

North Yorkshire Council

North Bay Urgent Wall Improvements – Phase 2



Recommendation

It is recommended that funding be approved for implementing Phase 2 of the previously approved North Bay Urgent Wall Improvement Plan for the coastal defence assets in order to sustain the current standard of service (SoS).

Version

5

13/10/2023

Version History

Version	Date	Purpose	Main Changes
1	24/6/2022	EA review	
2	17/3/2023	EA Area review	
3	22/3/2023	Submission to EA for approval	
4	02/05/2023	Response to NPAS review queries	
5	13/10/2023	Update of council name from SBC to NYC	

Assurance and Approval Record

RMA reference number:

EA reference number:

Date of submission to EA:

Assurance from Risk Management Authority

I confirm that this Outline Business Case meets our guidelines, quality assurance requirements, environmental obligations and Defra investment appraisal conditions. All internal approvals, including member approval, have been completed. I apply to the Environment Agency for capital grant and local levy in the sum of £_____ (Grant Claim Value).

Name of RMA Project Executive:

[For administrative use only]

Approval from Risk Management Authority Council

Version approved:

Date:

Endorsement from Environment Agency Area Flood and Coastal Risk Manager

I confirm that the Outline Business Case is ready for assurance.

Applications less than £1million - I have consulted with the Area Director and Senior Finance Business Partner External Funding & Grants.

Applications up to £10million - I have consulted with the Director of Operations and the Deputy Director of Finance.

Applications up to £20million - I have consulted with the Executive Director of Operations and the Director of Finance.

Applications over £20million - I have consulted with the Executive Director of Operations, the Executive Director of FCRM and the Director of Finance.

Name of Area Flood and Coastal Risk Manager:

Date: 25/02/2022

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Environment Agency Assurance and Technical Approval

I recommend that the application is granted technical approval

Name of AFCRM or Lead Assurance Reviewer:

Date:

[For administrative use only]

Financial Approval

[See Section A4 of the Financial Scheme of Delegation.]

Name of Approving Officer:

Date:

Name of Approving Officer:

Date:

Name of Approving Officer:

Date:

FSOD reference:

Date:

Financial Scheme of Delegation Co-ordinator

Notes

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1.0 Project Summary

The purpose of this report is to seek investment approval for an asset refurbishment scheme in North Bay, Scarborough. This report presents the business case for the most efficient way of sustaining the standard of service (SoS) of the existing coastal defence assets across the frontage of North Bay. This report is a business case for Phase 2 of a 4 phase project; Phase 1 was completed in 2012.

Total Value of Phase 2 of Project £1,562,855 (excl. future costs)

Flood risk type: Coastal

Numbers of households at flood and/or erosion risk

- Households at risk in medium term – 224 (with 37 allocated to Phase 2)
- Households at risk in long term - 0

Critical Infrastructure at risk now and in 2122

Yorkshire Water infrastructure

Royal Albert Drive – part of the main coastal link road between North and South Bays in Scarborough

Type, condition and residual life of existing defences

The coastal defence assets consist of a variety of concrete and masonry near-vertical seawalls of varying heights and an assortment of access points (steps and slipways). The assets are Victorian in age, with various subsequent modifications and in varying condition. The Scarborough Coastal Defence Strategy (2209) assessed the structural stability of the assets as being at high risk of failure, with an annual probability of failure of 10% to 50% in any one year.

Environmental designations?

There are two sites of Special Scientific Interest (SSSI) in North Bay (one to the north and one to the south), designated for geological interest

How is flood and erosion risk managed?

North Yorkshire Council maintain the existing coastal defence assets which protect against erosion. Wave overtopping is managed through road and promenade closures.

Summarise the case for change

Initial asset inspections undertaken in 2010 identified assets within North Bay as needing 'urgent' repair. Additional inspections in 2018 and 2020 reiterated the need for Phase 2 of the Urgent Wall Improvements project to be completed. Failure of the coast defence assets would lead to the onset of coastal erosion. The initial losses would be the promenade immediately behind the seawalls, and the loss of Royal Albert Drive in the Clarence Gardens MU, which is the main road connecting the north and south bays in Scarborough. The resumption of active toe erosion and removal of support to the steep coastal slopes behind the promenade and road would also result in reactivation of pre-existing landslides and instigation of new landslides. The cliff-top would consequently collapse and recede resulting in the significant loss of assets, services and property. Failure of the coastal defence assets in North Bay would also impact on the visitor economy of the area.

Selected option

The preferred option is Option1: Phased Repair Scheme. This OBC has confirmed the selection of Option 1 from the 2012 Phase 1 PAR. The preferred option consists of three phases of urgent wall improvements, followed by a fourth phase which is the delayed capital scheme. Phase 1 was completed in 2012. This OBC is for Phase 2.

The preferred option will deliver benefits of £98,118k over the four phases within the 100 year appraisal period, with a whole life cost of £20,993k.

Economic cost and benefit of selected option over 4 phases (100 year appraisal period)

- Present Value Benefit - £98,118k (£23,679k for Phase 2)
 - Present Value Cost - £20,993k (£1,622k for Phase 2)
 - Net Present Value - £77,125k (£22,057k for Phase 2)
 - Benefit to Cost Ratio - 4.67 (14.6 for Phase 2)
 - Incremental Benefit to Cost Ratio – n/a
 - Whole Life Cash Cost - £42,251k
-

Affordability of selected option for Phase 2

- Raw Partnership Funding score is 132%
- Adjusted Partnership Funding score is 132%
- Funding from Environment Agency (grant) is £1,466k
- Funding from the Regional Flood and Coastal Committee is £0
- Funding from North Yorkshire Council is £0

Risk

- The total contingency amount for approval of Phase 2 is £444k

Top three residual risks are:

- Timing of Marine Licence – MMO is currently taking considerably longer than its target timescales to issue licences.
 - Extent of repairs required is greater than anticipated
 - Unforeseen ground conditions
-

Permissions and consents

- MMO Marine Licence – to be obtained
-

Outcomes

- OM2 – n/a
 - OM3 – 37 for Phase 2 (224 over all 4 phases)
 - OM4a – n/a
 - OM4b – n/a
-

Schedule of critical milestone dates.

- Approval of OBC (funding approval) – June 2023
 - Detailed design – July-November 2024
 - Construction – April 2025 – September 2025 (subject to Marine Licence)
 - Scheme completed (benefits realised) – September 2025
-

2.0 Strategic Case

2.1 Introduction

The purpose of this report is to seek investment approval for an asset refurbishment scheme in North Bay, Scarborough, to extend the residual lives of the existing coast defence assets, and thereby delaying the requirement for a capital scheme. This report presents the business case for the most cost-efficient way of sustaining the standard of service (SoS) of the existing assets.

The proposed works concern Phase 2 of the North Bay Urgent Wall Improvements project. Phase 1 was completed in 2014 (PAR approved in 2012) and was the first of 4 planned phases concluding with a delayed capital scheme anticipated in 2042. Phase 2 will consist of repair works to 470m of frontage (31%). Phase 3, anticipated to be in 2030, will consist of repair work to 430m of the frontage (28%).

The assets under protection are located within North Bay, Scarborough, along 1.5km of coastal frontage and fall within two of the management units (MU) of the Scarborough Coastal Defence Strategy: Holbeck to Scalby Mills (2009); namely North Bay Cliffs (MU 20A/2-20A/7) and Clarence Gardens (MU 20B/1-20B/3). The Scarborough Coastal Defence Strategy is currently being subject to a refresh, anticipated to be complete in 2023. This frontage is also covered by the River Tyne to Flamborough Head Shoreline Management Plan 2 (SMP2, 2007).

