

Public Consultation Brochure

# East Coast Railway Infrastructure Protection Projects (ECRIPP)

Emerging Preferred Scheme for CCA2/3  
**DALKEY TUNNEL TO SHANGANAGH-  
BRAY WASTEWATER TREATMENT PLANT**



Rialtas  
na hÉireann  
Government  
of Ireland

Tionscadal Éireann  
Project Ireland  
**2040**



**Jacobs**







# Contents

<b>01 Introduction to East Coast Railway Infrastructure Protection Projects</b>	<b>2</b>
Why are Coastal Protection Measures Required?	2
Coastal Cell Areas	4
Objectives of the East Coast Railway Infrastructure Protection Projects	5
<b>02 Public Consultation Process</b>	<b>6</b>
<b>03 Current Design Status</b>	<b>7</b>
<b>04 Key Inputs of ECRIPP</b>	<b>9</b>
<b>05 Selection Process</b>	<b>10</b>
Development of Options	10
Stage 1	10
Stage 2	10
<b>06 What are we consulting on now?</b>	<b>12</b>
CCA2/3 Dalkey Tunnel to Shanganagh-Bray Wastewater Treatment Plant	12
<b>07 Next Steps</b>	<b>19</b>
Further Design Development & Option Selection	19
<b>08 How to Engage</b>	<b>21</b>

## 01 Introduction to the East Coast Railway Infrastructure Protection Projects

**The East Coast Railway Infrastructure Protection Projects (ECRIPP) were established to provide improved coastal protection against predicted climate change effects of sea level rise and coastal erosion on the east coast railway corridor between Merrion Gates (Co. Dublin) and Wicklow Harbour (Co Wicklow).**

**In recent years Iarnród Éireann Irish Rail has seen an increase in the frequency of storm events as a result of climate change. This necessitates more and more maintenance works to be carried out to respond to the effects of coastal erosion, wave overtopping and coastal flooding on the east coast rail line and supporting infrastructure. These works result in increasing disruption to existing services.**

The Dublin to Wicklow section of the East Coast Railway is a critical part of the Iarnród Éireann rail network, with southside DART, Gorey commuter and Rosslare Europort Intercity services operating along this scenic route. ECRIPP will deliver the necessary enhanced coastal protection to the existing railway infrastructure in a number of key locations on this rail network.

### **Why are Coastal Protection Measures Required?**

Iarnród Éireann has first-hand experience of the impacts of climate change on railway infrastructure on the east coast. Some areas of the east coast rail line have seen encroachment through the loss of coast of up to 20-30 metres in the last 10 years alone.

This has resulted in large losses of land, and incursions to such levels that the railway line between Dublin and Wicklow is vulnerable to further loss due to coastal erosion. This rate of loss will increase in line with climate change as storm frequency and intensity increases due to climate change.

These key sections, termed Coastal Cell Areas (CCA), of the coastal railway south of Dublin to Wicklow are particularly vulnerable to the impacts of coastal erosion, coastal flooding, wave overtopping and cliff instability. All of which are expected to increase both in frequency and severity in future years. These five Coastal Cell Areas make up ECRIPP.

Each CCA is a standalone project as part of ECRIPP to address coastal erosion on the east coast railway corridor. Each CCA will be taken forward as a separate planning application submission and the programme for delivery may vary between the CCAs.

ECRIPP is funded by the Department of Transport, through the National Transport Authority under Project Ireland 2040 and is provided for in the Programme for Government and the National Development Plan.



In recent years Iarnród Éireann Irish Rail has seen an increase in the frequency of storm events as a result of climate change. This necessitates more and more maintenance works to be carried out to respond to the effects of coastal erosion, wave overtopping and coastal flooding on the rail line and supporting infrastructure.



Figure 1: Seapoint during Storm Emma 2019





Figure 2: ECRIPP CCA Map

Five key locations, termed Coastal Cell Areas along a 65km route have been **identified and assessed as particularly exposed to coastal erosion and climate change effects.**

**Coastal Cell Areas**

The locations of the five Coastal Cell Areas (CCAs) are:

- CCA1** Merrion to Dún Laoghaire
- CCA2/3** Dalkey Tunnel to Shanganagh-Bray Wastewater Treatment Plant
- CCA5** Bray Head to Greystones North Beach
- CCA6.1** Greystones to Newcastle
- CCA6.2** Newcastle to Wicklow Harbour

During Public Consultation 1 we will present the emerging preferred scheme (EPS) for each of these Coastal Cell Areas for review and feedback.



