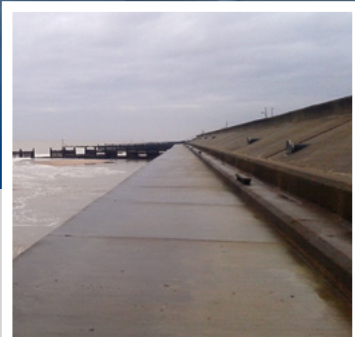
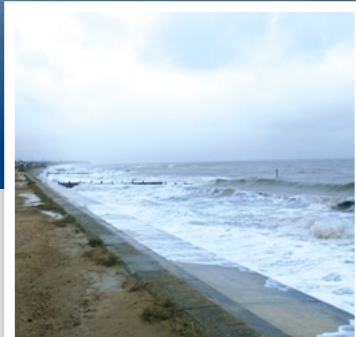


Bacton to Walcott

Coastal Management Scheme



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Bacton to Walcott Coastal Management Scheme seeks to:

- Provide protection to the nationally important Bacton Gas Terminal which supplies up to one third of the UK gas supply
- Extend the life of the sea defences at Bacton and Walcott villages and reduce flooding where possible

The scheme must:

- Work within the Shoreline Management Plan policies
- Minimise any environmental impacts, including on the beaches downdrift, to ensure no significant negative effects overall
- Be able to obtain necessary consents and approvals e.g. Planning consent, Marine licence etc.
- Be deliverable within the funding available
- Work within the National Flood and Coastal Risk Management Guidance in order to get government funding

From this information we would like you to:

- Understand what is and is not possible
- Be aware of the process to obtain funds for a coast protection scheme
- Provide feedback on the proposal in order to help shape the scheme before consents are sought
- Understand what will happen next
- Help identify how the community can contribute to the scheme to help make it happen
- Find out how you can keep updated

How are coastal management schemes planned and funded?

- ▶ North Norfolk District Council funds approximately £310,000 each year to maintain 21 miles of coastal defences – that's £14,700 a mile per year. Over the past 10 years NNDC has invested over £1.3M on the Bacton to Walcott frontage.
- ▶ To obtain additional funding from central government when defences need more substantial work, a coast protection scheme must satisfy the Government's Flood and Coastal Erosion Risk Management Strategy, which includes the below.

Shoreline Management Plan

A Shoreline Management Plan is a policy document which outlines the risks posed by coastal change and how this should be managed. The plan provides a large scale assessment of the risks experienced by people and the environment, aiming to manage them in a sustainable way.

Bacton Terminal, Bacton and Walcott are included in the Kelling to Lowestoft Ness Shoreline Management Plan (SMP6). The policy for the Bacton Terminal frontage is to 'Hold the Line' for the operational life of the terminal. The SMP does however recognise the risk of wider coastal impacts and these must be addressed in coastal management proposals. A scheme for protection of Bacton Gas Terminal would always have to prevent any negative impacts to the Villages.

The policy for the villages of Bacton and Walcott is to continue to 'Hold the Line' for the short term as far as possible through the maintenance of the existing defences. It is recognised that this will become ever more difficult as time progresses as the beaches become lower and narrower. As defences fail, the policy will change (over time) to 'Managed Realignment', this may still allow actions being taken to slow erosion, provided these do not result in wider negative impacts.

Strategy Study

A Strategy Study concerns the practical implementation of the policies agreed within the Shoreline Management Plan and explores the potential for obtaining government funding.

Bacton and Walcott are included in the Cromer to Winterton Coastal Management Study which identified that a scheme for the Bacton to Walcott village frontage was not economically viable, however, following further investigation an opportunity to work alongside Bacton Gas Terminal was identified as being a likely way of delivering a coastal management scheme for the frontage, therefore this was pursued.

Partnership Funding for Flood and Coastal Erosion Risk Management Grant in Aid

Large scale coast protection schemes can potentially be wholly or partially funded through central government (via the Environment Agency). This is called Grant in Aid Partnership Funding.

The benefits of a scheme - for example the number and value of the homes protected – determine how much Grant in Aid is potentially available. If the costs of the scheme are higher, then the resulting gap has to be filled with local funding, which could be from public or private sources.

Due to the rural nature of the North Norfolk coast, few locations are likely to receive full funding through Environment Agency Grant in Aid, however, it is indicated that Bacton and Walcott is potentially eligible for some funding.