2.2 Strategic context

The coastal defence assets in North Bay are Victorian in age, dating back to 1890 and stretch right around the bay from the Sea Life Centre in the North to the Castle headland and around to South Bay. The assets which are the subject of the North Bay Urgent Wall Improvements run from just south of the Sea Life Centre to the start of the 'East Pier, Castle Headland, and The Holms' coast protection scheme at the southern end of North Bay which was completed in 2005. There have been many developments and modifications to the structures over the last hundred years. The coastal defence assets consist of a variety of concrete and mason near-vertical seawalls of varying heights and an assortment of access points (steps and slipways). The assets are in varying conditions. The capital works for Phase 1 of this North Bay Urgent Wall Improvements project were completed in 2014, and improved the condition of 15m of seawalls in the North Bay Cliffs management unit and 525m of seawalls in the Clarence Gardens management unit.

The Scarborough Coastal Defence Strategy Refresh is currently in development and is anticipated to be completed by the end of 2023. The intention of the Strategy Refresh is to review and, where appropriate, update the current preferred options in the Strategy based on the most up to date guidance, data, and information available. The strategic preferred options from the current 2009 Strategy are seawall repairs and slope stabilisation for the North Bay Cliffs MU and rock

revetment, seawall repairs and slope stabilisation for the Clarence Gardens MU. The 2009 Strategy recognises that in the short term, prior to any capital scheme being implemented for these two frontages, an option of 'emergency coastal slope and defence works and repairs to defences and landslips as and when required' would be essential. In this context, the North Bay Urgent Wall Improvements project aims to facilitate for future capital works projects by prolonging the life of the existing assets whilst the longer term strategic aspirations are determined.

The Strategy operates within the framework of the Hold the Line policy set out in the SMP2 (2007). The recent SMP2 health check process (2020) did not identify any requirement for further consideration of the policy units which this project falls under as part of the SMP Refresh.

This OBC utilises the initial Project Appraisal Report (PAR) report from 2012 as a basis for all elements as it is a continuation of Phase 1 of the Urgent Wall Improvements project. The Strategic Appraisal Report (StAR) in 2009 provides the basis for the economic assessments used in this OBC, which have been updated to evaluate the Present Value (PV) benefits.

This project falls within the threshold criteria of the sustain SoS project; it is supported by a current approved strategy and it will not change the standard of protection of the frontage.

North Yorkshire Council is in the early stages of the creation of a masterplan document for the North Bay area which will provide the roadmap for the future regeneration of the area. It will include an overarching vision, spatial masterplan, implementation plan and marketing strategy. North Bay developments recognise the need for improved connectivity with the town centre and South Bay. This requires protection of Royal Albert Drive which is recognised in the Scarborough Local Cycling and Walking Infrastructure Plan (2020) and Focus Area 3 of the Scarborough Blueprint (2021). To provide opportunity for these plans to be developed, the continued North Bay Urgent Wall Improvements are necessary to secure the short-medium term stability of the coastal frontage.

2.3 Environmental and other considerations

Socio-economics

Scarborough is one of the principal urban areas in North Yorkshire with a population of around 50,000. The Borough has a balanced economy with employment mainly based on manufacturing, tourism, public sector services and retail, however the North Bay area is dominated by residential properties, hotels, guesthouses and leisure and recreation facilities. Tourism is of vital importance to Scarborough, generating annual revenues of around £140 million and providing in the order of 4,000 jobs. An essential feature of this tourism is the traditional beach use and coastal recreation opportunities provided by North Bay.

Critical Infrastructure

In the south of the North Bay, Royal Albert Drive runs adjacent to the coast and is the main coastal route linking the North and South bays at Scarborough. At its northern end Royal Albert Drive joins the A165, which is one of the main north-south routes through Scarborough. Yorkshire Water has carried out extensive work to improve the storage, transfer and treatment of storm water in Scarborough, with work at five locations across the town including Scalby Mills and Peasholm Gap, which is located at the centre of the North Bay frontage.

Biodiversity, Flora and Fauna

There are no Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Ramsar sites at North Bay or immediately adjacent. There are two sites of Special Scientific Interest (SSSI) in North Bay (one to the north and one to the south), however these are designated for geological purposes and are therefore not applicable to this section of the report. There are no Marine Conservation Zones (MCZs) at North Bay. There are no habitats listed on the Priority Habitat Inventory along the North Bay frontage, seaward of the existing defence.

Water

North Bay is a designated bathing water site with water quality currently classified by the Environment Agency in 2021 as 'excellent' (maintaining an excellent status since 2019 - classifications were not made for the 2020 season due to the impact of the Covid-19 pandemic on the sampling programme) (Defra, 2021).

Landscape, Archaeology and Cultural Heritage

From Scalby Ness to the centre of North Bay at Peasholm Gap the sea frontage is mostly sandy beach, protected by the sea wall and backed mainly by recreational uses. Between Peasholm Gap and Castle Headland the sea wall continues along Royal Albert Drive, which fronts a broad sandy beach backed by a cliff. Rock armour is present in front of the seawall at the very southern end of North Bay. There are no World Heritage Sites at North Bay however Scarborough Castle, positioned to the south of North Bay, is a Scheduled Monument. There are a number of listed buildings inland and south of North Bay, many of which border the A165 road. The southern part of North Bay, from Peasholm Gap southwards, is within the Scarborough Conservation Area.

2.3.1 Regulatory requirements

The proposed works are relevant to several regulatory requirements which are summarised below and outlined further in the Environmental report (Appendix C).

The *Marine and Coastal Access Act* (2009) provides the framework for the current marine licensing system. The capital scheme (which is included in all options at differing timescales) is considered to be significant works which will involve works

below MHWS. Therefore, it will require a marine licence from the Marine Management Organisation (MMO). Although the initial urgent wall repair works proposed in Option 1 and Option 2 are considered minimal, they will involve an increase of the seawall footprint by approximately 50m². As the footprint of the original coastal defence will increase below MHWS, the works will also require a marine licence from the MMO.

The *Town and Country Planning Act* (1990) is the principal legislation governing planning permission and law in England and Wales. The initial urgent wall repair works in Option 1 and Option 2 will not require planning permission, however the capital scheme (which is included in all options at differing timescales) will require planning permission.

The *Wildlife and Countryside Act* (1981), as amended by Schedule 9 to the *Countryside and Rights Way Act* (2000) states that any operations within, or adjacent to, a Site of Special Interest (SSSI) requires consent from Natural England. There are no SSSIs within the footprint of the proposed works, however there are geologically designated SSSIs to the north and south of North Bay. As the proposed works are considered to have a negligible effect on the existing coastal processes, no adverse effects are anticipated to the geological SSSIs to the north and south of the proposed works.

Environmental permitting was discussed in meetings with the Environment Agency (EA) in October 2021. It was confirmed that a Flood Risk Activity Permit would not be required for the proposed works.

The *Water Framework Directive* (WFD) ensures all European waterbodies are of Good Ecological Status by setting Environmental Quality Objectives for water chemistry, ecological and hydromorphological quality parameters. The proposed works are intended to prolong the life of the existing defences. Under the Do Nothing scenario, the eventual loss of the existing defences due to structural deterioration would likely result in significant impacts to water quality. Such impacts would be avoided due to the implementation of the proposed works. Assuming the adoption of suitable mitigation measures during the repair works, the potential for short term environmental impacts will be minor and no permanent deterioration in status is impacted.

