



ST KILDA

MIDDLE BEACH

ST CLAIR

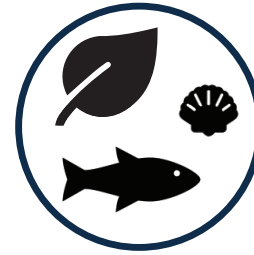
WHAT WE HAVE HEARD

PEOPLE VALUE



RECREATION

Walking, surfing,
swimming, playgrounds,
sports fields



ENVIRONMENT

Natural, wildlife,
open green spaces



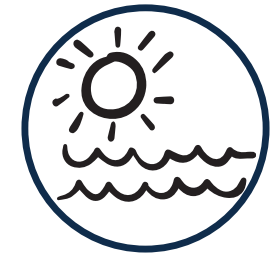
ACCESSIBILITY

Beach access for
all



CONNECTIVITY

Between
St Clair - St Kilda



LIFESTYLE

Cafes, spending
time with friends
and family

PEOPLE'S CONCERNS



KETTLE PARK

Landfill removal



SEA WALL

Safety and future



EROSION

Dunes and
protection



ACCESS

Movement and parking
along John Wilson Ocean
Drive and Esplanade



SAFETY

Between
St Clair - St Kilda



FACILITIES

Seating, rubbish
bins, drinking
fountains



BEACH EROSION

The beach will erode as sea-level rises and coastal storms become more frequent.



SLUMPING/FAILURE OF SEAWALL

Areas of the sea wall (pavers) will collapse as the beach lowers (erodes) and material is pulled out from behind the wall.



ACCESS DIMINISHED

Access to and from the beach will become increasingly poor as the beach erodes and the stairways degrade.



FAILURE OF GEOBAGS

The geobag structure is likely to fail within the next decade, if not sooner.



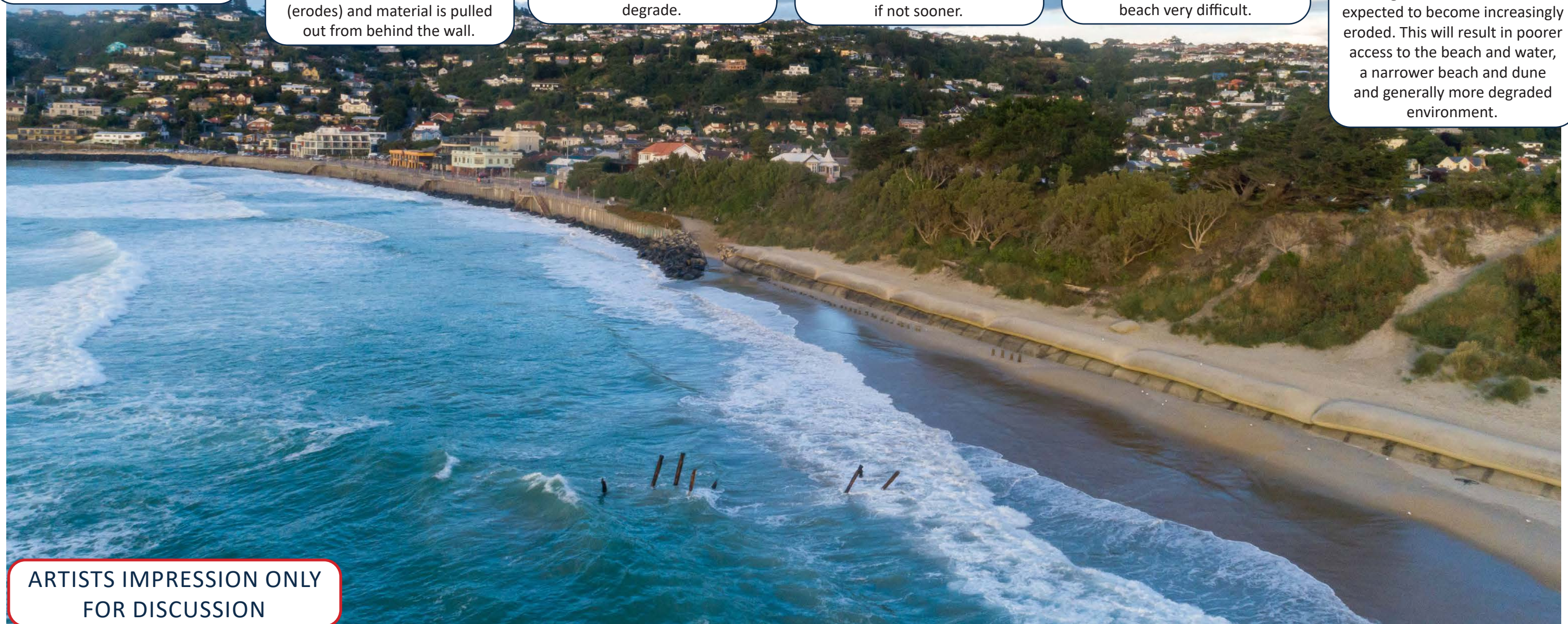
DUNE EROSION

Following the failure of the geobags, the dune is likely to erode making access along the beach very difficult.