Private & Public Funding

Bacton Gas Terminal is not eligible for government funding for coast protection and the Operators will need to provide the funding themselves.

In order to fund a scheme a mix of funding from the Environment Agency, North Norfolk District Council, Regional Flood and Coast Defence Committee and the Bacton Gas Terminal Operators is being put together. Other funding sources are also being explored, such as the Local Enterprise Partnership.

The Bacton Terminal Operators are considering financing the gap in funding for the villages scheme. Should additional funding be secured, through governmental funding and or private funding, it may be possible to enhance the scheme and further extend the life of the village defences.

Developing the scheme approach

The impacts of the 2013 storm surge led the operators of Bacton Gas Terminal to reassess the erosion risk of the gas infrastructure and to begin a process to identify measures to protect the terminal. Other investigations identified that there was an opportunity to potentially combine terminal protection with improvements for the adjacent coastline.

The following approaches have been considered for the management of the Bacton Terminal and Bacton to Walcott coastal frontage:

APPROACH A

Do Nothing

The Do Nothing approach is a baseline against which all other options will be compared. This approach would involve no further management of the existing defences, ceasing all maintenance and capital expenditure activities and allowing nature to take its course.

DISCOUNTED as an approach but used as a baseline to judge other options

APPROACH B

Continue maintenance of existing defences

This option involves continuing with routine maintenance works to reduce the health and safety risk to the public and retain the structural integrity of the defences where possible.

DISCOUNTED because it is anticipated that a pro-active scheme is viable. However, maintenance of defences will still be necessary alongside any scheme. Realistically this is the approach for the short term if a coastal management scheme cannot be delivered for the villages frontage.

APPROACH C

Continued maintenance and develop a way to help communities adapt to coastal change

As above but also involves activities to seek to help communities manage a changing coastline.

DISCOUNTED because it is anticipated that a pro-active scheme is viable, however, there will still be a need to develop ways to help the community adapt to coastal change in the future.

APPROACH D

Measures to reduce the impact of flooding

This option involves measures to reduce the impacts of flooding from the sea overtopping defences. Some measures have already been put into place (Property Level Protection, Walcott Flood Alleviation Highway Drains), are being delivered (Beach Road Bacton Flood Alleviation Drains) or are being considered further alongside this proposal (e.g. additional Walcott Flood Alleviation drains). This option will not prevent erosion and only benefits those who are impacted by flooding.

FURTHER CONSIDERATION TO BE COMPLETED

APPROACH E

Enhance existing protection

This involves monitoring and maintaining existing defences as well as enhancing/ extending the life of the current defences to keep the protection level the same.

SHORTLISTED Options for this approach are to be explored further – see 'The options'

Long list

A 'long list' of options to deliver the 'Enhance existing protection' approach was considered for the Terminal and Villages. The long lists included schemes which may be considered as desirable, but would not be achievable because they would either not be technically feasible, not be affordable or not be environmentally acceptable.

DISCOUNTED long list options include

- Offshore breakwater
- Rock armour groynes
- New timber groynes
- New sea wall
- Gabion scour protection

Short list

ROCK ARMOUR REVETMENT

This involves placement of rock armour at the toe of the sea wall/cliff to extend the life of existing defences. Rock armour could be placed across the whole frontage or in sections focusing on key locations.

Advantages

- Will dissipate wave energy, reduce beach scour at the base of the sea wall and support the wall as the beach lowers.
- Can be designed to provide a high level of protection to cliffs.
- Will extend the life of the existing defences
- Requires little maintenance
- Can be repositioned if displaced or required elsewhere
- Can be designed with relative certainty

Disadvantages

- Will prevent sediment from cliff entering environment - potentially altering coastal processes.
- Large-scale placement is not compliant with the Shoreline Management Plan
- Rock placement is not desirable near gas infrastructure
- Any remaining dry beach is likely to disappear
- Typically, rock is not used in the area - change in aesthetics
- Potential health and safety risk - people climbing on rocks
- Difficulties in public beach access

BEACH NOURISHMENT/SANDSCAPING SCHEME

This involves placement of additional sediment across the Bacton Terminal/ Bacton to Walcott frontage in order to raise beach levels to extend the life of the defences and protect the gas infrastructure. Sandscaping is a term that is being used to describe a very large scale sand placement.

