which these data could be collected.

3. FINDINGS

3.1 Overview

This Section sets out the findings of each stage of the appraisal process described in Section 2 and forms a complete record of the methodology used and all assumptions and decisions made. The description of impacts, issues and costs are kept as concise as possible to the extent that this does not result in any reduction in the transparency and auditability of the appraisal.

3.2 Stage 1: Identification of Potential Adaptation Options

3.2.1 Identifying a Long-List of Options

The aim of the option identification stage was to list as many options as possible such that these included a wide range of different adaptation actions. At this stage, consideration was not given to whether the options could be implemented or the likely costs of the actions required. Instead, all possible approaches were included. The resulting long-list of options can be divided into three categories:

1. options that involve removing the property;
2. options that involve continued use of the property (or land); and
3. options that involve moving the property.

There are numerous options within each category. Furthermore, many of the options could be undertaken in a variety of different ways, or could be combined with other options, to provide a more complete package. Some of the possible sub-options are described below, with selection of packages of options undertaken at a later stage. There are also overlaps between some of the options; where this occurs both options are included for completeness.

3.2.2 Options Involving Removing the Property

This category includes options that buy the property from the current owners and then demolish the property:

- **outright purchase:** property is bought at market value (or some aspect of market value depending on time when the property was purchased, rebuild value, change in market value over time (e.g. as garden was eroded), whether it was reasonable to assume that the short-term life of the property could have been known at the time of purchase, etc.);
- **low interest loans:** the property is not bought, instead the opportunity is given for the property owner to take a low interest loan. This is offered to those whose house is to be eroded to help purchase another property or land on which to construct another property (note this could involve continued use of the property until it is eroded);

- **underwriting values:** liability is accepted for the property in the future. The owner receives a written guarantee that the property will be bought for a set amount when erosion is imminent. This option is similar to outright purchase but it has a longer time scale and gives the owner flexibility to plan. If the owners decide to move out earlier than necessary, the property can be re-let on a short-term basis (note this could involve continued use of the property until it is eroded); and
- **provide funding for reclamation of fabric of property:** the property owner is offered the value of the materials in/on the property (i.e. bricks, tiles, etc.).

3.2.3 Options Involving Continued Use of the Property (or Land)

This category includes options that allow the property to continue to be occupied until it is in danger of imminent erosion:

- **buy and lease:** the property is purchased from the owner (by NNDC, a housing association or developer) and leased back for continued occupation until the property is in imminent danger of erosion;
- **streamlined planning permission:** the property is not bought, instead the opportunity is given to take advantage of planning permission where fewer steps are required to obtain permission to build a new property. This could involve providing an assumption of provision of planning permission providing particular pre-defined rules are met;
- **insurance payments (catastrophe bonds):** the property owner pays into an insurance scheme (or savings scheme) that allows them to build up capital with a payout when the property erodes;
- **payback scheme:** an estimate is made of the savings by Government in terms of coastal defence costs for urban areas downcoast that are protected by the material coming from the areas that are eroded. This estimate is used as the basis for paying property owners for the loss of their land;
- **coastal adaptation fund:** a fund established especially to make payments to those who are suffering due to changes in coastal policy. Payments would help cover a range of needs including new mortgages and cost of removal of buildings at risk;
- **charity to assist with relocation:** a charity is set up to provide those whose houses have been eroded with some funds to help purchase a new property. This could involve subsidised/free assistance by property professionals as well as money donated to the charity or raised to support affected property owners;
- **land purchase by NNDC:** NNDC purchases land (or uses land it owns) to provide a free location for those displaced by erosion to develop new properties;

- **subsidised maintenance:** NNDC pays for/contributes to the cost of maintaining at risk properties to ensure they remain in keeping with the surrounding village/living standards;
- **time restricted use:** this option would result in temporary reuse of the property by allowing certain land uses to take over the property and continue to use it until erosion of the property became imminent. Appropriate land uses (e.g. holiday accommodation) would have to be agreed in advance of this option being implemented. This option would mean that the property would continue to be occupied until it is at imminent risk of erosion; and
- **land transfer incentives:** this option would allow temporary reuse of land by allowing those land uses that are more appropriate for land at risk of erosion to utilise the 'at risk' land while allowing other land uses to move to land that is not at risk. The option would require identification of land uses that are 'appropriate' and a mechanism for transfer of land use. This could involve the local authority transferring the land use to recreation and providing other land for development. This may also, in some cases, result in any properties currently occupying the land being demolished.

3.2.4 Options Involving Moving the Property

This category would allow existing property to be moved to areas that are not at risk:

- **physically move property:** the property could be jacked up, or disassembled and reassembled elsewhere (land would be required for the property to be moved to); and
- **relocatable properties:** development would be allowed in the 'at risk' areas provided this only involved properties that could be easily relocated to a new site once the risk became too great. These properties could replace those demolished under other options.

3.3 Stage 2: Assessment of the Implementation of the Adaptation Options

The potential implementability of each of the long-list of options has been considered and is recorded in Table 3.1. The table shows that four of the 16 options have been screened out because they are unlikely to be attractive to funders/lenders, property owners or both. This leaves 12 options that are to be assessed in detail in Stage 4.

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Table 3.1: Potential for Implementation of Long-List of Options						
Option	Funding Source(s)	Likely Return	Attractiveness to Funder	Attractiveness to Property Owner	Implementation Issues	Summary
Baseline – no option implemented	NNDC would have to pick up costs; property owners lose value of property	None	Costs associated with having to move people once property is at imminent danger of erosion	None – property owner unable to sell, loses total value of property	Issues all fall onto NNDC council taxpayers and property owners (benefits felt by others: general taxpayers)	Baseline – has to be assessed to allow benefits/costs of other options to be identified
Remove Property						
Outright purchase and demolish	Government NNDC	None – other than benefits to which land could be put	Not very attractive and perceived as expensive (will depend on price to be paid for property)	Very attractive (but likely to depend on price paid)		Screened IN – option to be appraised (sub-options to be defined)
Underwriting values	Government NNDC	None – although may reduce costs where property market continues to function until property is lost	Not very attractive and perceived as expensive (will depend on underwriting value placed on property)	Very attractive (ensures they will have value in their property until it is lost, can (in theory) sell if want to leave)	Legal implications	Screened IN – option to be appraised (sub-options to be defined)
Low interest loans to buy new property/land once property lost	Government NNDC Community-based finance initiative	Will require payback of loan, plus some (small) interest	Level of interest may determine funders – will have to be small to be of benefit to property owners	Limited as will effectively have to begin again (but some still may have outstanding debts from mortgage – borrowing from other sources may not be possible)	Timing of loan provision – what happens if property owners want to borrow and move out sooner; what happens if they move elsewhere (issue for community-based scheme)	Screened IN – option to be appraised (sub-options to be defined)
Reclamation of materials	Government NNDC Local businesses (recycling)	Very small – value of reusable materials likely to be very small	Attractive as price paid is likely to be small (but benefits also small) such that administration may be too costly	Not very attractive – price paid would be very small (and may benefit some more than others)	Difficulty of pricing materials and obtaining for re-use (at time of demolition or before?)	Screened OUT – unlikely to have any additional benefits over other options or cost less

Table 3.1: Potential for Implementation of Long-List of Options						
Option	Funding Source(s)	Likely Return	Attractiveness to Funder	Attractiveness to Property Owner	Implementation Issues	Summary
<i>Continued Use of Property until it is Eroded</i>						
Buy and lease	Government NNDC Housing association	Will depend on remaining life of property – likely to affect who is willing to fund (but price could be linked to remaining life of property)	Will depend on remaining life of property – short lives are unlikely to be attractive to private housing associations (unless price is reduced)	Potentially attractive if they have choice to rent or leave – may be issues if price is based on lifetime remaining (due to unavailability of options previously)	Issue over who the property will be let to (may raise problems if letting to vulnerable people)	Screened IN – option to be appraised (sub-options to be defined)
Streamlined planning permission	None?	None required	May not be attractive to NNDC planners as control taken away to some extent – could result in environmental, landscape issues (but controlled to some extent by existing policies)	May be attractive if they want to remain in the area/community (but could be limited by other planning constraints, e.g. selected villages)	Needs clear guidelines over who can do what and where	Screened IN – option to be appraised (sub-options to be defined)
Insurance payments by owners	Property owners paying into scheme run by insurance company based on life remaining on property	Limited – unless erosion is slower than predicted or amount paid back is fixed	Limited – will require insurance company to insure against (almost) certainty, but could use expected life of property as alternative	Limited – property owner would have to pay out now; unlikely to be able to move/sell, would be tied to property as liability would be on top of mortgage payments/other insurance requirements	Needs to be clearly financed and assessed, unlikely to be attractive option to private sector. Property owners may prefer to pay into an ISA or similar investment.	Screened OUT – unlikely to be workable as scheme on its own, may have potential as sub-option under others

Table 3.1: Potential for Implementation of Long-List of Options						
Option	Funding Source(s)	Likely Return	Attractiveness to Funder	Attractiveness to Property Owner	Implementation Issues	Summary
Government payback scheme	Government	None – unless savings associated with providing defences to the same standard but at lower costs due to increased sediment supply are more than costs	Government would be seen to be doing something that accounts for who benefits/ who pays	May be attractive as way of receiving some money, but would not take into account property value (unless based on land area covered by property/ land)	Method to estimate benefit from each property owner and distribution of benefits across property owners	Screened IN – option to be appraised (sub-options to be defined)
Charity	Charity	None (well-being for donators)	Limited to well-being, but issue of paying to support individual property owners (would have to be carefully marketed to attract donations)	May be very unattractive – property owners may not want to have to rely on charity		Screened OUT – unlikely to be workable as scheme on its own, may have potential as sub-option under others
Coastal Adaptation Fund	Government NNDC Charity	None – but could offset some of the costs under the baseline	Could be attractive depending on extent and coverage of fund	Could be attractive depending on extent and coverage of fund. May require individual applications rather than general payment	Need to identify what would be covered and what would not	Screened IN – option to be appraised (sub-options to be defined)
Land purchase by LA	NNDC	None – but could offset some of the costs under the baseline	Could be attractive in combination with other options (e.g. streamlined planning)	Could be attractive, but would require people to move to specific area	Method for using public money to buy land that would be given (sold or leased?) to private households/companies	Screened IN – option to be appraised (sub-options to be defined)
Subsidised maintenance	NNDC	None – but could offset some of the costs under the baseline (particularly blight)	Could be attractive as way of reducing knock-on effects and maintaining quality property stock in short/mid term	Could be attractive for those wishing to remain in their property; no benefits for those who want to move	Who gets subsidised maintenance and who does not?	Screened IN – option to be appraised (sub-options to be defined)

Table 3.1: Potential for Implementation of Long-List of Options						
Option	Funding Source(s)	Likely Return	Attractiveness to Funder	Attractiveness to Property Owner	Implementation Issues	Summary
Use of property for time-restricted use (sale of property to new user)	Government NNDC Private property purchaser/business owner	Will depend on remaining life of property – likely to affect who is willing to fund (but price could be linked to remaining life of property and appropriate land uses)	Will depend on remaining life of property – short lives are unlikely to be attractive (unless price is reduced)	Potentially attractive if they have choice to rent or leave – may be issues if price is based on lifetime remaining (due to unavailability of options previously)	Issue over who the property will be let to (but appropriate land uses could be defined, or let market decide?)	Screened IN – option to be appraised (sub-options to be defined), time restricted use of land as well as property to be included
Land transfer incentives	Government NNDC Private property purchaser/business owner	Like above but would require transfer of land/property	Would have to be cost reduction for those transferring to at risk land/properties	Potentially attractive but transfer may determine where they can move to, may be too restrictive	Issue over how to generate interest in land transfer	Screened OUT – with ‘land’ to be included as part of option for time-restricted use (not just property)
<i>Move Property</i>						
Physically move property	Government NNDC Charity (e.g. heritage)	None – other than continued life of property	Limited, would only be viable for specific properties of particular value	Will depend on new location/setting, unlikely to be realistic option for most	Issue of context/setting and properties that could realistically be moved (given costs)	Screened IN – option to be appraised (but for key properties of specific value only)
Relocatable properties in ‘at risk’ areas	Government NNDC Developers	Potential for sale of moveable properties in at risk zone (sea view so price could be high)	Likely to be attractive – planning permission may not be needed (but will need available land)	May not be attractive to current property owners, but they may be able to sell their land (after demolition of property). May be very attractive to new people (but may not be families)	Will need demolition of existing properties to make land available	Screened IN – option to be appraised (sub-options to be defined)

3.4 Stage 3: Assessment of the Baseline Costs

3.4.1 Overview

This section identifies and describes the impacts that are predicted to occur under the no active intervention option. The description set out below draws heavily on the Task 3 report (investigating blight) and feedback from the Bacton and Overstrand workshops⁵ and the meeting with caravan park owners⁶. Where possible, the impacts are monetised to give a full assessment of the damages that could be caused by no active intervention.

3.4.2 Impacts on the Property Owner

Loss of Property and Capital Value of Property

The main impact on the property owner is the loss of property and the capital value associated with that property. With no capital, many property owners may be unable to afford to purchase an alternative property and would, effectively, be homeless. The impacts on property owners begin well before the property is eroded because, as soon as it is identified that their property is at risk from erosion, there will be an effect on the market value. The actual effect is likely to vary according to how well-informed any future potential buyer may be, but in reality a stage may be reached where it is almost impossible to sell the property. In such cases, the loss of capital may occur much earlier than when the property is finally eroded (or demolished in advance of erosion). This stage will be reached when there is no buyer for the property and may occur when the property still has 15, 20 or 25 years residual life. If it is assumed that the total impact is reflected by the total loss of capital value then the damages can be estimated as the number of properties affected multiplied by the average not-at-risk value. Assuming the average not-at-risk value is £215,000⁷ and that 989 residential properties are affected, results in lost capital investment of £213 million to 2105 (not discounted). When discounted⁸ the damages are estimated at £43 million.

The above cost estimates include only residential properties. Commercial properties at risk include 29 premises such as shops, offices, etc. plus six hotels/guest houses, and three community facilities. The undiscounted loss of these properties is estimated to result in damages of £26 million (based on average land/floor area of properties of 750 m² and average commercial value of £900 per m²). The discounted costs (assuming the commercial properties are lost in the mid-year of each epoch, as for the residential properties) give damages of £5.9 million.

⁵ Bacton workshop, held 20 February 2008. Overstrand workshop, held 21 February 2008.

⁶ Meeting with caravan park owners held 13 March 2008.

⁷ Estimated as the average value of property in the NNDC area.

⁸ At 3.5% (reducing) based on HM Treasury Green Book. The assumptions made here that 51 properties are lost in year 9, 283 properties are lost in year 34 and 655 properties are lost in year 69 are used as the basis for discounting throughout this report, unless indicated otherwise.