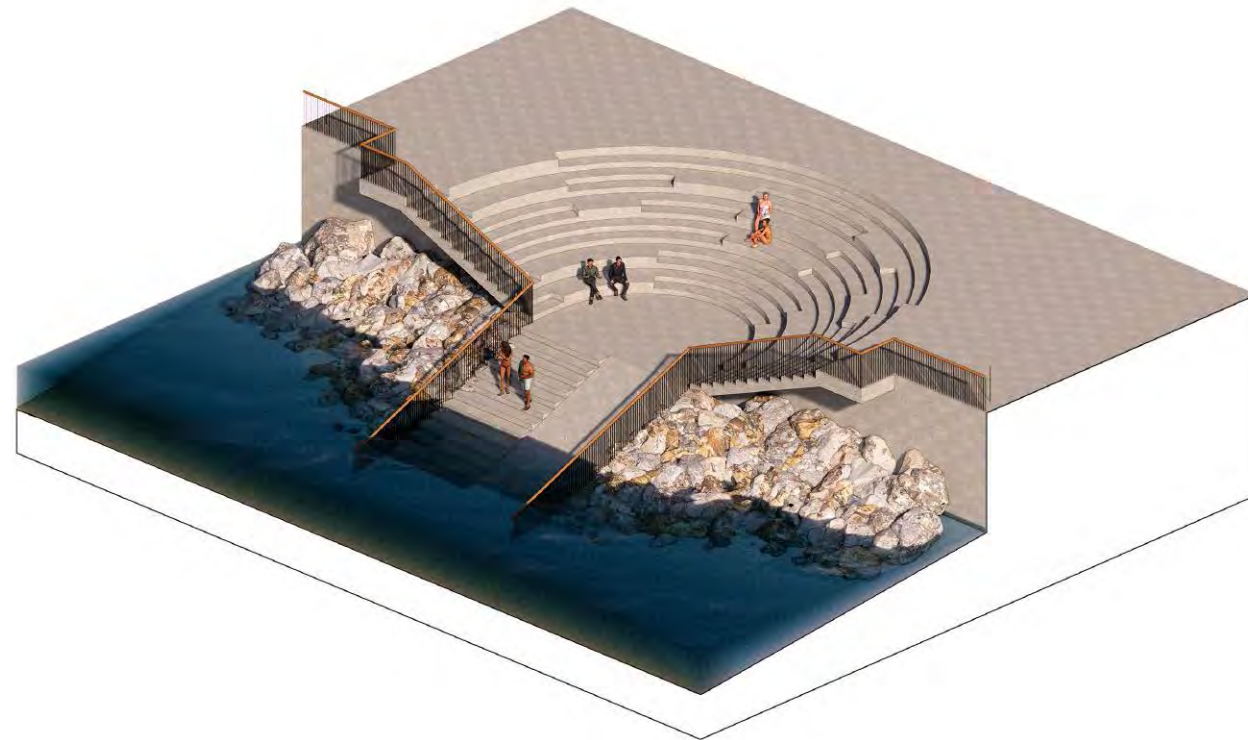
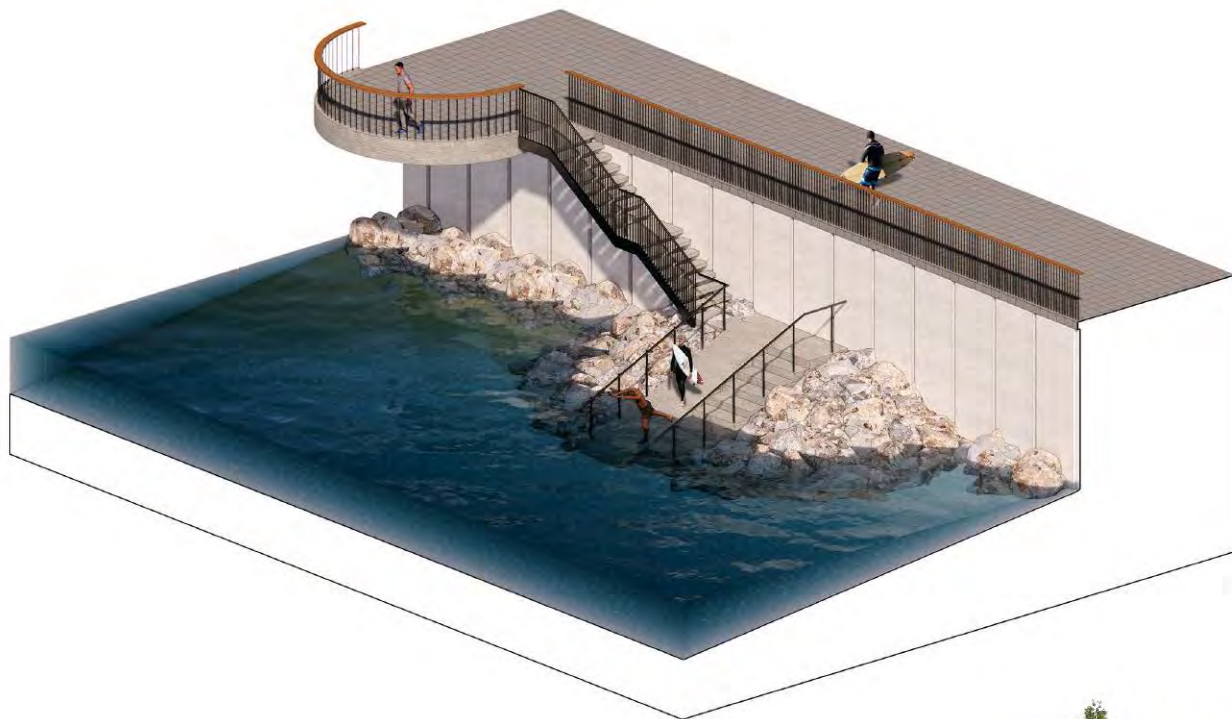


GENERAL LOSS OF ACCESS AND CHARACTER

Through time, St Clair Beach is expected to become increasingly eroded. This will result in poorer access to the beach and water, a narrower beach and dune and generally more degraded environment.



ARTISTS IMPRESSION ONLY
FOR DISCUSSION



2021

WHEN COULD THIS HAPPEN

2030

ARTISTS IMPRESSION ONLY
FOR DISCUSSION



BUYING TIME

Even with modifications, the existing wall will only last so long (likely no more than 20 years)



EFFECTS ON THE BEACH

Any modifications to the existing sea wall are unlikely to make a meaningful difference to the amount of sand on the beach.



REMOVAL OF ROCK

By replacing rock at the base of the sea wall with a concrete toe, access to the beach could be improved.