Advantages

- Will dissipate wave energy and protect existing defences
- Will extend the life of the existing defences
- Is suitable to protect gas infrastructure
- Compliant with the Shoreline Management Plan
- Likely to improve beaches in neighbouring frontages
- Improved public access and beaches for recreation

Disadvantages

- Less certainty as to scheme performance (e.g. how long it will last), although the Dutch Sand Motor has over performed since placement in 2011

The options

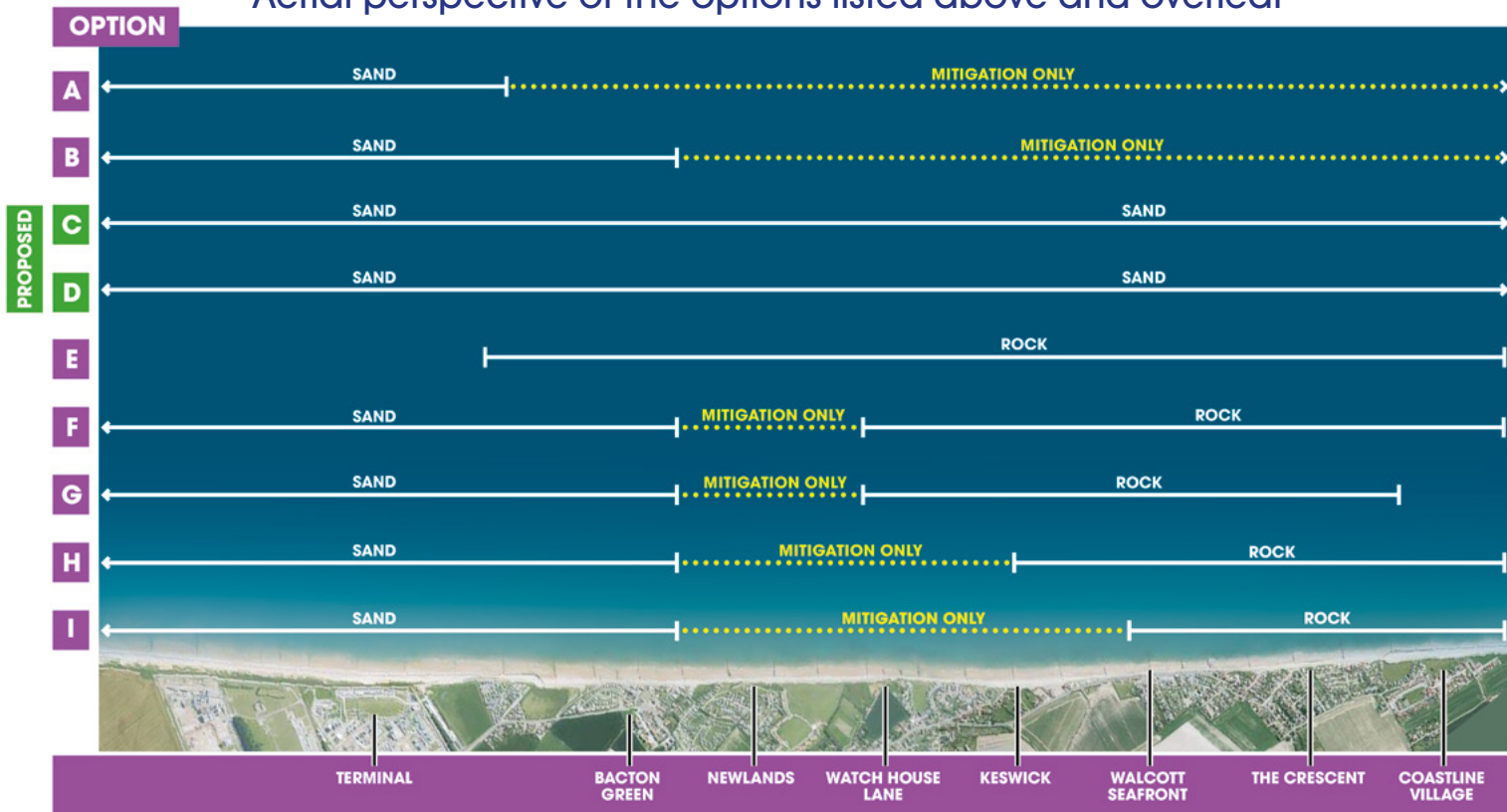
| OPTION A | | Terminal Protection only with mitigation to prevent acceleration of falling down drift beach level trend - estimated at 1 million m2 of sand | | | | | |
|---|--------------|--|-----------------|--|------------------|-----------------------|-------------------|
| Estimated total Scheme cost (£M) | | 12.2 | | Estimated total villages scheme costs (£M) | | 0 | |
| Estimated Environment Agency Funding | | 0 | | Other funding secured for Sandscaping - NNDC, Local Levy, Natural Flood Management (not confirmed for rock) (£M) | | 0 | |
| | | | | Funding Gap (£M) | | Not Applicable | |
| Anticipated defence life from 2017 (years) | | | | | | | |
| Seagulls Field | Bacton Green | Newlands Estate | Watchhouse Lane | Keswick | Walcott Seafront | The Crescent, Walcott | Coastline Village |
| 0 | 5 | 5 | 5 | 15 | 5 | 5 | 0 |
| DISCOUNTED: This approach is considered technically feasible, environmentally acceptable and financially viable to protect the Terminal. However, it is considered that a more advantageous scheme is possible. | | | | | | | |

