

ROGERSTOWN COASTAL FLOOD AND EROSION RISK MANAGEMENT STUDY

Stage 1: Optioneering

Non-Technical Summary

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Rogerstown CFERM Study

Stage 1
Optioneering NTS

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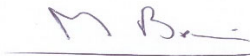
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1 INTRODUCTION

The purpose of this Non-Technical Summary (NTS) is to present the findings of an Optioneering process that was undertaken to develop a Coastal Flooding and Erosion Risk Management plan (CFERMp) for the Rogerstown estuary area.

This work forms Stage 1 of the Rogerstown estuary Coastal Flooding and Erosion Risk Management (CFERM) study.

This document presents:

- An appraisal of coastal management policies & options.
- Site specific coastal management plans.
- A description of the preferred (CFERMp) for each study area.

The locations considered by this study included the Burrow peninsula and the coastlines along Rush South and Rush North. These areas are shown in Figure 1.1.

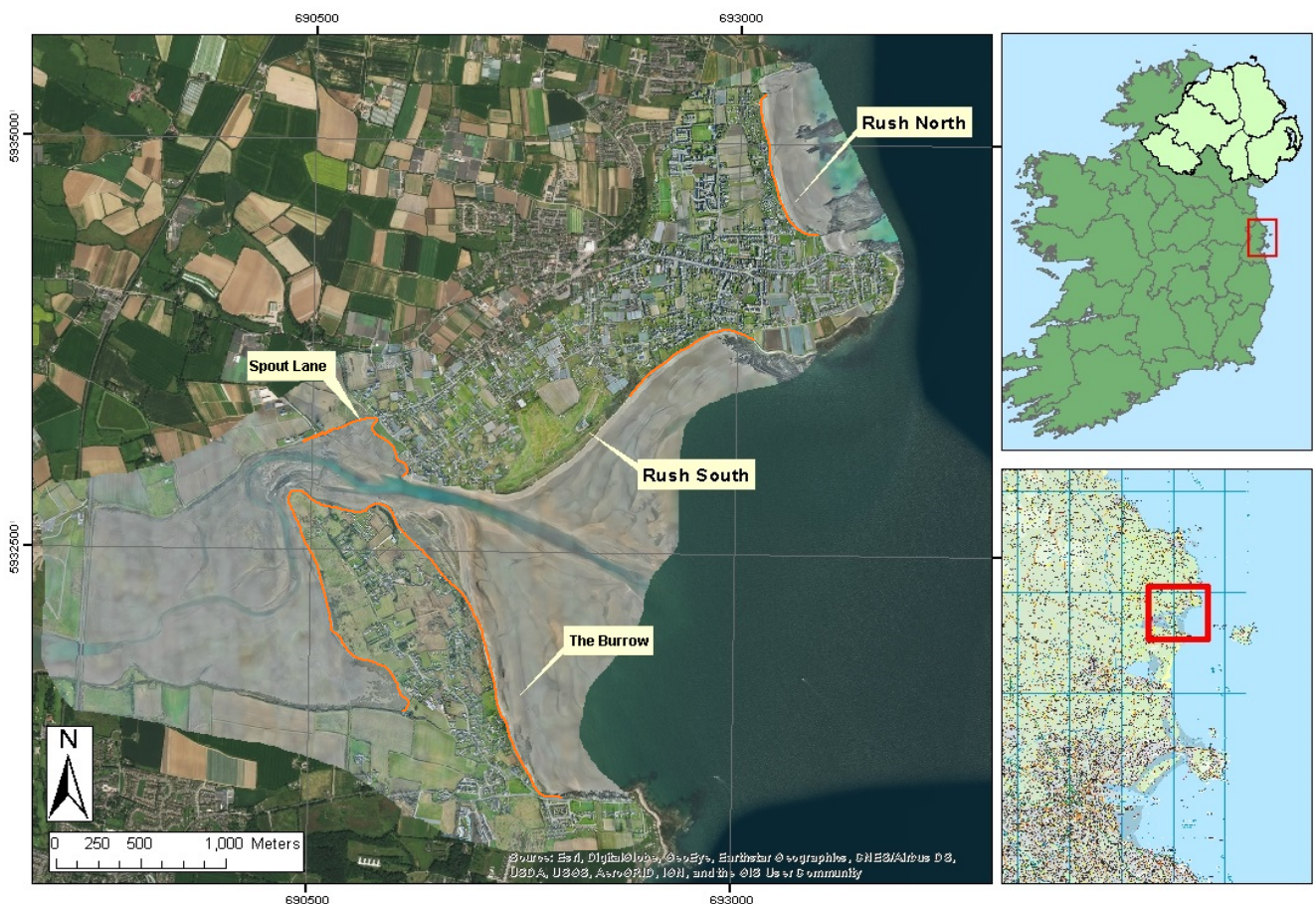


Figure 1.1: Location of the key study areas at the Burrow, Spout Lane and the Rush beaches

2 THE OPTIONEERING PROCESS

As outlined in Figure 1.1 below, Optioneering is a staged process for identifying a preferred coastal management option. Following a consultation period whereby the public can provide important feedback, a Flooding and Erosion Risk Management Plan (CFERMp) is developed for each study area.