2021

WHEN COULD THIS HAPPEN

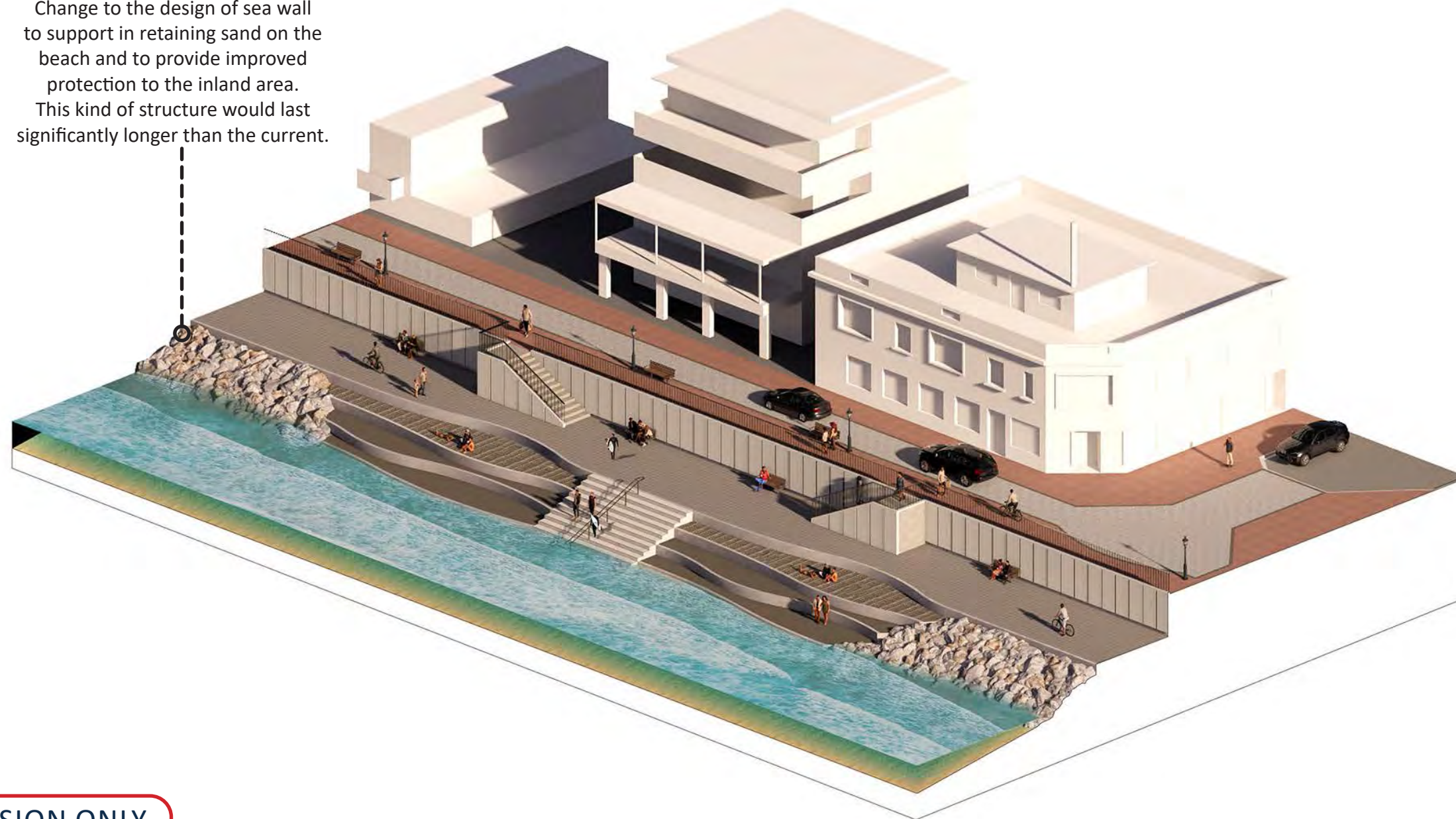
2030

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SEAWALL RE-DESIGN

Change to the design of sea wall to support in retaining sand on the beach and to provide improved protection to the inland area.
This kind of structure would last significantly longer than the current.



