

# Penrhyn Bay – Coastal Defence Improvements

Conwy County Borough Council (CCBC) is considering options to protect the coastline at Penrhyn Bay from coastal flooding and erosion. We would like to hear your views.

## WHAT IS THE PROBLEM?

### Protecting The Sea Wall

The 1950's concrete sea wall provides significant protection to Penrhyn Bay. Without this structure, the coastline would begin to be eroded and low-lying areas behind the defences would be at increasing risk of tidal flooding. The beach material provides protection to the sea wall and prevents it being damaged by wave action. If the beach materials are lost due to erosion, the concrete sea wall is at risk of failure from the on-going action of the waves.

### Preventing Beach Erosion

The beach at Penrhyn Bay is particularly mobile – meaning that under the action of waves and tides, material is transported along the beach, exposing the wall. CCBC regularly move beach material back to the centre of the bay at significant cost. In 1990 we installed breakwaters to reduce erosion, but it is still occurring. Due to climate change this process is likely to be accelerated. We are looking to find a solution that reduces beach erosion.

## WHAT IF WE DON'T DO ANYTHING?

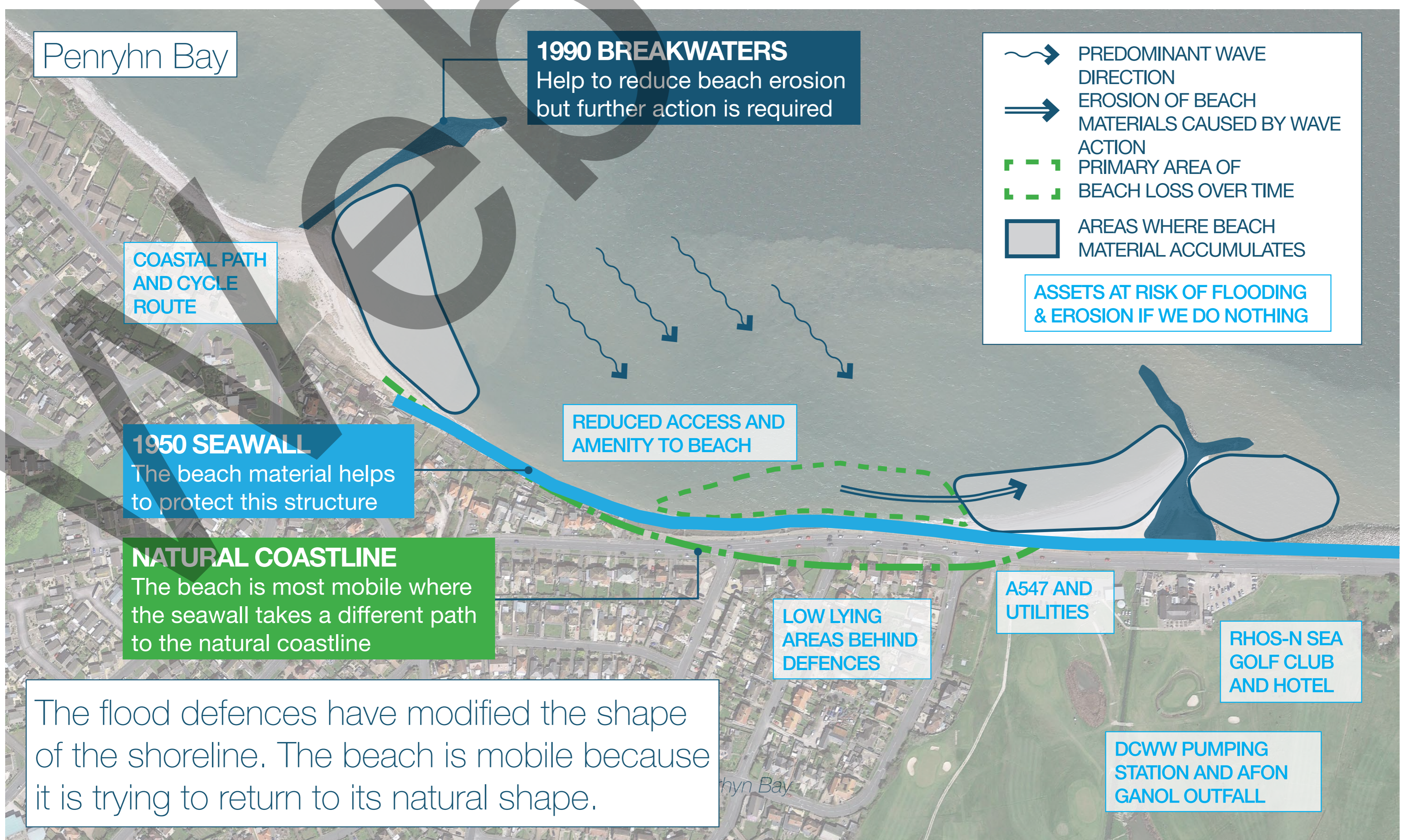
Without on-going beach maintenance activities the sea wall is a risk of failure. This will place properties and assets at risk from flooding and erosion.