A photograph of a railway platform at Blackrock Station. A sign on a pole reads "Blackrock An Charraig Dhubh". The platform is bordered by a stone wall and a metal fence. A green train is visible on the left side of the frame.

Blackrock  
An Charraig Dhubh

Figure 3: Blackrock Station

### Objectives of the East Coast Railway Infrastructure Protection Projects

The objectives of the projects are:

- Support the continued safe operation of rail services.
- Increase railway infrastructure resilience to climate change.
- Provide improved and sustainable coastal protection works against predicted climate change effects such as sea level rise, coastal erosion and storm surges on the east coast railway corridor.
- Secure the railway line for future generations.

- Allow for the long-term efficient management and maintenance of the railway corridor.
- Support sustainable low carbon local, regional, and international connectivity fostering a low carbon and climate resilient society.

### Benefits of the East Coast Railway Infrastructure Protection Projects

Iarnród Éireann's role as a sustainable national transport system is recognised in the publication of the All-Island Strategic Rail Review commissioned by the Governments of Ireland/Northern Ireland which proposes a very significant increase in capacity of our existing infrastructure and future expansion of the rail network across the island. ECRIPP will aid Irish Rail's increased capacity and expansion ambitions by supporting the development of the DART+ Programme and other improvements to the rail network on the east coast of Ireland.

## 02 Public Consultation Process

This process is a key element in the delivery of the East Coast Railway Infrastructure Protection Projects.

This project has two non-statutory public consultation periods planned. The first public consultation on ECRIPP is on the Emerging Preferred Scheme for each of the five Coastal Cell Areas CCA1 to CCA6.2 and seeks feedback to advance the design through to Public Consultation 2, where we will present the Preferred Scheme for each of the five Coastal Cell Areas CCA1 to CCA6.2. Feedback is now requested on the Emerging Preferred Scheme for each of the five Coastal Cell Areas.

Public consultations are our way of asking you, as potential users of the services or those likely to be affected by its development, for your views on our plans, whilst the design process is active. Your local knowledge and comments will further inform the design of the proposed protection measures and help it be a success for you and the communities it will serve.

Public feedback will be accepted during all stages of the design development and can be submitted through the project website, e-mail address, phone line or by written correspondence. For further details see the 'How to Engage' section.