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ACCESS IMPROVEMENTS

SEAWALL MODIFICATION

ST CLAIR
STEPPED SEAWALL

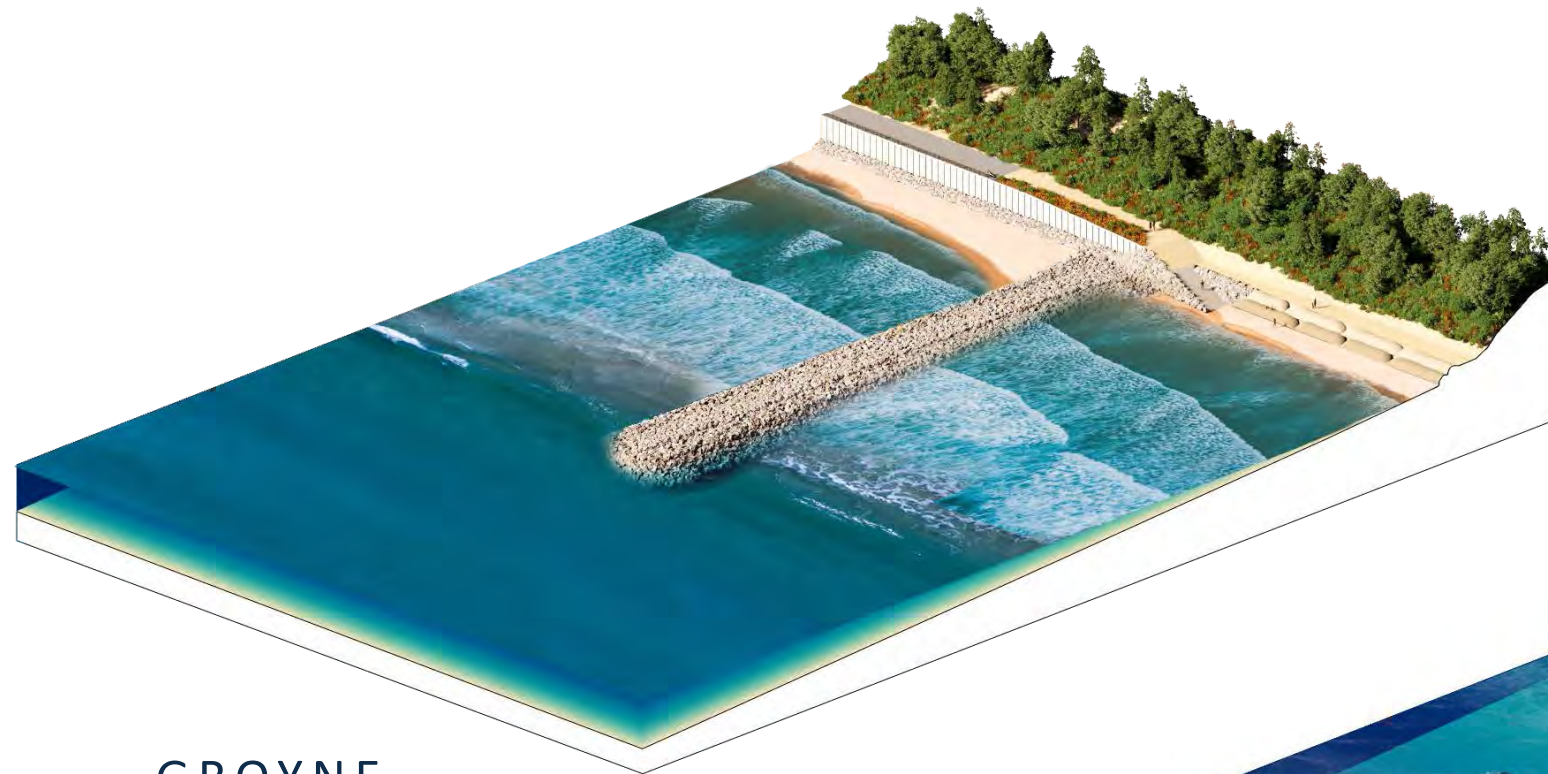
SAND RETENTION

DO NOTHING

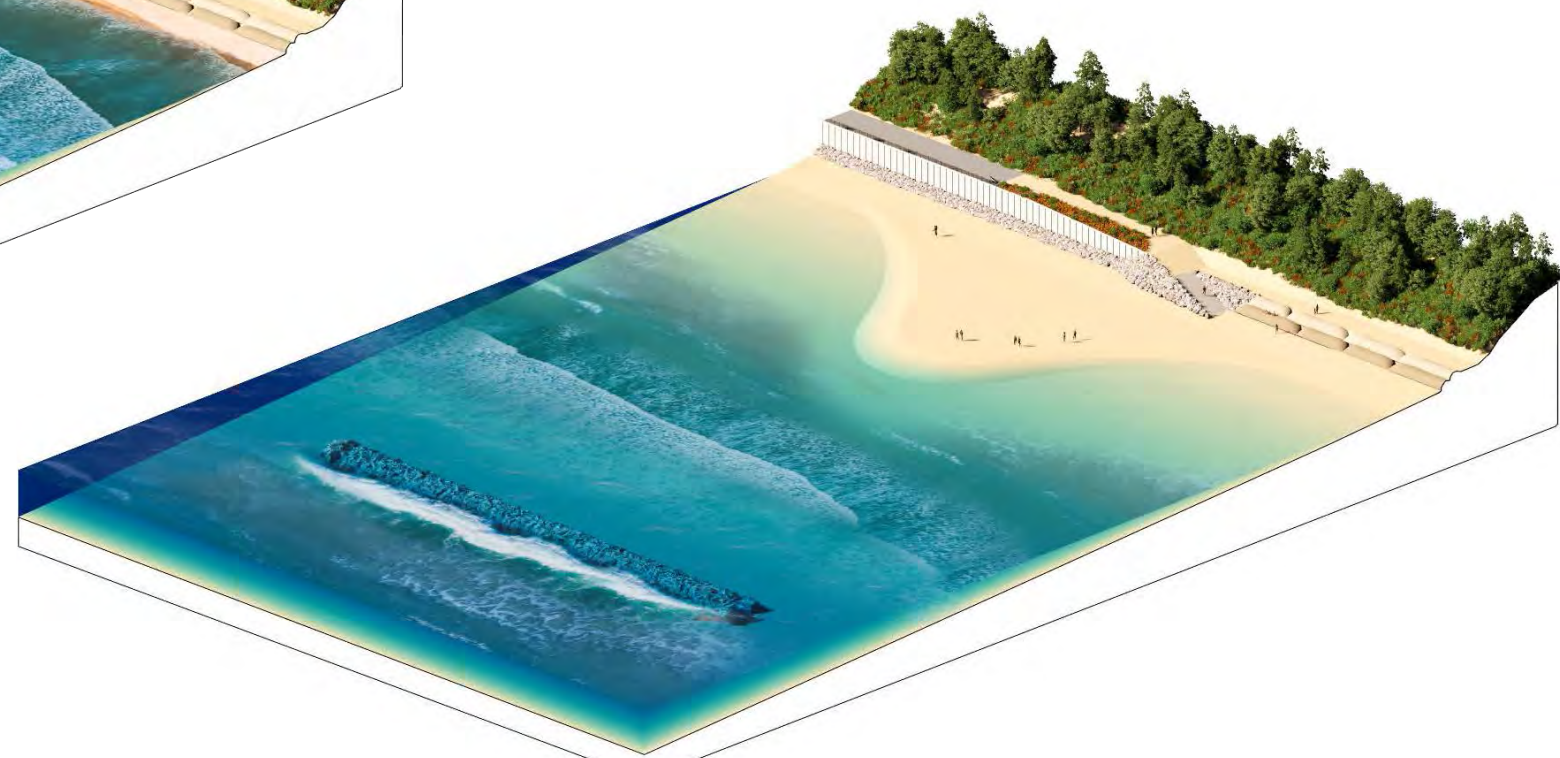
THE CURRENT SEA WALL WILL ONLY LAST SO LONG, SO A NEW STRUCTURE WILL NEED TO BE CONSIDERED AND WOULD HELP PROTECT THE INLAND AREA FOR MUCH LONGER THAN THE CURRENT WALL.

SAND RETENTION STRUCTURE DESIGN

Groynes and breakwaters can serve to trap sand on the beach. The design and positioning of these structures would need to be carefully considered as such structures can have negative impacts on beaches, access and safety. Beach nourishment will be considered in the future also.



GROYNE



BREAKWATER

2025

WHEN COULD THIS HAPPEN

2070

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FOR DISCUSSION



LOSS OF ACCESS AND CHARACTER

Through time, Middle Beach is expected to become increasingly eroded. This will result in poorer access to the beach, a narrower beach and dune and a generally more degraded environment.



LANDFILL THREATENED

Through time, as the dune is eroded, the landfill located beneath the sports fields will be exposed and eroded onto the beach, damaging the natural environment and introducing a public health risk.



CONTAMINANTS EXPOSED

Contaminated materials located in the dune area will be exposed and eroded onto the beach and released into the marine environment.



BEACH AND DUNE EROSION

The beach and dune will erode as sea-level rise and coastal storms become more frequent.

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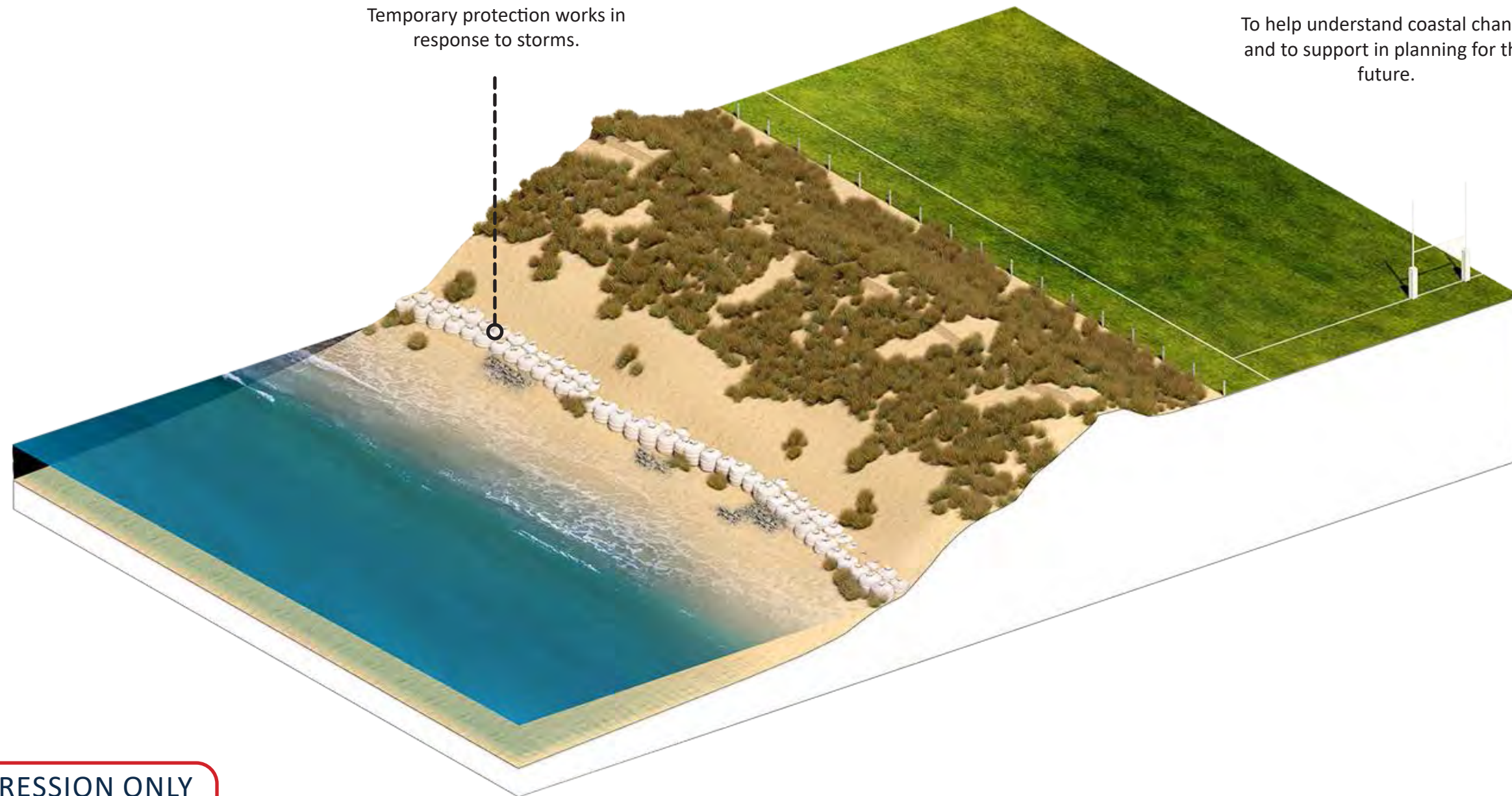
TEMPORARY PROTECTION

Temporary protection works in response to storms.



CONTINUE BEACH AND DUNE MONITORING

To help understand coastal change and to support in planning for the future.