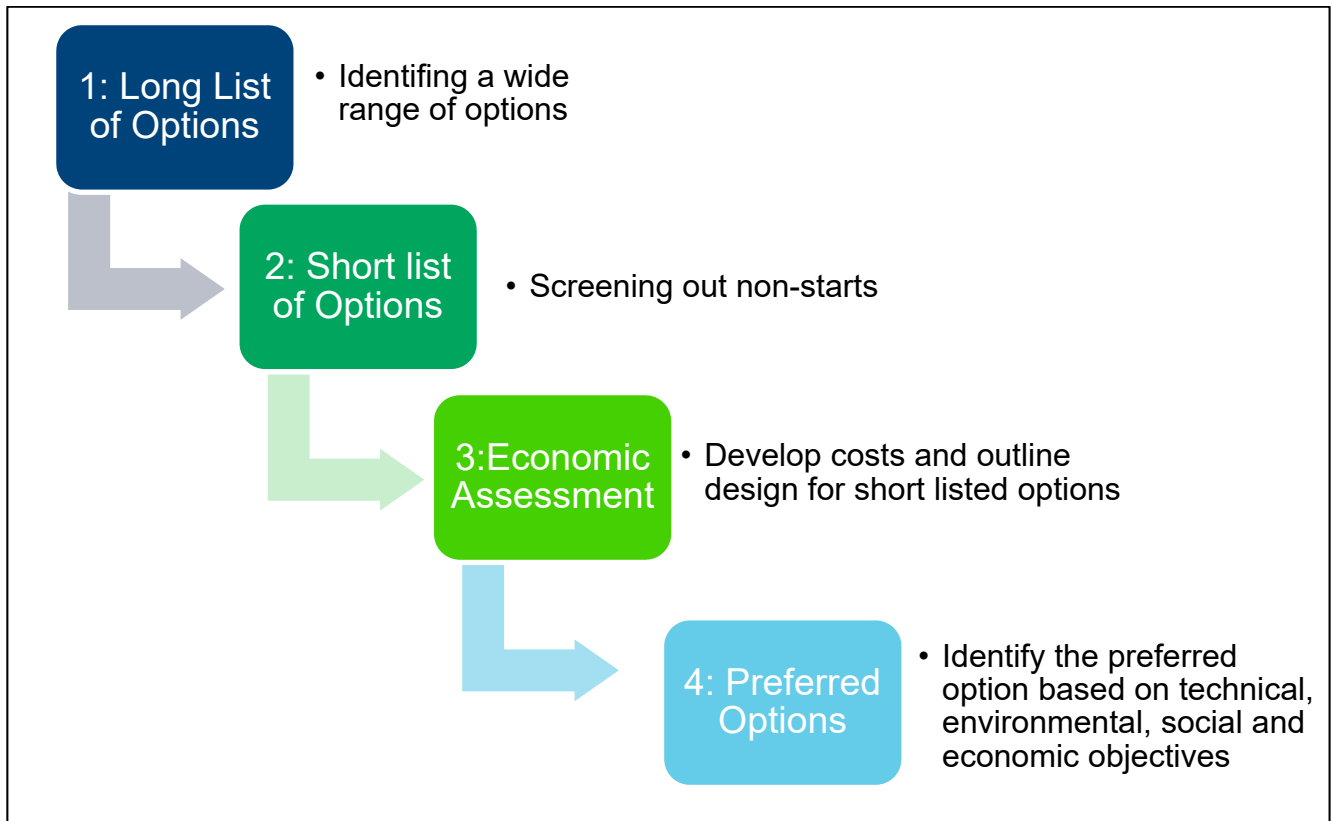


Figure 2.1: Summary of the optioneering process

The objectives of the CFERMp for each area are to:

- Develop coastal management options for the study area over the short (up to 2025), medium (2025 – 2050) and long (2050 to 2100) term.
- Reduce the risk posed by coastal flooding and erosion across the study areas.
- Contribute to a healthy environment.
- Deliver value for money.

3 COASTAL MANAGEMENT OPTIONS

RPS developed a long list of options of possible methods to improve protection against coastal flooding and erosion risks. The long list is a very high level and is developed to ensure that a wide variety of options are considered. The long list of options was assessed against technical, environmental, social and cost criteria to identify feasible options.

The long list of options appraised is presented in Table 3.1 below.

Table 3.1: Potential Coastal Flood and Erosion Risk Management (CFERM) options

Option	Technical	Environmental	Social	Economic	Brought Forward
Seawalls	✓	✗	✓	✓	Yes
Revetments	✓	✗	✓	✓	Yes
Embankments	✓	✓	✓	✓	Yes
Dune Maintenance	✗	✓	✗	✓	Yes
Groynes	✓	✗	✓	✓	Yes
Detached breakwaters	✓	✗	✓	✗	No
Perched beaches	✗	✓	✗	✓	No
Dune stabilisation	✓	✓	✗	✗	Yes
Beach Nourishment	✓	✓	✓	✓	Yes
Sand motor	✗	✓	✓	✗	No
Managed Retreat	✓	✓	✗	✗	Yes
No Active Intervention ('Do nothing')	✓	✓	✗	✗	Yes

A brief description as well as the advantages and disadvantages associated with options brought forward is presented in the following Sections.

3.1 No Active Intervention

No Active Intervention (i.e “Do nothing”) means that the local authority do not invest in coastal defence assets or operations. Nothing is done to prevent erosion or flooding.

<i>Advantage</i>	<i>Disadvantage</i>
<ul style="list-style-type: none"> No change to natural coastal processes 	<ul style="list-style-type: none"> Does not provide any protection against coastal flooding or erosion
<ul style="list-style-type: none"> Complimentary to environmental conservation objectives 	<ul style="list-style-type: none"> Significant economic impacts associated with flooding and erosion

3.2 Shoreline Monitoring

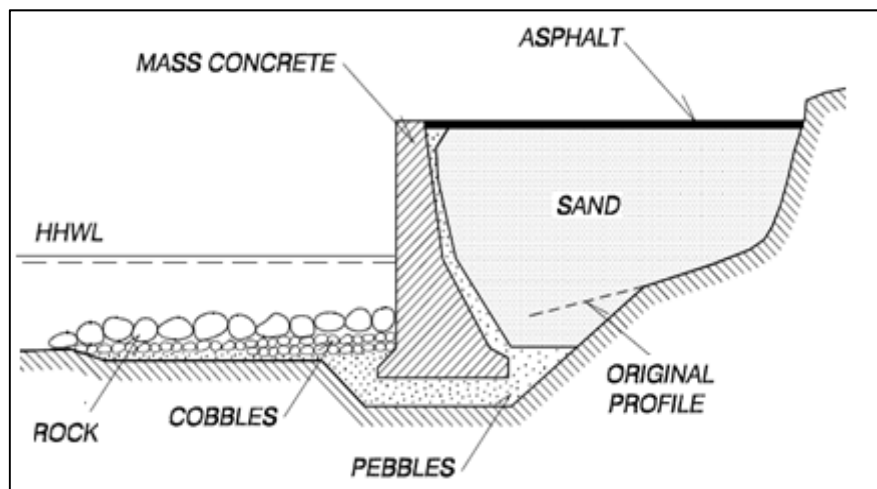
Although not strictly a management option, coastal monitoring can provide valuable data which can inform future coastal management decisions.