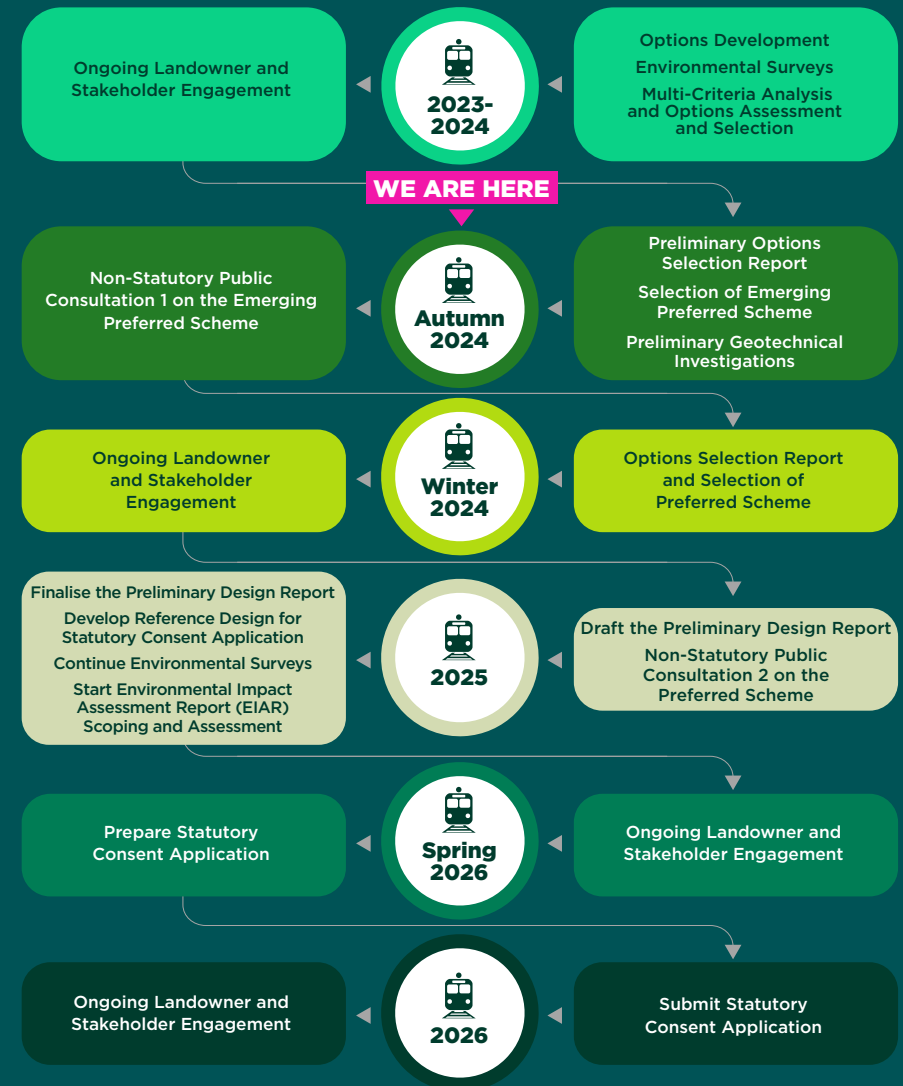


Figure 4: Consultation Roadmap



*Figure 5: Bray Tunnels*

## 03 Current Design Status

**This brochure explains the current design status of ECRIPP, its benefits, potential impacts, and how you can send us your queries, thoughts and ideas.**

**The design process and environmental studies for ECRIPP have commenced, and we are at a key stage in the project.**

Your participation and feedback is encouraged and we are interested in gaining your feedback and comments at this stage in the design process.

Before we proceed any further, we would like your views on the Emerging Preferred Scheme for each of the five Coastal Cell Areas being put forward for Public Consultation 1. Based on the optioneering process presented in the Preliminary Option Selection Reports, the Emerging Preferred Scheme is our identified preferred technical approach to managing coastal erosion and wave overtopping risks to railway operations.

We are at a very early stage of design and studies are still ongoing to confirm the approach and develop the site-specific design aspects. These studies will be progressed with your local knowledge and will inform the design and help us to improve the project.

Following these further studies, assessments, design development, consultation and our review of your feedback, the Emerging Preferred Scheme for each coastal cell area will be refined. The Preferred Scheme will then be presented at Public Consultation 2, due to take place in 2025.