The Environmental Impact Assessment (EIA) directive is implemented via various Regulations two of which are applicable to the proposed works.

Part 69 of Schedule A2 of the *Marine Works (EIA) Regulations* (2017) is of some relevance to the proposed works. It states an impact assessment is necessary for:

‘coastal work to combat erosion and maritime works capable of altering the coast through the construction, for example, of dykes, moles, jetties and other sea defence works, excluding the maintenance and reconstruction of such works’.

As the proposed works may be defined as ‘maintenance’ of the existing sea defence at North Bay (in the context of the above definition), it is envisaged that under this regulation an EIA would not be required. However, this will be confirmed by a formal EIA Screening request to the Marine Management Organisation (MMO)).

Town and Country Planning (2017) contains the same regulatory position as above with a clarity on the ‘exclusion of maintenance and reconstruction’. This means that an EIA, under the Town and Country Planning Regulations, is not envisaged to be required for the proposed works (although this will be confirmed by a formal EIA Screening request to the Local Planning Authority).

2.4 The case for change

The existing coastal defence assets originally date back to 1890 and are in a deteriorating condition. The Strategy (2009) assessed the structural stability of the assets as being at high risk of failure, with an annual probability of failure of 10% to 50%. The Strategy estimated that there was a 95% probability that the seawalls would fail within 10 years under a No Active Intervention policy.

Initial asset inspections undertaken in 2010 identified assets within North Bay as needing ‘urgent’ repair. Additional North East Coastal Monitoring Programme inspections in 2018 and 2020 reiterated the need for Phases 2 and 3 of the Urgent Wall Improvements project to be completed. Failure of the coast defence assets would lead to the onset of coastal erosion. The initial losses would be the promenade immediately behind the seawalls, and the loss of Royal Albert Drive in the Clarence Gardens MU. The resumption of active toe erosion and removal of support to the steep coastal slopes behind the promenade and road would also result in reactivation of pre-existing landslides and instigation of new landslides. The cliff-top would consequently collapse and recede resulting in the significant loss of assets, services and property.

Failure of the seawall and the onset of coastal erosion would impact on tourism in this area through reduction of value of enjoyment visitors would obtain, the loss of the promenade and the loss of tourist facilities e.g. golf course.

There are no residential properties at risk of flooding in either management unit.

North Bay Cliffs MU

The North Bay Cliffs Management Unit (20A/2-20A/7) is in the northern section of North Bay and has heavy abrasion around access steps and the front face. There is also spalling of the capping beam along the entire length of this frontage. The wall to the north of the ramp at Peasholm Gap continues to show several (currently minor) vertical cracks. The coastal slope along North Bay is largely inactive however commercial properties such as the miniature railway would be lost through landsliding following erosion at the toe of the slope.

Within this Management Unit, under the Do Nothing scenario, there are 38 residential properties (including 25 properties within the Sands Development) potentially at risk and 94 commercial properties (including 81 holiday lets within the Sands Development) potentially at risk. Alongside these properties there are 166 beach chalets at risk along the promenade, a café, and crazy golf course. 13 of the residential properties at the top of the coastal slope and the North Cliff Golf Club and course would also be at risk within a 100-year appraisal period.

Clarence Gardens MU

Management unit 20B/1-20B/3 covers the southern section of North Bay. The slipway in front of the Oasis Café in this section is heavily damaged with crack and blockwork issues. The promenade wall next to this has a large vertical crack on the wingwall and the surface is poor in places. Royal Albert Drive runs adjacent to the seawall. Regular overtopping during storm events is deemed to be a risk to public safety, when this occurs, the road is closed affecting commercial businesses in North Bay and connectivity between North and South Bay. The slope along the Clarence Gardens area is slightly active however remediation works have repaired cracks and the slopes are now well vegetated.

Within this Management Unit, under the Do Nothing scenario, there are 186 residential properties and 68 commercial properties potentially at risk. There are only a small number of commercial properties at the toe of the coastal slope however a significant number of the properties at the top of the coastal slope would be at risk if the sea wall was to fail and erosion commence, triggering failure of the coastal slope.

2.5 Objectives

The aim of the North Bay Urgent Wall Improvements is to sustain the current standard of service provided by the existing coast defence assets in North Bay, whilst maximising the longevity of the previous investments.

The objectives set out by the 2009 StAR for the strategy area as a whole are as follows:

- Maintain an appropriate level of coastal defence protection for people and their property, in partnership with opportunities identified in other Strategies and Plans
- Maintain and, where possible, improve tourism, amenity and recreational value of beaches and associated coastal features
- Protect designated features, such as geological SSSIs
- Protect ecologically valuable inter-tidal rocky shore habitats
- Maintain the Conservation Area's character and appearance
- Prevent disturbance to sea birds
- Maintain and, where possible, improve access to the seafront

- Conserve visual appearance of coastline
 - Prevent damages to fisheries
 - Maintain water quality in order to achieve the requirement for all coastal waters to maintain 'excellent' status under the Water Framework Directive
 - Ensure the Coastal Defence Strategy takes account of Climate Change
-

2.6 Current arrangements

The existing coastal defence assets are maintained by North Yorkshire Council, with a regular inspection regime carried out under the Cell 1 Regional Coastal Monitoring Programme.

During storm events, when overtopping of the seawalls is deemed to be a risk to public safety, North Yorkshire County Council (as Highway Authority) along with HM Coastguard close Royal Albert Drive. A variety of temporary methods are used such as signs, road blocks, physical barriers, or personnel with vehicles to block the road and warn the public. The road is closed at either the Sands development or the roundabout at the landward end of Peasholm Gap.

2.7 Main benefits

Improving the North Bay assets to sustain the current SoS is crucial to protect from coastal erosion and maximise longevity of the existing assets to allow future capital schemes to be developed. The damages caused by the Do-Nothing scenario across the full 100 year appraisal period (covering all phases of the project) have been explored and quantified in the North Bay Phase 2 Economic Report (summarised in Table 1 below for the undiscounted cash values). The area at risk was derived as part of the Phase 1 PAR completed in 2012 and has been assessed based on the information presented in the approved 2009 StAR. This methodology has been retained and updated with more recent information. Damages have been calculated using guidelines from the Multi Coloured Manual (MCM) and the Green Book (HM Treasury, 2020).

The main benefits of the North Bay Urgent Wall Improvements project are the protection of 224 residential and 162 non-residential properties, 166 beach chalets, recreation infrastructure including the promenade, miniature railway, and golf course and the avoidance of the associated tourism losses, protection of the main road link between North and South Bays, and important utility infrastructure, and the avoidance of mental health impacts for residents.

Table 1: Undiscounted cash damage values for damage receptors

Damage Receptor	North Bay Cliffs Management Unit	Clarence Gardens Management Unit
Residential Property	£9,439k	£28,269k
Commercial Property	£28,722k	£8,114k
Mental Health	£849k	£4,166k
Recreation & Amenity	£10,685k	£10,685k
Traffic Disruption	-	£29,025k
Services	-	£6,453k
TOTAL	£49,695k	£86,712k

2.8 Strategic risks and constraints

The following are potential constraints the proposed works may face:

Tourism – the beach in North Bay is a popular amenity beach and during the peak tourist season is extremely busy. Disruption from construction during the peak tourist season could have an adverse impact on local businesses and Scarborough's reputation as a premier seaside resort, therefore works should be programmed outside of the peak tourism season (school summer holidays July-August) as far as possible.