| OPTION B | | Terminal and Bacton Village sediment placement only – estimated at 1.2 million m3 | | | | | |
|--|--------------|---|-----------------|--|------------------|-----------------------|-------------------|
| Estimated total Scheme cost (£M) | | 14.4 | | Estimated total villages scheme costs (£M) | | 2.3 | |
| Estimated Environment Agency Funding | | 0.6 | | Other funding secured for Sandscaping - NNDC, Local Levy, Natural Flood Management (not confirmed for rock) (£M) | | 1.1 | |
| | | | | Funding Gap (£M) | | 0.6 | |
| | | | | | | | |
| Anticipated defence life from 2017 (years) | | | | | | | |
| Seagulls Field | Bacton Green | Newlands Estate | Watchhouse Lane | Keswick | Walcott Seafront | The Crescent, Walcott | Coastline Village |
| 29 | 50 | 9 | 5 | 16 | 5 | 5 | 0 |
| | | | | | | | |
| DISCOUNTED: This approach is considered technically feasible, environmentally acceptable and financially viable due the villages funding gap potentially being met by the Bacton Terminal Operators. However, it is considered that a more advantageous scheme is viable. | | | | | | | |

| OPTION C | | Proposal- Sandscaping Scheme estimated at approximately 1.5 million m3 of sand. | | | | | |
|--|-----------------|--|--------------------|--|---------------------|-----------------------------|----------------------|
| Estimated total Scheme cost (£M) | | 17.9 | | Estimated total villages scheme costs (£M) | | 5.7 | |
| Estimated Environment Agency Funding | | 3.4 | | Other funding secured for Sandscaping - NNDC, Local Levy, Natural Flood Management (not confirmed for rock) (£M) | | 1.1 | |
| | | | | Funding Gap (£M) | | 1.2 | |
| | | | | | | | |
| Anticipated defence life from 2017 (years) | | | | | | | |
| Seagulls Field | Bacton Green | Newlands Estate | Watchhouse Lane | Keswick | Walcott Seafront | The Crescent, Walcott | Coastline Village |
| 34 | 50 | 39 | 30 | 50 | 26 | 19 | 7 |
| | | | | | | | |
| PROPOSED: This approach is considered technically feasible, environmentally acceptable and financially viable due the villages funding gap potentially being met by the Bacton Terminal Operators. | | | | | | | |

| OPTION D | | Proposal - Sandscaping Scheme (enhanced) | | | | | |
|--|--------------|--|-----------------|--|------------------|-----------------------|-------------------|
| Estimated total Scheme cost (£M) | | 19.3 | | Estimated total villages scheme costs (£M) | | 7.1 | |
| Estimated Environment Agency Funding | | 4.2 | | Other funding secured for Sandscaping - NNDC, Local Levy, Natural Flood Management (not confirmed for rock) (£M) | | 1.1 | |
| | | | | Funding Gap (£M) | | 1.8 | |
| | | | | | | | |
| Anticipated defence life from 2017 (years) | | | | | | | |
| Seagulls Field | Bacton Green | Newlands Estate | Watchhouse Lane | Keswick | Walcott Seafront | The Crescent, Walcott | Coastline Village |
| 36 | 50 | 50 | 50 | 50 | 40 | 26 | 10 |
| | | | | | | | |
| PROPOSED (conditional): This approach is considered technically feasible, environmentally acceptable and has the potential to be financially viable with further governmental and or private contributions to the villages funding gap. | | | | | | | |