Impacts on Quality of Life

As well as the capital value of the property, the owner is likely to experience other losses. Loss of garden may reduce utility, while the knowledge that their property will, eventually, be eroded is likely to cause stress and anxiety, as well as concern over future intangible losses associated with 'loss of home' and the memories/family history associated with the home. The estimated value of stress is taken as £200 per household per year. This value is based on stress associated with flooding of a property; the stress associated with the (certainty) of erosion could be considered much more such that the value estimated here is likely to be an under-estimate. Stress is assumed to continue from year 0 through to one year after the property is eroded (to account for the stress of having to move). This gives total costs of stress of £11 million (not discounted). The discounted total damages from stress are estimated at £4.9 million.

The time between being identified as at risk and being eroded is also likely to be associated with a lack of investment in the property in terms of maintenance. This may affect the quality of life and, potentially, health of the occupants (particularly if heating systems break down, roofs need repairing, etc.).

Loss of Opportunities

The owner may not be able to move their mortgage, thus they are excluded from access to normal competition between lenders. They may also be unable to borrow against their property reducing their opportunities to improve the property, support a business or fund the education of their children. They will also lose the value of any inheritance.

There are also impacts on individuals living in the properties as a result of their being unable to move. This means that they cannot take up a job elsewhere and are effectively tied to their property location and any employment they currently have. The same is true of business owners, who may be unable to move or develop their business affecting their overall efficiency.

Assuming the property owner is unable to move voluntarily from their home may also have wider impacts since any rehousing provided by the Council may be to a smaller premises, such that they have to dispose of some of their possessions.

Impacts on Businesses

For commercial property owners, the impacts in addition to capital losses could include a gradual deterioration of their business. This could occur where, for example, there is no incentive or ability to maintain or develop the business (e.g. as they are unable to raise capital for investment) which could reduce the perception of customers, thus reducing business. Such impacts are more likely to occur in those businesses that rely on a good quality premises, such as holiday accommodation, food service or retail. Other types of businesses could also suffer, however, since they would also lose the capital value of their premises which could affect the viability of the business (for example, the willingness of a bank to provide business loans or an

overdraft). They would also be less likely to be able to afford to move to new premises, such that the business may eventually be lost along with the property. Businesses tend to be sold as going concerns and any evidence that this may not be possible may result in the business being wound down over time, with the consequent loss of businesses.

There is evidence from the questionnaire sent to estate agents that there is a negative reaction to the Shoreline Management Plan in terms of sales of commercial premises, with the need to discount properties to achieve a sale.

Commercial property owners may also suffer from loss of land, which could reduce the potential for the continued running of the business. It is unlikely that loss of land would affect development of the business once the erosion risk is known, since this is unlikely to take place in the at risk location.

3.4.3 Impacts on the Community

Impacts from Loss of Businesses

Loss of beach accesses is likely to have significant impacts on tourism, one of the major employment sectors for the region. The impacts on commercial properties and winding down of businesses may result in a loss of local jobs, with knock-on effects potentially felt throughout the community. A lack of investment in those companies whose properties will be eroded could also result in many people whose properties are not at risk moving away from the area (particularly young people) in search of new employment opportunities. This would have further impact on the remaining services, such that they may also be lost. Decreasing quality and reputation of businesses before they are closed could also have knock-on impacts on the reputation of the village and community.

Loss of Residents to Support Services

As properties are eroded, people would move away from the area, affecting commercial businesses, but also services such as schools, libraries and community facilities. The loss of residential property from village communities is likely to have significant impacts on any remaining services (shops, pubs, schools, bus routes, etc.) and could result in increasing isolation of the village. The community spirit may also be affected (although this may depend on individuals). Any erosion loss of public buildings or meeting places could, though, have a more direct impact on the sense of community.

Increasing Deprivation

Many of the costs to the community and local economy cannot be readily monetised but could be expected to be significant and wide-ranging. All of these factors would increase deprivation of the local area, with lost jobs meaning that even those outside the at risk zone are unlikely to be able to afford to move.

While it is difficult to place a monetary value on this spiral into poverty, a paper by Atkinson (2000)⁹ identifies that a 3.5% reduction in poverty (equivalent to 150,000 people moving out of poverty) can be achieved for a spend equal to 1% of GDP. If it is assumed that the opposite also holds true (i.e. a 3.5% increase in poverty relates to a decrease of 1% in GDP), and that the GDP of the UK in 2006 was £1.129 billion, this means that damages would be £11.3 million per percentage point increase in poverty or £75 per person falling into poverty per year¹⁰. Thus the damages in North Norfolk where 7,650 people living within the coastal parishes¹¹ are predicted to fall into poverty because of implementation of the no active intervention policy could be estimated at £575,000 per year, or £29 million (undiscounted from year 49 to 99 (50 years), assuming it takes 50 years for the impacts to build to the point where almost all the local population is deprived¹²) and £3.2 million (discounted at 3.5% from year 49 to 99).

Increasing Dereliction

Where residents/business owners are able to move out of the at risk properties (either because they have sufficient funds available or because they are renting), there may be significant numbers of empty (and increasingly derelict) properties. This will have a negative impact on the market value of other properties in the village, potentially increasing the number of property owners directly affected. Evidence from a questionnaire sent to estate agents suggests that the market value reduction could be as much as 10%, even for those properties not-at-risk from coastal erosion within the next 100 years¹³. Similarly, the gradual decay of the at risk properties is also likely to affect the market value of nearby properties, even though they are not at risk of erosion. The damages due to knock-on effects can be estimated based on a 10% reduction in property value as the impacts increase over time. Thus, the average impact per property would be £21,500 (based on average property prices of £215,000). If it is assumed that there are 2.36 people per household and that the 7,650 people affected by deprivation are also those whose property value would have declined, the number of households affected is estimated at 3,242. Of these, 989 would be eroded and the damages are captured under individual impacts. This leaves 2,253 properties such that the undiscounted damages are estimated at £48 million. Assuming the not at risk properties are affected in similar proportions to the eroded properties¹⁴ means that total discounted damages are estimated at £9.8 million.

⁹ Atkinson AB (2000): **A European Social Agenda: Poverty Benchmarking and Social Transfers**, CAE2000.

¹⁰ Based on 1% of £1.129 billion (£11.3 million) divided by 150,000.

¹¹ Includes Happisburgh, Bacton, Mundesley, Overstrand, Sidestrand, Trimingham, Paston and Gimingham (data taken from Norfolk County Council small area population estimates).

¹² A worst case could be taken by assuming that such impacts are already occurring, i.e. damages extend over 100 years. However, this is not used as the indicative cost estimate here as many of the most significant impacts are unlikely to occur for several years, at least. If the damages were assumed to begin in year 20, the undiscounted damages would increase to £46 million and the discounted damages to £8.7 million.

¹³ Based on results of the questionnaire sent to estate agents by Nigel Morgan. The number of responses was small such that the results are indicative only.

¹⁴ Where 51 of 989 properties (5%) are eroded in year 9, 283 of 989 properties (29%) are eroded in year 34 and 655 of 989 properties (66%) are eroded in year 69. This gives 116 properties affected in year 9, 645 properties affected in year 34 and 1,492 properties affected in year 69.

The impact of blight on properties outside the at risk zone could adjust over time such that a new equilibrium with lower property prices is reached that recognises the at risk condition of the remaining properties. However, the baseline assumes that properties will be continually eroded through the three epochs with the number of properties affected increasing over time. This means that there may not be sufficient time for a new equilibrium to become established as properties are continually being exposed to increasing risk.

Short-Term Increase in Community Action

Communities may group together to try and address the perceived inequalities within the villages of those who are seen as being treated unfairly and the treatment the village as a whole is receiving. This may lead to complaints, petitions and demonstrations at the local, regional and national level. Although this may briefly increase community involvement, the impacts of eventual erosion may extend beyond those directly affected causing emotional distress on a wider scale.

3.4.4 Impacts on NNDC

Need for Rehousing

NNDC would be responsible for rehousing those whose homes have been eroded. It is likely this would only occur once the property is threatened with imminent erosion, which may minimise the number of empty houses, although those at risk may fall into gradual disrepair. This will involve costs to NNDC housing options service of:

- housing register administration;
- housing options service;
- homelessness assessment;
- provision and management of temporary accommodation; and
- provision of nominations.

Not all those whose properties are eroded are likely to need all aspects of the service and may only be on the housing register. Costs are not available on the individual aspects of the service provided by NNDC. Costs associated with providing temporary accommodation are passed onto the individual and so would be incurred by the household's income or housing benefit. However, the cost of temporary accommodation for larger households may exceed the subsidy available from central Government as housing benefit; any extra cost will have to be met by NNDC. This could be a significant impact where there is a lot of demand for such accommodation, e.g. as could occur in Epochs 2 and 3, where several hundred households will require rehousing. Any increase in the number of households requiring rehousing would affect NNDC's ability to rehouse families already on the register. Since the number of households on the register on 1 April 2008 was 3,697, erosion risk would result in an increase of 1% in Epoch 1, 8% in Epoch 2 and 18% in Epoch 3¹⁵.

¹⁵ These percentages assume that those whose properties were eroded in previous Epochs have been rehoused and it is the underlying 3,697 households that is (reasonably) constant. If the problem was compounded such that those whose properties were eroded in Epochs 1 and 2 are still on the register in

The administrative costs per applicant are estimated at £94.50¹⁶, which would give total costs over 989 affected properties of £93,000 (undiscounted) over the 3 Epochs. The discounted costs to NNDC of administration would be £19,000 (assuming properties are lost in year 9 in Epoch 1, year 34 in Epoch 2 and year 69 in Epoch 3).

Costs of Temporary Accommodation

If 50% of the families have to use temporary accommodation at an average cost of £300 per week¹⁷ and that each family uses temporary accommodation for six weeks, the total costs for the 989 properties eroded would be £890,000 (undiscounted) or £180,000 (discounted). Given the large number of additional families requiring accommodation, the time required for temporary accommodation may be considerably longer; these estimates are, therefore, expected to be under-estimates.

Increased Complaints

NNDC is also likely to have to deal with complaints, concerns and information requests from those living in or near at risk zones.

Provision of Replacement Properties/Development Land

NNDC will also have to provide land for development to replace those properties lost and to ensure it can meet the housing demands of its residents. This may be significant in terms of commercial properties, since any delay or lack of provision of commercial land could have knock-on consequences that are felt across the whole District (or even wider) should businesses move elsewhere or be lost. The costs of providing the replacement properties are estimated using the following assumptions:

1. off-the-shelf purchase of three bedroom dwellings and bringing them up to Registered Social Landlords (RSL) standards at a unit cost of £160,000; and
2. cost of new build based on 80m² floor area at £1,200/m² and on costs of 16%. Plot cost for land purchase and infrastructure of £25,000, giving a total unit cost of £136,360. The value for Council free land is assumed at £10,000 per exception site or £20,000 for social housing use.

The total costs to NNDC of replacing the residential properties lost to erosion to 2105 are £158 million for off-the-shelf purchase or £135 million for new build to RSL standards. If grant is available at 50% of the costs, the costs to NNDC reduce to £79 million (off-the-shelf) or £67 million (new build). The (ungranted costs) reduce to £33 million (off-the-shelf) or £28 million (new build) when discounted (assuming the new property is built one year before at risk property is eroded), such that the costs to NNDC reduce to £17 million (off-the-shelf) and £14 million (new build).

Epoch 3 (or have knock-on effects such that the number of the register is increased), the overall increase by Epoch 3 would be 27%.

¹⁶ Costs provided by NNDC Strategic Housing Manager.

¹⁷ Based on information on costs of bed and breakfast accommodation in Spelthorne (report of Director of Community Services, January 2003 downloaded from the Internet).

3.4.5 Impacts on UK plc

Need for Funding to Cover Costs of Local Impacts

NNDC would require funding from government to assist with the additional costs of rehousing those whose properties have been eroded. There will also be a shortfall in the housing stock that has to be replaced (although it is likely this will have to be addressed locally). Assuming that 50% grant is available would mean that the costs to UK plc are £79 million (off-the-shelf) or £67 million (new build). When discounted, the grant costs reduce to £17 million (off-the-shelf) and £14 million (new build).

Increase in Deprivation

There is the potential that the cumulative effects of all the above impacts could result in the wider area becoming much more deprived. This may not only affect whether the Government can meet targets (e.g. number of children in poverty) but could require additional future funding to help the regenerate the area.

Costs Avoided from Not Providing Coast Protection Works

UK plc benefits from avoiding having to incur costs associated with having to pay for erosion risk defences along the whole coastline. The costs in the SMP for different maintenance and replacement schemes are:

- maintenance costs of £10,000/km/year for linear structures and groyne fields and £20,000/km/year for beach schemes; plus
- replacement costs of £2 million/km for revetment and £7 million/km for concrete walls (mean value of £2.7 million/km).

These costs are applied over approximately 30km of coastline that would not be defended (assuming that existing defences would be replaced but not improved). Using data on the existing defences shows that 26% would require beach management while 74% would require maintenance of linear structures. It is also assumed that these linear structures would be replaced in year 20 (start of Epoch 2 of the SMP). The assumptions give potential costs avoided of £98 million (undiscounted) or £41 million (discounted). There may also be savings if the sediment from those areas where no coast protection is provided moves down the coast to provide protection elsewhere (and where the costs of protecting the areas down the coast are reduced as a result).

3.4.6 Total Costs and Benefits of the Baseline

The above discussion identifies a number of different costs and benefits that could occur under the baseline option. It has been possible to quantify and monetise some of these impacts. The overall monetised costs and benefits are summarised in Table 3.2.

Table 3.2: Summary of Monetised Costs and Benefits of No Active Intervention				
Impact Type	COSTS		BENEFITS	
	Undiscounted	Discounted	Undiscounted	Discounted
Residential property - capital value	£210,000,000	£43,000,000	-	-
Commercial properties - capital value	£26,000,000	£5,900,000	-	-
Stress	£11,000,000	£4,900,000	-	-
Deprivation	£29,000,000	£3,200,000	-	-
Knock-on loss of property value	£48,000,000	£9,800,000	-	-
Rehousing costs	£93,000	£19,000	-	-
Temporary accommodation	£890,000	£180,000	-	-
Sub-Total	£330,000,000	£67,000,000		
New property - off the shelf	£160,000,000	£33,000,000	-	-
New property - new build	£130,000,000	£28,000,000	-	-
Sum (off the shelf)	£490,000,000	£100,000,000		
Sum (new build)	£460,000,000	£95,000,000		
Grant costs - off the shelf (if 50% grant)	£79,000,000	£17,000,000	-	-
Grant costs - new build (if 50% grant)	£67,000,000	£14,000,000	-	-
Costs avoided - no cost protection works	-	-	£98,000,000	£41,000,000
Notes: Sum values include costs of either new property-off the shelf or new property-new build (grant costs are ignored from the sums, but could represent a transfer payment from UK plc to NNDC)				

Table 3.2 shows that the undiscounted damages are estimated at £460 million to £490 million (depending on the costs used for new build), with the discounted damages estimated at £95 million to £100 million. These cost estimates only include those impacts that could be valued in monetary terms. There are many other damages that could only be described. Many of the costs could not be monetised but could be expected to be significant and wide-ranging. Loss of beach accesses is likely to have significant impacts on tourism and number of visitors to the area. Loss of visitors would result in loss of businesses and, potentially, services such as pubs, shops, banks, etc. As properties are eroded and jobs and businesses are lost, people who could afford to move would move away from the area, further affecting services such as schools, libraries and community facilities. Those who cannot afford to move would be forced to remain with no (or reduced) access to insurance, mortgage lenders, and loss of inheritance, pension or a means of raising money. All of these factors would increase deprivation of the local area, with lost jobs meaning that even those outside the at risk zone are unlikely to be able to afford to move.