ARTISTS IMPRESSION ONLY
FOR DISCUSSION

MIDDLE BEACH STATUS QUO

SETBACK

DO NOTHING

DUNE MANAGEMENT

HOLD THE LINE

THIS VISUAL SHOWS THE CURRENT MANAGEMENT ACTIVITY THAT TAKES PLACE AT MIDDLE BEACH. THIS MANAGEMENT APPROACH IS NOT SUSTAINABLE AND DOES NOT ADDRESS THE RISK OF DUNE AND LANDFILL EROSION AT THIS AREA.



MIDDLE BEACH DUNE MANAGEMENT

DO NOTHING

STATUS QUO

HOLD THE LINE

SAND RETENTION

THIS VISUAL SHOWS SOME OF THE CHANGES THAT COULD BE MADE TO ADDRESS THE RISK OF DUNE EROSION AND CONTAMINANT EXPOSURE.



INVESTIGATIVE WORKS AND MONITORING

To develop an improved understanding of landfill composition and extent.



CLEAN-UP OF DUNES

Including the removal of contaminated materials and the stabilisation of the dune area.



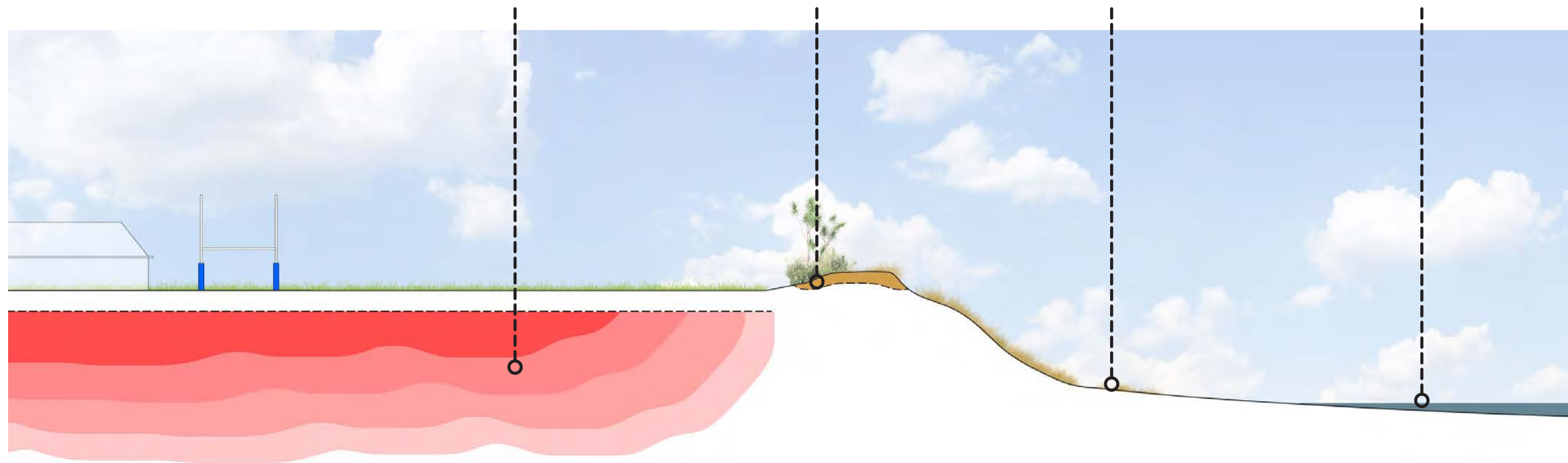
DUNE PLANTINGS

To support stabilising the dune area following the removal of contaminated materials.



BEACH ACCESS

To improve access to the beach and better control movement through the dune.



2021

WHEN COULD THIS HAPPEN

2030

ARTISTS IMPRESSION ONLY
FOR DISCUSSION

MIDDLE BEACH DUNE MANAGEMENT

DO NOTHING

STATUS QUO

HOLD THE LINE

SAND RETENTION

THIS CROSS SECTION SHOWS THE MIDDLE BEACH AREA AND WHERE WE EXPECT THAT CONTAMINATED MATERIALS ARE LOCATED.



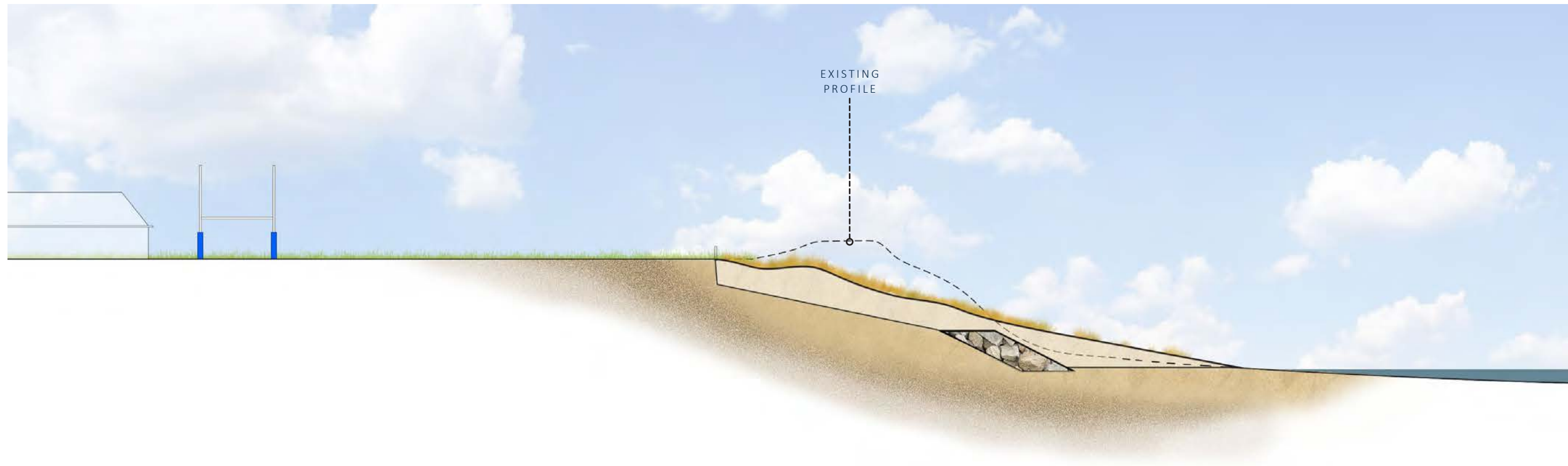
PROTECTION

A buried protection method could be used to provide some level of protection to the inland area and contaminants.



BEACH EROSION

A protection method as shown is expected to result in increased beach lowering (erosion).



