	REPORT TO CABINET **TO BE HELD ON** **19 JANUARY 2016**
	Key Decision **Forward Plan Ref No**
Corporate Priority: **Developing safer and stronger communities**	**Cabinet Portfolio Holder** **Cllr M. Cockerill**

REPORT OF THE CHIEF EXECUTIVE – 16/5

WARDS AFFECTED: MULGRAVE WARD

SUBJECT: RUNSWICK BAY COASTAL PROTECTION SCHEME, PROJECT APPRAISAL REPORT

RECOMMENDATION (S):

Cabinet is recommended to:

i. Approve the Runswick Bay Coastal Projection Scheme Project Appraisal Report;

ii. Accept £1,040,000 FCDGiA (Flood and Coastal Defence Grant in Aid) funding from the Environment Agency and further £100,000 contribution from the Runswick Bay Coast Protection Trust to undertake a coastal protection scheme to the northern seawall, noting that no contribution is required from the Council;

iii. Approve the appointment of a consultant and a design and build contractor up to the amount of grant offered, selected through a competitive tendering exercise via the YORconsult/YorCivils Framework or Environment Agency WEM Framework;

iv. Approve entry into a funding agreement with the Runswick Bay Coast Projection Trust.

REASON FOR RECOMMENDATION (S):

To increase and rejuvenate the coastal erosion protection afforded to the village of

Runswick Bay, including better protecting 96 residential and 17 non-residential properties that have been identified to be at high risk of loss should the current seawall fail.

To authorise officers to appoint a consultant and contractor to undertake the required works in a timely fashion to co-ordinate with programmed Yorkshire Water preliminary works on the foreshore.

HIGHLIGHTED RISKS:

As shown in Appendix A.

1. INTRODUCTION

1.1 The Community of Runswick Bay has been formed between two headlands and comprises a quite deeply indented sandy bay of some 2km in length, backed by cliffs and steep till coastal slopes.

1.2 The Current Shoreline Management Plan 2 (SMP2) policy for Runswick Bay is 'hold the line.' The SMP2 notes that further works will be required to maintain this policy, most notably reinforcing the natural protection provided by the rock outcrop in the north of the bay.

1.3 The Runswick Coastal Strategy approved by Cabinet and the Environment Agency in 2015 confirmed the need to investigate improved coastal protection for the village. It recommended the development of a Project Appraisal Report (PAR) to identify a business case for scheme implementation. The 100% externally funded PAR has now been completed and has been agreed by the Environment Agency and is now seeking Scarborough Borough Council agreement.

2. CORPORATE OBJECTIVES AND THE COMMUNITY PLAN

2.1 The project will support a number of the Council's Corporate Plan aims:

Aim 1: Developing a Safer Community
Aim 2: Building a Prosperous Community
Aim 3: Creating a Quality Environment

3. BACKGROUND AND ISSUES

History of coastal erosion:

3.1 The coastline at Runswick Bay and its surrounding area consists of unstable cliffs, which are susceptible to landslides. These cliffs are made up of soft Jurassic bed rock and weak glacial sediments. On-going erosion of these different rock types has formed the indented coastline that can be seen today, with embayments at Runswick Bay and Port Mulgrave and intervening headlands.

3.2 Runswick Bay has a long history of slope instability, the first recorded slope failures occurred in 1682 when the whole village, located further north than at present, collapsed towards the shore. Successive landslips of varying severity occurred in 1873, 1953 and, in 1958 when the old road was closed twice in one week due to landslides. This road was abandoned in 1961 with the construction in 1961 and 1963 of a new access road on its present alignment further to the west. Around the same time a sea wall extension and new car park were constructed at the base of this road. Landslips and rock falls were experienced immediately north of the village during the 1970's, including a landslip at Rose Cottage in 1975, resulting in the loss of various assets.