3.5 Stage 4: Assessment of the Impacts of the Adaptation Options

3.5.1 Comparison of the Impacts of the Options

The assessment of each screened in option against the baseline (as described in Section 3.4) is provided in Table 3.3 (overleaf). The table focuses on key impacts and differences from the baseline in order to provide the basis for comparing the different adaptation options. In some cases, it is not possible to fully assess the individual options without reference to the potential benefits of other options. This information has been used as the starting point for combining options into packages as it helps identify which options could be considered solutions in their own right and which will need to be combined to provide an holistic adaptation option. Table 3.4 summarises which options are considered whole adaptation options and which provide only partial solutions.

Option	Option Performance by Stakeholder		
	Whole	Partial	Reasoning
Baseline	-	-	Not a solution, used as common reference to compare options
Outright purchase and demolish	Y	Y	Would require property owner to move out of property (but could occur at any time up to erosion)
Low interest loans to buy new property/land once property lost	Y	Y	Allows property owner to move out when ready (but does not deal with key financial constraint)
Underwriting values	Y	Y	Provides guaranteed value for property and may allow functioning of housing market (but at lower prices)
Buy and lease	Y	Y	Provides potential market for property, allowing owner to move
Streamlined planning permission	N	Y	Only provides approval for new property, does not address concerns over moving from existing property
Government payback scheme	N	Y	Provides potential to pay property owners when their property erodes, but could tie them to their property until that time
Coastal Adaptation Fund	Y	Y	Provides funding to assist with move
Land purchase by LA	Y	Y	Provides alternative location to move to
Subsidised maintenance	N	Y	Provides assistance for those staying in their property but not those wishing to move
Use of property for time-restricted use (sale of property to new user)	Y	Y	Provides potential market for property, allowing owner to move
Physically move property	N	Y	Only applicable to certain (unique) properties
Relocatable properties in 'at risk' areas (mobile homes)	N	Y	Requires properties currently occupying land to be removed

Table 3.3: Assessment of the Screened In Options								
Option	POSITIVE IMPACTS (BENEFITS) to...				NEGATIVE IMPACTS (DIS-BENEFITS) to...			
	Individual property owners	Community	NNDC	UK plc	Individual property owners	Community	NNDC	UK plc
Baseline	None	None	None	Costs avoided in terms of not having to provide defences to local communities and potential savings downcoast due to increased sediment supply (estimated at £41 million, discounted)	Loss of utility before property is eroded, potential stress and health issues (£4.9 million, discounted). Loss of planning for businesses and eventually businesses become unviable. Loss of capital investment in property. Loss of property. Cannot move as property value is decreased or (effectively) zero (loss of £33 million, discounted). Loss of all assets (from Task 2) estimated at £37 million (discounted). Without another source of funding could become homeless and forced to move into Council provided accommodation	Loss of residents, eventual loss of community and population to support local services. Loss of businesses, loss of employment, increasing deprivation in community. Derelict properties likely to affect value of other (not at risk) properties and result in isolated properties with no services rather than a community. Concerns that some members of the community are being treated unfairly may led to complaints, petitions and demonstrations	Costs associated with having to rehome those whose properties have been lost. Probability of complaints to the council, particularly as number of properties, villages affected increases Need to provide land and/or rebuild properties (estimated cost of £33 million for council new build (off-the-shelf) or £28 million, RSL new build, all discounted)	NNDC will require funding from government (taxpayers). At 50% grant to purchase/rebuild the grants required would be £17 million (off-the-shelf) or £14 million (new build), all discounted Increased deprivation will result in missed targets and need for funding to regenerate area

Table 3.3: Assessment of the Screened In Options								
Option	POSITIVE IMPACTS (BENEFITS) to...				NEGATIVE IMPACTS (DIS-BENEFITS) to...			
	Individual property owners	Community	NNDC	UK plc	Individual property owners	Community	NNDC	UK plc
<i>Remove Property</i>								
Outright purchase and demolish	Receive money for their property and can move out of the at risk area. Can find new property or land on which to build a replacement property. Potential for reduced stress/health impacts. Opportunities for better business planning. Seen as equitable (may depend on price paid)	Property can be demolished thus avoiding having lots of derelict properties within the village and associated blight	People are moved out of the at risk zone without requiring rehousing (reduced costs). Reduced complaints and costs of dealing with complaints. May reduce need for replacement properties (if people build new homes in NNDC area)	People have money to invest in the housing market or even a new development – reduced funding for NNDC. Reduction in deprivation of whole community. May reduce need for replacement properties (if people build new homes)	Still have to move out of their home. Property is demolished. Without linkages to other options they may have to move out of the village	Loss of residents (unless combined with another option that allows them to develop nearby), with potential impact on local businesses and services. May lead to localised pockets of deprivation (lost jobs)	Loss of properties that need to be replaced. Cost (depends on whether UK pays all or just some). Potential loss of residents (if they move away) reducing income	Loss of properties that need to be replaced. Cost (depends on whether NNDC pays – but likely to require central funding and have to be paid in lumps). May be seen as setting a precedent for ‘compensation’. May still be pockets of deprivation

Table 3.3: Assessment of the Screened In Options								
Option	POSITIVE IMPACTS (BENEFITS) to...				NEGATIVE IMPACTS (DIS-BENEFITS) to...			
	Individual property owners	Community	NNDC	UK plc	Individual property owners	Community	NNDC	UK plc
Low interest loans to buy new property/land once property lost	Reduced cost of borrowing as a means of recouping small amount of capital investment loss. Increased flexibility in terms of when they leave their property (unless tied by option or threatened by imminence of erosion) to find new property. May be some reduction in stress or health benefits (but may be small). Opportunity for business relocation	Assuming loans are offered well before properties have to be evacuated, the community gains time and money to adjust to the situation and react accordingly. For example coordinated development may occur further inland which could help avoid some of the impacts due to lost businesses and services. Properties at risk can be demolished reducing blight	May result in replacement of properties (rebuild), reducing costs that have to be incurred by NNDC for rebuild and rehousing. May be reduced complaints and costs of dealing with complaints, but only for those for whom loan is appropriate	May result in replacement of properties (rebuild), reducing costs that have to be incurred by UK plc. Reduction in deprivation of whole community such that other targets can be met or additional funding provided	Still have to move out of their property. Property is demolished. No capital to invest, hence, those living in at risk properties become effectively 'first-time' buyers. May have to move out of village to find affordable properties. Will discriminate against non wage earners (e.g. retired) who may not be able to repay a loan so may not be able to take up the option. Fees associated with obtaining loan	Loss of residents (unless combined with another option that allows them to develop nearby), with potential impact on local businesses and services (but may be able to relocate locally). May lead to localised pockets of deprivation (lost jobs)	NNDC may be seen as abandoning the communities since people will ultimately have to finance their own move through loan repayments, may still be complaints from some	Likely to have to be funded by Government (at least in part) as will not be very profitable for private company. Administration costs. May still be pockets of deprivation

Option	POSITIVE IMPACTS (BENEFITS) to...				NEGATIVE IMPACTS (DIS-BENEFITS) to...			
	Individual property owners	Community	NNDC	UK plc	Individual property owners	Community	NNDC	UK plc
Underwriting values	Guaranteed price, known in advance. Extra time to find new property in the area (or elsewhere). Opportunities for better business planning. Terms of agreement can be built in at the start so people can plan reducing stress. Seen as equitable (may depend on price paid)	Property can be re-let by the council if owners move out early. Property can later be demolished thus avoiding having lots of derelict properties within the village with potential to maintain services (reduced blight)	Knowledge of future payments helps financial planning. People have opportunity to move out of risk zone without the council having to rehouse them. Reduced complaints and costs of dealing with complaints	People have money to invest in the property market or even a new development. Reduction in deprivation of whole community	Still have to move out of their property. Property is demolished. May have to move out of village if no suitable properties	Loss of residents (unless combined with another option that allows them to develop nearby), with potential impact on local businesses and services. May lead to localised pockets of deprivation (lost jobs)	Loss of properties that need to be replaced elsewhere. Cost of funding (but knowledge of future expenditure should ease financial planning)	Loss of properties that need to be replaced elsewhere. Cost of funding (but knowledge of future expenditure should ease financial planning). May be seen as setting a precedent. May still be pockets of deprivation

Table 3.3: Assessment of the Screened In Options								
Option	POSITIVE IMPACTS (BENEFITS) to...				NEGATIVE IMPACTS (DIS-BENEFITS) to...			
	Individual property owners	Community	NNDC	UK plc	Individual property owners	Community	NNDC	UK plc
<i>Continued Use of Property until it is Eroded</i>								
Buy and lease	Receive guarantee of money for their property and can move out (or lease back if wanted). Opportunities for better business planning. Potential to stay in own property (until eroded). Property owners gain time to consider their choices, reducing stress	Properties remain occupied for longer maintaining community and income to community. Reduced impact in terms of blight and deprivation (jobs). Viable opportunity for private investors (at right price)	Fewer people require rehousing in short-term and should have some capital to help themselves in longer-term. Maintains housing stock (at least in the short-term). Reduced complaints and costs of dealing with complaints	Could be run by private organisation, not requiring public funds. Maintains housing stock (at least in the short-term). People have money to invest in the property market or even a new development, deprivation reduced avoiding impacts on poverty targets, etc. Potential to eliminate liability for future claims (purchaser buys right to live in/rent out property for x years) and also sell-off at reduced price to recoup some money immediately (proviso that property is threatened)	Lose any potential for increase in capital through increase in property price. May be limited maintenance on property so quality may deteriorate over time. May not be appropriate where residual life is less than 5-15 years	Properties may gradually deteriorate reducing visual amenity of village over time with potential blight impacts. Loss of local residents (if people cannot find alternative properties nearby) with potential impact on local businesses and services. May be replaced with poor quality tenants with negative impacts on the rest of the community	May have to find money to initially purchase houses (but should receive some money back in rent)	Loss of housing stock (in long term). Cost (depends on whether NNDC pays – but may need some central funding)

Table 3.3: Assessment of the Screened In Options								
Option	POSITIVE IMPACTS (BENEFITS) to...				NEGATIVE IMPACTS (DIS-BENEFITS) to...			
	Individual property owners	Community	NNDC	UK plc	Individual property owners	Community	NNDC	UK plc
Streamlined planning permission	Reduced time and cost of applying for planning permission to rebuild property. Reduced uncertainty of outcome (whether permission will be granted or not) (compared with baseline where there would be no special dispensation for those in property at risk of erosion). Opportunity for relocation of business	Potential for new property/land to be associated with existing community reducing impacts on services. Potential reduction in number of derelict properties or those that are not being maintained if people are able to move out of at risk properties reducing blight	Strategic approach with clear guidelines. May ease replacement of housing stock and reduce complaints (but only for those that can afford to take advantage of option)	Would enable any lost housing stock to be replaced relatively quickly assuming investment was available. Potential reduction in deprivation (but may only relate to those with money, so impacts may be limited)	May not be able to afford to build a new property due to loss of capital invested in eroded property (or loss of market value) – does not address affordability. May only benefit some, may be seen as unfair	Community may split into those who can afford to finance building a property and those who cannot. Properties in village may gradually deteriorate thus reducing visual amenity since people are unlikely to spend money on their homes if they need to finance another property, with implications for blight	May be viewed as unfair. NNDC may be seen as abandoning the communities since people still have to finance their own move	May conflict with other planning policies. May still be deprivation, affecting those who are most vulnerable

Table 3.3: Assessment of the Screened In Options								
Option	POSITIVE IMPACTS (BENEFITS) to...				NEGATIVE IMPACTS (DIS-BENEFITS) to...			
	Individual property owners	Community	NNDC	UK plc	Individual property owners	Community	NNDC	UK plc
Government payback scheme	Owners of properties at risk receive some payment for their property, which may help them to move to an area that is not at risk. Potential to plan for future and find new property, reducing stress. Opportunities for better business planning	Payments may mean people stay in their properties for longer such that impacts on businesses and services are delayed. Blight may be reduced as properties at risk are demolished	The council does not have to bear the full cost of helping people relocate with reduced rehousing costs. Potential for reduced complaints	Potential reduction in deprivation (but will depend on payments made)	May have to move out the area due to lack of available/affordable properties. May have to take out further loans or mortgages to finance move	Community may break down as people lose their homes, receive some payment and move out of the area. Potential impact on local businesses and services if those affected move away	Cost of calculating the amount of money saved and obtaining funding from central government. Administrative costs involved in dividing money between applicants. Time taken to obtain money from central government	UK plc to fund options from savings made from being able to provide smaller defences than may otherwise have been the case (only in those areas where defences are justified). Ultimately properties are lost and people do not necessarily have sufficient money to afford to pay for a new development
Coastal Adaptation Fund	Provides help with moving costs (but may be limited), reducing stress at time of move	May encourage property owners to stay as long as possible in own property, with benefits for businesses and services	May reduce rehousing costs (if people move to private housing). Reduced complaints as those at risk are not being abandoned	Potential reduction in deprivation, at least in short term (but will depend on payments made)	May not maintain property with possible health impacts. Eventual loss of property and no capital to invest in new property with associated stress	Increasingly run-down properties may affect market value of other properties (blight). May be pockets of deprivation	Will still need replacement properties. Cost of fund	May be impacts in terms of deprivation, poverty targets, etc. May need to fund NNDC

Table 3.3: Assessment of the Screened In Options								
Option	POSITIVE IMPACTS (BENEFITS) to...				NEGATIVE IMPACTS (DIS-BENEFITS) to...			
	Individual property owners	Community	NNDC	UK plc	Individual property owners	Community	NNDC	UK plc
Land purchase by LA	Displaced people will not have to search for land or finance its purchase, reducing stress and making it easier to move (reduced investment need). Opportunity for business relocation	Community retained if large enough plots of land near the village are bought or given to the community, reducing impacts on businesses and services and, hence, deprivation	Housing stock may be replaced as it is eroded, increasing need for replacement properties and reducing rehousing costs. Reduced complaints from those at risk	Housing stock may be replaced as it is eroded, helping to meet targets. Reduced deprivation (will depend on location of land)	Money has to be found to develop a new property and may not be available to all	Community may be split into those who can afford to finance building a new property and those who cannot. May be loss of businesses and services if land is away from village, with impacts on deprivation	Land may be expensive or unavailable in the vicinity. Additional administration costs and cost of funding. Lost opportunity value of land	May be seen as setting a precedent for other areas. Requires funding if land has to be bought
Subsidised maintenance	Individuals can save their money for relocation and still live in sound and functional properties, reducing potential health impacts. Can continue living in property without seeing it deteriorate	The village retains its character and is not blighted by disintegrating properties. People continue to live in properties until eroded with short-term benefits for businesses and services	Council is not accused of abandoning the residents with reduced complaints	Other properties in the area are not devalued since all buildings are well maintained, reducing deprivation	Individuals may ultimately have to move far away since properties/land for development may not be available in the vicinity. Sudden loss of property. No capital to invest elsewhere, limited opportunity for future planning	Community may disintegrate since less well off members will not be able to afford an alternative property. Eventual deprivation if people, businesses move away	Money is spent on properties which have a finite life. This could instead be put towards new properties not at risk of erosion. Funding costs. Rehousing costs of those unable to afford to move themselves	Ultimately properties are lost and people do not necessarily have sufficient money to afford to pay for a new development. Impacts in time, on poverty targets