Weather – as the works will be taking place on the foreshore in a tidal area the works will need to be programmed outside of the winter months (December-February) due to severe and unpredictable wave and weather conditions.

Access - foreshore access from the promenade for vehicles and machinery is limited. To avoid having to track machinery long distances along the foreshore from the slipway at the Sands development it may be possible to temporarily re-open the slipway halfway along the Clarence Gardens frontage for the duration of the works.

Funding & Resources – due to other high priority schemes that have recently been delivered by SBC the availability of funding is limited. It should once again be noted that the proposed works are urgent and necessary to maximise the longevity of the previous investments in order to explore the longer term strategic options in the Scarborough Coastal Defence Strategy Refresh.

Designated areas – Scarborough Conservation Area is located to the south of the bay and includes the defences from Peasholm Gap southwards. In addition, there are two geological SSSIs, to the north and south of the bay respectively.

Water – North Bay is a designated bathing beach and currently holds Blue Flag status which is important to the visitor economy of the local area.

3.0 Economic Case

3.1 Critical success factors (CSF)

The Critical Success Factors (CSF) in Table 2 have been identified as essential in order to deliver a successful scheme. The CSFs are underpinned by the Investment Objectives which are defined in the Strategic case in Section 2.5.

The CSFs described below are reflective of the main drivers for delivering the scheme which are focused around the reduction of coastal erosion risk to residential and non-residential properties in Scarborough North Bay.

Table 2: Critical Success Factors

No.	Critical Success Factor	Measurement Criteria
CSF1	Reduction in coastal erosion risk to people, property and businesses within the study area.	Reduction in the number of residential (224) and non-residential (162) properties at risk from coastal erosion.
CSF2	Strategic fit contributes to local and national, environmental and water management objectives.	Delivers a wider range of benefits to the local economy by reducing coastal erosion risk.
CSF3	Value for money.	Deliver value for money by identifying the most economic option which is technically feasible and provides the best standard of protection for managing coastal erosion risk.
CSF4	Scheme fits within wider Strategy for area	Works do not preclude any recommendations from ongoing Strategy Review
CSF5	Promote sustainable options for managing coastal erosion risk in the study area, while considering the whole life-costs of mitigation options.	Maximise life of existing assets.

3.2 Long List of Options

The long list of options are those which were presented by the 2012 PAR for Phase 1 of the North Bay Urgent Wall Improvements project. No additional options have been identified for inclusion in the appraisal.

The baseline option for a sustain standard of service (SoS) appraisal is the Do Minimum, defined as the minimum action or intervention needed to ensure that the legal requirements or performance of an asset is met. Option 1: Phased Repair Scheme is the minimum amount of intervention that can be carried out whilst maintaining the current SoS of the asset system in North Bay. Therefore Option 1 is the baseline for this option appraisal.

3.2.1 Option 1: Phased Repair Scheme

Repair works to the coastal defence assets would be carried out in phases according to the urgency of works. The phased approach would involve repair works being carried out over the full length of the coastal defence assets in both management units in three planned phases over the short and medium term. This brings forward the seawall repair portion of the preferred strategic option and would result in the need for a capital scheme being delayed until 2042 (Phase 4). The capital scheme to implement the strategic options would consist of rock revetment, further seawall repairs and slope stabilisation.

This was the preferred option in the 2012 PAR. The capital works for Phase 1 of this approach were successfully completed in 2014. This OBC is for Phase 2 of this approach.

3.2.2 Option 2: Full Repair Scheme

Repair works and preventative works to delay/avoid damage to the full length of assets from between the Sea Life Centre in the north and the start of the 'East Pier, Castle Headland and The Holms' coast protection scheme would be carried out in one phase without delay. This brings forward the seawall repair portion of the preferred strategic option. A capital scheme to implement the strategic options of rock revetment, further seawall repairs and slope stabilisation would be delayed until 2042.

This option was rejected by the 2012 PAR as it was less economically efficient than Option 1. Implementing this option going forward would mean combining Phases 2 and 3 of the phased repair scheme into a single phase, delivering all the remaining urgent repair works in one phase that were not delivered by the 2014 Phase 1 works.

3.2.3 Option 3: Capital Scheme

No further repair works are carried out, instead routine maintenance is continued until a capital scheme to implement the preferred strategic option from the 2009 StAR. The capital scheme would incorporate seawall repairs along the full length of the coastal defence assets in both management units, along with rock revetment and slope stabilisation works. Under Option 3 it is assumed that the capital scheme would be developed immediately, however given the scale of the scheme and the likely level of site investigations, design, and consenting & permissions required, and the amount of funding/contributions to be secured a long lead-in time would be required. It is therefore assumed that the construction of the capital scheme under Option 3 would be in Year 5.

3.3 Technical appraisal

3.3.1 Option 1: Phased Repair Scheme

Options 1 and 2 both propose the same technical solutions in terms of repairing the existing assets to prolong the asset life and delay the need for a capital scheme. The capital scheme implemented is as described as Option 3 below. A programme comparing the relative intervention points of all 3 options can be found in Appendix L.

Option 1 proposes to prioritise investment in repairs to target the most urgent issues first, whilst continuing to maintain those assets where repairs are less urgent and where improvement works can be programmed for funding (contributions) for a later date. Urgent works identified in Phase 1 commenced in 2012 and were delivered over the two-year period which followed. These works delivered condition improvements for 35% of the total frontage. Phase 2 (the subject of this OBC) has a one-year construction programme and intends to cover 31% of the total frontage. Phase 3, anticipated for 2032, will cover 28% of the frontage and is anticipated to have a two-year construction programme. The final capital project would therefore be delayed until 2042.

Works for Options 1 and 2 include:

- Installation of mass concrete scour protection at locations where undercutting of the wall has occurred due to erosion of the bed rock and/or lowering of beach levels
- Replacement of eroded masonry sets with new concrete encasement
- Breaking out and replacement of a number of badly damaged promenade slabs and slipway slabs.
- Replacement of several badly damaged seawall copes (recurved)
- Replacement of damaged secondary defence wall.

Options 1 and 2 involve simple scour protection and re-facing repairs which are relatively easy to install and can be undertaken in localised sections but are constrained by tidal working and the need to minimise disruption to tourist use of the beach.

The wall repair scheme elements of Options 1 and 2 do not require planning permission and are unlikely to be controversial in terms of their impact on the seafront, therefore there is little risk of delays, objections or changes to the design as a result of licences, consents or application processes. The capital scheme element of all three options is likely to be more controversial and will require extensive consultation within the council, stakeholders and the general public.

The initial short and medium term delivery activities of Options 1 and 2 only include elements of erosion protection, therefore climate change consequences are not a significant factor for these initial phases. Climate change considerations will form

a critical part of the design development process for the capital scheme proposed in the latter stages of Options 1 and 2.

3.3.2 Option 2 – Full Repair Scheme

Option 2 proposes the same technical solutions as Option 1. The programme, however, would differ due to lack of phased maintenance.

Option 2 initially proposed to carry out all repairs commencing 2012, with an anticipated construction programme of four years. As the 2012 PAR recommended Option 1 as the preferred option, and Phase 1 of which has already been delivered, a change to Option 2 at this point would result in an anticipated construction period of two years.