<i>Advantage</i>	<i>Disadvantage</i>
<ul style="list-style-type: none"> Data can facilitate more informed coastal management decisions 	<ul style="list-style-type: none"> Does not reduce significant risk of coastal flooding or erosion
<ul style="list-style-type: none"> No change to natural coastal processes 	<ul style="list-style-type: none"> Significant economic impacts associated with flooding and erosion
<ul style="list-style-type: none"> Complimentary to environmental conservation objectives 	<ul style="list-style-type: none"> Designated habitats may be damaged by coastal erosion

3.3 Seawalls

Seawalls protect shorelines by resisting wave action and preventing erosion and flooding.

Careful consideration must be given to future sea level rise as seawalls are fixed structures.

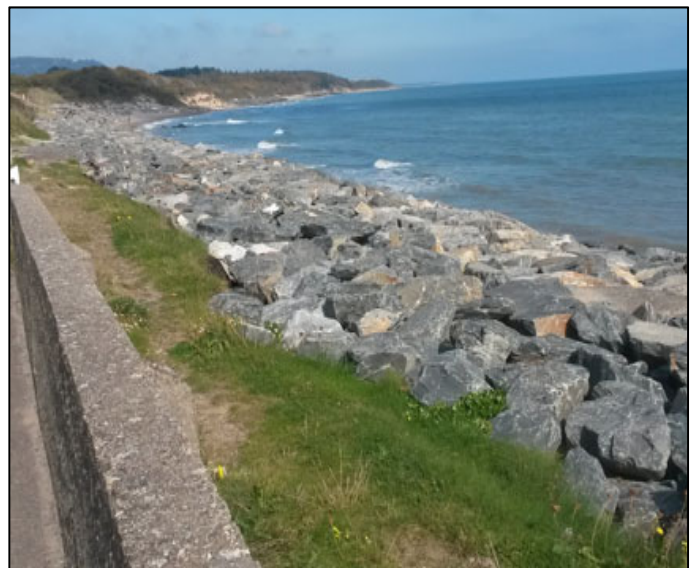


<i>Advantage</i>	<i>Disadvantage</i>
<ul style="list-style-type: none"> Effectively mitigates erosion and flooding 	<ul style="list-style-type: none"> Significant impact on coastal processes including loss of beach width
	<ul style="list-style-type: none"> Designated habitats may be damaged by coastal erosion
	<ul style="list-style-type: none"> Potential for increased erosion pressures on adjacent coastlines
	<ul style="list-style-type: none"> On-going maintenance requirements

3.4 Revetments

Revetments are designed to dissipate wave energy and reduce coastal erosion. These defences are usually constructed using rock armour and are easily adapted to climate change.

Like seawalls, revetments cut the natural interaction of sand transport between beach and dune systems. This can cause beach levels to drop and a reduction in available beach width as seen in Courtown (see right).



<i>Advantage</i>	<i>Disadvantage</i>
<ul style="list-style-type: none"> Effectively mitigates erosion and flooding from wave overtopping 	<ul style="list-style-type: none"> Significant impact on coastal processes including beach squeeze
	<ul style="list-style-type: none"> Designated habitats may be damaged through coastal squeeze
	<ul style="list-style-type: none"> Potential for increased erosion pressures on adjacent coastlines
	<ul style="list-style-type: none"> On-going maintenance requirements

3.5 Embankments

Embankments are onshore structures that protect low-lying areas from flooding. On coastlines vulnerable to erosion, embankments can be coupled with other defences such as sea walls or rock revetments.

<i>Advantage</i>	<i>Disadvantage</i>
<ul style="list-style-type: none"> Prevents flooding of low lying areas 	<ul style="list-style-type: none"> Does not protect against erosion unless coupled with another hard defence
<ul style="list-style-type: none"> Built above the high water mark and therefore has little impact on coastal processes 	<ul style="list-style-type: none"> The footprint of these structure can be much greater than alternative options such as seawalls
<ul style="list-style-type: none"> Minimal environmental or visual impact 	

3.6 Groynes

The purpose of groynes is to control the transport of sand on a beach. Overtime these defences create saw-toothed shaped beaches. Special “fishtail” groynes have the added benefit of providing similar coastal protection associated with nearshore breakwaters.



<i>Advantage</i>	<i>Disadvantage</i>
<ul style="list-style-type: none"> Can build up natural beach levels to reduce the impact of erosion and flooding 	<ul style="list-style-type: none"> The coastline is not directly protected by hard engineered structures
<ul style="list-style-type: none"> Promotes the formation of a natural beach 	<ul style="list-style-type: none"> Can reduce the supply of sand to other areas
<ul style="list-style-type: none"> Does not cut off the natural exchange of sand between beach and dune systems 	<ul style="list-style-type: none"> Coastlines can still be vulnerable to erosion and flooding if beach levels along a groyne field drops
	<ul style="list-style-type: none"> Can require frequent maintenance

3.7 Beach nourishment

Beach nourishment can be used to restore beach levels, reduce wave energy and therefore mitigate the threat of coastal erosion and flooding.