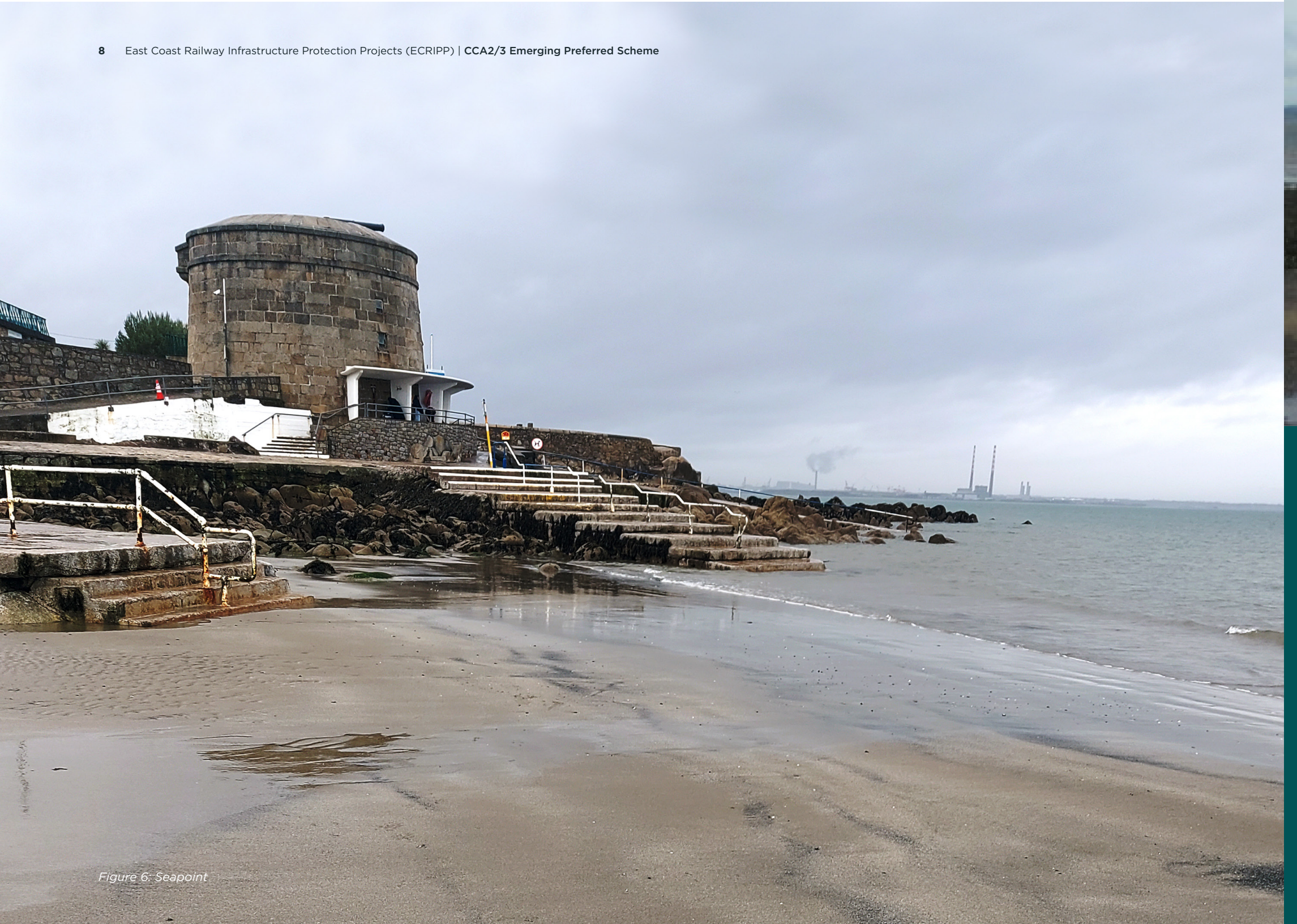


Figure 6- Seapoint





Figure 7: Typical Rock Revetment

## 04 Key Inputs of ECRIPP

The concept designs for each of the options considered the following:

- Wave climate and extreme water level data has been extracted from hydrodynamic modelling work undertaken during preliminary investigations for ECRIPP.
- Initial rock stability calculations have been undertaken to identify the required rock size to ensure long term stability of the rock armour.
- An assessment of wave overtopping rates during storm events has been undertaken. This includes an allowance for sea level rise. This analysis informs the required geometry of the improved defences to provide the required Standard of Protection (0.5% Annual Exceedance Probability, also known as a 1 in 200-year storm protection level).
- The condition of the existing coastal defences has been informed by condition survey.
- Defence type and material selection have been selected to provide a long design life and to minimise future maintenance requirements.
- Constructability and technical viability have been considered in the design to ensure the options are feasible.
- Within the bounds of each option form, the impact on the environment and community have been considered at a high level through multicriteria assessment (MCA).

## 05 Selection Process

**To assist the design development process and to determine the Emerging Preferred Scheme for each of the five Coastal Cell Areas, a structured engineering process has been followed.**

**The option selection process is detailed in the Preliminary Option Selection Report for each CCA, which are available through the website or contact methods outlined at the back of this document.**

### Development of Options

Options that were developed for the individual Coastal Cell Areas include but are not limited to:

- Concrete Seawall fronted by Rock Toe
- Rock Revetment with Wall Raising
- Breakwaters with Beach Nourishment
- Groynes with Beach Nourishment

### STAGE 1

**Preliminary Assessment consists of the assessment of a long list of options against engineering, economic, and environmental criteria to evaluate the ‘feasibility’ of each option to meet the project objectives and requirements.**

This approach allowed for the long list of options to be filtered to a shorter list of feasible options. All feasible options were brought forward to Stage 2 where they could be explored in greater detail.