3.3.3 Option 3 – Capital Scheme

Option 3 proposes to carry out the capital scheme to deliver the preferred option from the 2009 StAR immediately. Given the more complex nature of this option, a longer lead-in time would be required for design and investigations, consents and permissions, and contractor procurement. It is anticipated that construction would commence in 2028, and last for three years.

This capital scheme would consist of the following elements:

- Unit 20A/2 – 20A/7 North Bay Cliffs; sea wall repairs and slope stabilisation
- Unit 20B/1 – 20B/3 Clarence Gardens (N); rock revetment, seawall repairs and slope stabilisation

Option 3 will be a more complex design and construction project that will involve slope stabilisation and the construction of a rock revetment, in addition to far more extensive wall repairs than proposed in Options 1 and 2.

Climate change will form a critical part of the design development process for this capital scheme. The climate change impacts on achieving the required overtopping performance will be a significant factor in the design development.

3.4 Environmental appraisal

The potential key positive and negative environmental impacts of the detailed options being considered are presented in Table 3. Only the potential impacts that differ between the options are presented here allowing for a comparison of each option's positive and negative impacts against each other. Mitigation measures and enhancement opportunities have also been proposed, where required. A complete appraisal of the positive and negative effects of the preferred options is presented later in the OBC.

Table 3: Comparison of key environmental impacts of the alternative options

Key Positive Impacts	Key Negative Impacts	Mitigation/ Enhancement Opportunity
Option 1 – Phased Repair Scheme		
Smaller, more localised, works with lower effects, due to shorter duration, on surrounding environment.	Repeated disturbance associated with the repair works at multiple occasions (years 1 and 9).	Construction works should follow industry best practice guidance (i.e. PPG and CIRIA).
A phased approach allows for the works to be more easily undertaken around sensitive tourism and bird periods.	Wave overtopping issue not resolved until the capital works have been completed.	Works should be undertaken outside of peak tourism period.
Repair works would extend the residual life of the defences, delaying the time for capital works by 20-30 years.		Production of a construction method statement will ensure suitable mitigation for construction works (e.g. materials to be used, timing of works, prevention of pollution, etc.)
Option 2 – Full Repair Scheme		
Repair works would extend residual life of defences, delaying the time for capital works by 20-30 years.	Wave overtopping issue not resolved until the capital works have been completed.	Works should be undertaken outside of peak tourism period.
Repair works undertaken once. Thus, fewer disturbances than Option 1.		Construction works should follow industry best practice guidance (i.e. PPG and CIRIA).
Fewer disturbances and the extension to the residual life of the defences means that this option is considered to be the most sustainable.		Production of a construction method statement will ensure suitable mitigation for construction works (e.g. materials to be used, timing of works, prevention of pollution, etc.)
		A SWMP will be produced and implemented prior to the commencement of works.
Option 3 – Capital Scheme		
Lowest disturbance to the surrounding environment as no repair works are required.	Residual life of the defences not extended to their full potential, thus reducing the period for when capital works will be required in the future.	Construction works should follow industry best practice guidance (i.e. PPG and CIRIA).
Wave overtopping issue resolved sooner.	Potential for assets requiring urgent work to deteriorate further and collapse during the five year capital works period, leading to significant health and safety dangers to the public using the promenade, beach and road.	Works should be undertaken outside of peak tourism period.
		Production of a construction method statement will ensure suitable mitigation for construction works (e.g. materials to be used, timing of works, prevention of pollution, prevention etc.)
		A SWMP will be produced and implemented prior to the commencement of works.

3.5 Economic appraisal

3.5.1 Assessment of benefits

The economic assessment which was produced for the 2012 PAR for Phase 1 of this project built up on the economic assessment carried out for the 2009 Strategic Appraisal Report (StAR) for the Scarborough Coastal Defence Strategy: Holbeck to Scalby Mills. It took the strategic assessment probabilistic methodology and updated the input data for the various types of damage receptor based on the most up to date information that was available. No changes to the assumed probabilities were made.

The economic assessment for this Phase 2 OBC has reviewed and updated the data in the 2012 assessment. In addition, mental health benefits (the guidance for which was released in 2020) have been included for the residential properties.

Damages have been calculated following the guidance in the Multi Coloured Manual (MCM, 2013) and the Green Book (HM Treasury, 2020). These documents have been used in combination with the Defra FCERM-AG series and Supplementary Guidance Notes.

Damages have been calculated for the 100 year appraisal period and discount rates starting at 3.5% and reducing to 2.5% have been applied. The benefits for the options take into account all of the phases included within each option across the full 100 year appraisal period. Benefits have been calculated to a Q1 2023 base date.

The updated present value benefits for this scheme over the 100 year appraisal period are £98,117k (£41,532k North Bay Cliffs MU and £56,585k Clarence Gardens MU).

There is no difference in the monetarised present value benefits between the options, as all options include the capital scheme at some point to prevent the onset of erosion within the 100 year appraisal period. The total benefits have been apportioned to the different phases of the option to ensure each phase is economically justifiable and to allow the Partnership Funding Calculator to be completed (see Section 5.2).

3.5.2 Assessment of costs

The construction costs for the repair works have been developed to a Q1 2023 price date (uplifted using GDP Deflator from March 2022 derivation), these are based on constructions costs from past projects with increases made to rates to take into consideration the smaller more localised nature of the works along with recent cost increases in materials following COVID19. Costs have been reviewed by SBC's Principal Engineer and Flood & Coastal Engineer and compared to similar works they have undertaken with their framework contractor in recent years.

The design of the works and the site supervision could be undertaken by either SBC's in-house technical team or design consultant.

The costs for developing and constructing the capital scheme from the preferred strategic option have been taken from the 2009 StAR and updated to a 2023 base date using GDP Deflator. These costs have then been applied to all three options and discounted to the appropriate investment year. Consequently Option 3 shows higher present value costs due to the significant capital scheme costs occurring earlier in the appraisal period.

Due to the type of works involved in the repair works, primarily re-pointing, re-surfacing and toe works, for Options 1 and 2 it is not anticipated that significant site investigation or further surveys will be required however some intrusive concrete cores etc. might be required. The site investigation and survey costs included in the Strategy for the capital scheme have been included at the appropriate year for all options.

Due to the type of works proposed for the repair works there is little opportunity for any environmental enhancement works, as the works will repair the existing assets to the same appearance and form. A study is currently being carried out to identify potential environmental enhancement opportunities along the entire Yorkshire Coast. The findings of this study will be incorporated into the Scarborough Coast Defence Strategy Refresh, with appropriate measures identified for North Bay that can be incorporated into the capital scheme.

Compensation will not be required for the repair works as the assets are owned by SBC and no privately owned land or assets will be affected. The work will be carried out outside of the peak tourist season and therefore there will be minimal impact on the tourism trade in the North Bay.

Ongoing maintenance costs for all options have been based on the annual maintenance budget that SBC have for the North Bay coast defence assets of £30k a year.

The risk contingency at the option appraisal stage has been based on the 60% optimism bias included within the Strategy. This is due to the largest proportion of the cash costs for all 3 options being associated with the capital scheme which has not been further developed from the preferred strategic option at this stage. The risk contingency for the preferred option has been reassessed in Section 5.1 to reflect the additional option development work carried out.