<i>Advantage</i>	<i>Disadvantage</i>
<ul style="list-style-type: none"> Can build up beach levels to reduce the impact of erosion and flooding 	<ul style="list-style-type: none"> The coastline is not directly protected by hard engineered structures
<ul style="list-style-type: none"> Promotes the formation of a natural beach 	<ul style="list-style-type: none"> Does not prevent erosion and therefore requires long-term maintenance effort
<ul style="list-style-type: none"> Maintains natural exchange of sand between beach and dune systems 	<ul style="list-style-type: none"> Coastlines are vulnerable to erosion and flooding if beach levels drop
	<ul style="list-style-type: none"> No established beach nourishment industry in Ireland
	<ul style="list-style-type: none"> Potential environmental impacts associated with importing sand into environmentally designated areas

3.8 Dune stabilisation

The aim of dune stabilisation to protect, preserve and enhance the natural protection afforded by a beach and its dune systems. Stabilisation methods include the construction of sand trap fencing, planting of marram grass and re-grading steep dune faces

These measures help to build up the foredune which acts as a natural coastal defence. But where erosion is active, this buffer may only serve as a short-term defence to assets behind the dunes, possibly only lasting through a single storm event.

<i>Advantage</i>	<i>Disadvantage</i>
<ul style="list-style-type: none"> Minimal impact to natural coastal processes 	<ul style="list-style-type: none"> Short term benefit in areas that are actively eroding.
<ul style="list-style-type: none"> Complimentary to environmental conservation objectives 	<ul style="list-style-type: none"> Difficult to build up natural foredune defences in areas depleted of sand
<ul style="list-style-type: none"> Can provide effective protection against coastal flooding and erosion 	<ul style="list-style-type: none"> Successive storm events could breach a dune system and result in significant flooding or erosion damages

3.9 Managed Retreat

This option involves creating a sacrificial buffer zone where no further development is permitted (i.e. a no build zone). Planned abandonment can be achieved by prohibiting post-storm reconstruction. In other countries, landowners affected by this policy may be compensated through land or property acquisition programmes.

<i>Advantage</i>	<i>Disadvantage</i>
<ul style="list-style-type: none"> ▪ Potentially less expensive than defending a coastline 	<ul style="list-style-type: none"> ▪ Does not reduce significant risk of coastal flooding or erosion
<ul style="list-style-type: none"> ▪ Complimentary to environmental conservation objectives 	<ul style="list-style-type: none"> ▪ Significant economic impacts on property value and local economy
<ul style="list-style-type: none"> ▪ No change to natural coastal processes 	<ul style="list-style-type: none"> ▪ Can often delay difficult decisions
	<ul style="list-style-type: none"> ▪ No natural point to retreat to along the Burrow which is of limited width
	<ul style="list-style-type: none"> ▪ No national strategic policy in Ireland to facilitate managed retreat or to compensate landowners

5 APPRAISAL PROCESS

To consider each of the short-listed option in greater detail, RPS scored each option using a set of criteria developed by the Office of Public Works. Any option that produced a positive score was brought forward for further consideration. Further information about this process can be found in the main Stage 2 technical report.

Using the measures brought forward, RPS developed coastal management options for the study areas affected by flooding and/or erosion.

5.1 The Burrow Option 1 – Rock armour & Flood defences

Option 1 would involve constructing:

- A rock revetment along c.1,250m of the existing dune system to prevent coastal erosion.
- A seawall a Marsh Lane and along a section of the Burrow and Quay roads to prevent coastal flooding.
- Strategically placed embankments along the western extent of the Burrow to prevent flooding from the estuary.

Subject to detailed design a valued amenity could be restored to beach users by constructing a raised boardwalk. This would provide a safe walking space at high tide.

A plan view of Option 1 for the Burrow without the boardwalk is illustrated in Figure 5.1.





Figure 5.1: The Burrow Option 1 – Rock armour & Flood defences Plan View

5.2 The Burrow Option 2 – Managed Retreat

For the purposes of this study, RPS have assumed that a scheme is established to compensate land and property owners affected by this scheme. Based on this assumption, a policy of Managed Retreat would involve:

- Purchasing and demolishing c. 13 properties over the short to medium term to create sufficient space for future coastal change.
- Continually monitoring the coastal flooding and erosion risk and establishing new setback lines in response to future risk.
- Over the longer term, i.e. by 2100, purchasing and demolishing up to an additional 34 properties to facilitate future retreat.

** The number of properties affected would depend on several factors including the rate of future climate change and coastal retreat. **

This option does not involve defending the position of the new setback lines with hard defences. As such, this option intended to provide coastal managers, relevant stakeholders and statutory authorities' time to develop alternative plans

As this is a dynamic option that will require continuous monitoring and reviewing, no high-level maps have been produced to highlight which properties could be affected by this policy.

5.3 The Burrow Option 3 – Beach nourishment & Flood defences

Option 3 would involve:

- Re-nourishing the beach along the Burrow to restore beach levels and mitigate the risk of coastal flooding and erosion.
- The construction of seven fish tail groyne structures to control the movement and loss of sand along the Burrow. These structures would extend c.70m seaward at a spacing of c.175m.
- Constructing a seawall a Marsh Lane and along a section of the Burrow and Quay roads to prevent coastal flooding.
- Constructing strategically placed embankments along the western extent of the Burrow to prevent flooding from the estuary.

The groyne structures will reduce the volume of sand lost from the beach, but this option would still require frequent maintenance. The volume of material required to recharge the beach would likely increase over time due to the impact of future climate change.

An artist's impression of this option for the Burrow is illustrated in the Figure below whilst a plan view of the scheme is presented in Figure 5.3.