Table 3.3: Assessment of the Screened In Options								
Option	POSITIVE IMPACTS (BENEFITS) to...				NEGATIVE IMPACTS (DIS-BENEFITS) to...			
	Individual property owners	Community	NNDC	UK plc	Individual property owners	Community	NNDC	UK plc
Use of property for time-restricted use (sale of property to new user)	Have some capital to invest in new property and can move away to find new property, reducing stress and health impacts. Potential for some future planning. Opportunities for better business planning	Property in use for as long as possible. Avoids early abandonment of functional buildings, providing on-going income for local businesses, e.g. if more properties are used as holiday accommodation	People are moved out of the at risk zone without requiring rehousing by the council. Reduced complaints	Residents obtain some money so can invest in property elsewhere. May be privately funded, reducing costs. Reduced deprivation increases chance of meeting targets	Individuals may have to move far away since affordable/suitable properties may not be available in the vicinity. Value obtained may be lower than not at risk market value, reducing opportunities	Potential for character of community to change as it becomes dominated by temporary residents. Impacts on services (e.g. schools) which may be lost, impacting whole community. May increase deprivation	Administration involved when deciding which land uses are to be allowed on eroding land. Cost of purchasing properties (unless bought privately). Responsibility of demolishing property at end of its life	Ultimately have loss of properties with no definite replacement reducing potential to meet poverty targets, etc.
Move Property								
Physically move property	Owner moves with property so no loss of property, only stress associated with move of whole property	Part of community if moved locally. The village retains its character and is not blighted by disintegrating or empty properties. Offers potential to link with coastal access	Self help, therefore little council involvement required. Reduced complaints	Retains property, reduces deprivation. May require funding	Costly as technically difficult and will require land. May not be appropriate for all properties (not equitable)	Will discriminate against less well off members of the community who cannot afford land or the actual process of moving their property	May appear to be abandoning the residents since option is only available to those with sufficient funds-other people will need more help. May be required to help with the provision of land	Relocating an existing house will prevent a better design/structure from being implemented. Likely to require funding (e.g. heritage assets), which may be limited

Table 3.3: Assessment of the Screened In Options								
Option	POSITIVE IMPACTS (BENEFITS) to...				NEGATIVE IMPACTS (DIS-BENEFITS) to...			
	Individual property owners	Community	NNDC	UK plc	Individual property owners	Community	NNDC	UK plc
Relocatable properties in 'at risk' areas (mobile homes)	Owner moves with property once original property has been removed. No loss of relocatable property, only stress associated with move of whole property	Part of community if moved locally. Village retains population which may reduce impacts on businesses and services. Offers potential to link with coastal access	Solution can be implemented continuously as coastline advances, maintain housing stock over time	Self help therefore no dis-benefit for those in relocatable properties	Impacts as baseline for original property owner unless land is bought by those living in relocatable properties (probably at lower cost than value of at risk property). Cost to owner of moving property. Owner may additionally have to finance the initial building/ construction of the relocatable property	May not be seen as appropriate in some of the more picturesque coastal villages, change in character	Council may need to make land available (costs of purchasing land off existing property owners or removing original property owners). May increase complaints in short-term from original property owners and nearby residents	Issues if not good housing stock (e.g. energy costs and CO ₂ targets)

Most of the impacts (positive and negative) in Table 3.2 are qualitative, although some quantitative/monetary information is included. The next step is to use this information to identify which options perform better/worse than other options across the different stakeholders. This will identify whether any options are clearly worse than other options and can be screened out of the more detailed investigation of how the option would work in practice. Before screening out of any options (even those that are clearly worse across all stakeholders), consideration is given as to whether the option could provide benefits if combined with other options or whether there are sub-options that could reduce some of the negative impacts. It is also important at this stage to estimate the likely funding costs associated with each option.

The options are compared stakeholder-by-stakeholder using a five point rating of:

- worst option: the option with the greatest negative impacts;
- poor option: option with significant negative impacts but where these are reduced compared with the worst option;
- fair option: option with some negative impacts, mediocre option;
- better option: option with significantly fewer negative impacts, or benefits; and
- best option: the option with the fewest negative impacts or greatest benefits.

The comparison of options based on the extent that they remove or reduce the impacts under the baseline is set out in Table 3.5. Where it is difficult to judge one option as clearly preferred, more than one option is considered best. Uncertainties over the level of funding, etc. apply to all options and are not included in the table (see Section 3.5.2 for discussion on funding of options).

Option	Option Performance by Stakeholder			
	Property Owners	Community	NNDC	UK plc
Baseline	Worst	Worst	Worst	Worst (no options considered here include defences, therefore, costs avoided of £41 million occur on all options)
Outright purchase and demolish	Better	Better	Best	Fair
Low interest loans to buy new property/land once property lost	Poor	Better	Poor	Fair
Underwriting values	Best	Better	Best	Fair
Buy and lease	Better	Better	Best	Better
Streamlined planning permission	Fair	Fair	Fair	Fair
Government payback scheme	Fair	Fair	Better	Best
Coastal Adaptation Fund	Fair	Better	Better	Fair

Option	Option Performance by Stakeholder			
	Property Owners	Community	NNDC	UK plc
Land purchase by LA	Better	Fair	Best	Fair
Subsidised maintenance	Better	Better	Best	Better
Use of property for time-restricted use (sale of property to new user)	Better	Best	Better	Better
Physically move property	Better	Better	Fair	Poor
Relocatable properties in 'at risk' areas (mobile homes)	Fair	Better	Fair	Fair

Table 3.5 shows that some options score well across most of the stakeholders, outperforming other options on all categories. These options are considered to dominate the worse performing options. Table 3.6 summarises those options that dominate and those that are dominated. The dominated options would not be considered appropriate substitutes for the better performing options within the packages of options (unless there were considerable reductions in the level of funding required or the shortcomings could be addressed by combining them with other options).

Dominant Option	Dominated Options
Buy and lease	Outright purchase and demolish Low interest loans Streamlined planning permission Coastal Adaptation Fund Land purchase by LA Subsidised maintenance Physically move property Relocatable properties
Use of property for time-restricted use	Outright purchase and demolish Low interest loans Streamlined planning permission Coastal Adaptation Fund Land purchase by LA Subsidised maintenance Physically move property Relocatable properties
Underwriting values	Outright purchase and demolish Low interest loans Streamlined planning permission Coastal Adaptation Fund Land purchase by LA Physically move property Relocatable properties

Table 3.6: Dominant and Dominated Options	
Dominant Option	Dominated Options
Subsidised maintenance	Outright purchase and demolish Low interest loans Streamlined planning permission Coastal Adaptation Fund Land purchase by LA Physically move property Relocatable properties
Outright purchase and demolish	Low interest loans Streamlined planning permission Coastal Adaptation Fund Land purchase by LA Physically move property Relocatable properties
Land purchase by LA	Streamlined planning permission
Government payback scheme	Streamlined planning permission
Coastal Adaptation Fund	Low interest loans Streamlined planning permission
Relocatable properties	Low interest loans Streamlined planning permission

3.5.2 Costs of Funding the Options

Options Involving Purchasing the Property

Four options include providing some payment to the property owner:

- outright purchase and demolish;
- underwriting values;
- buy and lease; and
- use of property for time-restricted use (sale of property to new owner).

Average not-at-risk residential property prices are estimated at £215,000 (assumed minimum life of 70 years)¹⁸. If residential properties at risk are to be purchased at the average market value, the total costs would be £210 million (undiscounted) or £43 million (discounted)¹⁹. This is the same as the estimated loss of market value faced by property owners and is based on a similar principle to the mechanism associated with compulsory purchase, where the property owner should be no worse or better off than in the absence of a ‘scheme’²⁰. If all properties are included (residential and commercial), the total costs increase to £240 million (undiscounted) and £49 million

¹⁸ The market value of the property were it truly not-at-risk may include some premium associated with a seaview or access to the beach/sea for recreation.

¹⁹ It is important to note that the discounted costs assume the full market value is paid at the time the property erodes. If the property were to be bought today (i.e. year 0), then the discounted costs would be the same as the undiscounted costs.

²⁰ The specific case of coastal erosion may differ from that for compulsory purchase where it can be assumed that properties purchased before the scheme were in ignorance of it. For coastal erosion, there is likely to be some evidence of the potential threat many years in advance (although there may be the assumption that defences will continue to be provided).

(discounted). Including other assets (e.g. caravan parks, golf courses) will increase this cost further.

Properties could also be purchased on a sliding scale, where the residual life of the property is taken into account. The price paid could be estimated based on the residual life of the asset in terms of the income that could be generated from it, e.g. if it was rented at a 'typical' rent of £10,000 per year (£833 per calendar month). In this case, the property values would be²¹:

- residual life of 10 years: £73,100;
- residual life of 35 years: £156,950;
- residual life of 60 years: £202,100;
- residual life of 70 years: £215,000; and
- in perpetuity: £215,000.

It is assumed that those properties lost in Epoch 1 have an average life expectancy of 10 years (i.e. eroded in year 9), those lost in Epoch 2 have an average life expectancy of 35 years (i.e. eroded in year 34) and those lost in Epoch 3 will be eroded in year 69 (residual life of 70 years). These assumptions are used to determine the discounted funding costs.

Using these assumptions, the total costs of purchasing residential properties on a sliding scale of property values would reduce to £190 million (undiscounted) or £33 million (discounted). The value is high because most of the properties (655) would not be lost until Epoch 3 so are assumed to have sufficient residual life to qualify for full market value. Such an approach is clearly dependent on the year in which the funding mechanism is introduced and could be seen as unfair to those whose properties only have very short residual lives, but who could not have foreseen that the property would have eroded when they purchased it.

A sliding scale could also be applied based on the residual life of the property when it was purchased, to reflect the extent to which the purchaser could reasonably have been aware of the risk that they were taking. This may be more equitable than the use of an arbitrary base year, although the calculations become more complex. The funding costs for this sliding scale are based on a series of simplifying assumptions, as set out in Table 3.7. The estimated costs of funding this option, based on the (simplifying) assumptions set out in Table 3.7 are £200 million (undiscounted) and £26 million (discounted).

²¹ Based on a 6% required return on investment and that a property owner would pay 25% tax on that part of the income used to provide an annual sinking fund (a fund to be used to replace the property at the end of its life).

Residual life	Epoch		
	1	2	3
Property bought before policy change – no expectation of erosion	70 years 30% properties bought in that era	70 years 30% properties bought in that era	70 years 30% properties bought in that era
Property bought as SMP policy was changing – assumed would protect for first epoch	35 years 50% properties bought in that era	60 years 50% properties bought in that era	70 years 50% properties bought in that era
Property was bought after SMP published and policy changed	10 years 20% properties bought in that era	35 years 20% properties bought in that era	70 years 20% properties bought in that era

An alternative could apply where the funding is used to cover the difference between actual market value and sale price. This option assumes that a market exists for the properties (although a fund that covers the difference between the at risk price and an estimated not at risk price could help to encourage development of a market). The funding costs are equal to the difference between the funding based on full market value and that based on residual value. This means the costs of providing funding to cover the difference between actual sale price and not at risk price is estimated at £24 million (undiscounted) and £10 million (discounted). In this case, there is no reduction in value of those properties affected in epoch 3 such that the funding estimates are reduced. Thus, this option for funding would be best operated with another option that provides a mechanism for sale of properties to include a proviso that it is at risk. This may increase the funding requirements initially (since property prices are likely to decrease) but should reach a new equilibrium over time.

A further option could involve purchasing the property at the rebuild value, such that the property owner has the funds to rebuild elsewhere. Two sub-options exist: providing additional money to cover the purchase of land; or combining the option with provision of land (e.g. by the Local Authority). This option is considered particularly beneficial since it (i) reduces the initial funding requirements and (ii) would result in no overall financial loss to the property owner since, once a replacement property is built, the owner would then receive the full market value were they to sell the property. Some losses could occur if the property at erosion risk would (in the absence of erosion risk) have received a premium for the sea view. Property owners would still lose their home and the emotional/sentimental value attached to it. Additionally, those who wished to move out of the area might find provision of rebuild costs and land restrictive. Only NNDC would be providing land, so residents would be limited to rebuilding within the confines of the NNDC area, unless they could afford to pay for residential development land elsewhere. They might have to wait until their new property was built, or the process was at least in progress, before they could sell their assets and obtain money to move away. However, for those who intended to remain in the area, some of the community issues associated with loss of residents would be reduced if the local authority were to provide land. Furthermore, the local authority would have control over where the replacement developments were located.

An average property of 80m² has a rebuild value of around £95,000 (estimated using the ABI/BCIS House Rebuilding Costs Calculator²²) meaning that the rebuild costs are around 44% of the market value of the property. Thus, the funding costs of this option are £94 million (undiscounted) and £19 million (discounted). As well as having lower funding requirements, this option could benefit from the inclusion of rebuild costs in mortgage statements and/or insurance policies reducing the need to estimate the funding for each individual property.

It is important to note that these are indicative cost estimates designed to illustrate the principles and give an indication of the order of magnitude of the potential funding implications. The figures would change if different assumptions were made.

Options Involving Purchase of Land

In addition to purchasing the at risk properties, there is the potential to purchase or make available land that can be used by those whose properties are eroded to build new homes (i.e. providing replacement land in lieu of cash). These options are:

- land purchase by Local Authority; and
- relocatable properties in at risk areas.

Agricultural land in Norfolk is valued at around £12,300 per hectare, land for commercial development is valued at around £250,000 per hectare and land for residential development at £1.9 million per hectare (all indicative values). There may also be 'hope' values attached to land adjacent to or adjoining a village which, although not currently zoned for development could obtain planning consent in the future. Such land could attract a sale price well above the agricultural value.

The estimated price for land in the Task 2 report for all assets was £33 million (undiscounted) or £8.0 million (discounted). Thus, this could be the funding requirement if land is to be provided to replace all those assets likely to be eroded. The costs reduce to £31 million (undiscounted) or £6.2 million (discounted) for residential properties only. These estimates are based on land values of £930,000 per hectare for residential and commercial properties.