**316**

**Properties at risk of flooding**

**39**

**Properties at risk of coastal erosion**



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## WHAT ARE OUR KEY OBJECTIVES?

Through this scheme we want to:

- Manage the effects of flood risk and coastal erosion to protect Penrhyn
- Reduce the frequency and cost of beach maintenance and management activities
- Maintain or widen the existing the beach area and improve it for the local community
- Find an affordable and deliverable option
- Minimise impact on the environment and delivering wider benefits for Penrhyn

## WHAT ARE THE SOLUTIONS?

We have selected two options for further consideration.

There are lots of different ways to protect the coastline. In 2016, a detailed option development process was undertaken. This resulted in a long-list of options, including groynes, extending existing breakwaters, rock armour, various options for extending the existing breakwaters and modifying beach material. Further analysis was undertaken to select our two options.

## WHY ARE WE CONSULTING?

We would like to hear your views on what is best for Penrhyn Bay:

- WHAT DO YOU THINK IS SPECIAL ABOUT PENRHYN BAY SEA FRONTAGE AND BEACH?
- WHAT DO YOU LIKE OR DISLIKE ABOUT THE CCBC PROPOSALS FOR PENRHYN BAY?
- WHAT REASONABLE IMPROVEMENTS WOULD YOU LIKE TO SEE TO PENRHYN BAY?

There are lots of different ways to protect the coastline. Each has different benefits and impacts. Your views will help us to select the best options for your community and finalise the project business case. They will also help us to explore the wider benefits we might deliver through this scheme. This depends on the options, but possibilities for include improved access to the beach, more seating, better lighting or improved public realm.

## PROJECT TIMELINE - WHAT HAPPENS NEXT?

We must follow a government process to select the right options and secure the funding we need. Once the business case is approved, we will need to secure funding, planning permission and environmental & marine consents. We can then start to build the proposed solution, this could be as soon as 2020. We will consult further throughout this process.

