

Public Consultation Brochure

East Coast Railway Infrastructure Protection Projects (ECRIPP)

Emerging Preferred Scheme for CCA1
MERRION TO DÚN LAOGHAIRE



Rialtas
na hÉireann
Government
of Ireland

Tionscadal Éireann
Project Ireland
2040



Jacobs





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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.



Figure 3: White Rock, Killiney

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.

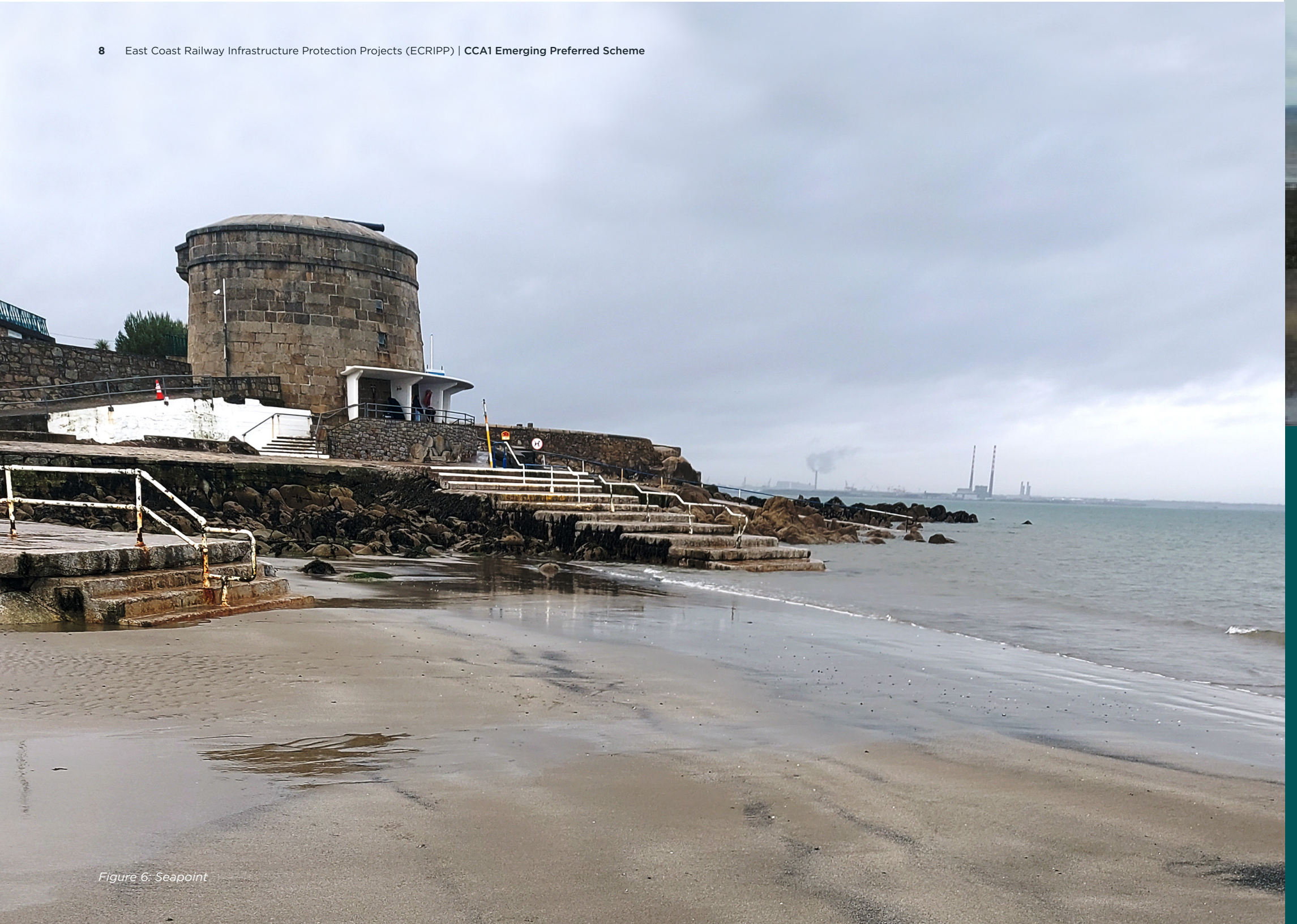


Figure 6- Seapoint



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.