The option to provide land for relocatable properties requires land occupied by existing at risk properties to be purchased and the properties demolished. One method of funding this option could be to assign a value to the land on which the at risk property stands. This could then represent the price paid to the current property owner. If the land on which the at risk property sits is valued at the residential development value of £1.9 million per hectare (probably unlikely), the price paid to the property owner for an 'average' property covering 333 m² (0.0333 ha) would be £63,270. For 989 properties, the undiscounted costs would be £63 million. The discounted cost would be £13 million. If a lower value of land were used, e.g. £930,000 per hectare based on the average for both residential and commercial development, the funding costs would reduce to £31 million (undiscounted) and £6.2 million (discounted). These costs could be funded by (future) owners of relocatable

²² <http://abi.bcis.co.uk>

properties due to the attractiveness of a coastal site at a price that reflects the value of the land to its eventual users.

Options Involving Impacts in Terms of Lost Opportunity Costs

Some of the options considered do not involve expenditure by the funding body on properties or land; instead they require money to be made available that could then not be used elsewhere. These options are:

- low interest loans to buy new property/land once property is eroded;
- Government payback scheme;
- Coastal Adaptation Fund; and
- subsidised maintenance.

Use of a low interest loan would result in potentially lost income to the funder as they could raise additional interest through other means. There may also be greater value in using the money that provides the funding for the loans to pay for other projects or schemes (not necessarily erosion risk management). The total value of the loans is likely to be similar to the rebuild costs estimated in Task 2, i.e. £140 million (discounted) or £37 million (undiscounted), although this could be reduced if those applying for loans have some savings of their own.

The Government payback scheme requires an estimate to be made of the savings incurred as a result of the sediment supply provided by those areas that are eroded. The costs of providing defences to Cromer and Bacton Gas Terminal are estimated at £44.7 million (undiscounted) or £17.8 million (discounted) in the SMP (Appendix H). If it is assumed that the sediment supply has reduced the option costs by 50% (a likely over-estimate, implying that defence costs prior to increased sediment supply were £89.4 million), the benefits received by the Government would be £44.7 million (undiscounted) or £17.8 million (discounted). If £44.7 million were put into a fund to help those affected by erosion, the taxpayer would still benefit overall since this money would only represent part of the total amount saved through not funding defences along the whole coastline. If this fund was divided equally between the residential and commercial properties at risk (including caravan parks and golf courses), each property would receive £42,700 (when based on undiscounted defence costs) or £17,000 (when based on discounted defence costs). If it is assumed that the payment would be made when the property erodes, the discounted funding costs would reduce to £16.3 million (based on £42,000 per property/asset) or £6.6 million (based on £17,000 per property/asset) (the overall costs are the same (£44.7 million and £17.8 million) since no discount factor is used to reduce costs that occur in the future).

The Coastal Adaptation Fund requires funding to pay for demolishing the property once it is at imminent threat of erosion plus help with moving costs, mortgage arrangement fees, etc. It is likely that the fund would run on a maximum amount available to each applicant. Assuming it costs around £1,000 to demolish a property, moving costs of around £500 and mortgage fees of £1,000 (including all solicitor fees) suggests the Fund may need to provide £2,500 to each applicant. This would mean that the fund (across all 989 properties at risk) needs to be £2.5 million

(undiscounted). Since not all applicants would require funding immediately, the discounted costs of the fund are estimated at £500,000. If the fund were to provide £5,000 to each applicant, the costs would increase to £4.9 million (undiscounted) and £1.0 million (discounted). If the fund were to provide £10,000 to each applicant, the total required would be £9.9 million (undiscounted) and £2.0 million (discounted).

Subsidised maintenance would provide property owners with a fund they could draw on to assist with maintaining their property so it remains in good condition until the time that it is eroded. If it is assumed that 1% of the total property value is spent on the property each year to maintain it, the annual estimate would be £2,150 per property per year (based on average property value of £215,000). These costs would only be incurred until the property is eroded such that the total costs of funding all maintenance can be estimated at £120 million (undiscounted) and £55 million (discounted). The costs of subsidised maintenance assume that all at risk properties are subsidised at 1% of the property value each year until the property erodes. This is likely to be a significant over-estimate of the costs, as subsidised maintenance may not be offered until the residual life of the property falls below a particular threshold (e.g. 20 years). In this case, the costs would reduce to £43 million (undiscounted) and £18 million (discounted). Furthermore, if grants are provided to cover part of the costs, then the overall funding requirements will decrease proportionally.

Streamlined Planning Permission

The option of streamlined planning permission does not require any funds to be made available to property owners. It instead requires time and resources to develop guidelines on the streamlined approaches such that those living in properties at risk can benefit from the option. The appraisal (Tables 3.3, 3.4 and 3.5) shows that this option is unlikely to be effective on its own, although it could offer benefits if a source of funding can be found through one or another of the other options.

The costs of developing the guidelines are estimated at £20,000 (including drafting, consultation and revision). These costs are based on £100 per hour for council officers giving a maximum of 200 hours input. The undiscounted and discounted costs are the same as the guidelines would need to be drafted in year 0 before the option could be implemented.

Physically Move Property

Physically moving the property does not require funding in terms of purchasing the property, although it is highly likely that funds will be required to help cover the costs of the move. This option did not perform well in the appraisal (Tables 3.3, 3.4 and 3.5), although it may be attractive in certain situations, for example, where there is an irreplaceable asset such as a church or monument. Previous projects have involved costing an option to take down and rebuild a Martello Tower at Bawdsey at an estimated cost of £1 million and moving the lighthouse at Beachy Head at a cost of £180,000. It is likely that moving any property, particularly a unique asset, is likely to incur significant costs unless it can be jacked up using a similar process to that at Beachy Head.

It is possible that all properties could be moved, but this is unlikely to be practical or effective such that the option is only likely to be used on significant or unique assets. This could include the seven listed properties. The costs may be greater than those for the Beachy Head lighthouse and, if it is assumed that £500,000 is needed for each property, the total costs would be £3.5 million (undiscounted). Since most of the listed buildings are not currently at risk, the discounted costs are £0.6 million.

Overall Funding Estimates

The overall estimated funding requirements for the options are provided in Table 3.8.

Option(s)	Funding Estimates	Undiscounted	Discounted
Outright purchase and demolish Underwriting values Buy and lease Use of property for time-restricted use	1: full market value: residential	£210 million	£43 million
	1a: full market value: residential and commercial	£240 million	£49 million
	2: value based on residual life	£190 million	£33 million
	3: residual life when purchased	£200 million	£26 million
	4: difference between residual life and market value	£24 million	£11 million
	5: purchase property at rebuild costs	£94 million	£19 million
Land purchase by Local Authority Relocatable properties in at risk areas	6: land purchased at £12,300 per hectare (compulsory purchase)	£0.41 million	£0.08 million
	7: land purchased at £930,000 per hectare	£31 million	£6.6 million
	8: land purchased at £1.9 million per hectare	£65 million	£13 million
	9: land purchased from residential property owners only (£1.9 million per ha)	£63 million	£13 million
Low interest loans to buy new property/land once property is eroded	10: to cover full cost of rebuild	£140 million	£29 million
Government payback scheme (calculated assuming 50% savings on defence costs for Cromer/Bacton Gas terminal)	11: at £42,000 per asset	£42 million	£8.9 million
	12: at £17,000 per asset	£17 million	£3.6 million
Coastal Adaptation Fund	13: £2,500 for each applicant	£2.5 million	£0.53 million
	14: £5,000 for each applicant	£4.9 million	£1.1 million
	15: £10,000 for each applicant	£9.9 million	£2.1 million
Subsidised maintenance	16: £2,150 per year (1% of property value)	£130 million	£55 million
	17: 50% grant	£63 million	£27 million
Streamlined planning permission	18: to cover costs of developing guidelines	£0.02 million	£0.02 million
Physically move property	19: to fund property moves for unique assets only	£3.5 million	£0.6 million

3.5.3 Potential Opportunities to Recoup some of the Funding Outlay

A number of options being considered offer the potential to sell or rent the property or land once it is purchased from the property owner. When assessing the funding implications of each option, it is important that these offsetting opportunities are considered since they will affect the overall funding requirement. There may also be opportunities to involve the private sector in some of the options, such that funding from the public sector is significantly reduced.

Options Involving Renting or Selling the Property

Three options are considered that could recoup some of the funding through renting or selling the at risk properties:

- underwriting values: where the property can be rented or sold;
- buy and lease: where the property can be rented (it could also be bought initially by NNDC and sold on to a private landlord); and
- use of property for time-restricted use: where the property can be sold.

Renting the property may be the most beneficial in terms of recouping the initial outlay plus some profit, although this will occur over time (rather than being an immediate repayment of all/part of the outlay as would occur if the property is purchased by a new owner). The potential to return a profit will depend on (i) the value paid for the property and (ii) the number of years over which rent is received. This is in turn related to the funding options considered.

Payment of the full market value (assumed at an average value of £215,000) requires funding of £210 million (it is assumed that the property is bought today (year 0) such that the undiscounted and discounted costs are the same). If the property is rented such that it returns £10,000 per year (£830 per month), the total amount that could be recouped will depend on the residual life of the property:

- residual life of 10 years: income per property of £100,000 (undiscounted) and £86,000 (discounted);
- residual life of 35 years: income per property of £350,000 (undiscounted) and £210,000 (discounted); and
- residual life of 70 years: income per property of £700,000 (undiscounted) and £280,000 (discounted).

The potential income from renting out properties across all three epochs is presented in Table 3.9. The original funding requirements vary by the value paid for the property, but it can be seen that there is potential to return a significant (gross) profit against all five pricing options. Even when the cost of tax, maintenance costs and borrowing costs are taken into account the undiscounted figures show a small profit. The discounted figures only show a profit on total income for funding options based on market value. Where rebuild costs are used as the basis for funding, there is the potential to return a profit.

Table 3.9: Potential Income from Renting Properties					
<i>UNDISCOUNTED FIGURES</i>					
Purchase Type	Total costs	Recouping of Funds			
		Total income	-25% tax	PLUS -25% maintenance	PLUS -10% cost of borrowing
		£560 million	£420 million	£280 million	£230 million
Full market value	£210 million	PROFIT £350 million	PROFIT £210 million	PROFIT £69 million	PROFIT £12 million
Sliding scale based on residual life	£190 million	PROFIT £370 million	PROFIT £230 million	PROFIT £92 million	PROFIT £36 million
Sliding scale based on residual life 'when bought'	£200 million	PROFIT £400 million	PROFIT £200 million	PROFIT £80 million	PROFIT £20 million
Rebuild costs	£94 million	PROFIT £500 million	PROFIT £300 million	PROFIT £200 million	PROFIT £100 million
<i>DISCOUNTED FIGURES</i>					
Purchase Type	Total costs	Recouping of Funds			
		Total income	-25% tax	PLUS -25% maintenance	PLUS -10% cost of borrowing
		£240 million	£180 million	£120 million	£97 million
Full market value	£210 million	PROFIT £30 million	LOSS £30 million	LOSS £90 million	LOSS £110 million
Sliding scale based on residual life	£190 million	PROFIT £50 million	LOSS £10 million	LOSS £70 million	LOSS £90 million
Sliding scale based on residual life 'when bought'	£200 million	PROFIT £40 million	LOSS £20 million	LOSS £80 million	LOSS £100 million
Rebuild costs	£94 million	PROFIT £150 million	PROFIT £90 million	PROFIT £30 million	PROFIT £4 million

Table 3.10 provides the undiscounted and discounted figures for epoch 1 to allow a comparison of the potential for a profit from properties with short (mean of 10 years) residual lives. The results for epochs 2 and 3 are provided in Tables 3.11 and 3.12. Table 3.10 shows that there may be potential for buy and lease to return more than the initial funding outlay even over the first epoch, but only where the value paid for the property is based on residual life or the rebuild cost. However, taking into account expenses such as tax, maintenance of the property and the cost of borrowing means that the overall return is expected to be a loss. The undiscounted figures for Epochs 2 and 3 show much greater returns. The discounted figures, which involve discounting the future income from rent, return losses when tax, maintenance costs and cost of borrowing is included for all epochs. The discounted figures do not take account of increases in rent over time, such that they are a worst case estimate of income.

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Table 3.10: Potential Income from Renting Properties (EPOCH 1)					
<i>UNDISCOUNTED FIGURES: EPOCH 1</i>					
Purchase Type	Total costs	Recouping of Funds			
		Total income	-25% tax	PLUS -25% maintenance	PLUS -10% cost of borrowing
		£5.1 million	£3.8 million	£2.6 million	£2 million
Full market value	£11 million	LOSS £-6 million	LOSS £-7 million	LOSS £-8 million	LOSS £-9 million
Sliding scale based on residual life	£3.7 million	PROFIT £1.4 million	PROFIT £0.1 million	LOSS £-1 million	LOSS £-2 million
Sliding scale based on residual life 'when bought'	£6.5 million	LOSS £-1 million	LOSS £-3 million	LOSS £-4 million	LOSS £-4 million
Rebuild costs	£4.8 million	PROFIT £0.3 million	LOSS £-1 million	LOSS £-2 million	LOSS £-3 million
<i>DISCOUNTED FIGURES: EPOCH 1</i>					
Purchase Type	Total costs	Recouping of Funds			
		Total income	-25% tax	PLUS -25% maintenance	PLUS -10% cost of borrowing
		£4.4 million	£3.3 million	£2.2 million	£1.8 million
Full market value	£11 million	LOSS -£7 million	LOSS -£8 million	LOSS -£9 million	LOSS -£9 million
Sliding scale based on residual life	£3.7 million	PROFIT £0.7 million	LOSS -£0.4 million	LOSS -£2 million	LOSS -£2 million
Sliding scale based on residual life 'when bought'	£6.5 million	LOSS -£2 million	LOSS -£3 million	LOSS -£4 million	LOSS -£5 million
Rebuild costs	£4.8 million	LOSS -£0.4 million	LOSS -£1.5 million	LOSS -£2 million	LOSS -£3 million

Table 3.11: Potential Income from Renting Properties (EPOCH 2)					
<i>UNDISCOUNTED FIGURES: EPOCH 2</i>					
Purchase Type	Total costs	Recouping of Funds			
		Total income	-25% tax	PLUS -25% maintenance	PLUS -10% cost of borrowing
		£99 million	£74 million	£50 million	£40 million
Full market value	£61 million	PROFIT £38 million	PROFIT £13 million	LOSS £-10 million	LOSS £-20 million
Sliding scale based on residual life	£44 million	PROFIT £55 million	PROFIT £30 million	PROFIT £5.1 million	LOSS £-5 million
Sliding scale based on residual life 'when bought'	£56 million	PROFIT £43 million	PROFIT £19 million	LOSS £-6 million	LOSS £-20 million
Rebuild costs	£27 million	PROFIT £72 million	PROFIT £48 million	PROFIT £23 million	PROFIT £13 million

<i>DISCOUNTED FIGURES: EPOCH 2</i>					
Purchase Type	Total costs	Recouping of Funds			
		Total income	-25% tax	PLUS -25% maintenance	PLUS -10% cost of borrowing
		£59 million	£44 million	£29 million	£23 million
Full market value	£61 million	LOSS -£2 million	LOSS -£20 million	LOSS -£30 million	LOSS -£40 million
Sliding scale based on residual life	£44 million	PROFIT £14 million	LOSS -£0.4 million	LOSS -£20 million	LOSS -£20 million
Sliding scale based on residual life 'when bought'	£56 million	PROFIT £2.9 million	LOSS -£10 million	LOSS -£30 million	LOSS -£30 million
Rebuild costs	£27 million	PROFIT £32 million	PROFIT £17 million	PROFIT £2 million	LOSS -£4 million