### STAGE 2

**The Multi-Criteria Analysis process consists of a more detailed multi-disciplinary comparative analysis of the feasible options that passed through Stage 1.**

The feasible options were assessed against seven appraisal criteria, namely: economy, safety, environment, accessibility and social inclusion, integration, engineering/technical and planning risk.

Options were then compared to each other based on whether an option had ‘some’ or ‘significant’ advantage or disadvantage over other options or whether all options were ‘comparable/neutral’.

Following the identification of the technical approach to managing coastal erosion and wave overtopping risk to the railway, a second prioritisation assessment was undertaken to assess what works should be delivered under ECRIPP, and which works could safely be deferred to provide longer term coastal protection as climate change impacts are realised. A second MCA (against the same criteria) was undertaken on the priority works to be delivered under ECRIPP to identify the Emerging Preferred Scheme.

The MCA was developed cognisant of the Common Appraisal Framework and the recently published Infrastructure Guidelines.





*Figure 8: View from Blackrock beach*



## 06 What are we consulting on now?

**For Public Consultation 1, we will showcase the options selection process and the methodology followed to identify the Emerging Preferred Scheme for each of the five Coastal Cell Areas.**

**As part of the public consultation process, the public are invited to make observations and submissions on the Emerging Preferred Scheme.**

Full details of each Emerging Preferred Scheme, including maps, drawings and the Preliminary Options Selection Reports are available to view and download on the project website: [www.irishrail.ie/en-ie/about-us/iarnrod-eireann-projects-and-investments/ecripp](http://www.irishrail.ie/en-ie/about-us/iarnrod-eireann-projects-and-investments/ecripp).

### **CCA2/3 Dalkey Tunnel to Shanganagh-Bray Wastewater Treatment Plant**

CCA2/3 is the section of the coast that stretches from Dalkey Tunnel to just south of Killiney Martello Tower (near Shanganagh-Bray Wastewater Treatment Plant). This frontage is mainly non-urban with natural cliffs and intermittent man-made structures supporting the railway corridor.

The main hazards along this frontage are;

- Coastal erosion of beach and foreshore undermining cliff and embankment integrity
- Cliff instability from wave overtopping.

### **Objectives for CCA2/3**

1. To allow for the long-term efficient management and maintenance of the railway corridor
2. To support the continued safe operation of rail services
3. To support sustainable low carbon local, regional and international connectivity that will enable the transition to a low carbon, and climate resilient society, supporting a fair society with the highest quality of life possible
4. To design and construct the proposed infrastructural protection measures to minimise environmental effects during the construction and operational phases, insofar as is practicable enhance the receiving environment
5. To design and construct the proposed infrastructural protection measures in line with local regional and national policies and legislation relating to sustainability circular economy and carbon





Figure 9: Wicklow Railway Line



## The Emerging Preferred Scheme – CCA2/3 Dalkey to Shanganagh-Bray Wastewater Treatment Plant

**The Emerging Preferred Scheme (EPS) to be taken forward to public consultation is rock revetments and concrete walls with walkway.**

### **The top advantages identified with the EPS are:**

- Non-complex and comparatively low-cost construction
- Minimal maintenance burden and expenditure
- Robust solution
- Low material consumption and waste
- Preferable option for carbon management
- Low impact on noise, vibration and air quality

### **Rock revetment**

- A rock revetment will be constructed on the beach at the toe of the cliffs in front of existing structures at Whiterock (south of Whiterock Beach). The rock revetment will comprise a minimum of two layers of natural rock boulders. The rock size has been selected to provide long-term stability and to allow for climate change. This rock will be of high quality to ensure that it has a long lifespan.
- The rock revetment will absorb wave energy, reduce wave run up and overtopping and stabilise the shoreline.
- Where required, the height of the existing walls behind the revetments will be raised to manage the overtopping risk

### **Walkways**

- At Killiney beach there are existing walkways along the rear of some sections of the beach. These walkways will be extended to the south and will provide continuous access along the rear of the beach with access down onto the beach provided at regular intervals. These new structures will prevent waves eroding the slopes that sit under the railway corridor at this location.
- Buried rock will be placed at the toe of these new structures to prevent any undermining if the beach levels lower in the future.