CCA1 Merrion to Dún Laoghaire

CCA1 is the section of coast that stretches from Merrion to Dún Laoghaire Harbour. This frontage is mainly urban with the trainline running along the coastline. Coastal protection measures currently in place mostly include natural stone revetments with upstand seawalls.

The railway is relatively low-lying along this frontage and the main hazards along this frontage are;

- Wave overtopping leading to flooding.
- Wave impact leading to structural damage.
- Beach erosion and foreshore lowering leading to undermining of defences and allowing larger waves to reach the shoreline.

Climate change impacts (sea levels rise and storm frequency) will increase the severity of all of these hazards.

Objectives for CCA1

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.
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.

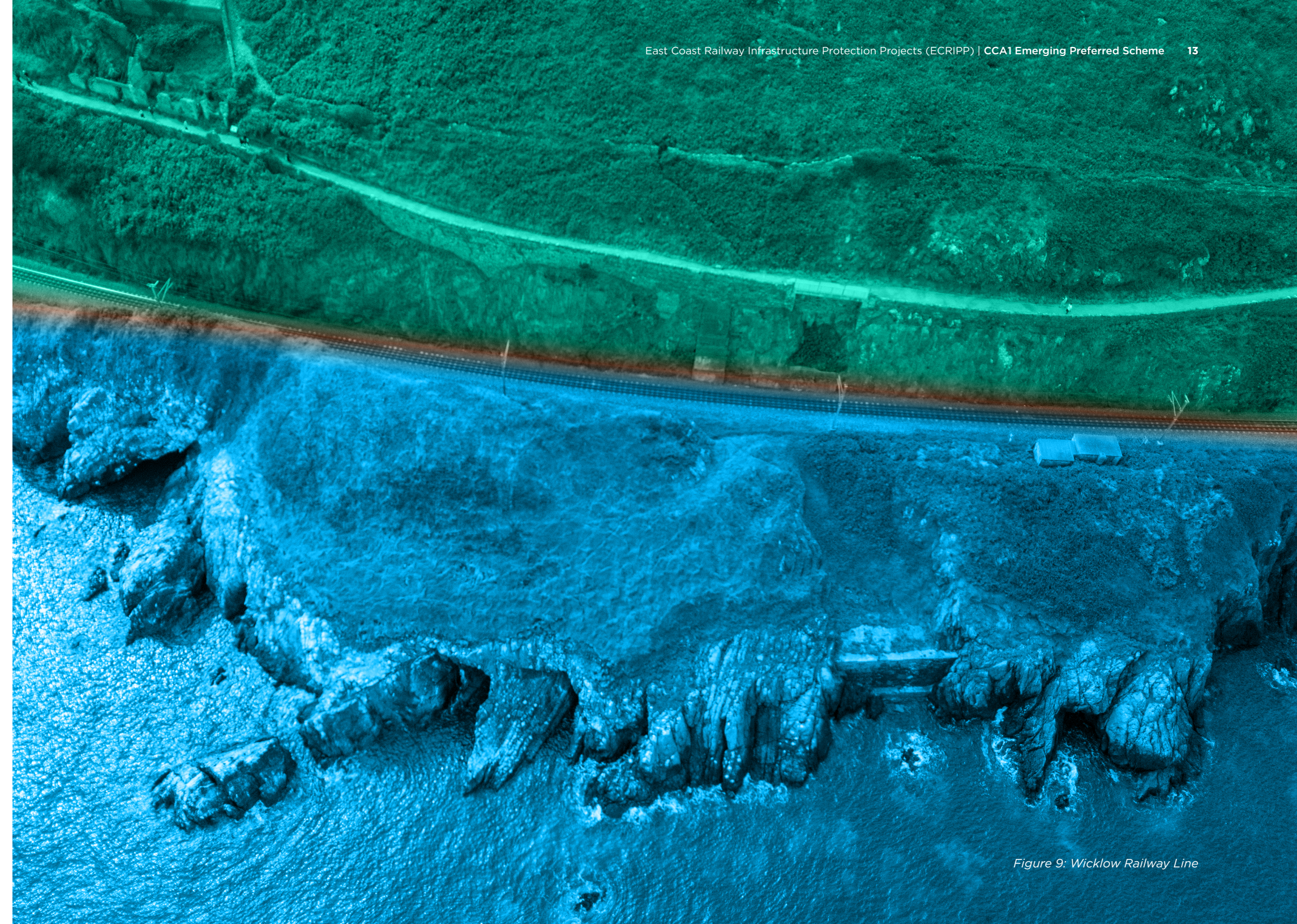


Figure 9: Wicklow Railway Line

The Emerging Preferred Scheme – CCA1 Merrion to Dún Laoghaire

The Emerging Preferred Scheme to be taken forward to Public Consultation 1 consists of; Raised walls across the majority of the frontage and raised walkways and new walls at the amenity areas of Seapoint and Blackrock.

The top advantages identified with the EPS are:

- Delivers the project objectives.
- Low maintenance burden over its lifetime
- Reduced direct impacts on archaeology, architectural and cultural heritage in comparison to other options.
- Reduced environmental impact on important intertidal and reef habitats.
- Retains the amenity function and shoreline character at Blackrock and Seapoint.

Wall raising

- The raising and rebuilding of existing vertical walls is unavoidable to provide protection of the railway. The walls are currently experiencing wave overtopping during storm events, and this is without considering future sea level rise.
- The existing walls are largely masonry walls from the original railway construction and of good quality. Many of these existing walls have the capacity to be raised.
- At this early stage in the design process, it has been assumed the wall will be raised with reinforced concrete by a height of approximately 0.7m to 1.5m. At locations where the existing wall is in poor condition the walls will be taken to ground level and rebuilt with reinforced concrete.

Walkways and steps raising

- At Blackrock and Seapoint, there is existing provision for public access for general amenity, bathing and water sports. The Emerging Preferred Scheme seeks to provide the same amenity provision.
- The existing footpaths, walkways and steps (over and along the revetment) will be rebuilt and raised.

- New and raised seawalls will be incorporated at the back of the sea defences to manage the wave overtopping risk. The level transitions and beach access will be remodelled to retain all amenity areas and access along the shore and to the beach. This remodelling will take into consideration the proposed use of the steps, accessibility requirements and health and safety requirements.
- The area around the Martello Tower to the west of Seapoint will remain unchanged and the new works will tie into these areas to maintain amenity areas and access.
- The swimming piers and the beach will remain unchanged.