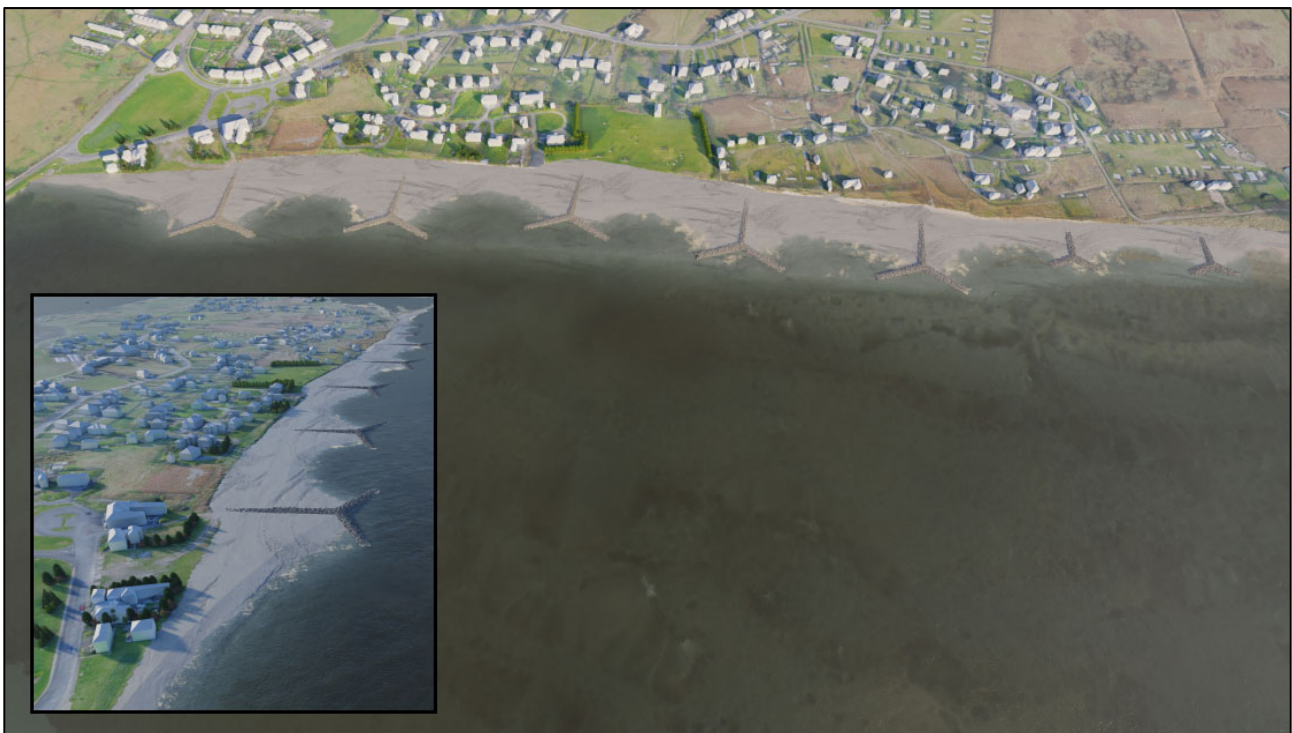


Figure 5.2: Artists impression of Option 3 at the Burrow



Figure 5.3: The Burrow Option 3 – Beach nourishment & Flood defences

5.4 Rush South Option 1 – Flood defences

At Rush South, the main risk stems from coastal flooding. In order to address this risk, Option 1 would include:

- The construction of a c. 850m seawall from Rush Sailing Club to the end of Channel Road.
- The construction of a small urban wall to prevent flooding of the property at the western extent of Channel Road.
- The installation of flood gates at the end of Channel Road and at the slipways at Rush Sailing Club to consolidate this defence line.
- The construction of a suitably designed culvert fitted to prevent fluvial flooding at Channel Road & Spout Lane.
- Removing dangerous structures that are not considered effective coastal defence structures from the entrance to Rogerstown Estuary.

All seawalls would be constructed with a suitable crest level to minimise the visual impact of the defence whilst still providing the required standard of protection. An example of typical flood gates that could be installed as part of this option is provided below.

A plan view of Option 1 for Rush South is presented in Figure 3.4.