### **Construction**

Through the design process we will identify and develop construction methodologies, haul routes, construction compounds and landing locations for the contractor and materials to construct the project. Further details on construction methodologies will be developed in the coming months and will be presented at Public Consultation 2. This information will be developed to inform the EIAR that will support the Planning Application for the project.





Figure 10: White Rock, Killybegs







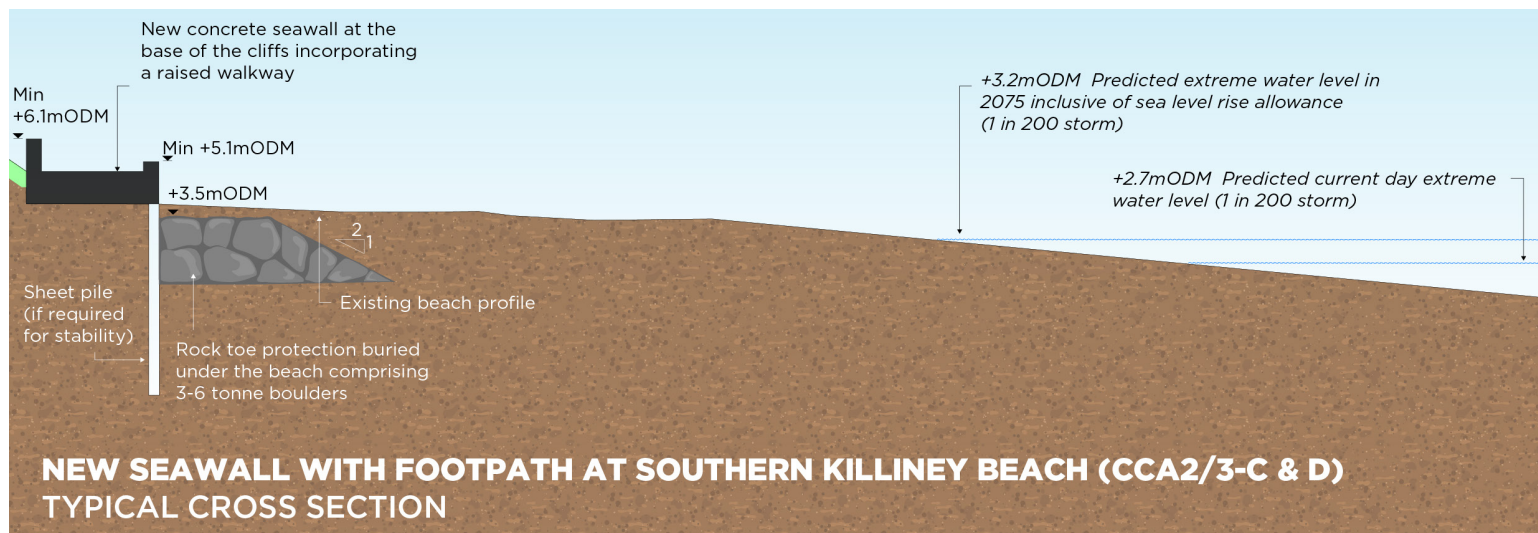
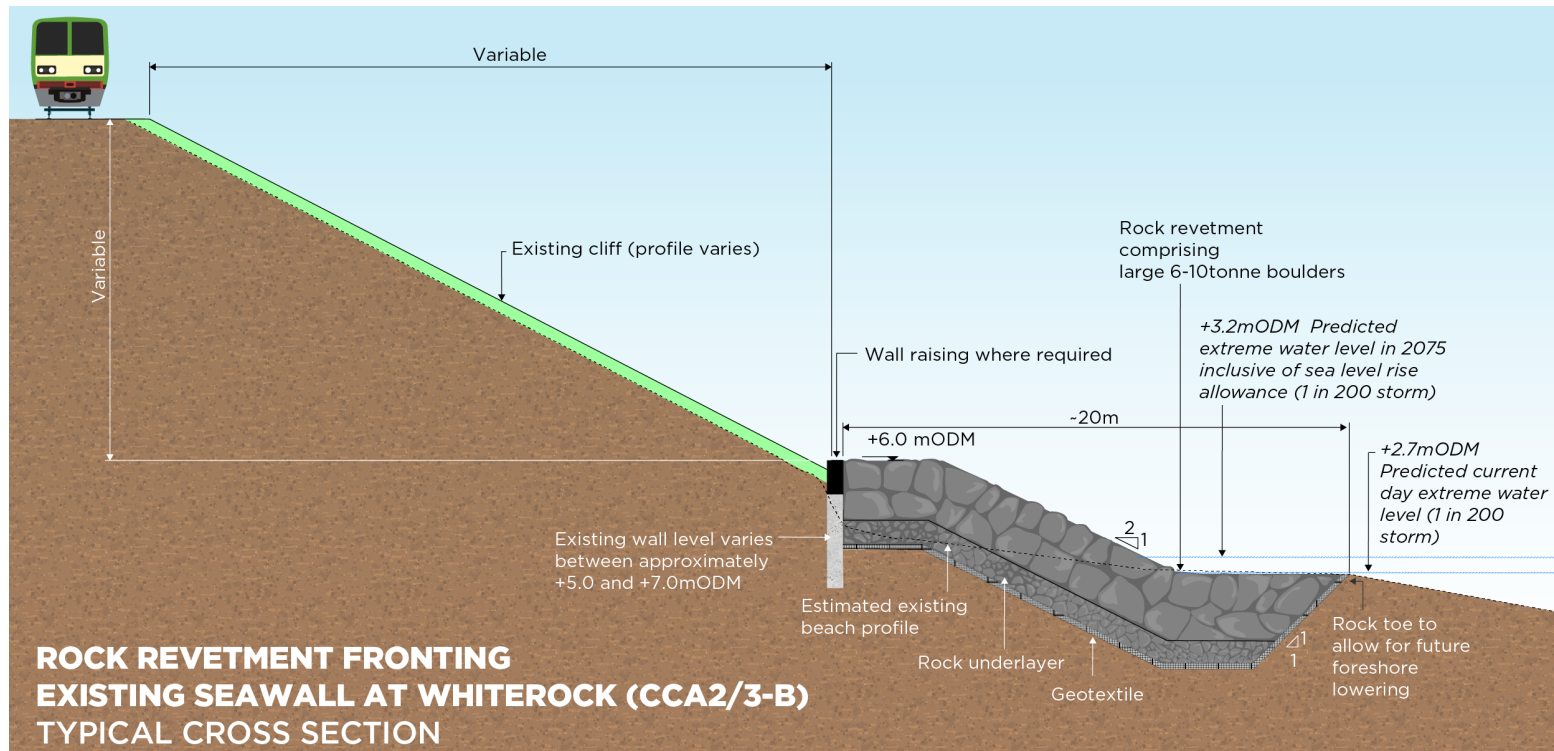