Aerial perspective of the options listed above and overleaf



| OPTION E | | Stand-alone rock placement scheme for Bacton village to Coastline village | | | | | |
|---|--------------|---|-----------------|--|------------------|-----------------------|-------------------|
| Estimated total Scheme cost (£M) | | 10.9 | | Estimated total villages scheme costs (£M) | | 10.9 | |
| Estimated Environment Agency Funding | | 5.1 | | Estimated additional funding (not secured) - NNDC, Local Levy (£M) | | 1.0 | |
| | | | | Funding Gap (£M) | | 4.8 | |
| | | | | | | | |
| Anticipated defence life from 2017 (years) | | | | | | | |
| Seagulls Field | Bacton Green | Newlands Estate | Watchhouse Lane | Keswick | Walcott Seafront | The Crescent, Walcott | Coastline Village |
| 29 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | | | | | | | |
| DISCOUNTED: This scheme is not financially viable as a funding gap remains and it is likely to raise concerns regarding wider coastal impacts. | | | | | | | |

| OPTION F | | Option B + rock placement from Watchhouse Lane to Coastline Villages | | | | | |
|---|-----------------|---|--------------------|--|---------------------|-----------------------------|----------------------|
| Estimated total Scheme cost (£M) | | 21.7 | | Estimated total villages scheme costs (£M) | | 9.5 | |
| Estimated Environment Agency Funding | | 5.0 | | Other funding secured for Sandscaping - NNDC, Local Levy, Natural Flood Management (not confirmed for rock) (£M) | | 1.1 | |
| | | | | Funding Gap (£M) | | 3.4 | |
| Anticipated defence life from 2017 (years) | | | | | | | |
| Seagulls Field | Bacton Green | Newlands Estate | Watchhouse Lane | Keswick | Walcott Seafront | The Crescent, Walcott | Coastline Village |
| 29 | 50 | 9 | 50 | 50 | 50 | 50 | 50 |
| DISCOUNTED: This scheme is not financially viable as a funding gap remains and it is likely to raise concerns regarding wider coastal impacts | | | | | | | |

| OPTION G | | Option B + rock placement from Watchhouse Lane to Ostend Gap | | | | | |
|---|-----------------|---|--------------------|--|---------------------|-----------------------------|----------------------|
| Estimated total Scheme cost (£M) | | 20.2 | | Estimated total villages scheme costs (£M) | | 8.0 | |
| Estimated Environment Agency Funding | | 3.8 | | Other funding secured for Sandscaping - NNDC, Local Levy, Natural Flood Management (not confirmed for rock) (£M) | | 1.1 | |
| | | | | Funding Gap (£M) | | 3.2 | |
| Anticipated defence life from 2017 (years) | | | | | | | |
| Seagulls Field | Bacton Green | Newlands Estate | Watchhouse Lane | Keswick | Walcott Seafront | The Crescent, Walcott | Coastline Village |
| 29 | 50 | 9 | 50 | 50 | 50 | 50 | 0 |
| DISCOUNTED: This scheme is not financially viable as a funding gap remains and it is likely to raise concerns regarding wider coastal impacts | | | | | | | |

| OPTION H | | Option B + rock placement Rudrams Gap to Coastline Village | | | | | |
|--|--------------|---|-----------------|--|------------------|-----------------------|-------------------|
| Estimated total Scheme cost (£M) | | 20.2 | | Estimated total villages scheme costs (£M) | | 8.0 | |
| Estimated Environment Agency Funding | | 4.7 | | Other funding secured for Sandscaping - NNDC, Local Levy, Natural Flood Management (not confirmed for rock) (£M) | | 1.1 | |
| | | | | Funding Gap (£M) | | 2.2 | |
| | | | | | | | |
| Anticipated defence life from 2017 (years) | | | | | | | |
| Seagulls Field | Bacton Green | Newlands Estate | Watchhouse Lane | Keswick | Walcott Seafront | The Crescent, Walcott | Coastline Village |
| 29 | 50 | 9 | 5 | 50 | 50 | 50 | 50 |
| | | | | | | | |
| DISCOUNTED: This scheme is not financially viable as a funding gap remains and it is likely to raise concerns regarding wider coastal impacts | | | | | | | |