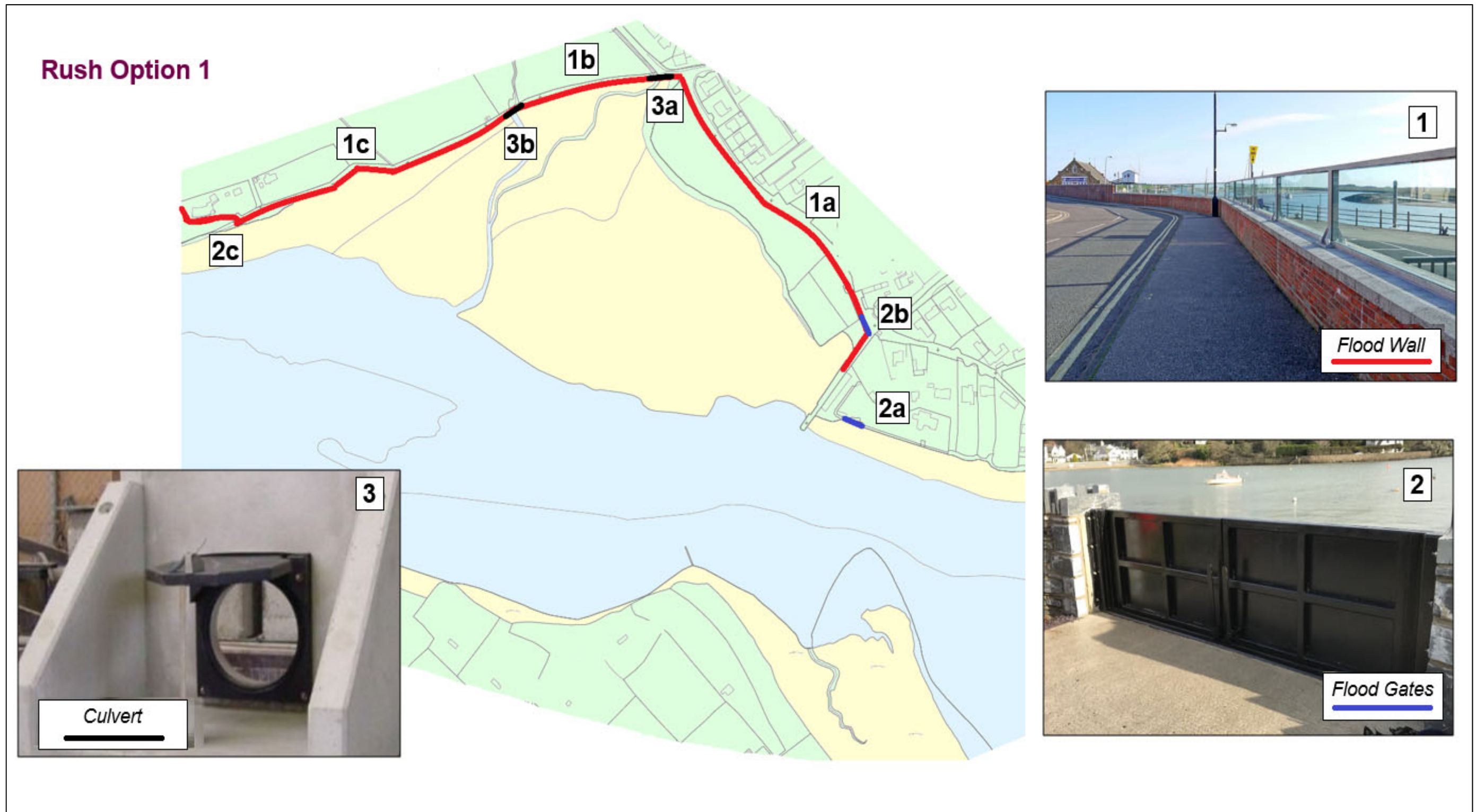


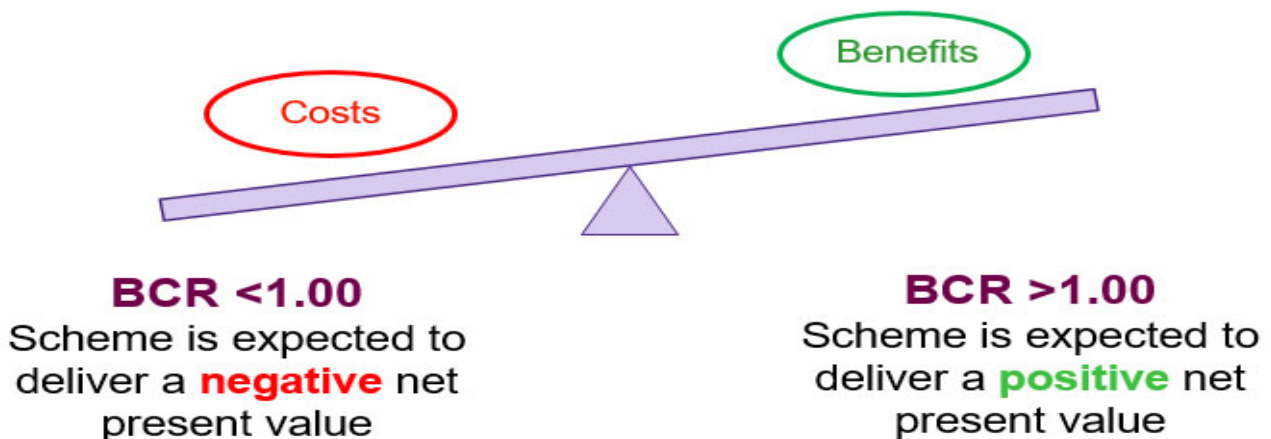
Figure 5.4: Rush South Option 1 – Flood defences

6 ECONOMIC APPRAISAL

Having identified potential coastal management options it was important to determine if these options represented value for money. By means of economic appraisal, RPS determined if the benefit provided by each scheme outweighed the cost of each scheme. This was done for the following climate conditions:

- **Existing conditions** whereby there is no sea level rise by 2100.
- The **Medium Range Future Scenario (MRFS)** whereby sea levels are expected to rise by +0.50m by 2100.
- The **High End Future Scenario (HEFS)** whereby sea levels are expected to rise by +1.00m by 2100.

A full description of this process can be found in the main Stage 2 technical report, but in summary this process involved calculating the benefit provided by each scheme and comparing this to the cost of scheme. As summarised in the figure below, a scheme that produces a Benefit Cost Ratio greater than one is considered to represent good value for money.



6.1 Calculating benefits of a scheme

The benefit of a coastal management scheme is equivalent to the damage or economic loss that would occur if the scheme was not in place. Based on this approach RPS calculated the total damage by 2100 for the various climate scenarios using the coastal flooding and erosion risks identified in the main Stage 1 technical report (RPS, 2020).

6.2 Calculating costs of a scheme

RPS developed estimated costs for each scheme based on industry standard approaches and information from third party contractors where relevant.

Given the lack of a defined process or procedure for Managed Retreat, to assess costs associated with this option RPS assumed that affected property owners would be compensated on average €297,500 per property.

The costs associated with each management option is summarised in Table 6.1 below.

Table 6.1: Initial capital costs associated with the coastal management schemes for the Burrow and Rush South

Area	Scheme	Initial Capital Costs
The Burrow	Option 1 – Rock armour & Flood defences	Approx. €11 million euro with ongoing maintenance
	Option 2 – Managed Retreat	€2.5 – 3.5 million euro Potential need to buy more property by 2100 could cost a further €6.5 – 10 million euro
	Option 3 – Beach nourishment & Flood defences	Approx. €16 million euro with ongoing maintenance
Rush South	Option 1 – Flood Defences	Approx. €4 million euro with ongoing maintenance

6.3 Output of Economic Appraisal

The output of the economic appraisal for the coastal management options at the Burrow is summarised in Figure 6.1. It will be seen that:

- A policy of Managed Retreat represents the best value for money.
- Options 1 and 3 only become viable under the Medium Range Future Climate Scenario.

From an economic perspective this assessment indicates that Option 2, i.e. managed retreat, represents the most cost effective solution. However the actual costs of this option could be significantly more expensive depending on the type of scheme introduced for affected landowners.