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: Blackrock Station

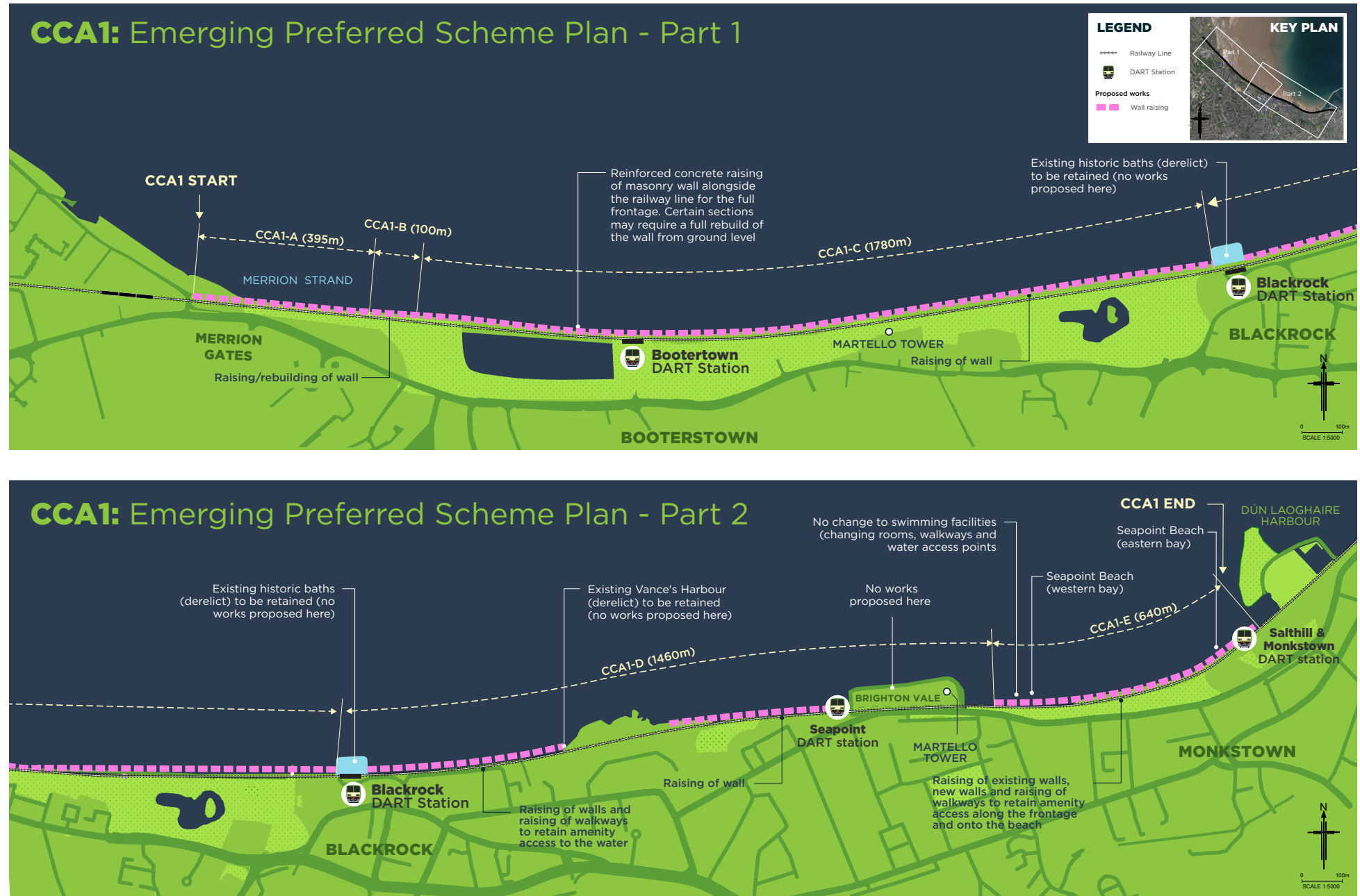


Figure 11: CCA1: Emerging Preferred Scheme Plan - Parts 1 & 2

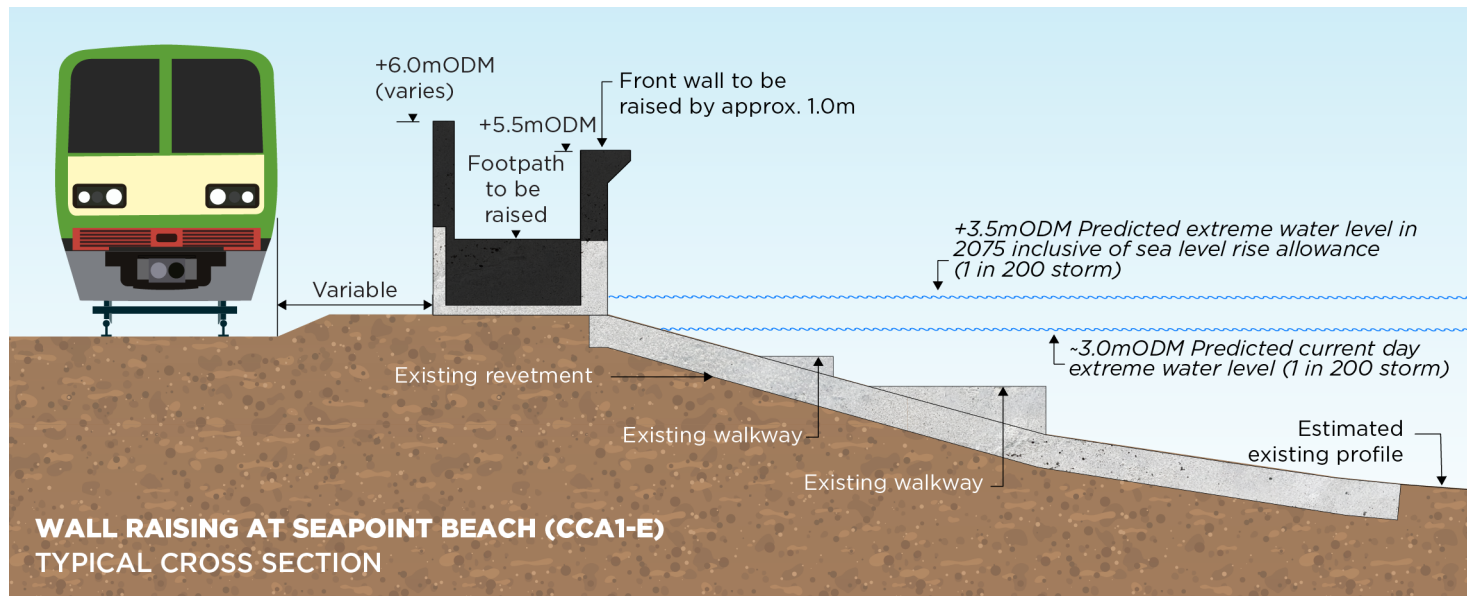