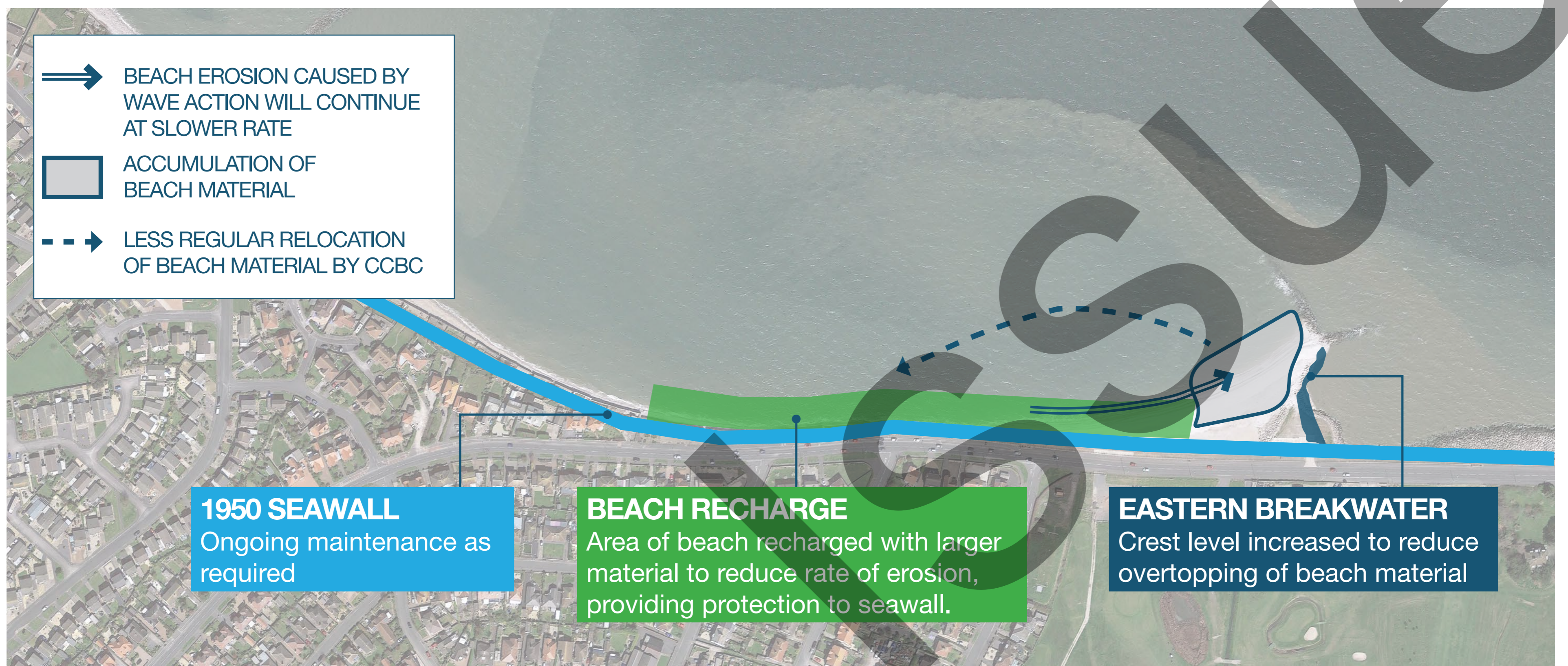


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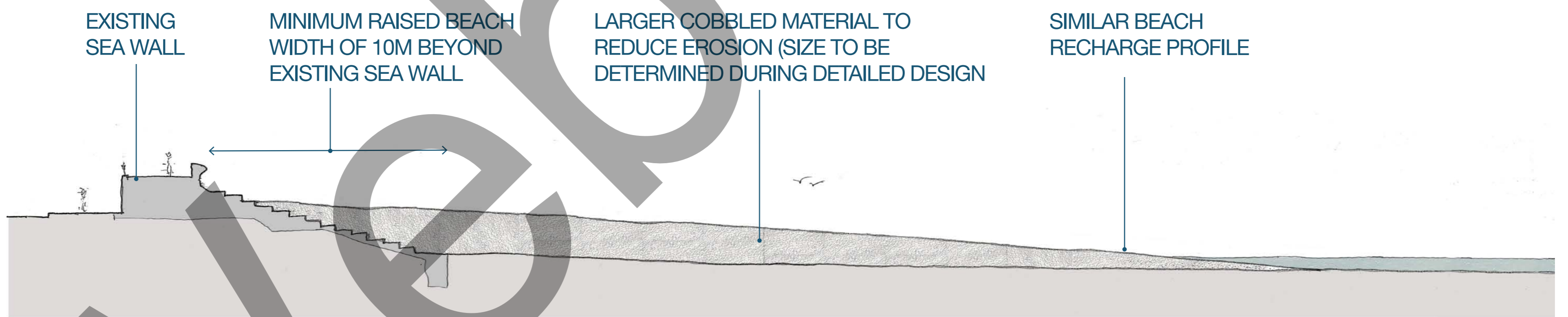
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## OPTION 1 BEACH MODIFICATION AND RECHARGE

The use of larger cobbled beach material along the central-southern section of the beach to reduce the transportation of beach material - creating a minimum beach width of 10m beside the existing seawall defences. Key elements of the option is shown in the diagrams below.



ABOVE: PLAN SHOWING THE MAIN ELEMENTS OF OPTION 1



ABOVE: SCHEMATIC SECTION LOOKING EAST, SHOWING THE EXISTING AND PROPOSED BEACH PROFILE



VIEW SHOWING THE SECTION OF THE BEACH THAT WE WOULD MODIFY AND RECHARGE WITH NEW MATERIAL UNDER THIS OPTION. THE EXISTING BREAKWATER CAN BE SEEN TO THE LEFT. THIS WOULD BE RAISED.