3.3 A mass concrete sea-wall constructed in 1970 provided coastal protection to the southern edge of the village, access road and car park areas. Following its construction, the seawall was subjected to a combination of marine and land based erosional mechanisms causing the wall to move in a seaward direction with backwards rotational tilting. Seawall deterioration and failure was caused by earth pressure loading from slope failures behind the wall, beach erosion exposing the toe of the wall and wall toe failure of the fractured and folded shale bedrock. This sea wall was replaced by rock armour during the Emergency Works scheme in 1999-2000.

3.4 Although a major slope stabilisation scheme was completed in 2000 just south of the village (comprising drainage, piling, rock armour and earthworks), there is evidence that on-going ground movement still occurs. However it is now considered that the amount of displacement is low and that scheme significantly reduces risk to south of the village in the short term. It was therefore considered within the Strategy (and for the proposed Coastal Protection Scheme) that both the on-going risk related to the natural geology of Runswick Bay and future risks associated with climate change (sea level rise) and coastal erosion would need to be addressed in the north of the village.

3.5 The primary areas of concern for Runswick Bay are the ongoing risks of seawall degradation, toe erosion and the implications for the stability of the slopes behind the deteriorating defences in the north of the village. Failure or loss of even part of the existing defence structures could have serious and relatively rapid implications. There are 96 residential and 17 non-residential properties which are considered to be at risk from coastal erosion. Wave over topping is also a problem at Runswick Bay causing occasional damage to properties and slopes behind the existing seawalls.

Current measures to manage slope instability and coastal erosion

3.6 Two monitoring programmes have been implemented. Scarborough Borough Council (SBC) conduct a ground movement monitoring programme for a number of sites along the North Yorkshire coastline, which includes the collection and analysis of all groundwater and ground movement data every 6

months. At Runswick Bay this involves monitoring inclinometers and taking groundwater readings in the area of the southern defences.

3.7 In addition the Cell 1 Regional Coastal Monitoring Programme (Cell 1 RCMP), which includes strategic monitoring of the whole of the Cell 1 coast, comprises topographic survey of the beach at Runswick Bay every 6 months, 2-yearly walkover inspection of asset condition and cliff activity and 2-yearly collection and analysis of aerial photography and LiDAR data. All data and reports can be downloaded from www.northeastcoastalobservatory.org.uk/

4. CONSULTATION

4.1 Extensive consultation has been sought with both statutory and non-statutory consultees through correspondence, a public information event and with the project steering groups representatives.

- Runswick Bay Homeowners Association – Residents Representative body
- Runswick Bay Coast Protection Trust – Funding body
- Yorkshire Water - Infrastructure owner
- Environment Agency - Funding body
- Natural England - Environmental interests
- English Heritage - Heritage interests
- National Trust – Land owners
- Marine Management Organisation – Environmental interests
- North York Moors National Park – Planning Authority and land holder
- Parish Council - Residents Representative body
- North Yorkshire & Cleveland Heritage Coast – Heritage coast Interests
- North Yorkshire County Council – Road and resident interests
- The Crown Estates – Land owners
- Mulgrave Estate – Land owners
- University of Hull (Scarborough Campus) – Environmental Interests
- Runswick Bay Beach and Sailing Club – Local Beach and Sailing Interests
- North Yorkshire & Cleveland Coastal Forum – Interest in the management of the coast

4.2 Ongoing engagement, particularly with the key stakeholders listed above, will be extremely important to ensure the smooth implementation of the proposed scheme works. The proposed scheme has the broad support of the residents and backing by the Homeowners Association.

5. ASSESSMENT

5.1 The main problem at Runswick Bay Village is the ongoing risk of seawall deterioration, toe erosion and the implications for the stability of the slopes behind. In recent years, erosion has been more common, which suggests a loss of beach material from the bay and increased exposure of the seawalls and cliffs. Inspections undertaken in 2012 identified for example significant cracking in the wall running below the village properties, and undercutting of

the toe in several locations. In addition the northern seawall is cracked and damaged, and there is erosion of the rocky foreshore and undercutting of the seawall.

5.2 On 5 December 2013 a significant storm surge, driven by strong northerly winds, coincided with one of the highest astronomical tides of the year. Significant elements of the patchwork defences north of the RNLI building were damaged and removed by the sea. The Runswick Bay Rescue Boat (RBRB) timber slipway was also damaged.