2021

WHEN COULD THIS HAPPEN

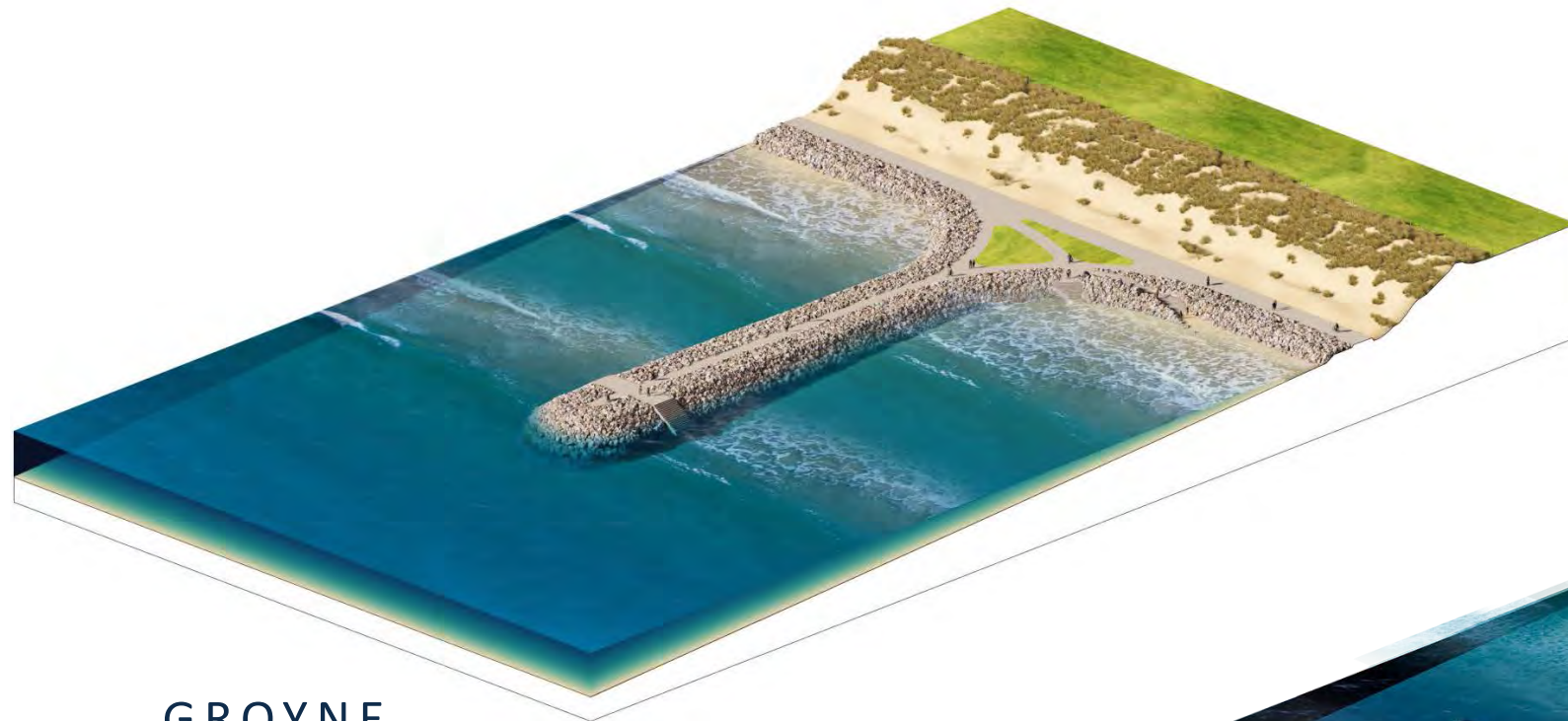
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ARTISTS IMPRESSION ONLY
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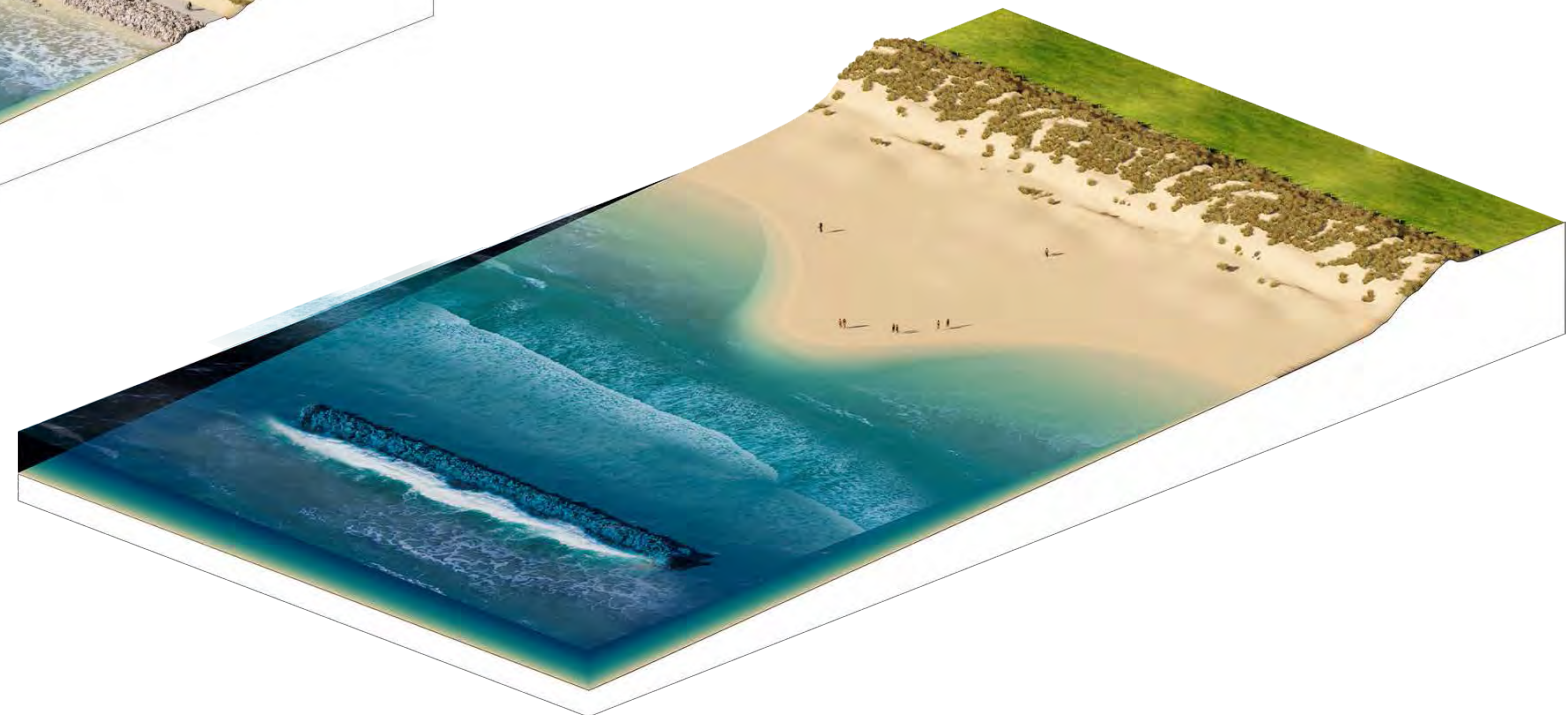
THIS CROSS SECTION SHOWS A BURIED PROTECTION, THAT COULD BE USED TO PROTECT THE PLAYING FIELDS AT MIDDLE BEACH.

SAND RETENTION STRUCTURE DESIGN

Groynes and breakwaters can serve to trap sand on the beach. The design and positioning of these structures would need to be carefully considered as such structures can have negative impacts on beaches, access and safety. Beach nourishment will be considered in the future also.



GROYNE



BREAKWATER

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DUNE PLANTING AND MAINTENANCE

To support with dune stability and biodiversity.



REAR DUNE PLANTING

To support erosion mitigation and to enhance the natural environment.



WALKWAYS

To enhance access along the coast and to discourage access over the dunes.



LANDFILL REMOVED AND COAST SETBACK

To remove environmental risk and to establish a more sustainable community and environmental asset.