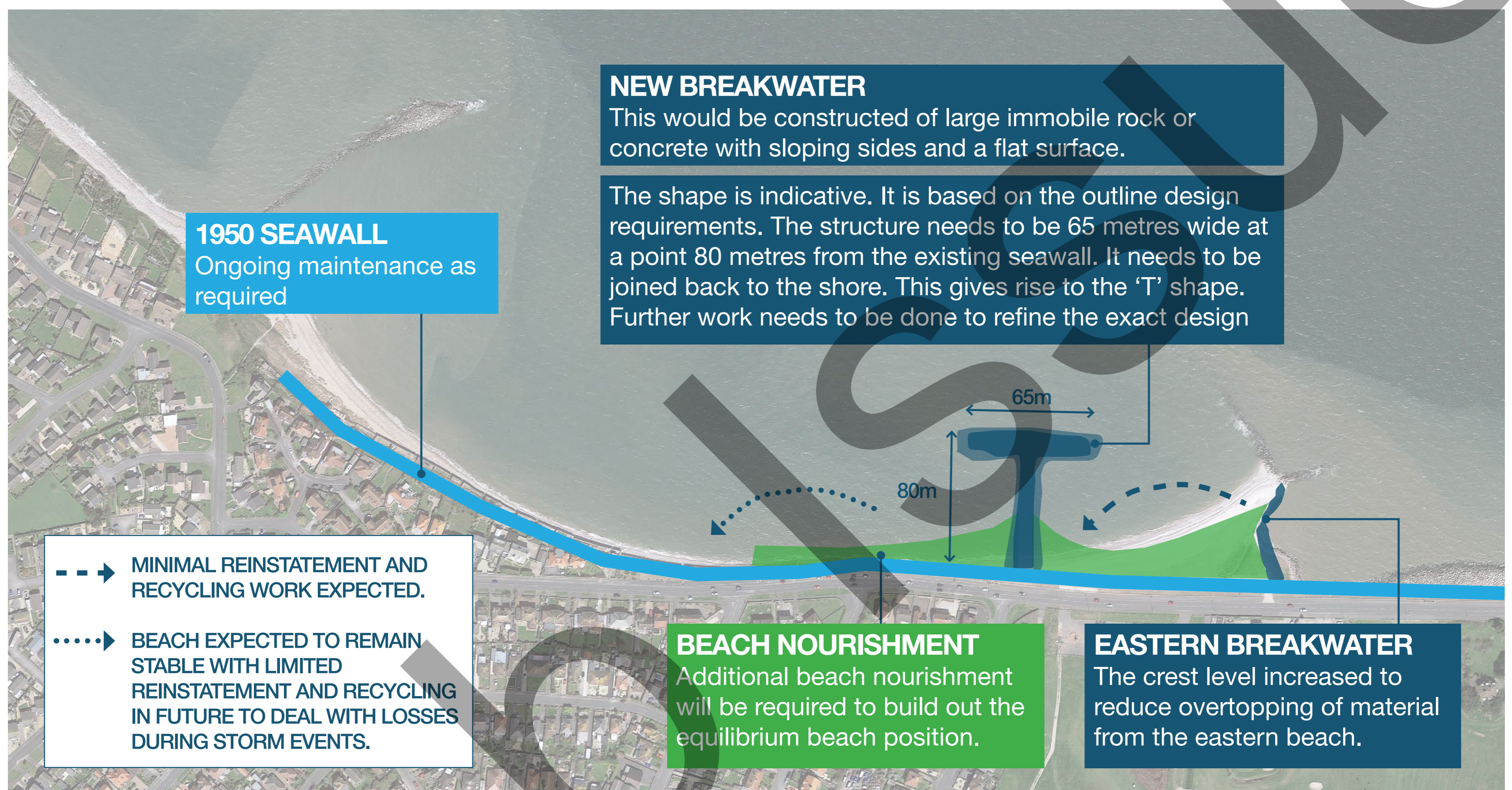
CCBC REGULARLY MOVE BEACH MATERIAL BACK TO THE CENTRE OF THE BAY AT SIGNIFICANT COST. THIS OPTION WOULD GREATLY REDUCE THE SPEED OF BEACH EROSION AND THEREFORE REDUCE THE FREQUENCY OF THIS TASK.