5.3 Wave overtopping is also a problem, causing occasional damage to properties and slopes behind the existing seawalls. Calculations indicate that in the do nothing scenario overtopping discharges at the Runswick Village seawall would reach around 3.5 litres per second per metre (l/s/m) during a storm event having a 2% annual probability, increasing to 22 l/s/m for a 0.05% annual probability event. These figures are much higher than the mean discharge limit of 0.1 l/s/m for an “aware pedestrian with a clear view of the sea, not easily upset or frightened and able to tolerate getting wet” (reference EurOtop, Wave Overtopping of Sea Defences and Related Structures: Assessment Manual).

5.4 Currently patch and repair works are undertaken on an ad-hoc as-required basis by SBC under the Local Authority general power of competance under the Localism Act 2011. It should be noted that the seawall is currently unowned and therefore SBC have no associated requirement to continue this maintenance. The current approach is reasonably effective but over time the overall integrity of the seawall is likely to reduce. SBC maintenance funding may not be available and there is always the risk of storm conditions leading to failure before remedial works can be undertaken. Consequently it is not considered to be a sustainable approach much beyond the short-term.

5.5 The issues at Runswick Bay Village will be exacerbated over time with climate change. As sea levels rise increased water depths will allow larger waves to propagate further up the beach and cause greater damage to the existing defences. In areas where overtopping is an issue this will also be significantly amplified.

5.6 Failure or loss of even part of the existing defence structures at Runswick Bay Village could have serious and relatively rapid implications. With reference to the Cliff Instability and Erosion Risk Mapping (previously undertaken), along the village frontage the defences protect an extensive area of soft glacial settlements. Loss of part or all of the existing seawall would probably lead to rapid toe erosion, with the potential to cause landslides and accelerated material loss. Equally failure of the northern seawall could trigger re-activation of the “old village slip” (the landslide that caused the village to largely disappear in the 17th century).

5.7 Under a do nothing scenario, no measures would be undertaken to prevent deterioration of the seawalls, toe erosion and ongoing erosion of exposed cliffs. Seawall damage and failures would not be addressed, leading to an

acceleration of structural damage, cliff exposure and subsequent erosion, all compounded by sea level rise. The actual rate of deterioration and time to significant failure is difficult to predict, however there is potential for the defences to unravel quite quickly leading to significant erosion and the initiation of landslides. In the medium to long term the village would need to be abandoned.

5.8 A range of assets would be at risk including residential and non-residential properties, and various infrastructure and recreational assets. There are also a number of Grade II listed buildings. With regard to the natural environment, there is a potential to revert to a more natural coast in the long term, but it is anticipated that there would be short term impacts such as pollution due to erosion damage to sewerage infrastructure and smothering of seabed habitats with debris from erosion.

5.9 Once the seawall has failed the access road and paths to the majority of the properties in the lower village (post code area TS13 5HU) would be lost - this is estimated to occur within 3 to 10 years. The other post code area in the lower village, TS13 5HT, has some properties with an access lane coming off the main road down the cliff just above the car parks and so these properties are assumed to be lost over a longer period of time. There is also a risk that cliff failures and recession of the top cliff line would result in loss of properties in the upper village. The lower car parks, sailing club boat park and access road down the cliff are protected by the rock armour defences and cliff stabilisation works that were completed in 2001. Whilst these works would continue to provide protection, say for up to 75 years, there is a significant risk that beyond 20 years outflanking of the defence from a failure in the village to the north, or from the active unprotected cliff to the south, could initiate loss of these assets.

5.10 Given the ongoing deterioration of the existing defences, the potential impacts of storms on the defences such as the one that occurred in December 2013, and the significance of the consequences should the defences fail, it is considered necessary to intervene as soon as possible.

5.11 **The preferred option for defence of Runswick:** is consistent with the agreed strategy option which consists of a rock armour fillet approximately 2 metres high (i.e. at a crest level of +4.7m AOD) and 7 to 8 metres wide that will be placed at the toe of the seawalls and extend some 30 or 40m north of the seawall at Upgarth Hill. This option would provide protection to the toe of the seawall to limit outflanking, undermining and scour.