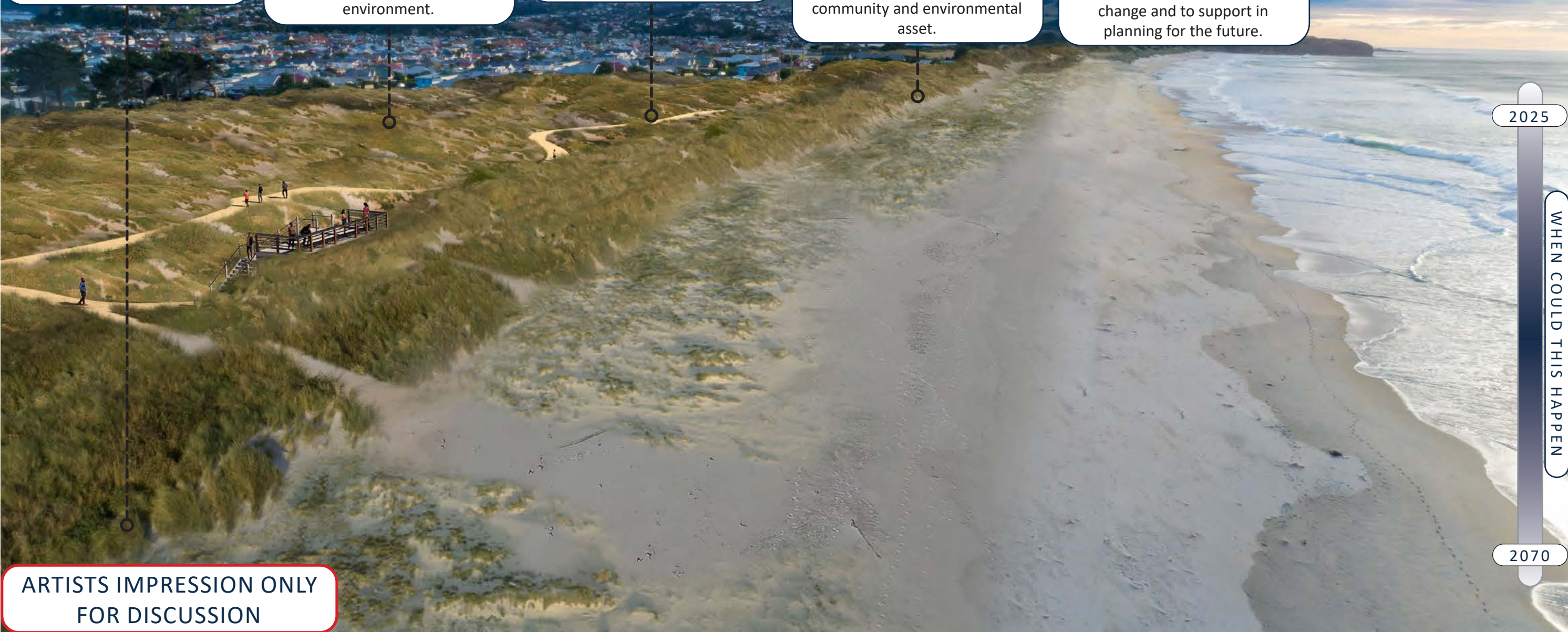
CONTINUE BEACH AND DUNE MONITORING

To help understand coastal change and to support in planning for the future.



ECOLOGY

To protect and enhance native flora and wildlife habitats.



ARTISTS IMPRESSION ONLY
FOR DISCUSSION

MIDDLE BEACH SETBACK

HOLD THE LINE

SAND RETENTION

DO NOTHING

STATUS QUO

THIS VISUAL SHOWS COASTAL SETBACK WHICH WILL NEED TO BE CONSIDERED AT MIDDLE BEACH. THIS IS THE ONLY OPTION THAT ENTIRELY REMOVES THE RISK OF LANDFILL EROSION/ EXPOSURE.



REAR DUNE PLANTING

To support erosion mitigation and to enhance the natural environment.



WALKWAYS

To enhance access along the coast and to discourage access over the dunes.



DUNE PLANTING AND MAINTENANCE

To support dune stability and biodiversity.



LANDFILL REMOVED AND COAST SETBACK

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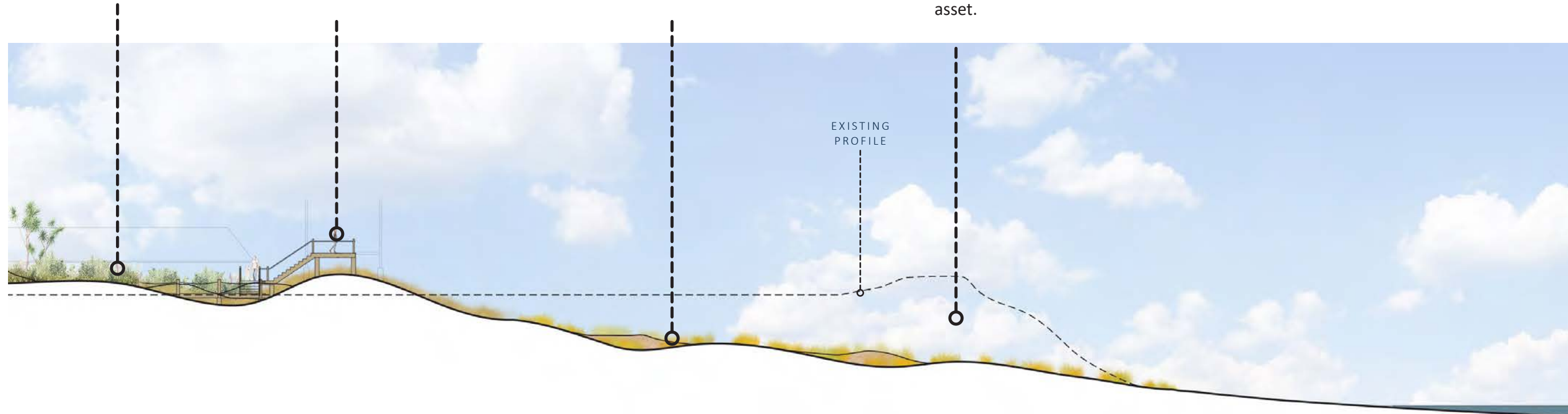
ECOLOGY

To protect and enhance native flora and wildlife habitats.



CONTINUE BEACH AND DUNE MONITORING

To help understand coastal change and to support in planning for the future.



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WHEN COULD THIS HAPPEN

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ARTISTS IMPRESSION ONLY
FOR DISCUSSION

MIDDLE BEACH SETBACK

HOLD THE LINE

SAND RETENTION

DO NOTHING

STATUS QUO

THIS CROSS SECTION SHOWS WHAT COASTAL SETBACK COULD LOOK LIKE AT MIDDLE BEACH.



BEACH AND DUNE EROSION

The beach and dune will erode as sea-levels rise and coastal storms become more frequent.



GENERAL LOSS OF ACCESS AND CHARACTER

Through time, St Kilda Beach is expected to become increasingly eroded. This will result in poorer access to the beach, a narrower beach and dune, and generally more degraded environment.



JOHN WILSON OCEAN DRIVE THREATENED

Through time as the dune is eroded, John Wilson Ocean Drive will be exposed and eroded - damaging the natural environment and likely resulting in temporary beach closures which will become increasingly common.