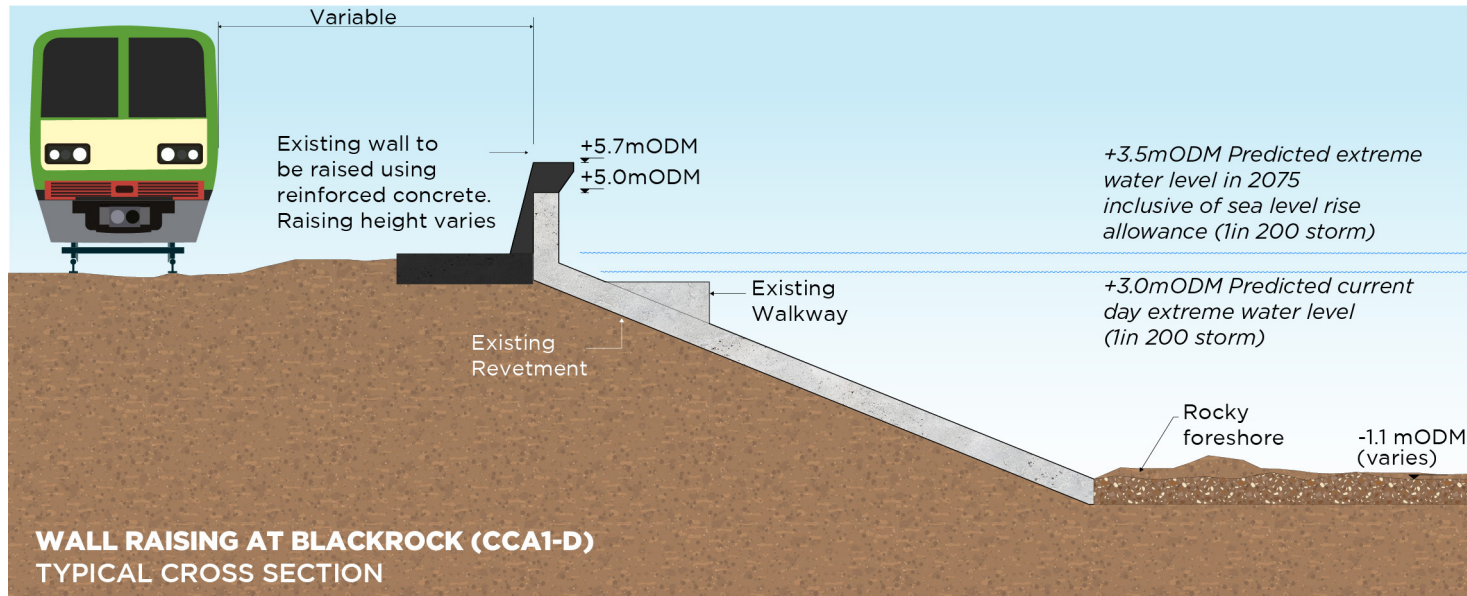


Figure 12: CCA1 Typical cross sections showing wall raising (top) and raised revetments, walls and walkways at Seapoint (bottom)



Figure 13: 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.