Table 3.12: Potential Income from Renting Properties (EPOCH 3)					
<i>UNDISCOUNTED FIGURES: EPOCH 3</i>					
Purchase Type	Total costs	Recouping of Funds			
		Total income	-25% tax	PLUS -25% maintenance	PLUS -10% cost of borrowing
		£460 million	£340 million	£230 million	£180 million
Full market value	£140 million	PROFIT £320 million	PROFIT £200 million	PROFIT £88 million	PROFIT £43 million
Sliding scale based on residual life	£140 million	PROFIT £320 million	PROFIT £200 million	PROFIT £88 million	PROFIT £43 million
Sliding scale based on residual life 'when bought'	£140 million	PROFIT £320 million	PROFIT £200 million	PROFIT £88 million	PROFIT £43 million
Rebuild costs	£62 million	PROFIT £400 million	PROFIT £280 million	PROFIT £170 million	PROFIT £120 million
<i>DISCOUNTED FIGURES: EPOCH 3</i>					
Purchase Type	Total costs	Recouping of Funds			
		Total income	-25% tax	PLUS -25% maintenance	PLUS -10% cost of borrowing
		£180 million	£140 million	£90 million	£72 million
Full market value	£140 million	PROFIT £39 million	LOSS -£6 million	LOSS -£50 million	LOSS -£70 million
Sliding scale based on residual life	£140 million	PROFIT £39 million	LOSS -£6 million	LOSS -£50 million	LOSS -£70 million
Sliding scale based on residual life 'when bought'	£140 million	PROFIT £39 million	LOSS -£6 million	LOSS -£50 million	LOSS -£70 million
Rebuild costs	£62 million	PROFIT £120 million	PROFIT £80 million	PROFIT £30 million	PROFIT £10 million

Since a profit can be made in Epoch 3, but not Epoch 2 (unless rebuild cost is used as the basis for the funding option), there must be an optimal time when the costs of purchasing property at the residual value are outweighed by the income. This optimal time (using the assumptions set out here) is at 33 years. If all properties are bought at a residual (market) value of £172,000 (total cost of £85 million for the properties at risk in Epoch 3), the income from rent (excluding tax, maintenance and cost of

borrowing) would be £86 million. Based on rebuild costs, the optimal time in terms of residual life of the property is much shorter due to the lower costs associated with buying a property at its rebuild cost (£95,000 rebuild costs compared with residual value of £172,000). As a result, the residual life of a property to break even is estimated at 24 years (total cost of £62 million with rental income (excluding tax, maintenance and cost of borrowing) of £63 million). It is important to note that additional costs may be incurred if the land is to be provided by the local authority (£0.41 million undiscounted or £0.08 million discounted). These additional costs would be higher if the property owner had to find land themselves since they may have to pay residential development land values.

An option to pay the difference between the value based on residual life and the not-at-risk market value could operate where the property is sold to a third party (e.g. private landlord) either directly, with the difference funded publicly, or indirectly where the public body purchases the property at the full market value and then sells it on. This approach could help raise interest from private investors (since there is potential for a profit to be returned when the residual value of the property is the price paid), although the sale of the property would need to be based on the knowledge that it has a finite life. The private investor would then bear the risk that the estimated residual life may be much shorter (reducing the time for a profit to be made based on rental income).

Sale of the property, e.g. for a time-restricted land use is likely to attract the reduced market value, based on residual life of the property. The value may even be lower to reflect the limitations imposed on the types of land use that can purchase the property. The income from this approach is likely to reflect the funding requirement for the purchase of properties at residual values (£190 million). The residual value of the properties (and hence the funding requirement associated with this approach) would reduce over time, if properties are not sold immediately. Again, it is in Epoch 1 where the at-risk value is most reduced and the income in this epoch alone would be equivalent to £2.9 million (undiscounted) or £2.2 million (discounted). Therefore, any packages that look to extend the amount of time that properties are occupied would reduce the funding requirement. The property owner would have to balance the gradual reduction in price they would receive for their property against the benefits to them of continuing to occupy the property.

Implications in terms of selling or renting land are considered under ‘options involving purchase of land’ below.

Options Involving Selling or Renting of Land

There are three options that involve the purchase of land. These are:

- outright purchase and demolish: where the land on which the property stood can be put to alternative uses;
- underwriting values: where the land on which the property stood can be put to alternative uses;
- relocatable properties in at risk areas: where land can be rented by potential occupants living in relocatable properties.

The value of the land attained by purchasing and demolishing properties is unlikely to attract the £1.9 million per hectare associated with residential development land. However, it is also likely to be greater than the equivalent price for agricultural land since there may be demand for coastal land with sea views, e.g. from caravan parks or those wishing to live in relocatable properties.

It is assumed that the strip of land available for relocatable uses would roll-back over time such that the purchaser would buy the right to live within the at risk zone rather than a particular piece of land. This would mean that the impact of residual life should decline to zero and the value of the relocatable site should reflect the value of the seaview. It is assumed that the value of land may reflect a similar magnitude as for commercial development, i.e. £250,000 per hectare. Assuming an average property has a total footprint of 333m² (as in Task 2) would give potential income per property demolished of £8,300. Total income under this option would be £8.2 million (undiscounted) and £1.7 million (discounted) assuming the land is sold at the value of commercial development. If the land is bought at the residential development value (i.e. £1.9 million per hectare), total income increases to £63 million (undiscounted) and £13 million (discounted). Both sets of figures are significantly less than the funding estimates for either outright purchase and demolish or underwriting values if the full market value is paid (or assured), as summarised in Table 3.13.

The land could also be rented (e.g. for caravan pitches, although this is likely to be a pitch with no/limited infrastructure unless the land has reasonable residual life and/or the infrastructure could be moved). If a rental value for the site of £1,000 per year is used (given that infrastructure is likely to be limited) for an area of 80m² per caravan pitch, this would give a value of £125,000 per hectare per year income (assuming 125 pitches per hectare). If the whole area where properties have been demolished is rented for caravans, income would be £230 million (undiscounted) or £100 million (discounted).

<i>UNDISCOUNTED FIGURES</i>					
Purchase Type	Total costs	Recouping of Funds (Renting Land)			
		Total income (sale of land, commercial development)	Total income (sale of land, residential development)	Rent of £1,000 per year	No. caravan pitches to break even
		£8.2 million	£63 million	£230 million	-
Full market value	£210 million	LOSS £-200 million	LOSS £-200 million	PROFIT £22 million	3,700 (91% of land area)
Sliding scale based on residual life	£190 million	LOSS £-200 million	LOSS £-200 million	PROFIT £45 million	3,300 (81% of land area)
Sliding scale based on residual life 'when bought'	£200 million	LOSS £-200 million	LOSS £-200 million	PROFIT £30 million	3,600 (87% of land area)
Rebuild costs	£94 million	LOSS £-860 million	LOSS £-31 million	PROFIT £140 million	1,600 (40% of land area)

Table 3.13: Potential Income from Selling and Renting of Land					
<i>DISCOUNTED FIGURES</i>					
Purchase Type	Total costs	Recouping of Funds			
		Total income (sale of land, commercial development)	Total income (sale of land, residential development)	Rent of £1,000 per year	No. caravan pitches to break even
		£1.7 million	£13 million	£100 million	-
Full market value	£210 million	LOSS £-200 million	LOSS £-200 million	LOSS £-120 million	-
Sliding scale based on residual life	£190 million	LOSS £-200 million	LOSS £-200 million	LOSS £-90 million	-
Sliding scale based on residual life 'when bought'	£200 million	LOSS £-200 million	LOSS £-200 million	LOSS £-100 million	-
Rebuild costs	£94 million	LOSS £-92 million	LOSS £-81 million	PROFIT £6 million	3,800 (92% of land area)

The estimated potential for profit from renting of land assumes that there is demand for 4,100 caravan pitches in the demolished areas, which is likely to be an over-estimate. However, the land could also be made available for relocatable properties (with the rental value related to the area covered). Table 3.13 also includes an estimate of the number of caravan pitches that need to be rented for the option to return an income equal to the cost of purchasing properties. The table shows that almost the whole area (91%) needs to be rented out when considering the undiscounted figures and properties purchased at full market value, but that some land could be retained as open space for recreational use, particularly if funding is based on rebuild costs of properties. The discounted figures return a significant loss due to the cost of purchasing the land now and renting it at (discounted) income streams into the future, although a small profit is possible where funding of outright purchase is based on rebuild costs.

It may be possible that caravan and recreational land uses can be combined, with a required buffer strip of, say, 20m for recreation (coastal footpath) with land behind available for relocatable properties. This would reduce costs associated with providing open spaces, could have health/well-being benefits for the local residents and help attract visitors to the local area.

Options Involving Recouping of Money over Time

This option mainly relates to low interest loans to buy new property/land once property is eroded where the funding is initially required to provide the loan, but where this will be paid back over time with some interest added. The rate of interest would have to be low to be more attractive than mortgages or loans available commercially. It is difficult to estimate the potential 'return' associated with this option as there may be other losses associated with making money available in the form of loans. This may include reduced expenditure in other areas (not necessarily erosion risk related) which could extend across the life of the loan (since the other activities could involve a higher rate of return than the low level of interest being

paid). Such returns may not always be measurable in terms of money but could reflect quality of life or services of other/all residents within local communities or North Norfolk as a whole.

Other Options where Recouping Funding is More Difficult

The options that do not involve expenditure by the funding body on properties or land but require money to be made available that could then not be used elsewhere are:

- land purchase by LA;
- Government payback scheme (although the saving can be measured directly against the cost of providing the defences without erosion elsewhere);
- Coastal Adaptation Fund;
- subsidised maintenance;
- streamlined planning permission; and
- physically moving the property.

The remaining options do not offer any obvious means of recouping the funding outlay and it is unlikely that they would be funded by private investors. Subsidised maintenance could be used as an incentive for private landlords to purchase at-risk properties and rent them, thus reducing other costs to NNDC associated with purchasing the properties (or reducing the cost of purchase) and avoiding the need to build new homes (at least in the short-term). Such actions could also help reduce or delay some of the community impacts by providing accommodation in local communities, thus maintaining a population that could help to sustain local services.

Overall Estimates of Potentially Recouped Costs

Table 3.14 summarises the above discussion and highlights where some of the funds required by the options could be recouped.

Option(s)	Approach to Recouping Funds	Undiscounted	Discounted
Underwriting values Buy and lease Use of property for time-restricted use	1: Rent out properties at typical rent of £10,000 per year until property is eroded (-25% tax, 25% maintenance costs, 10% borrowing costs) 2: Sell property at residual (market) value	£230 million £190 million	£97 million £33 million
Outright purchase and demolish Underwriting values Relocatable properties in at risk areas	3: Sell land at £8,300 per property 4: Sell land at £63,200 per property 5: Rent land at £1,000 per caravan pitch	£8.2 million £63 million £230 million	£1.7 million £13 million £100 million
Low interest loans to buy new property/land once property is eroded	6: Low interest rate charged	Cannot be estimated	
Government payback scheme	7: Compared with costs of providing defences without erosion elsewhere (£42,000 per asset)	£42 million	£8.9 million
	8: at £17,000 per asset	£17 million	£3.6 million
Coastal Adaptation Fund	No significant potential to recoup funds	-	
Subsidised maintenance			
Streamlined planning permission			
Physically move property			

Table 3.15 provides a summary of the funding costs of each option and the potential to recoup some or all of these costs. The table shows that only by renting the properties or land can the funding costs be fully recouped. However, the total estimates given in Table 3.15 assume that all properties at risk are purchased in year 0 and rented, with most of the return coming from properties at risk in Epochs 2 and 3. This is also true of the option to fund the difference between the actual market price of a property (based on residual life) and the sale price. It is in Epoch 1 where the difference between the two values is greatest, such that this option requires significant funding with little return in Epoch 1 alone.

The potential return from renting land for caravan parks or relocatable properties appears attractive when considering the undiscounted figures. This option also offers the opportunity for significant community benefits and could include a new asset in the form of a coastal footpath and recreation area. Along with community benefits associated with maintaining opportunities for tourism and a population that can sustain local services, this option could offer significant additional benefits over the money that can be recouped directly from selling or renting the land.

Table 3.15: Summary of Potential to Return a Profit by Option/Funding Mechanism (all profit/loss estimates calculated using spreadsheet, hence, rounding errors may occur)								
Option(s)	Funding Estimates	Funding Costs		Approach to Recouping Funds	Potential Income		Profit/Loss	
		Undiscounted	Discounted		Undiscounted	Discounted	Undiscounted	Discounted
Underwriting values Buy and lease Use of property for time-restricted use	1: full market value (residential properties only)	£210 million	£210 million	1: Rent out properties at £10,000 per year until property is eroded	£230 million	£97 million	PROFIT £12 million	LOSS £100 million
				2: Sell property at residual (market) value	£190 million	£33 million	LOSS £24 million	LOSS £24 million
Outright purchase and demolish Underwriting values Relocatable properties in at risk areas	1: full market value (residential properties only)	£210 million	£210 million	3: Sell land at £8,300 per property	£8.2 million	£1.7 million	LOSS £200 million	LOSS £210 million
				4: Sell land at £63,200 per property	£63 million	£13 million	LOSS £150 million	LOSS £200 million
				5: Rent land at £1,000 per caravan pitch	£230 million	£100 million	PROFIT £22 million	LOSS £110 million
Underwriting values Buy and lease Use of property for time-restricted use	1a: full market value (residential and commercial properties)	£240 million	£240 million	1: Rent out properties at £10,000 per year until property is eroded	£230 million	£97 million	LOSS £13 million	LOSS £140 million
				2: Sell property at residual (market) value	£190 million	£33 million	LOSS £49 million	LOSS £49 million
Outright purchase and demolish Underwriting values Relocatable properties in at risk areas	1a: full market value (residential and commercial properties)	£240 million	£240 million	3: Sell land at £8,300 per property	£8.2 million	£1.7 million	LOSS £230 million	LOSS £240 million
				4: Sell land at £63,200 per property	£63 million	£13 million	LOSS £180 million	LOSS £230 million
				5: Rent land at £1,000 per caravan pitch	£230 million	£100 million	LOSS £4 million	LOSS £140 million
Underwriting values Buy and lease Use of property for time-restricted use	2: value based on residual life	£190 million	£190 million	1: Rent out properties at £10,000 per year until property is eroded	£230 million	£97 million	PROFIT £36 million	LOSS £92 million
				2: Sell property at residual (market) value	£190 million	£33 million	£0	LOSS £160 million
Outright purchase and demolish Underwriting values Relocatable properties in at risk areas	2: value based on residual life	£190 million	£190 million	3: Sell land at £8,300 per property	£8.2 million	£1.7 million	LOSS £180 million	LOSS £190 million
				4: Sell land at £63,200 per property	£63 million	£13 million	LOSS £130 million	LOSS £180 million
				5: Rent land at £1,000 per caravan pitch	£230 million	£100 million	PROFIT £45 million	LOSS £88 million