Table 4: showing the results of the economic appraisal over the 100 year appraisal period

Option	PVc £k	PVb £k	BCR	Rank
1 – Phased Repair Scheme	20,993	98,117	4.67	1
2 – Full Repair Scheme	21,408	98,117	4.58	2
3 – Capital Scheme	31,578	98,117	3.11	3

3.5.3 Economic sensitivity

Sensitivity tests for the most economically viable option (Option 1 – Phased Repair Scheme) have been carried out looking at the impact of changing the timings of the different stages of interventions.

The sensitivity of the timing of the capital scheme has been investigated. If the phased repair works are not able to delay the need for the capital scheme by the duration estimated, and the works are instead required in year 10 then the PV costs would increase by 27% to £26,689k. Conversely, if the repair works are more successful in delaying the need for a capital scheme by a further 10 years to year 30, then the PV costs would reduce by 22% to £16,424k. As the repair works in Option 1 and 2 are essentially the same but with different timings then any change to the estimated delay for the capital scheme intervention would affect both options similarly. Therefore, there would be no change to the most economically viable option.

The sensitivity of the most economically viable option to the timings of the different phases of the repair works has also been considered. Option 1 assumes the repair phases are carried out in year 1 (31% of frontage) and year 9 (28% of frontage) based on urgency and priority of works. Option 2 – Full Repair Scheme represents the case if all the remaining repair works were required immediately. If this occurred then the PV costs would only increase by 2% to £21,408k, and the repair of existing defences approach would remain more economically viable than Option 3 – Capital Scheme.

The capital scheme of rock revetment, seawall repairs and slope stabilisation which is the preferred strategic option is an acceptable solution for this location. It will provide a continuation of the 'East Pier, Castle Headland and The Holms' coast protection scheme completed in 2005. The choice of preferred strategic option will be reviewed during the current refresh of the Scarborough Coastal Defence Strategy: Holbeck to Scalby Mills. As the costs for the capital scheme are included in all three options, just at different intervention points, then a change in the type of capital scheme would not affect the choice of option for this OBC. Option 1 maximises the longevity of the previous investments through phasing and prioritising the repair works. This option therefore is the most flexible in terms of future investment, and does not preclude any potential changes to the preferred strategic option.

3.6 Carbon appraisal

A detailed assessment and appraisal of the carbon benefits has not been undertaken, the options that have been considered all contain similar works over the appraisal period, however it is largely the timing of when the works that varies.

It is considered that a phased approach to delivery of the works will likely be the lowest carbon approach. The reasoning for this is that there is currently significant

investments and research in the construction sector and low carbon approaches for delivering sea defences (which tend to be concrete and carbon heavy). As time passes the improvements in lower carbon concrete works will only increase, it is therefore Option 1 which phases the works and delays the more significant capital scheme which will likely be the lowest in terms of carbon.

3.7 Option Selection

Option 1 – Phased Repair Scheme has the highest benefit-cost ratio. Although Option 3 – Capital Scheme offers the additional non-monetarised benefits of potentially reducing the wave overtopping sooner and requires less interventions and therefore disruption, the incremental PV cost is very high at £10,585k and is therefore not justified. In order for Option 3 to become the most cost-beneficial options, there would have to be an additional £49.7M in benefits from reduced overtopping. Wave overtopping affects traffic and public safety and does not cause flooding of properties at this location, this level of benefits is therefore considered to be unlikely, as this is equivalent to a 51% increase in benefits.

The economic evaluation has compared the effectiveness of carrying out short term repair works (through a phased programme) and a delayed capital programme, against carrying out a capital scheme in the short term. This has shown that the former proposal is a better economic option.

Technically all three options are suitable for achieving the Strategy objectives. A short term capital scheme has the risk however that assets that have been identified as requiring urgent works will continue to deteriorate during the five year period prior to construction commencing. This may result in a potential collapse and breach of a section of the sea wall. This would result in additional costs for delivering the capital scheme and would pose significant health and safety dangers to the public using the promenade, beach and road.

The environmental impacts of the three options are very similar. The principal positive effect of Options 1 and 2 over Option 3 is the extension of the defences' residual lives by 20 years, thus delaying the requirement for the capital works. For this reason, Options 1 and 2 are preferred, environmentally, over Option 3. The potential environmental effects of Options 1 and 2 are very similar; however, the lower number of disturbances that would result through the implementation of Option 2 means that this is marginally the environmentally preferred option.

Following the detailed option appraisal, Option 1 was considered to be the preferred option based upon economic viability. The similarities between Options 1 and 2, in terms of their potential environmental effects, are such that selecting the preferred option on economic grounds is considered acceptable. Option 1 – Phased Repair Scheme is therefore the preferred option.

Table 5 showing how well each option meets the appraisal criteria and the derivation of the selected option.

Criteria	Option 1 – Phased Repair Scheme	Option 2 – Full Repair Scheme	Option 3 – Capital Scheme
Question: Meets the Objectives?	Yes	Yes	Yes
Question: Meets critical success factors?	Yes	Yes	No
Technical	=1	=1	3
Environmental	2	1	3
Economic	1	2	3
Carbon	1	2	3
Operational	3	2	1
Local preference	1	2	3
Conclusion and selection	1	2	3

4.0 Commercial Case

4.1 Procurement strategy and timescales

4.1.1 Contract Strategy

The contract strategy adopted by the Council for both its Consultants and Contractors appointments is to use the New Engineering Contract (NEC) making best use of the incentivisation and partnering options available to foster a team spirit between all parties. The principal objectives of the NEC contracts are clarity, flexibility and a stimulus to good management:

- **Clarity:** The NEC uses ordinary language with as few long sentences and legal terms as possible. The actions required by each of the parties are precisely defined so that it is clear who is to do what, how and in what timescale.
- **Flexibility:** The contract is structured to be flexible by the use of main and options clauses that deal with variables such as design responsibility, payment basis, risk allocation etc without the need for amendment.
- **Stimulus to good management:** The procedures within the contract have been designed so that they actively encourage co-operation, and their implementation should contribute to, rather than detract from, the effective and efficient management of the contract. The contract is also written to ensure pro-active participation to give the best indication of outcome at every stage.

Given the nature and value of the works, a Consultant will be appointed to undertake Design and Planning, Licences & Consents (PLCs) for the works. The Council anticipates managing and supervising the delivery during the construction phase. A separate contract will be let for the appointment of a Contractor to deliver the works. Due to the nature and timing of the works, there are no major advantages of an alternative Design & Build contract strategy for this project.

4.1.2 Consultant Selection

The YORConsult2 Framework will be used for the appointment of a Consultant. This Framework is based on the use of the NEC3 Contracts. For each scheme under the Framework, a mini tender competition is held between the Framework Consultants for the provision of services for the full delivery of the scheme, including design, PLCs, procurement and project management and supervision.

Consultants to partner with North Yorkshire Council will be selected from the Coastal Lot of the YorConsult2 Framework. The use of this Framework represents

a value for money mechanism for procuring a suitably qualified and experienced Consultant, fully in accordance with OJEU rules and procedures.