5.12 The new rock armour element is intended to achieve a balance between, on the one hand environmental impacts and cost, and on the other performance. Rock armour fillets of this type have an established track record in reducing wave impacts, erosion and overtopping. Optimisation of the rock profile will ensure that wave energy is sufficiently reduced to limit impacts on the existing seawall and provide the proposed 100 year design life. Further, rock sizing will take into account the need for rock stability, the proposed cross-section and the founding beach material.

5.13 Some lengths of the rock fillet will be more vulnerable to wave attack than others due to their alignment in relation to the dominant wave direction, for example the northerly half of the northern seawall. In these areas it will be beneficial to ensure that larger rocks from the proposed 3t to 6t weight range are used, certainly on all outer faces. Directly in front of the village the smaller rock will be adequate. One set of concrete steps will be constructed through the rock armour to maintain access between the seawall and the beach.

5.14 Despite the use of rock armour being controversial and divisive in other parts of the Borough, at Runsick Bay the community are fully in support of the proposals and welcome the use of rock armour to protect their village. To this end the Runswick Bay Homeowners Association have formed the Runswick Bay Sea Defence Trust and are making their own financial contribution towards the project.

5.15 At strategy stage it was agreed that Yorkshire Water (YW) would need to divert their existing sewer from the foreshore to avoid it being covered by the rock fillet. One further development has been made following the latest consultation with Yorkshire Water in October 2015. YW are promoting the construction of a new shore parallel sewer closer to the seawall which will also be protected by the proposed rock armour. At the southern end, the rock armour will now be curtailed at the northern face of the pumping station, thus affording protection to the structure whilst not directly covering the existing outflow pumping main. Yorkshire Water will undertake these Preliminary works prior to the proposed sea defence scheme, although some overlap will be required. The two construction schemes aim to work together to increase efficiency and corporation between partners. The in-kind enabling works being addressed by Yorkshire Water provides effectivity a c.£200k saving to the Runswick Bay Coastal Protection Scheme.

5.16 In order to achieve the project's objectives a consultant and design and build contractor will be appointed following a competitive tendering exercise via the YORconsult/ YorCivils or Environment Agency's WEM framework to deliver the proposed scheme.

6. IMPLICATIONS

(a) Policy

6.1 The proposals accord with the Council's SMP2, which was adopted in May 2007 and the adopted 2015 Runswick Bay Strategy.

(b) Financial

6.2 It is pleasing to note that £1,040,000 of Environment Agency 'Flood and Coastal Grant in Aid' has been made available and secured by the Coastal Projects Team for the proposed scheme. A further contribution of £100,000 has been secured by the Coastal Projects Team from the Runswick Bay

Coastal Protection Trust, which is run and operated by the Runswick Bay Homeowners Association's members. A further in-kind contribution of £200,000 worth of enabling works has been secured and agreed with Yorkshire Water through meetings and correspondence.

6.3 It has been agreed with the Runswick Bay Coastal Protection Trust, that their contribution will be used following the spend of all available grant aid. Should the project be completed under budget, or without the need for contingency spend, their contribution will be returned and held by the Trust and used to fund on-going future maintenance of the coastal defence structures. A formal funding agreement with the Runswick Bay Coastal Protection Trust will be prepared by the Council's legal services.

6.4 It is not proposed that any Borough Council funding will be expended on this scheme. The scheme is fully funded through Environment Agency grant aid and contributions. SBC officer time, consultant and contractor fees along construction and survey costs are all included. An contingency sum of £271k is also built into scheme costings.

6.5 The grant is awarded in accordance with the Environment Agency's Memorandum relating to Scheme Approval and Grant under the Flood Water Management Act 2010. Under the terms of the grant, the Council is required to complete scheme inline with the agreed Project Appraisal Report.