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Table 3.15: Summary of Potential to Return a Profit by Option/Funding Mechanism (all profit/loss estimates calculated using spreadsheet, hence, rounding errors may occur)								
Option(s)	Funding Estimates	Funding Costs		Approach to Recouping Funds	Potential Income		Profit/Loss	
		Undiscounted	Discounted		Undiscounted	Discounted	Undiscounted	Discounted
Underwriting values Buy and lease Use of property for time-restricted use	3: residual life when purchased	£200 million	£200 million	1: Rent out properties at £10,000 per year until property is eroded	£230 million	£97 million	PROFIT £22 million	LOSS £110 million
				2: Sell property at residual (market) value	£190 million	£33 million	LOSS £14 million	LOSS £14 million
Outright purchase and demolish Underwriting values Relocatable properties in at risk areas	3: residual life when purchased	£200 million	£200 million	3: Sell land at £8,300 per property	£8.2 million	£1.7 million	LOSS £190 million	LOSS £200 million
				4: Sell land at £63,200 per property	£63 million	£13 million	LOSS £140 million	LOSS £190 million
				5: Rent land at £1,000 per caravan pitch	£230 million	£100 million	PROFIT £31 million	LOSS £100 million
Outright purchase and demolish Underwriting values Buy and lease Use of property for time-restricted use Relocatable properties in at risk areas	4: difference between residual life and market value	£24 million	£24 million	Would require another funding mechanism/private investor to pay market value and assumes private investor would receive income (only likely to be viable for properties affected in Epoch 3 and possibly Epoch 2)		-	-	
Underwriting values Buy and lease Use of property for time-restricted use	5: rebuild costs	£94 million	£94 million	1: Rent out properties at £10,000 per year until property is eroded	£230 million	£97 million	PROFIT £140 million	PROFIT £3 million
				2: Sell property at residual (market) value	£190 million	£33 million	PROFIT £100 million	LOSS £61 million
Buy and lease Use of property for time-restricted use Relocatable properties in at risk areas	5: rebuild costs	£94 million	£94 million	3: Sell land at £8,300 per property	£8.2 million	£1.7 million	LOSS £86 million	LOSS £92 million
				4: Sell land at £63,200 per property	£63 million	£13 million	LOSS £31 million	LOSS £81 million
				5: Rent land at £1,000 per caravan pitch	£230 million	£100 million	PROFIT £140 million	PROFIT £6 million

Table 3.15: Summary of Potential to Return a Profit by Option/Funding Mechanism (all profit/loss estimates calculated using spreadsheet, hence, rounding errors may occur)								
Option(s)	Funding Estimates	Funding Costs		Approach to Recouping Funds	Potential Income		Profit/Loss	
		Undiscounted	Discounted		Undiscounted	Discounted	Undiscounted	Discounted
Land purchase by Local Authority Relocatable properties in at risk areas	6: land purchased at £12,300 per hectare (compulsory purchase)	£0.4 million	£0.08 million	Unlikely to be appropriate for LA to profit from option, therefore, compulsory purchase to make land available for replacement properties may need to be combined with another option			-	-
	7: land purchased at £930,000 per hectare	£31 million	£31 million	3: Sell land at £8,300 per property	£8.2 million	£1.7 million	LOSS £24 million	LOSS £30 million
	8: land purchased at £1.9 million per hectare (residential development land value)	£65 million	£65 million	3: Sell land at £8,300 per property	£8.2 million	£1.7 million	LOSS £57 million	LOSS £64 million
	9: land purchased at £1.9 million per hectare (to replace residential properties only)	£63 million	£63 million	3: Sell land at £8,300 per property	£8.2 million	£1.7 million	LOSS £54 million	LOSS £61 million
Land purchase by Local Authority Relocatable properties in at risk areas	7: land purchased at £930,000 per hectare	£31 million	£31 million	4: Sell land at £63,200 per property	£63 million	£13 million	LOSS £31 million	LOSS £19 million
	8: land purchased at £1.9 million per hectare (residential development land value)	£65 million	£65 million	4: Sell land at £63,200 per property	£63 million	£13 million	LOSS £2.9 million	LOSS £53 million
	9: land purchased at £1.9 million per hectare (to replace residential properties only)	£63 million	£63 million	4: Sell land at £63,200 per property	£63 million	£13 million	£0	£0
Land purchase by Local Authority Relocatable properties in at risk areas	7: land purchased at £930,000 per hectare	£31 million	£31 million	5: Rent land at £1,000 per caravan pitch	£230 million	£100 million	PROFIT £200 million	PROFIT £69 million
	8: land purchased at £1.9 million per hectare (residential development land value)	£65 million	£65 million	5: Rent land at £1,000 per caravan pitch	£230 million	£100 million	PROFIT £170 million	PROFIT £36 million
	9: land purchased at £1.9 million per hectare (to replace residential properties only)	£63 million	£63 million	5: Rent land at £1,000 per caravan pitch	£230 million	£100 million	PROFIT £170 million	PROFIT £36 million
Low interest loans to buy new property/land once property is eroded	10: to cover full cost of rebuild	£140 million	£37 million	4: Low interest rate charged	Cannot be estimated		-	-

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Table 3.15: Summary of Potential to Return a Profit by Option/Funding Mechanism (all profit/loss estimates calculated using spreadsheet, hence, rounding errors may occur)								
Option(s)	Funding Estimates	Funding Costs		Approach to Recouping Funds	Potential Income		Profit/Loss	
		Undiscounted	Discounted		Undiscounted	Discounted	Undiscounted	Discounted
Government payback scheme	11: at £42,000 per asset	£42 million	£8.9 million	5: Compared with costs of providing defences without erosion elsewhere (£42,000 per asset)	£42 million	£8.9 million	£0	£0
	12: at £17,000 per asset	£17 million	£3.6 million	6: at £17,000 per asset	£17 million	£3.6 million	£0	£0
Coastal Adaptation Fund	13: £2,500 for each applicant	£2.5 million	£0.5 million	No significant potential to recoup funds	-	-	No significant potential to recoup funds, therefore, full funding costs have to be found	
	14: £5,000 for each applicant	£4.9 million	£1.1 million					
	15: £10,000 for each applicant	£9.9 million	£2.1 million					
Subsidised maintenance	16: £2,150 per year (1% of property value)	£130 million	£55 million					
	17: 50% grant	£63 million	£27 million					
Streamlined planning permission	18: to cover costs of developing guidelines	£20,000	£20,000					
Physically move property	19: to fund property moves for unique assets only	£3.5 million	£0.6 million					

3.6 Stage 5: Identification and Assessment of Packages of Options

3.6.1 Identification of Packages of Options

Many of the suggested options for those who own properties at risk need to be seen as part of a package of potential ways forward, rather than individual solutions. There is unlikely to be one solution which is satisfactory to all, as can be seen from the appraisal of options in Table 3.3. This point was highlighted by discussions on roll-back at the workshops, where it was acknowledged that a flexible approach to the problem was required so different needs were recognised.

The assessment of the potential for implementation of each option, whether each option is a whole solution in its own right, the comparison of options against the do-nothing baseline (in particular the negative impacts) and the estimated funding costs provides the basis for combining options. Packages of options are developed such that they can provide one overall option that (i) offers an opportunity for adaptation to coastal erosion and (ii) removes as many of the residual negative impacts as possible. In all cases, the packages are determined by whether the owner of the property at risk moves some time before the property is eroded or just before it is eroded, and whether any help is provided to the property owner once they have made the decision (or been forced by erosion) to move.

The result is eight main packages, as set out in Tables 3.16 to 3.23, with 19 packages in total. The top option in each case is given as the main measure and is supported by other actions. Where a package is assessed on the principle that the owner would remain in the property until it is threatened by imminent erosion, but the property owner moves out earlier (with at least 10 years residual life in the property), packages B and D to H could be supplemented with Package A or C.

Table 3.16: Outright Purchase and Demolition (PACKAGE A)			
Outright purchase of 'at risk' properties by the government or NNDC, followed by demolition. Owners receive money for their properties. In conjunction with:			
↓		↓	
Land purchase by local authority so space is available for new build (based on rebuild costs used as mechanism for funding option)		Streamlined planning permission for those who wish to oversee a new build on 'out of risk' land in the vicinity.	
↓	↓	↓	↓
Subsidised maintenance (funded by NNDC) of 'at risk' properties PACKAGE A1 (assumes property owners stay in their property until it erodes)	'At risk' property is bought in advance by government, local authority or a housing association and leased out. PACKAGE A2 (assumes property owners move out)	Relocatable properties in 'at risk' areas. PACKAGE A3 (assumes property owners move out)	Relocatable properties in 'at risk' areas. Government or NNDC could sell or rent land to caravan parks or developers of relocatable properties and so recoup some of the money from purchasing properties originally. The benefits of a buffer zone for recreational use are likely to be significant and are included as part of this option. PACKAGE A4 (assumes property owners move out)

Table 3.17: Underwriting Values (PACKAGE B)		
Government or local authority underwrites the value of properties. Owners are guaranteed to receive a certain sum for their property. In conjunction with:		
↓ Streamlined planning permission for those who subsequently move out yet wish to stay in the area PACKAGE B1 (assumes owners stay in property until it is eroded)	↓ Potential use of property for a time restricted sale if final owner moves out when building has a few years of life remaining. Money goes to government or local authority who originally underwrote property PACKAGE B2 (assumes property owners move out when there is sufficient residual value in the property to make this an attractive option)	↓ 'At risk' property is bought in advance by government, local authority or a housing association and leased out PACKAGE B3 (assumes property owners move out when there is sufficient residual value in the property to make this an attractive option)

Table 3.18: Buy and lease (PACKAGE C)
'At risk' property is bought in advance by government, local authority or a housing association and leased out. In conjunction with:
↓ Streamlined planning permission for those who subsequently move yet wish to stay in the area and oversee a new build PACKAGE C1
Note: this package could be supplemented with subsidised maintenance to encourage upkeep of the property but it may be preferable to sell the property to a purchaser at a value which reflects the residual life of the property and with the proviso that the purchaser has a requirement to maintain it. As the property would be bought with the knowledge of its restricted life, there would then be no further liability for the public sector

Table 3.19: Low Interest Loans to Buy New Property/Land (PACKAGE D)		
Low interest loans are supplied by government, NNDC or a community-based finance initiative so that owners can buy new property/land once property lost. In conjunction with:		
↓ Streamlined planning permission for loan holders who wish to stay in the area PACKAGE D1 (assumes owners stay in property until it is eroded)	↓ Land purchase by local authority so space is available for new build PACKAGE D2 (assumes owners stay in property until it is eroded)	↓ 'At risk' property is bought in advance by government, local authority or a housing association and leased out PACKAGE D3 (assumes property owners move out when there is sufficient residual value in the property to make this an attractive option)

Table 3.20: Physically Move Property to an Area out of Risk (PACKAGE E)		
Physically move any 'at risk' properties. In conjunction with:		
↓ Land purchase by local authority so space is available for relocated property. PACKAGE E1 (assumes owners stay in property until it is almost eroded)	↓ Streamlined planning permission to minimise administration and time costs. PACKAGE E2 (assumes owners stay in property until it is almost eroded)	↓ Low interest loan to help pay for relocation of property. PACKAGE E3 (assumes owners stay in property until it is almost eroded)

Table 3.21: Use of Property for Time-restricted Sale (PACKAGE F)
Use of property for time-restricted sale e.g. for holiday accommodation. The owner subsequently receives some money to put towards a new property. In conjunction with:
↓ Land purchase by local authority so space is available for the building of new properties in the vicinity. In conjunction with: ↓ Streamlined planning permission in the area so new development is rapidly able to compensate for lost properties. PACKAGE F1
Note: this package could be supplemented with subsidised maintenance to encourage upkeep of the property but it may be preferable to sell the property to a purchaser at a value which reflects the residual life of the property and with the proviso that the purchaser has a requirement to maintain it. As the property would be bought with the knowledge of its restricted life, there would then be no further liability for the public sector

Table 3.22: Government Payback Scheme (PACKAGE G)	
Government Payback Scheme. Government provides payments to residents since it is saving on coastal erosion defence costs (it is assumed that the payment would be made once the property is at imminent threat of erosion hence it could help maintain value in the property and allow for sale of the property). In conjunction with:	
↓ Subsidised maintenance (funded by NNDC) of 'at risk' properties to avoid poor housing standards and a decline in the visual amenity of the area.	
↓ Streamlined planning permission for those who move out of 'at risk' properties yet wish to stay in the area. PACKAGE G1 (assumes owners stay in property until it is almost eroded)	↓ Land purchase by local authority so space is available for the building of new properties in the vicinity. PACKAGE G2 (assumes owners stay in property until it is almost eroded)

Table 3.23: Coastal Adaptation Fund (PACKAGE H)	
Coastal Adaptation Fund - a fund established especially to make payments to those who are suffering due to changes in coastal policy. Payments would help cover a range of needs including new mortgages and cost of removal of buildings at risk. In conjunction with:	
↓	
Subsidised maintenance (funded by NNDC) of ‘at risk’ properties to avoid poor housing standards and a decline in the visual amenity of the area.	
↓	↓
Streamlined planning permission for those who wish to move out of ‘at risk’ properties and supervise a new build in the area. PACKAGE H1 (assumes owners stay in property until it is almost eroded)	Land purchase by local authority so space is available for new development. PACKAGE H2 (assumes owners stay in property until it is almost eroded)

3.6.2 Assessment of Packages of Options

The assessment of the packages of options considers the comparison of individual options set out in Table 3.3 and the impacts of combining the options into the 16 packages on the residual impacts. The assessment of packages is provided in Table 3.24 and highlights the residual impacts not addressed by each package. The overlap between packages in terms of the options included means that there is some repetition. However, Table 3.24 shows that no package of options removes all of the residual impacts for either property owners or NNDC.

The assessment of packages suggests that low interest loans (package D) is the worst and is unlikely to be appropriate. Those packages that retain some value in properties at risk, combined with keeping residents in the local community perform best. The final choice of package may depend on the funds available.