4.1.3 Contractor Selection

The procurement of a Contractor will be carried out through the use of the YORCivils2 Framework. This Framework is based on the use of the NEC3 Contracts. For each scheme under the Framework, a mini tender competition is held between the Framework Contractors for the provision of services for the full delivery of the scheme. The use of this Framework represents a value for money mechanism for procuring a suitably qualified and experienced Contractor, fully in accordance with OJEU rules and procedures

4.1.4 Contract Selection

Of the NEC3 forms of contract the two main pricing options for consideration of this commission are:

Option A: Lump Sum –this form of contract is useful when the scope elements are well described and there is limited scope for changes. This contract places a greater level of risk on the Consultant or Contractor. This additional risk may be reflected in marginally higher tender prices, however overall, this type of Contract should ensure a greater cost certainty on the project budget at the Contract award stage.

Option C: Target Cost-this form of Contract incentivises the Consultant or Contractor performance through a pain/gain share based on the performance. This form of Contract shares risk more evenly between both the Client and the Contractor.

In terms of the Form of Contract for this project it has been recommended by the Council's Legal and Finance Teams that to provide greater cost certainty at the Tender Stage that the Option A Lump Sum Contract is used.

4.2 Efficiencies and commercial arrangements

Throughout the life cycle of the project, efficiencies will be sought as good practice and recorded in order to help the Environment Agency meet its efficiency targets set by Defra. A project efficiency register will be kept and made available to interested parties following scheme completion. Opportunities to promote the works within the local area will be taken to increase the already strong buy-in and support of the local community and businesses. Delivery of a successful partnership project will encourage future opportunities of local support both financial and non-financial in nature.

5.0 Financial Case

5.1 Summary of financial appraisal

The costs for the preferred option are based on recently completed coastal defence schemes & published costs data. These values were then adjusted to take into consideration the recent increases as a result of COVID19 inflation/material shortages. Costs were then benchmarked with the SBC Engineering Team's recent project experience which have used a framework contractor on similar works.

An Optimism Bias assessment was carried out (Appendix N) in line with FDGIA Appraisal Guidance, to account for uncertainty within price estimates and provide a sufficient risk allowance. This gave a value of 30% to be applied to the design and construction costs, equivalent to £320k (undiscounted). The Environment Agency's 'Managing financial pressure on the FCRM programme: Guidance note for Risk Management Authorities on the effect of increasing inflation and financial pressures on scheme viability' (Guidance document dated 16-05-22) has been applied, with an additional annual 7% allowance for the capital works included in the project risk contingency, equivalent to £124k (undiscounted). This gives a total risk contingency budget of £444k (undiscounted).

There is limited environmental enhancement opportunity presented within the preferred option. It is important that best working practices are adhered to in order to ensure that the construction phase does not negatively impact the surrounding environment.

Compensation will not be required for the repair works as the assets are owned by SBC and no privately owned land or assets will be affected. The work will be carried out outside of the peak tourist season and therefore there will be minimal impact on the tourism trade in the North Bay.

The future costs include Phase 3 of the repair works in Year 8 and the full capital scheme in Year 20, as well as the ongoing annual maintenance costs for the North Bay coastal defence assets. An optimism bias of 60% has been applied to the future costs due to the strategic level of the development of the capital scheme, which forms the majority of the future costs.

Table 6: showing the Whole Life Cash Cost (undiscounted).

Cost Heading	Whole-life cash cost
Cost up to OBC.	52,000
Salary costs	42,680
Cost of Professional Advice	59,751
Site investigation and survey	25,608
Construction	853,591
Supervision	85,359
Environmental mitigation	-
Land purchase & compensation	-
Other.	-
Risk or Optimism Bias.	443,867
Future cost (construction + maintenance)	25,339,948
Optimism Bias on future cost.	13,911,701
Total	40,814,505

Table 7: showing the Total Value for approval of Phase 2 of the Project (cash values, undiscounted)

Cost Heading	Total value of project (Phase 2) (For approval)
Cost up to OBC.	52,000
Salary costs	42,680
Cost of Professional Advice	59,751
Site investigation and survey	25,608
Construction	853,591
Supervision	85,359
Environmental mitigation.	-
Land purchase & compensation	-
Other	-
Risk or Optimism Bias.	443,867
Total (incl. sunk costs)	1,562,855

5.2 Funding sources

The partnership funding score is 132% and is therefore fully Grant in Aid fundable. The Partnership Funding Calculator can be found in Appendix D.

The Partnership Funding Calculator has been completed for a 20-year benefit period, this is the expected duration until the capital scheme will be required. By capping the benefit period to the capital scheme, it avoids any potential double counting of benefits at the capital scheme stage. The benefits have also been factored by the proportion of the frontage in each of the two management units that is being covered by the Phase 2 works to ensure that there are sufficient benefits left for the following Phase 3 urgent repair works. The number of residential properties benefitting under OM3 have also been factored in the same way. This is the same approach that was applied for the Phase 1 PAR in 2012.

Table 8: showing outcomes to be claimed over the different phases of the Project.

Phase	Year	Length Frontage Improved	% Frontage Improved	OM3s Claimed	Benefit Period for PF Calculator
Phase 1	2012	540m	36%	142	30 Years
Phase 2	2023	471m	31%	37	20 Years
Phase 3	2030	430m	28%	45	12 Years
Total (Phases 1-3)		1,441m	95%	224	
Phase 4	2042	1,520m	100%	224	

North Yorkshire Council will be responsible for the ongoing maintenance costs. North Yorkshire Council will be responsible for any costs that exceed the approval amount.

Table 9: Sources of Funding (PV discounted values from PF Calculator).

Source of Funding	£k
EA contribution (Grant in Aid)	£1,466k
Local Levy	£0k
Contributions 1	£0k
Total funding	£1,466k

Table 10: Partnership Funding Score

Source of Funding	%
Raw Partnership Funding score	132%
Adjusted Partnership Funding score	132%

5.3 Expenditure and income profile

The expenditure profile is based on the design and consenting being carried out in 2024/25 and construction being carried out in 2025/26.

Table 11: Income and Expenditure Profile (cash values, undiscounted)

Income and Expenditure streams £k	23/24	24/25	25/26	26/27	27/28	Total
Cost less contingency		£85k	£982k			£1,067k
Contingency		£26k	£418k			£444k
Total cost		£111k	£1,400k			£1,511k
Grant in aid		£110k	£1,401k			£1,511k
Contribution		-	-			-
Total income		£110k	£1,401k			£1,511k*

*Note: This value does not include the sunk costs up to OBC of £52k. When included this equals the £1,563k total in Table 7.

6.0 Management Case

6.1 Project management

6.1.1 Project Governance

North Yorkshire Council as the Coast Protection Authority will take the lead in the development, implementation and project management of the project. From the 1st April 2023 Scarborough Borough Council will become part of North Yorkshire Council (replacing the current county council and seven district and borough councils). The Coast Protection Authority will transfer to the new council at this point, and North Yorkshire Council will deliver the scheme.

The project will be managed in line with PRINCE2 best practice. An approved PRINCE2 Project Executive within the Council will be given the overall responsibility of delivering the project, with a Project Manager from the Council responsible for day-to-day project management. Project Assurance will be delivered by the Council's Senior User, working closely with the Project Manager and Project Board.

The project will be governed by a Project Board comprising:

- Project Executive (North Yorkshire Council) – Chris Bourne
- Senior User (North Yorkshire Council) – Robin Siddle
- Senior Supplier (Consultant) -TBC
- Senior Supplier (Contractor) –TBC

Gateway Review Processes will be utilised at key points throughout the project to be determined in the Project Plan.

Communication from the Project Board to the Project Manager (and vice versa) occurs regularly throughout the project life cycle. The Project Board will meet quarterly but should the need arise more regular meetings can be arranged.