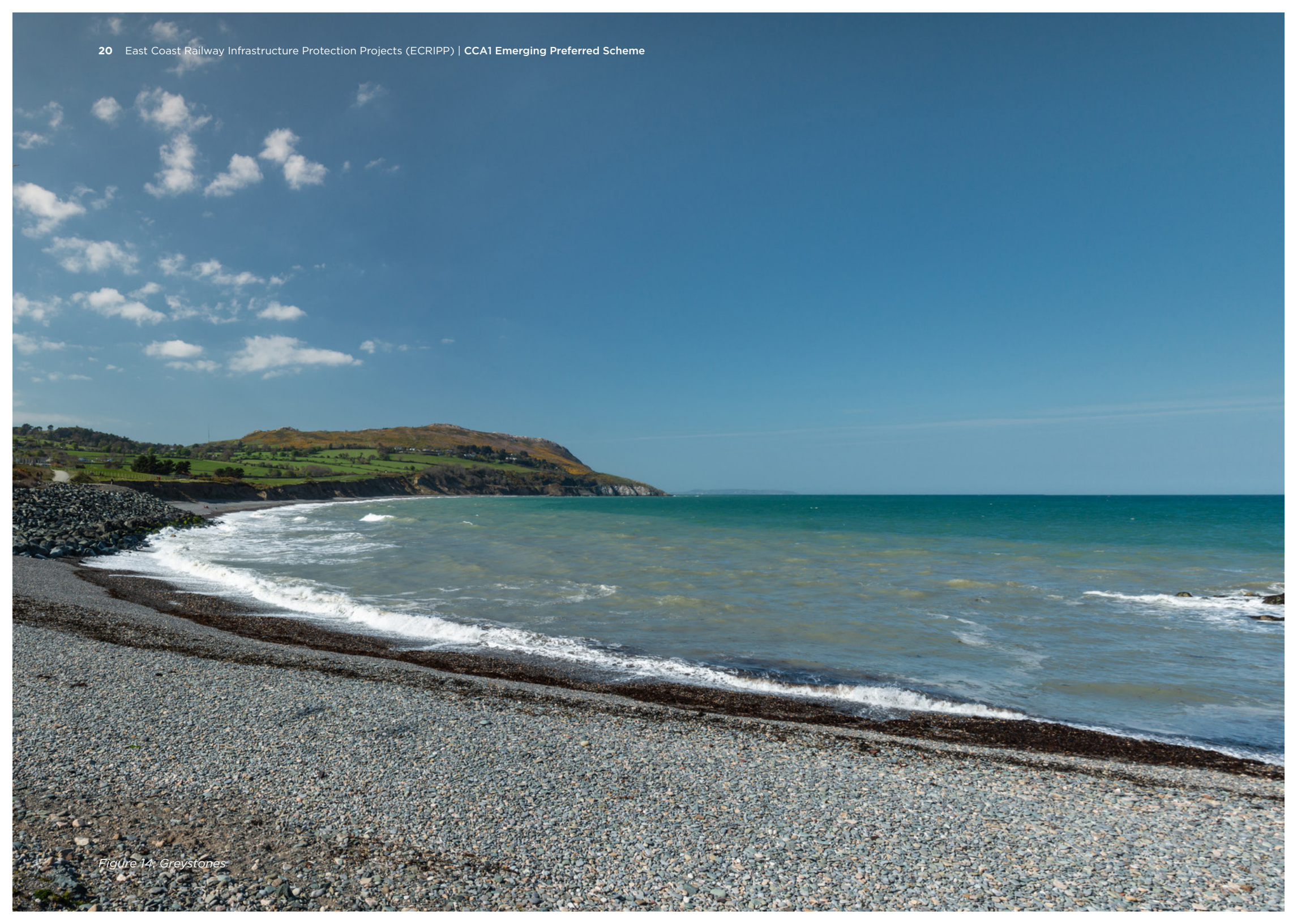


Figure 14: Greystones

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

Phone line: 01 202 7900

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

ECRIPP,
Engineering & New Works Building,
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