(c) Risk

6.6 The risks, which may arise from the undertaking of study, are as set out in Appendix A.

(d) Legal

6.7 The proposed Runswick Bay scheme will be carried out using the Council's permissive powers under the Flood Water Management Act 2010.

6.8 There is a requirement to follow the Council's financial and contract procedure rules. This report is part of that process.

(e) Environmental and Sustainable Development

6.9 There are no Ramsar Sites, Special Protection Areas (SPAs) or Special Areas of Conservation (SACs), within the Runswick Bay Strategy Study Area. Natural England has confirmed (in their letter of comfort of 17 February 2015 and during subsequent consultation in August 2015) that consequently there is no requirement for Appropriate Assessment under the Habitats Regulations. Natural England have also confirmed that they consider that the preferred option is likely to lead to an environmentally aceptable solution.

6.10 With regards to the achievement of Water Framework Directive objectives, the strategy includes an objective to ensure that the strategy does not cause deterioration in the current status of the waterbodies in the area and that it

supports the achievement of WFD objectives. No significant impact on compliance with WFD objectives is envisaged. Implementation would prevent the potential release of sediments and pollutants into coastal waters through erosion in the medium term, which would have minor beneficial effects on coastal water quality. No significant impact on surface or ground water is envisaged except in the immediate vicinity of the bay.

6.11 The preferred option would reduce the risk of seawall failure in the short, medium and long term, and reduce wave overtopping for residents in Runswick Bay Village. Consequently the risks to residential and commercial properties and other infrastructure would be significantly reduced. Further, this would alleviate much of the stress and anxiety felt by residents and property owners, particularly as the rock apron would provide visual reassurance.

6.12 With regard to the natural environment, this option would not allow the landscape to respond to the existing environmental conditions, and would not result in a natural coastal landscape. However, the protection of Runswick Bay from erosion and the Village from dereliction would represent a major beneficial impact on the townscape and built environment, which would contribute to the landscape of the North Yorkshire Moors National Park (meeting the aims of the NYMNPA Core Strategy to protect and enhance the special qualities of the National Park) and the North Yorkshire and Cleveland Heritage Coast.

6.13 It is also to be noted that SBC has commissioned the University of Hull to investigate approaches to encourage habitat colonisation of rock armour, particularly anything that speeds up the colonisation process. The outcomes are being monitored, and there could be an opportunity for any successful methods to be considered for use during the Runswick Bay Scheme construction.

(f) Others

6.14 I have considered whether the following implications arise from this report and am satisfied that there is no identified adverse implications that will arise from this decision to proceed with the Runswick Bay Coastal Protection Scheme.

Equalities and Diversity
Staffing
Planning
Crime and Disorder
Health and Safety

7. ACTION PLAN

7.1 The current programme is given below:

Cabinet receives report	January 2016
Prepare Contracts	January 2016

Tender and Appoint Consultants	February 2016
Tender and Appoint Contractor	March 2016
Detailed Design & Consents	June 2016
Construction Start	October 2016
Construction Completion	May 2017

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Chief Executive

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Background Papers:
Runswick Bay Strategy, (2015)
River Tyne to Flamborough Head Shoreline Management Plan 2 (SMP2), 2007
Cell 1 Coastal Monitoring Programme 2008-2011