6.1.2 Project Team

The Project Team will comprise:

- Project Manager -TBC (North Yorkshire Council)
- Contract Manager (Consultant) –TBC
- Contract Manager (Contractor) –TBC
- Environment Agency –TBC

Other key stakeholders (some of whom may be invited to the Project Team) include:

- North Yorkshire County Council
 - Natural England
 - Yorkshire Water
-

6.2 Schedule

The preferred option will be delivered in four phases over the next century. Phase 1 of the urgent wall improvements was completed in 2012. This OBC relates to Phase 2 of the North Bay Urgent Wall Improvements to be carried out in Year 1.

It is envisaged that the design and screening of the Phase 2 works will be undertaken over a 4-month period between July 2024 and November 2024, contingent on procurement of a suitable Consultant and receipt of the necessary funding. The MMO marine licence could take up to a year to receive, however it is only required for a small proportion of the works where the footprint of the defences is being extended i.e. the toe scour protection. Therefore, the majority of the construction can go ahead if confirmation of the MMO licence is delayed.

It is envisaged that the majority of the construction of the Phase 2 works will be undertaken over a 5-month period between April 2025 (mobilisation) and September 2025, contingent on procurement of a suitable Contractor and receipt of the necessary funding and PLCs. It is likely that the works will pause over the months of July and August to minimise the impact on tourism. The final stage of construction will be completed upon receipt of the MMO licence, in the appropriate months, likely to be August/September 2025.

The construction programme is constrained by preferring to avoid the winter months due to adverse weather conditions and minimising impacts during the peak tourist season over the summer months. Additionally, the construction will be constrained locally by tidal conditions because Mean High Water reaches the base of the seawall and will encroach upon the working area fronting the rock armour revetment.

Repair Phase 3 and Phase 4 capital scheme of the preferred option have been considered in the whole life costing and will be contingent upon future updates of the Coastal Strategy, as informed by emerging science on climate change and results of ongoing monitoring and inspection. It is presently envisaged that Phase 3 of the project will be delivered in Year 9 (2032) and Phase 4 in Year 19 (2042).

Table 12: Main Event Dates.

Event	Date
Approval of OBC (funding approval)	June 2023
Detailed Design completed	November 2024
MMO Marine Licence received	August 2025
Work to be started on site	April 2025
Work substantially completed by	September 2025

6.3 Outcomes

Maintaining the integrity of the North Bay coastal defence assets will benefit 224 residential and 162 non-residential properties, and 166 beach chalets. There will also be wider benefits from the protection of recreation infrastructure including the promenade, miniature railway, and golf course and the avoidance of the associated tourism losses, protection of the main road link between North and South Bays, and important utility infrastructure, and the avoidance of mental health impacts for residents.

The residential properties which qualify under OM3 for Phase 2 of the scheme have been factored according to the length of the defences in each of the two management units which are being improved as part of Phase 2.

North Yorkshire Council own the coastal defence assets and will remain responsible for their ongoing maintenance.

Table 13: Outcome Measures delivered by Phase 2 of the project

Guidance Ref	Outcome Measures	Value
4.1	OM 1 - Ratio of whole-life benefits to whole life costs over the duration of benefits period.	14.6
4.2	OM 1A – Qualifying benefits over the appraisal period (PVb taken from table 2)	£21,403k
4.4	OM 1B - benefits to people that are not associated with avoiding household damages, eg, less stress/risk to life.	£352k
4.5	Duration of benefit period (not the appraisal period)	20yrs
5.2	OM 2A – Households at risk of flooding before the investment and which are going to benefit from a reduction in flood risk at the end of the duration of benefits period (households at risk today)	n/a
5.3	OM2B – Additional households that are at risk from the impacts of climate change before 2040	n/a
6.1.1	OM 3 – Households at risk of loss in the medium term	37
6.1.1	OM 3 – Households at risk of loss in the longer term	0
7.2	OM 4A – Habitat created or improved (ha)	n/a
7.3	OM 4B – Rivers enhanced – river habitats and natural processes restored and enhanced (km)	n/a

6.4 Risk, assumptions, issues and dependencies management

The key delivery risks are outlined in the table below.

Table 1: Key delivery risks

	Risk	Risk Owner	Mitigation
1	Natural England, Environment Agency or MMO objection due to (minor) footprint of elements of the scheme on intertidal habitat Timing of Marine Licence – MMO is taking considerably longer than its target timescales to issue licences.	Client and Consultant (shared)	Early engagement with Natural England, Environment Agency and MMO Robust environmental assessment supporting Planning and Marine Licence applications Survey of inter-tidal area affected by any works footprint
2	Funding availability from GiA	Client	Robust OBC submitted on back-of Coastal Strategy
3	EIA may be required	Client and Consultant (shared)	Early EIA screening opinion sought, with a case stated for our view that EIA is not required
4	Unforeseen ground conditions	Client	Trial pits were carried out in 2010 to assess the depth of the rock head, the overlying material and the location and extent of undercutting. The design for the scour protection, apron and facing repairs is simple and can be adapted easily on site to accommodate unforeseen conditions. A 30% contingency for Phase 2 of the works has been identified within the funding application to allow for unforeseen scope changes.
5	Extent of repairs required is greater than anticipated	Client	Repairs required are based on visual inspections carried out when beach levels were very low. A 30% contingency for Phase 2 of the works has been identified within the funding application to allow for unforeseen scope changes.
6	Health, safety and welfare during design process	Client, Designer, Principal Designer	Design-out health, safety and welfare issues during the design process where practicable. Produce Designers Risk

	Risk	Risk Owner	Mitigation
			Assessment for residual risks and PCI in advance of procuring a Contractor.
7	Health, safety and welfare during construction	Client, Principal Contractor, Sub-Contractors, Principal Designer	Ensure adequate planning and management of health, safety and welfare risks through appropriate Construction Phase Plan and Risk Assessments and Method Statements (RAMS).
8	Noise and disturbance to local residents and businesses	Client, Consultant and Contractor	Plan works to avoid main tourist season and minimise effects as far as practicable through avoidance or mitigation measures in accordance with construction good practice
9	Environmental effects	Client, Consultant and Contractor	Design works to avoid or mitigate environmental effects. Deliver works in accordance with construction environment management plan and site environmental management good practice

6.5 Assurance

Quarterly Project Board meetings will be held that will ensure that the project is being delivered as required in an appropriate manner in line with the Project Plan and budget. Independent assurance is also achieved by having an Environment Agency member as part of the Project Team. A post project evaluation will be completed in order to aid the delivery of future phases of the capital programme.

6.6 Engagement with Stakeholders and compliance with the Equality Act 2010

Regular communications with both the public and private stakeholders will be undertaken throughout the design, planning and construction stages. Consultation will ensure that all parties are fully consulted and are aware of the nature of the works that are proposed, including the reasoning behind the chosen option and likely outcomes.

Community residents will be informed of the details of construction and any disruptions that are likely to impact them in line with North Yorkshire Council's existing policies for public works advice.

7. List of Appendices.

- A List of reports produced
 - B Partnership Funding Calculator
 - C Photographs
 - D Details of proposed works
 - E Economic appraisal
 - F Cost breakdown
 - G Expenditure profile
 - H Project Schedule
 - I Technical reports (not used)*
 - J Risk
 - K Environmental reports
 - L Natural England letter of support
 - M Procurement strategy
-