Figure 4: CCA2/3 Typical cross sections showing rock revetment fronting existing wall and cliff (top) and rock revetment fronting existing path and cliff (bottom)





Figure 12: South of Kilcoole Station



## 07 Next Steps

### Further Design Development & Option Selection

The option selection process and design development that has been undertaken to date has led to the development of the Emerging Preferred Scheme for each coastal cell area that is the focus of this public consultation stage.

Once the Public Consultation 1 process is complete, all feedback and submissions received will be reviewed and assessed as part of the finalisation of the of the Preferred Scheme for Public Consultation 2.

Following a full appraisal of the feedback, a Consultation Findings Report on Public Consultation 1 will be prepared and published to document this process.

All information gathered by the Project Team will be used to inform the design development of the project which will be the subject of the Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) as part of the planning application.

Public feedback will be accepted during all stages of the design development and can be submitted through the project website, e-mail address, phonenumber or by written correspondence.



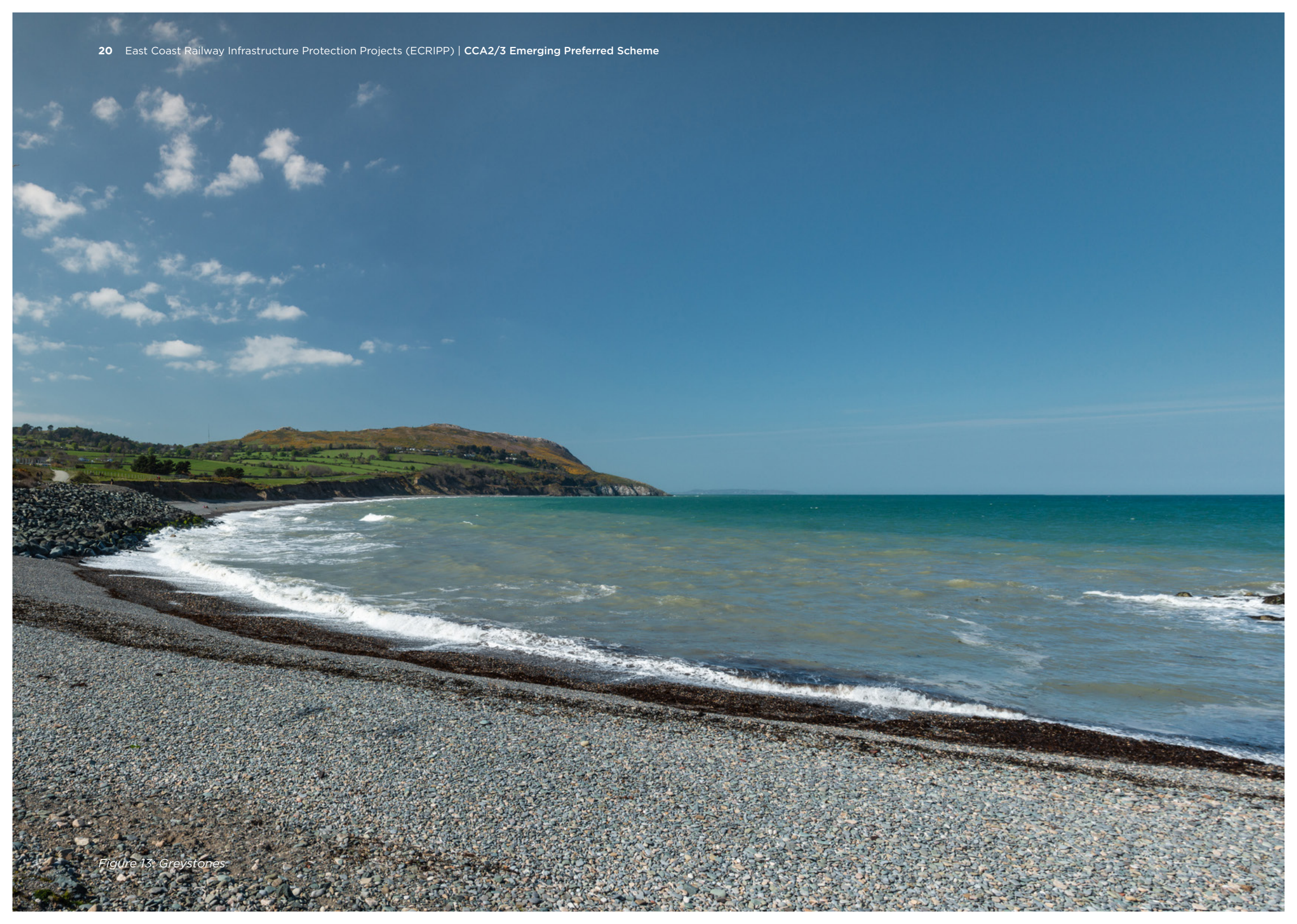


Figure 13: Greystones



## 08 How to Engage

**The project team would like to hear your views on ECRIPP Emerging Preferred Scheme for each of the Coastal Cell Areas. This consultation is our way of asking you, as potential users of the service or those likely to be affected by the development of coastal protection measures, for your views on our plans.**

Your local knowledge will inform the design development, help us to improve it and ensure that it will be beneficial to the communities we serve and those who pass through. It will also ensure that we preserve our railway infrastructure for generations to come.

The consultation period is now open, full details including closing dates for receipt of submissions are available on the project website.

**Please contact us via the following means:**



**Website:** <https://www.irishrail.ie/en-ie/aboutus/iarnrod-eireann-projects-and-investments/ECRIPP#overview>

**Email:** [ecrippenquiries@irishrail.ie](mailto:ecrippenquiries@irishrail.ie)

**Phone line:** 01 202 7900

**Postal Address:** If you would prefer to write to us, please send correspondence to:

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Engineering & New Works Building,  
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Inchicore Works,  
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