Appendix A

Risk Matrix

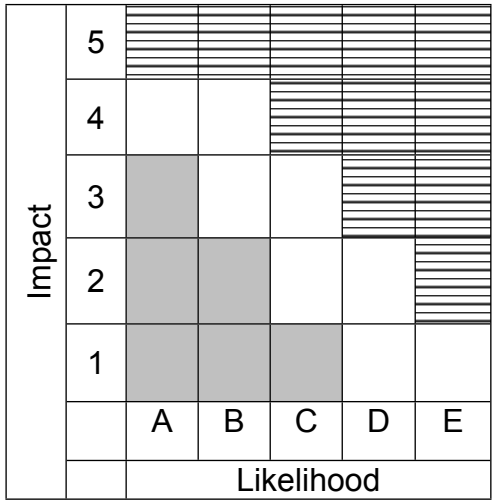
Risk Ref	Date	Risk	Consequences	Mitigation	Current Risk Score	Target Score	Service Unit Manager/ Responsible Officer	Action Plan
1	10.12.15	Budgeted scheme cost exceeded.	Due to pressure on Environment Agency funding, it should not be assumed that any changes to the approved spending profile or an increase in scheme costs will secure additional grant aid. Additional costs may therefore need to be met by others.	Seek fixed prices from consultants and contractors. Project Board to monitor project progress. Seek financial contributions from third party stakeholders, including the Environment Agency.	B4	B2	Chris Bourne/ Robin Siddle	Do not proceed to appoint consult/ contractors if tendered costs are over budget. Report to cabinet should funding become at risk.
2	10.12.15	Failure to obtain planning permission	Unable to implement the scheme	Early and continued consultation with the National Park. Meeting National Park Planners as necessary.	B4	A2	Chris Bourne/ Robin Siddle	Submit a quality planning application in line with current proposals
3	10.12.15	Lack of Agreement from Natural England	Unable to implement the scheme	Ongoing dialogue with Natural England to ensure that environmental reporting meets their requirements, and that the works include any necessary mitigation measures.	B4	A2	Chris Bourne/ Robin Siddle	Continue communication with NE
4	10.12.15	Failure to obtain full support from all consultees.	Works may not proceed or delays caused.	Full and ongoing consultation and communication with consultees	B4	A2	Chris Bourne/ Robin Siddle	Conduct early consultation
5	10.12.15	Contributions from 3rd parties failing to materialise	EA grant should be able to cover the costs however scope of work may be reduced.	Obtain legal agreement between contributors and SBC for the works.	B3	A3	Chris Bourne/ Robin Siddle	Obtain legal agreements
6	10.12.15	Working in a hostile marine environment.	Possible delay and cost.	Rate to be passed to contractor	E2	A2	Chris Bourne/ Robin Siddle	Place require-ment in tender and contact documents.

Risk Ref	Date	Risk	Consequences	Mitigation	Current Risk Score	Target Score	Service Unit Manager/ Responsible Officer	Action Plan
7	10.12.15	Unknown environmental issues encountered.	Delay caused by the requirement of further investigations/studies.	This is a low risk as the Council has worked in this area before and is familiar with its surroundings. Natural England will also be involved in the project to provide guidance if necessary along with the development of an Environmental Impact Assessment.	A2	A2	Chris Bourne/ Robin Siddle	Consult with Natural England
8	10.12.15	Negative media coverage.	Causing a poor image of the Council to the public	Provide the media with press releases explaining the project as and when required	B2	A2	Chris Bourne/ Robin Siddle	Provide press releases
9	10.12.15	Failure to meet construction start date marrying with Yorkshire Water works	Delays to project programme and delivery timetable, possible additional costs	Production of a project programme to be followed. Make YW aware of any issue that may impact their timetable	B3	B2	Chris Bourne/ Robin Siddle	Development of a project Programme and partnership working with YW
10	10.12.15	Delays from YW due to issues around service diversions.	My prevent works starting as anticipated	Close communication with YW, work from north to south if required to avoid YW working area.	B3	B1	Chris Bourne/ Stewart Rowe	Communication with YW.

Glossary of Terms

Risk	An event which may prevent the Council achieving its objectives
Consequences	The outcome if the risk materialised
Mitigation	The processes and procedures that are in place to reduce the risk
Current Risk Score	The likelihood and impact score with the current mitigation measures in place
Corporate Objectives	An assessment of the Corporate Objectives that are affected by the risk identified.
Target Risk Score	The likelihood and impact score that the Council is aiming to achieve
Service Unit Manager	The Service Unit or Officer responsible for managing the risk
Action Plan	The proposed actions to be implemented in order to reduce the risk to the target score

Risk Scoring



Likelihood:	Impact
A = Very Low	1 = Low
B = Not Likely	2 = Minor
C = Likely	3 = Medium
D = Very Likely	4 = Major
E = Almost Certain	5 = Disaster