Package	Option Performance by Stakeholder			
	Property Owners	Community	NNDC	UK plc
A1: outright purchase and demolish (as rebuild costs), land provided by local authority, subsidised maintenance	Would have to move to local authority identified areas for relocation but should address affordability issues. Subsidised maintenance will help people to maintain their property (which otherwise would have no investment potential). Possible loss of flexibility (e.g. to move out of area) while new property is being built	Impacts depend on location of land provided by local authority, but residents would be retained until property is eroded. Subsidised maintenance will help to ensure there is not gradual increase in dereliction of properties	Land may be expensive or unavailable in local area. Lost opportunity value of land	Funding costs (but less than under A4)
A2: outright purchase and demolish (as rebuild costs), land provided by local authority, buy and lease	Would have to move to local authority identified areas for relocation but should address affordability issues Possible loss of flexibility (e.g. to move out of area) while new property is being built	None until properties are eroded – assumes properties continue to be occupied until eroded. If land provided by local authority is in village could mean no negative impacts	Land may be expensive or unavailable in local area. Lost opportunity value of land	Funding costs (but potential for some to be recouped)
A3: outright purchase and demolish (as rebuild costs), land provided by local authority, relocatable properties	Would have to move to local authority identified areas for relocation but should address affordability issues Possible loss of flexibility (e.g. to move out of area) while new property is being built	If land provided by local authority for rebuild is in village could mean no negative impacts in terms of loss of population. Relocatable properties may not be seen as appropriate	Land may be expensive or unavailable in local area. Lost opportunity value of land. May receive some complaints over relocatable properties	Funding costs (but potential for some to be recouped). Impacts in terms of energy use of relocatable properties
A4: outright purchase and demolish, streamlined planning permission, relocatable properties	May have to move out of village; may not address all affordability issues	Relocatable properties may not be seen as appropriate	May receive some complaints over relocatable properties	Funding costs. May conflict with other planning policies. May be seen as setting a precedent. Impacts in terms of energy use of relocatable properties
B1: underwriting values, streamlined planning permission	May have to move out of village	Loss of residents, potential loss of businesses, services leading to deprivation (unless planning ensures properties are located near to/on edge of village)	Have to develop guidelines. May receive complaints over deprivation of community (unless planning ensures properties are located near to/on edge of village)	Funding costs. May be seen as setting a precedent. May be pockets of deprivation

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Table 3.24: Comparison of Packages of Options				
Package	Option Performance by Stakeholder			
	Property Owners	Community	NNDC	UK plc
B2: underwriting values, use of property for time restricted sale	May have to move out of village	None until properties are eroded – assumes properties continue to be occupied until eroded	Have to identify appropriate land uses	Funding costs (but potential for some to be recouped). May be seen as setting a precedent
B3: underwriting values, buy and lease	May have to move out of village	None until properties are eroded – assumes properties continue to be occupied until eroded	None	Funding costs (but potential for some to be recouped). May be seen as setting a precedent
C1: buy and lease, streamlined planning permission	May have to move out of village; may not address all affordability issues	None until properties are eroded – assumes properties continue to be occupied until eroded	Have to develop guidelines	Funding costs (but potential for some to be recouped). May conflict with other planning policies
D1: low interest loan, streamlined planning permission	May effectively become ‘first-time’ buyers. May have to move out of village to find affordable housing – may not be able to move in short-term. Discriminates against non-wage earners	Loss of residents, potential loss of businesses, services leading to deprivation (unless planning ensures properties are located near to/on edge of village)	Have to develop guidelines. May be seen as abandoning communities as owners still have to finance the move	Funding costs up-front (limited return). May be pockets of deprivation. May conflict with other planning policies
D2: low interest loan, land purchase by LA	May effectively become ‘first-time’ buyers – may not be able to move in short-term. Discriminates against non-wage earners	Loss of residents, potential loss of businesses, services leading to deprivation (unless land purchased ensures properties are located near to/on edge of village)	Land may be expensive or unavailable in local area. Lost opportunity value of land	Funding costs up-front (limited return). May be pockets of deprivation. May be seen as setting a precedent
D3: low interest loan, buy and lease	May have to move out of village – may not be able to move in short-term; may not address all affordability issues	None until properties are eroded – assumes properties continue to be occupied until eroded	None – no input required from NNDC	Funding costs (but potential for some to be recouped)
E1: move at risk properties, land purchase by LA	May have to finance move of property	Loss of residents, potential loss of businesses, services leading to deprivation (unless land purchased ensures properties are located near to/on edge of village)	Land may be expensive or unavailable in local area. Lost opportunity value of land	Funding costs. May be pockets of deprivation. May be seen as setting a precedent

Table 3.24: Comparison of Packages of Options				
Package	Option Performance by Stakeholder			
	Property Owners	Community	NNDC	UK plc
E2: move at risk properties, streamlined planning permission	May have to finance move of property	Loss of residents, potential loss of businesses, services leading to deprivation (unless planning ensures properties are located near to/on edge of village)	Have to develop guidelines	Funding costs. May conflict with other planning policies. May be pockets of deprivation. May be seen as setting a precedent
E3: move at risk properties, low interest loan	May have to finance move of property. Discriminates against non-wage earners	Loss of residents, potential loss of businesses, services leading to deprivation (unless planning ensures properties are located near to/on edge of village)	May be seen as abandoning communities as owners still have to finance the move	Funding costs. May be pockets of deprivation. May be seen as setting a precedent
F1: use of property for time restricted sale, streamlined planning permission	May have to move out of village; may not address all affordability issues	None until properties are eroded – assumes properties continue to be occupied until eroded	Have to identify appropriate land uses. Have to develop guidelines	Funding costs (but potential for some to be recouped). May conflict with other planning policies
G1: Government payback scheme, subsidised maintenance, streamlined planning permission	May have to move out of village in time; may not address all affordability issues – may not be able to move in short-term	None until properties are eroded – assumes properties continue to be occupied until eroded	Have to develop guidelines. Have to fund subsidised maintenance	Funding costs (but based on savings made when providing defences elsewhere). May conflict with other planning policies
G2: Government payback scheme, subsidised maintenance, land purchase by LA	May have to move out of village in time; may not address all affordability issues – may not be able to move in short-term	None until properties are eroded – assumes properties continue to be occupied until eroded	Have to fund subsidised maintenance. Land may be expensive or unavailable in local area. Lost opportunity value of land	Funding costs (but based on savings made when providing defences elsewhere).
H1: Coastal Adaptation Fund, subsidised maintenance, streamlined planning permission	May have to move out of village in time; may not address all affordability issues – may not be able to move in short-term	None until properties are eroded – assumes properties continue to be occupied until eroded	Have to develop guidelines. Have to fund subsidised maintenance	Funding costs (will depend on what is funded).
H2: Coastal Adaptation Fund, subsidised maintenance, land purchase by LA	May have to move out of village in time; may not address all affordability issues – may not be able to move in short-term	None until properties are eroded – assumes properties continue to be occupied until eroded	Have to fund subsidised maintenance. Land may be expensive or unavailable in local area. Lost opportunity value of land	Funding costs (will depend on what is funded).

3.7 Stage 6: Recommendation of the Best Options

The above discussion sets out a step-by-step approach to assessing, costing and combining the options such that they are compared on the basis of packages that could be implemented. The actual costs of funding the options are estimated to vary widely, from £20,000 to provide streamlined planning guidelines to £240 million to purchase properties at risk at their not-at-risk value. Mechanisms to recoup some of the initial outlay are based on renting or selling the property or land on a time-limited basis. It is the residual life of the property or land that determines the amount that could be recouped. Paying property owners the residual value significantly increases the impacts on that stakeholder group, making it more difficult for them to move to a new property (or to build a replacement property in a not-at-risk location). There may be greater benefits from paying property owners the rebuild costs and providing land on which to rebuild. This option has four key advantages: (i) it provides property owners with the finance to replace their home, (ii) it means that they are not financially worse off since, once re-built, the property will have a market value that 'belongs' to the property owners, (iii) the existing (at risk) property can continue to be occupied while the new property is being built, avoiding/reducing the need for temporary accommodation (providing the property is not at immediate risk) and (iv) once the replacement property is available, the at risk property can be sold at a residual value for buy and lease (potentially recouping profits for the funding body (i.e. the option would be self-funding) and/or the future landlord) or demolished to make way for relocatable properties or provide recreational benefits.

It is the amount of funding that will be available that is likely to determine which packages of options are preferred. If the funding is extremely limited (say in the order of a few million pounds), any options that involve purchase of properties at full market value (or even rebuild costs) will not be possible. Packages that could involve the private sector, e.g. buy and lease, or sale for time-limited uses (packages C and F), or those that involve a small payment to the property owner such as the Government Payback Scheme or Coastal Adaptation Fund (packages G and H) are likely to be preferred. Package A may offer opportunities to rent/sell land to caravan parks or people wishing to live in relocatable properties and where combined with purchase of properties at rebuild costs (rather than market value) could be self-funding over time. Subsidised maintenance (packages G2 and H2) could help people stay in their properties until they are at imminent danger of erosion, but they would be trapped, unable to move elsewhere unless they could borrow money. In such cases, land purchase by the local authority may help reduce some of the financial constraints (providing land in lieu of cash), but this is unlikely to help all. The option to purchase the property at rebuild costs could be combined with land to help reduce financial implications for those living in property at risk, but also for funders.

Where funding is limited and interest from private investors is small, packages G1, G2, H1 and H2 may offer the best opportunities for those people living in properties with residual lives of 10 years or greater and who are looking to move from their properties in the near future. Package A offers the opportunity to provide land for caravans or relocatable properties and/or recreation/open space but may not be as attractive to the private sector where properties have residual lives of less than 33 years (or 24 years where it is the rebuild costs that are used as the basis for funding

the option)²³, so may have to be funded publicly which may reduce the price offered to property owners. Packages G2 and H2 may offer the best opportunities for those whose properties have shorter residual lives or who do not want to move. G2 and H2 would provide some payment to the property owner and would allow them to continue living in their property, with sufficient maintenance, until it is eroded.

²³ 33 years is estimated as the time when the residual value of the property could be sufficiently paid back through rental income to provide a 6% return on the initial investment based on residual property values. The residual life required to return a profit reduces to 24 years if rebuild costs are used as the basis for estimating the funding costs.

4. SUMMARY

The Task 4 report identifies and assesses a long-list of possible adaptation options against the 'no active intervention' baseline. These options have been grouped into packages that provide comprehensive approaches to help those affected by coastal erosion to adapt and move in response to the impacts they are facing. Where possible, the costs associated with impacts from coastal erosion have been quantified in numeric and/or monetary terms. This provides the basis for determining which of the packages of options offer the best overall benefits and fewest negative impacts.

The best packages of options are identified in terms of the likely level of funding that may be available, with this assumed to be limited. In this case, the preferred packages are likely to be:

- A1: outright purchase and demolish (based on rebuild costs), land provided by local authority, subsidised maintenance (this could be provided where it is preferable (e.g. from a funding perspective) to encourage people to remain in their properties for as long as possible; without subsidised maintenance there would be a potential for gradual dereliction of properties);
- A2: outright purchase and demolish (based on rebuild costs), land provided by local authority, buy and lease,
- A3: outright purchase and demolish (based on rebuild costs), land provided by local authority, relocatable properties;
- C1: buy and lease, streamlined planning permission;
- F1: use of property for time restricted sale, streamlined planning permission;
- G1: Government payback scheme, subsidised maintenance, streamlined planning permission;
- G2: Government payback scheme, subsidised maintenance, land purchase by LA;
- H1: Coastal Adaptation Fund, subsidised maintenance, streamlined planning permission; and
- H2: Coastal Adaptation Fund, subsidised maintenance, land purchase by LA.

These packages have been selected since they offer the greatest opportunities for involving the private sector, which will reduce funding implications. However, all of these packages except those based on funding property owners to rebuild their property are likely to involve significant loss of capital investment for property owners. This may disproportionately affect those who are most vulnerable or living in properties with residual lives of less than 10 years. In these cases, it is likely to be packages G1, G2, H1 and H2 that offer the greatest benefits as they receive some payment but can carry on living in their property until it is at imminent risk of erosion. Package A1 may also be attractive for properties with very short residual lives as the funding costs are greatly reduced, although there is limited potential for recouping funding costs on such properties. It may also be important to ensure that there are no ongoing costs associated with outstanding Council Tax or Uniform Business Rate payments after a property has been eroded.

To make a fuller assessment of the implications of the short-listed packages, more information is needed on:

- the actual market value/rebuild cost of properties and the potential rent that could be charged to allow a more specific estimate of potential incomes and investment requirements to be assessed and, from this, the potential uptake of buy and lease, or time-limited uses in the at risk areas and, from this, the property prices that may be offered to property owners;
- the extent to which property owners need funding to help them move to new properties/sites and, from this, whether people want to stay in the local area or move away; and
- whether caravan park owners or developers of relocatable properties would be interested in previously developed land (where the properties had been demolished) and whether these users would be supportive of combining their frontage with recreational land.

This information may need to be collected through a detailed consultation exercise with local stakeholders focusing on real options. This will require more detail on the potential for funding of options to be made available if the property owners' expectations are not to be raised to a point where they cannot be met. It may also be necessary to consider specific locations to identify how the different options would work in practice through desk-based pilot trials. Only once such information has been collected and verified can the preferred packages of options be identified with confidence.

Further information is also needed on the 'real' costs of implementing the packages of options. The costs estimated in this report are based mainly on indicative and average (mean) data (e.g. property prices and rebuild costs). The 'real' costs of the options may differ significantly from these indicative cost estimates if the actual property prices, actual rebuild costs or residual lives are different from the assumptions made. These issues could be addressed by undertaking valuations of the properties at risk, with a simple and quick approach involving drive-by valuations (alternatively Internet sites such as www.zoopla.co.uk provide estimates of property values by road, postcode, etc.). Rebuild costs may be easier to estimate as they can be found on mortgage statements and insurance policies or can be estimated using internet-based calculators such as that provided by the ABI/BCIS. Such an approach should give valuations within $\pm 15\%$ of the total property values and/or rebuild costs for each epoch by identifying the main properties with much higher/lower values than the mean.

While funding for adaptation may be limited, it is important to consider the real costs of the no active intervention option. The baseline assessment undertaken in Section 3.4 highlights that there are significant costs to property owners, to local communities, to visitors to the area and to local government that appear to outweigh the costs avoided that arise from not providing defences to the whole coastline. This does not mean that there is a justifiable and affordable case for protecting all of the communities where no active intervention is currently proposed. However, it does identify that that the appraisal process in the Shoreline Management Plan is unable to include all of the impacts such that the most economically efficient option to UK plc as a whole (not just central Government) may not always be that identified as preferred.

The overall costs of the baseline are estimated at £460 to £490 million (undiscounted)²⁴ or £95 million to £100 million (discounted)²⁵. The baseline also offers costs avoided of around £98 million (undiscounted) or £41 million (undiscounted), based on coastal erosion protection costs that are not incurred under no active intervention. This can be compared against the estimated funding costs for the various options, where the most expensive is £230 million to purchase properties at risk at their not at risk market value or the £94 million estimated as being required to cover the rebuild costs of property at risk. Even if the administration, funding and implementation costs were equal to the property purchase costs, the adaptation options may still only cost the same as the no active intervention baseline.

²⁴ Based on £210 million in lost market value of existing residential properties, £26 million for rebuild of commercial properties, £130 million to £160 million for rebuild of properties, £11 million for stress values, £29 million for increased poverty and deprivation, £48 million knock-on property price decreases, £93,000 for housing register administration costs and £890,000 temporary accommodation costs (undiscounted).

²⁵ The discounted values are: £43 million (lost market value); £5.9 million (rebuild commercial properties); £28 million to £33 million (NNDC rebuild costs); £4.9 million (stress); £3.2 million (poverty and deprivation); £9.8 million knock-on property price decreases; £19,000 (housing register administration) and £180,000 (temporary accommodation).