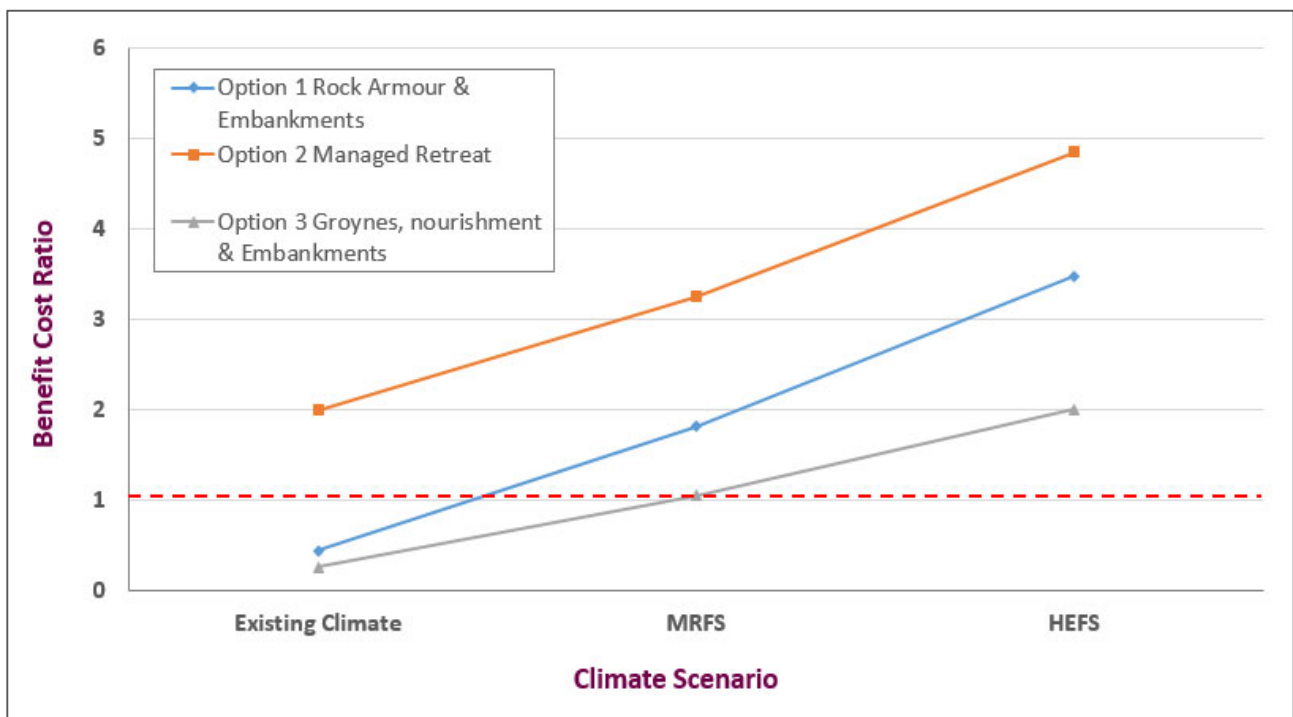


Figure 6.1: Summary of Cost Benefit Assessment of the Coastal Management Options for the Burrow

At Rush South, Option 1 which included for a range of flood defence measures was considered good value for money based on all climate change scenarios.

7 PREFERRED COASTAL MANAGEMENT PLAN

7.1 The Burrow

A summary of the preferred Coastal Flooding and Erosion Risk Management plan (CFERMp) for the Burrow is presented in Table 7.1. The potential implications of implementing this plan are summarised in Table 7.2.

Table 7.1: Summary the Coastal Flooding and Erosion Plan for the Burrow

Timeframe	Description of Preferred Option 3
Short to Long term (Present day to 2100)	<ul style="list-style-type: none"> ▪ The plan for this area is to mitigate the significant erosion and flood risk by constructing a series of groynes and re-nourishing the upper beach profile with sand. ▪ A series of flood walls and embankments should be constructed to mitigate the coastal flood risk. ▪ This scheme will need to be periodically re-nourished in order to maintain beach levels along the Burrow. ▪ RPS recommend that this scheme is complimented by a shoreline monitoring programme to determine frequency of future re-nourishment requirements.

Table 7.2: Predicated implications of the preferred management plan for the Burrow

Receptor	Predicated Implications
Property and Built Assets	<ul style="list-style-type: none"> ▪ In the short term, this option would mitigate the significant erosion risk to a number of private properties along the coastline of the Burrow. ▪ Over the medium to longer term, maintaining the integrity of the dune system which is a natural flood defence will mitigate the risk of coastal flooding. This is important given the predicted rise in sea levels. ▪ This option will safeguard local property prices and thus the economy.
Landscape	<ul style="list-style-type: none"> ▪ This option will maintain the existing dune system and restore the upper beach profile along the Burrow.
Nature Conservation	<ul style="list-style-type: none"> ▪ The natural exchange of sediment between the beach and dune system will be maintained.
Amenity and Recreational Use	<ul style="list-style-type: none"> ▪ Re-nourishing the upper beach profile would restore the popular beach amenity for recreational use. At present, most of the beach cannot be walked at high water due to the low beach levels.

7.2 Rush South

A summary of the preferred Coastal Flooding and Erosion Risk Management plan (CFERMp) for Rush South is presented in Table 7.3. The potential implications of implementing this plan are summarised in Table 7.4.

Table 7.3: Summary the Coastal Flooding and Erosion Plan for Rush South

Timeframe	Description of Preferred Option 1
Short to Long term (Present day to 2100)	<ul style="list-style-type: none"> ▪ The most significant issue for Rush South is coastal and fluvial flooding. A series of seawalls and flood gates should be constructed around Channel road, Spout lane and the sailing club to mitigate this risk. ▪ Localised measures including modified culverts should be used to manage the fluvial flood risk. ▪ Dangerous structures that are not considered effective coastal defence structures should be cleared from Rush South (particularly at the entrance to Rogerstown Estuary). ▪ A shoreline monitoring programme should be implemented to better understand the risk of coastal erosion. ▪ The management plan for this region should be reviewed c. every five years subject to the findings of the shoreline monitoring programme.