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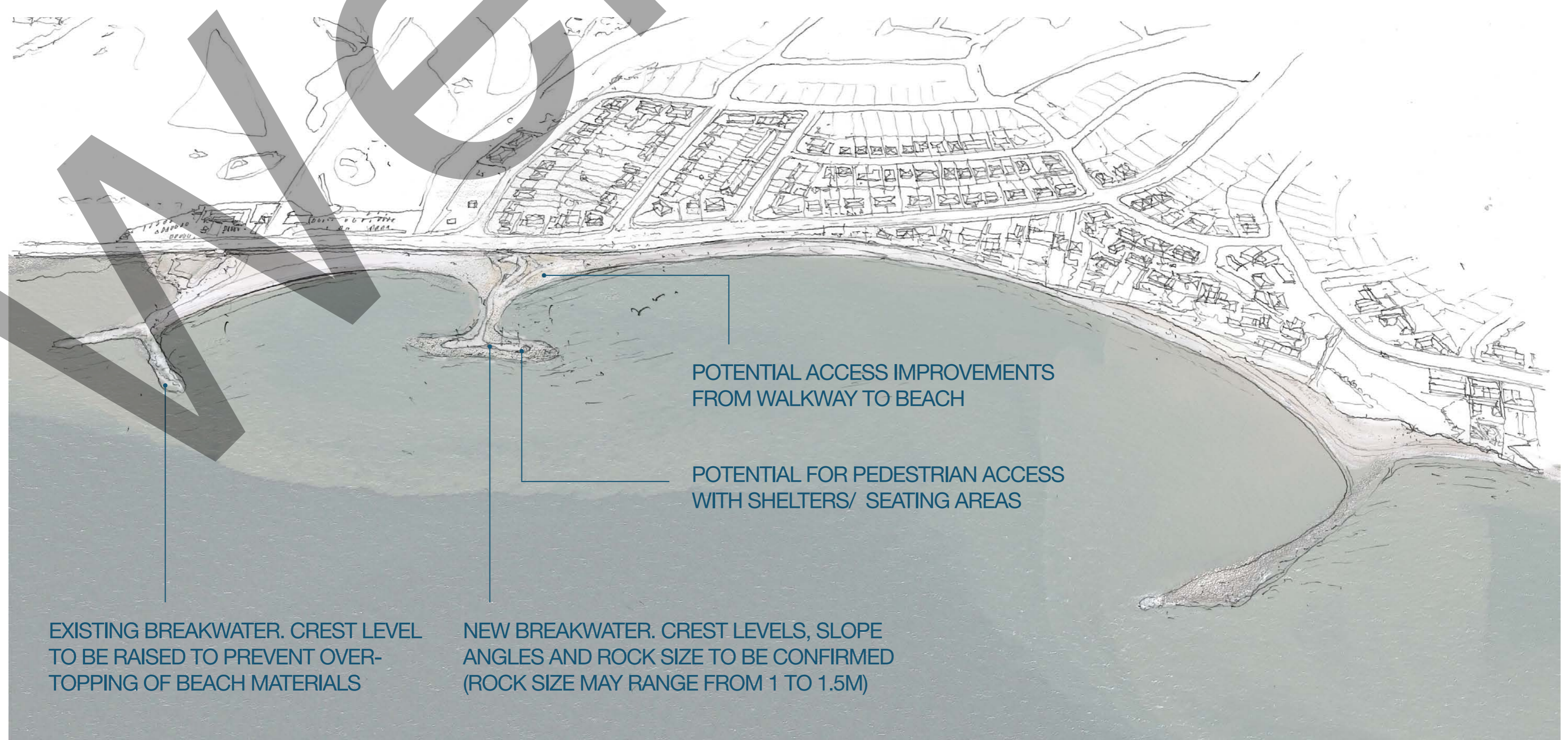
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## OPTION 2 - NEW CENTRAL BREAKWATER

A new structure, similar to the existing breakwaters, which would dissipate wave energy and reduce the movement of beach material being transported from west to east. Additional placement of beach material is required to create a stable beach profile. Key elements of the option is shown in the diagrams below.



ABOVE: PLAN SHOWING THE MAIN ELEMENTS OF OPTION 2



ABOVE: INDICATIVE SKETCH SHOWING THE PROPOSED LOCATION AND EXTENT OF THE NEW BREAKWATER (THE SHAPE IS INDICATIVE AT THIS STAGE)