| OPTION I | | Option B + rock placement Walcott Seafront to Coastline Village | | | | | |
|--|--------------|--|-----------------|--|------------------|-----------------------|-------------------|
| Estimated total Scheme cost (£M) | | 19.3 | | Estimated total villages scheme costs (£M) | | 7.1 | |
| Estimated Environment Agency Funding | | 4.5 | | Other funding secured for Sandscaping - NNDC, Local Levy, Natural Flood Management (not confirmed for rock) (£M) | | 1.1 | |
| | | | | Funding Gap (£M) | | 1.5 | |
| | | | | | | | |
| Anticipated defence life from 2017 (years) | | | | | | | |
| Seagulls Field | Bacton Green | Newlands Estate | Watchhouse Lane | Keswick | Walcott Seafront | The Crescent, Walcott | Coastline Village |
| 29 | 50 | 9 | 5 | 16 | 50 | 50 | 50 |
| | | | | | | | |
| DISCOUNTED: This scheme is not financially viable as a funding gap remains and it is likely to raise concerns regarding wider coastal impacts | | | | | | | |

Key Message

The proposed option(s) still requires approvals such as a Marine Licence and Planning Consent, this will include consideration of impacts to environmentally designated sites.

Proposal

The existing defences at the Terminal, Bacton and Walcott were designed at a time when there was a larger and higher beach. The beach is very important in defending the coast as it helps to absorb the energy of the waves before they reach the cliff or defences. Over the years the beach levels have reduced across the east coast; this is caused by natural processes that have been ongoing since the last Ice Age, but their impact is exacerbated by the presence of extensive coastal defences preventing materials from the cliffs replenishing the beaches. These reduced beach levels mean that the defences and cliffs are exposed more often to waves, which increases the likelihood of further reducing beach levels, causing defences to fail (e.g. collapsing) and cliffs to erode.

Key Message

By increasing beach levels it is expected that existing defences will last longer.

The proposed scheme seeks to put back the beach that has been eroded over the years in order to provide natural protection for a period of time. The idea is based on an approach used by the Dutch 'Sand Motor' (also known as Sand Engine) which is located on the coast between Hook of Holland and The Hague, The Netherlands. This Dutch scheme has been very successful.

The proposal seeks to deliver a total of approximately 1.5 million m³ of sand between a location approximately 300m west of the terminal to Coastline Village; this could be enhanced if funding is available and it is technically feasible.

The highest and widest part of the scheme (the head) will be located in front of the terminal to provide the level of protection required for this national asset and will be funded by the terminal operators. The remaining sediment will form a tail from the terminal across the villages frontage. For this additional sediment, a number of funding sources have been found.

The 'head' of sand is designed to erode over time and natural processes will move the sand predominantly along the Bacton to Walcott coastline, replenishing those beaches and continuing to provide protection. The sediment over time will be moved by the sea, this may also benefit communities further down the coast in future years.

Please view the visualisation of the scheme at www.north-norfolk.gov.uk

Where will the sand come from and how is it put on the beach?

The sand will come from an existing sand extraction site located in the North Sea. These sites are regulated and prior to licensing undergo extensive assessment to ensure that the extraction will not have an impact on coastal erosion.

The sand is extracted by a dredging vessel (large ship) which then transports the sand to the coast where it is to be placed. The sand is then pumped ashore through a large pipe and spread on the beach to the specified design. Please see the film of this approach where it has been completed in Lincolnshire <https://vimeo.com/155092154>. This operation takes advantage of every tide and is completed day and night.

Making the proposal better

There is an opportunity to improve the proposal to enhance the expected life of the defences of the villages and the terminal.

This could be achieved by:

- Increasing the volume of sand placed on the beach should additional funding be available
- Increasing the size of the grains of sand placed, slowing beach movement and extending the life of the defences further.

Please let us know your thoughts and help us identify ways in which additional funding may be found. Examples that have been considered elsewhere include additional Parish Precept contributions and supplemental local caravan pitch fees.