Table 7.4: Predicated implications of the preferred management plan for Rush South

Receptor	Predicated Implications
Property and Built Assets	<ul style="list-style-type: none"> ▪ In the short term, this option would mitigate the significant flood risk to the area. This would in turn prevent road closures and other disturbances during periods of high tide and surge activity. ▪ This option will safeguard local property prices and thus the economy.
Landscape	<ul style="list-style-type: none"> ▪ The impact of the preferred option on the landscape is considered to be minimal as the area is already protected by a number of seawalls. ▪ Removing dangerous structures from the beach at Rush South will enhance the quality of this landscape by removing potential hazards.
Nature Conservation	<ul style="list-style-type: none"> ▪ This option involves replacing existing defences or constructing new defences outside of environmentally designated areas. ▪ Avoiding the construction of hard coastal defence measures outside of the estuary will maintain a naturally functioning shoreline and the transport of sediment in the wider area.
Amenity and Recreational Use	<ul style="list-style-type: none"> ▪ The preferred option would mitigate the significant flood risk to Rush South area and prevent the closure of local roads and footpaths. ▪ Removing dangerous structures from the beach at Rush South would reduce health and safety risks to beach users.

7.3 Rush North

A summary of the preferred Coastal Flooding and Erosion Risk Management plan (CFERMp) for Rush North is presented in Table 7.5. The potential implications of implementing this plan are summarised in Table 7.6.

Table 7.5: Summary the Coastal Flooding and Erosion Plan for Rush North

Timeframe	Description of Preferred Option 1
Short to Long term (Present day to 2100)	<ul style="list-style-type: none"> ▪ Owing to the limited erosion and flood risk at Rush North, the preferred option for this area is No Active Intervention. ▪ Given the uncertainty associated with future climate change, a shoreline monitoring programme should be established for this area. ▪ The management plan for this should be reviewed c. every five years subject to the findings of the shoreline monitoring programme.

Table 7.6: Predicated implications of the preferred management plan for Rush North

Receptor	Predicated Implications
Property and Built Assets	<ul style="list-style-type: none"> ▪ Over the short to medium term, the risk of coastal flooding or erosion to any property or built assets is considered to be minimal. ▪ Depending on future climate change there is a small likelihood that up to 6 buildings could be affected by erosion.
Landscape	<ul style="list-style-type: none"> ▪ A policy of No Active Intervention would maintain a naturally functioning coastline in this area.
Nature Conservation	<ul style="list-style-type: none"> ▪ This option would be complimentary to the conservation objectives of the nearby environmentally designated area.
Amenity and Recreational Use	<ul style="list-style-type: none"> ▪ Implementing a policy of No Active Intervention is not expected to affect local amenities or the recreational use of this beach area.

8 ENVIRONMENTAL ASSESSMENT

In line with the project brief and OPW guidance for CFERM studies, RPS undertook a preliminary environmental assessment of the preferred options. In brief, this assessment found that:

- The preferred coastal management plans are likely to have a significant effect on the qualifying interests and/or special conservation interests of the nearby European designated sites.
 - An Appropriate Assessment (AA) will therefore be required as statutory requirement before the preferred management plans can reach the planning process.
- The preferred coastal management plans meet the mandatory requirement for Environmental Impact Assessment (EIA).
 - An EIA will therefore be required as statutory requirement before the preferred management plans can reach the planning process.

9 PUBLIC CONSULTATION EVENT

The consultation period event planned for this event was postponed due to the emergence of COVID-19 and the subsequent governmental directive to avoid social contact.

In response to this issue RPS have developed a range of digital and non-digital alternative solutions to engage with the public, including a site specific website. Over the course of the next number of months, RPS and Fingal County Council will utilise these alternative consultation resources to engage with relevant stakeholders and finalise the preferred CFERM plan for each site.

It is envisaged that the site specific website for the Rogerstown CFERM study will be live and accessible from the 22nd of July 2020. Depending on future social restrictions and how Ireland continues to emerge from the Covid-19 pandemic, it is hoped that a traditional “face-to-face” consultation event could be held for this project in the near future.

10 CONCLUSION

In 2018 RPS were commissioned by Fingal County Council to develop a sustainable Coastal Flooding and Erosion Risk Management (CFERM) plan for the Rogerstown estuary area.

Following an extensive optioneering process RPS identified a preferred management plan for each site. These plans are summarised in below

Study Area	Summary of CFERM Plan
<p>The Burrow</p>	<p>Option 3 – Beach nourishment & Flood Defences</p> <ul style="list-style-type: none"> ▪ Construct special groyne structures and re-nourish the upper beach profile with sand material to mitigate the erosion risk. ▪ Construct a series of strategically placed flood walls and embankments to mitigate the coastal flood risk. <p>This option will protect local property prices and thus the economy. This option may have an impact on the Rogerstown Estuary Special Area of Conservation.</p> <p>This option produced a marginally positive Benefit Cost Ratio based on a MRFS risk by 2100.</p>
<p>Rush South</p>	<p>Option 1 – Flood defences</p> <ul style="list-style-type: none"> ▪ Within the estuary, the flood risk to Channel Road and Spout Land should be mitigated by constructing a series of seawalls and flood gates. ▪ Outside of the estuary, no coastal defences should be constructed i.e. a policy of no active intervention should be adopted. This should be reviewed approximately every 5 years based on the findings of a shoreline monitoring programme. <p>This option will mitigate the flood risk within the estuary and maintain a naturally functioning coastline outside of the estuary. Removing dangerous structure from the beach at Rush South would reduce health and safety risks to beach users.</p> <p>This option produced a positive Benefit Cost Ratio based on all climate scenarios by 2100.</p>
<p>Rush North</p>	<p>High Level Policy: No Active Intervention</p> <ul style="list-style-type: none"> ▪ Owing to the limited erosion and flood risk at Rush North, the preferred option for this area is No Active Intervention. <p>The management plan for this area should be reviewed c. every five years subject to the findings of the shoreline monitoring programme.</p>

These plans will require extensive environmental assessments in the form of an Appropriate Assessment and Environmental Impact Assessment before being progressed through the planning process.