Environmental Impact Assessment

A thorough Environmental Impact Assessment (EIA) will be undertaken in order to address the potential for impacts occurring during and as a result of the scheme in operation.

The EIA, in summary, is to include the following aspects:

- Description of Proposed Scheme;
- Alternatives considered and reasons for selection of preferred option;
- Baseline environmental characteristics;
- Results of consultation exercises held during scoping (completed) and EIA phase (current);
- Assessment of Impacts (refer to scoping list of potential issues);
- Measures recommended to reduce any significant impacts;
- Remaining Impacts following successful implementation of recommended measures;
- Consideration of potential for cumulative (in combination with other projects) impacts.

The EIA will include potential changes to and Impacts on the following parameters:

- Coastal processes;
- Marine water and sediment quality;
- Nature Conservation Designations;
- Geological resources;
- Coastal erosion and flooding;
- Benthic (seabed) and coastal ecology;
- Fish ecology;
- Marine mammals;
- Ornithology (birds);
- Landscape;
- Commercial and recreational navigation;
- Commercial and recreational fisheries;
- Archaeology and historic environment;
- Local community and tourism (including changes to sound levels);
- Traffic;
- Air quality;
- Services and other users of the sea.

The EIA process will result in the production of an Environmental Statement, specific to the project which will be made available for public consultation. The publication of this document will be advertised and responses will be considered prior to decisions being made to consent and licence the proposed scheme.

So far the scoping phase of the EIA has been completed which involves some consultation, identification of the key potential impacts and gathering of known information. The scoping report is available at www.north-norfolk.gov.uk

We are currently undertaking a wider consultation of potentially interested people and groups and would therefore welcome any opinions that you may have on the proposed scheme as outlined in the information provided.

Please provide your response by filling in a questionnaire at www.north-norfolk.gov.uk. Your views will then be considered during the EIA phase which has now commenced.

Key Message

Now is your chance to provide information to help inform the scheme.

Contributions towards the scheme

The Proposal will rely on funding from the Bacton Terminal Operators and National Flood and Coastal Erosion funding.

National Flood and Coastal Erosion funding will often cover only part of the scheme costs, and in such cases it needs to be supported by local contributions towards the scheme. If any gap is not filled by local contributions, national funds won't be provided either. Contributions to the scheme or future maintenance can be financial or 'in kind'.

- North Norfolk District Council has committed £500,000 towards the construction of the scheme.
- The Regional Flood and Coast Defence Committee (Eastern) through the Local Levy has committed £500,000.
- The National Natural Flood Management Fund has committed £120,000
- The Terminal is willing to consider to meet the villages funding gap for the proposed Option C subject to NNDC leading the delivery of the scheme.

How can you help?

The community can offer to help the scheme and this 'contribution' can be included in the case for Government funding, this could help enhance the scheme.

Contributions can be in kind or financial. Even if a contribution is small, it will help to demonstrate local support. A Just Giving site has been set up as a secure and easy way to help, please see www.justgiving.com/crowdfunding/bactontowalcottsandscaping.

If you are not able to support the scheme financially, any information provided through the questionnaire, or support during public consultations, would be helpful.

What will happen next?

NNDC will be setting up a Local Liaison Group – with invitations to Members of the Parish Councils, District Councillors, Local Fishing Fraternity and Local Businesses. The liaison group will help to keep people informed, ensure local knowledge and feedback is included and ensure that the scheme is sensitive to local circumstances.

The scheme will require an Environmental Impact Assessment. Any comments or information that you provide will help with assessing issues and ensure that any additional opportunities are considered before any consents and licences are sought.

The scheme will continue to be fine-tuned in order to maximise benefits, minimise any potential environmental impacts, increase certainty of success and reduce costs.

During the consenting process, preparations will be made to identify a contractor who can construct the scheme. If all goes well, construction may be possible in late summer 2018, if there are any delays this is likely to be later, the next earliest date would be late spring 2019. Construction is expected to take between 2 and 4 months.

Would you like to be kept informed?

If you would like to be kept informed about the Scheme, please email coastal.management@north-norfolk.gov.uk

Contacts



01263 516248



coastal.management@north-norfolk.gov.uk



www.north-norfolk.gov.uk www.coasteast.org