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FOR DISCUSSION



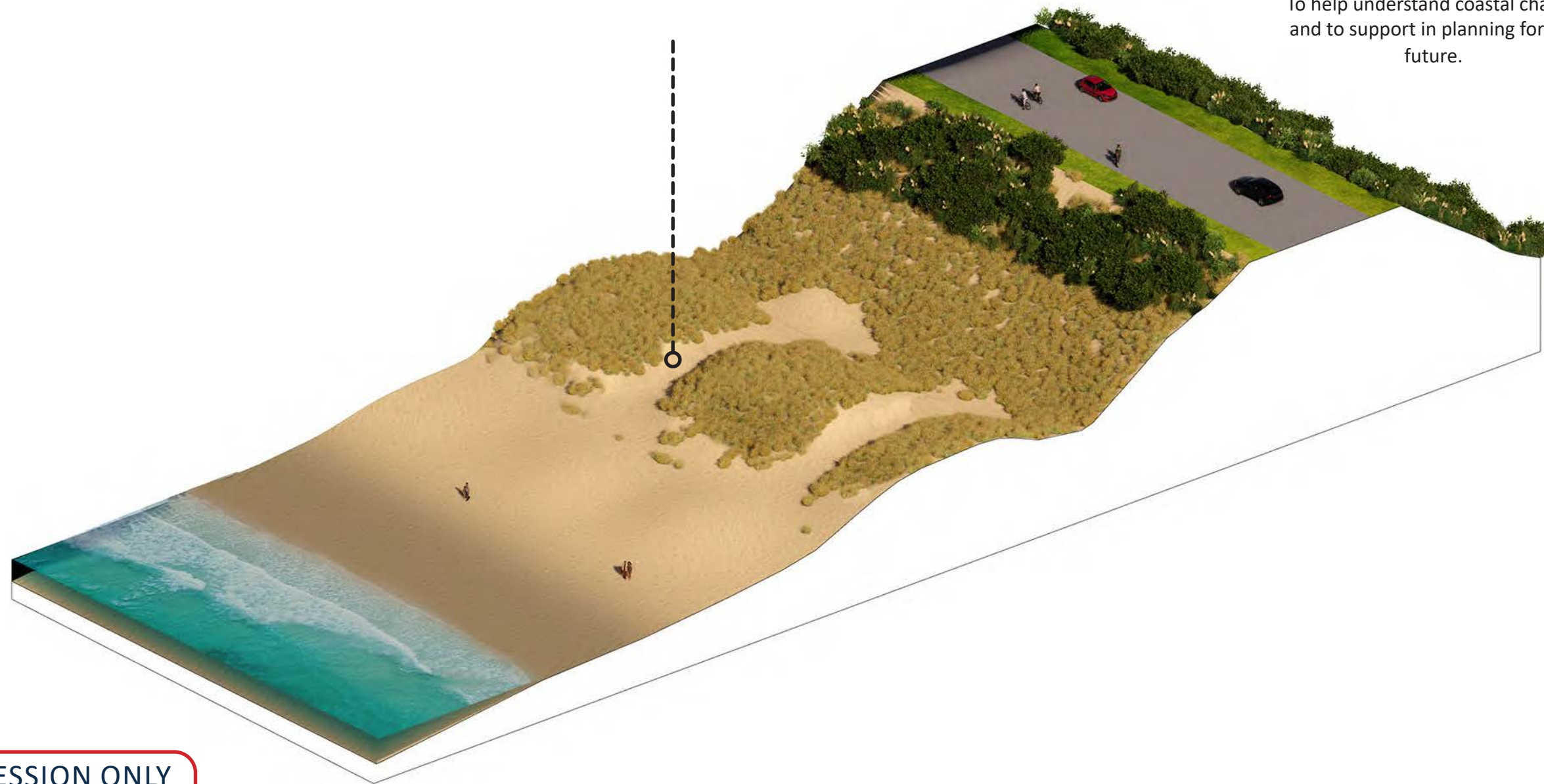
FOREDUNE NOTCHING

To encourage more sand build-up in the dune.



CONTINUE BEACH AND DUNE MONITORING

To help understand coastal change and to support in planning for the future.



2021

WHEN COULD THIS HAPPEN

2040

ARTISTS IMPRESSION ONLY
FOR DISCUSSION



ECOLOGY

To protect and enhance native flora and wildlife habitats.



DUNE PLANTING & MAINTENANCE

To support dune stability and biodiversity



FOREDUNE NOTCHING

To encourage more sand build-up in the dune.



BEACH ACCESS

To provide an additional access point from John Wilson Ocean Drive onto the beach.



PEDESTRIAN AMENITY

To improve the pedestrian experience of John Wilson Ocean Drive.



AMENITY PLANTING

Such as ngaio, toe toe, pikao and other native species.

ARTISTS IMPRESSION ONLY
FOR DISCUSSION

2021

WHEN COULD THIS HAPPEN

2060



AMENITY PLANTING

Such as ngaio, toe toe, pikao and other native species.



PEDESTRIAN AMENITY

To improve the pedestrian experience of John Wilson Ocean Drive.



BEACH ACCESS

To provide an additional access point from John Wilson Ocean Drive onto the beach.



FOREDUNE NOTCHING

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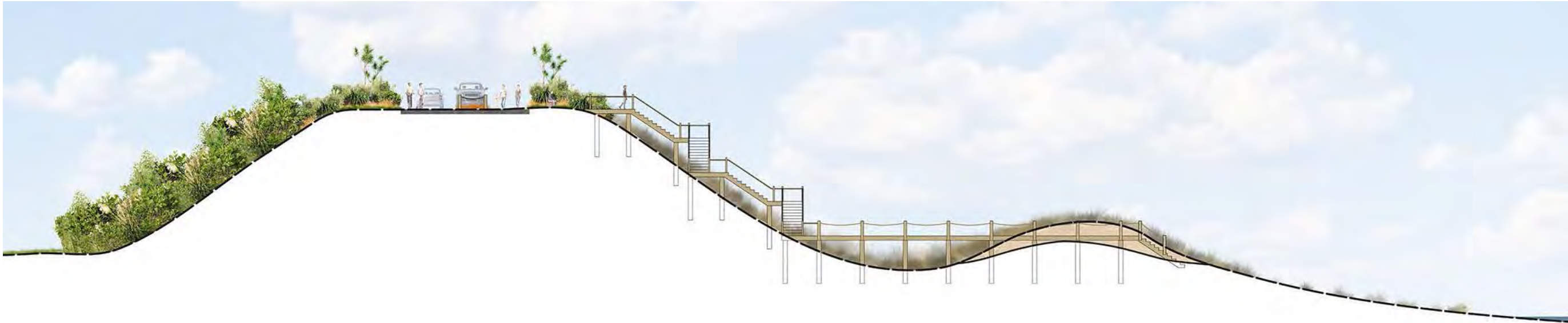
DUNE PLANTING & MAINTENANCE

To support dune stability and biodiversity.



ECOLOGY

To protect and enhance native flora and wildlife habitats.



2021

WHEN COULD THIS HAPPEN

2060

ARTISTS IMPRESSION ONLY
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PROTECTION

A buried protection method could be used to provide some level of protection to John Wilson Ocean Drive.

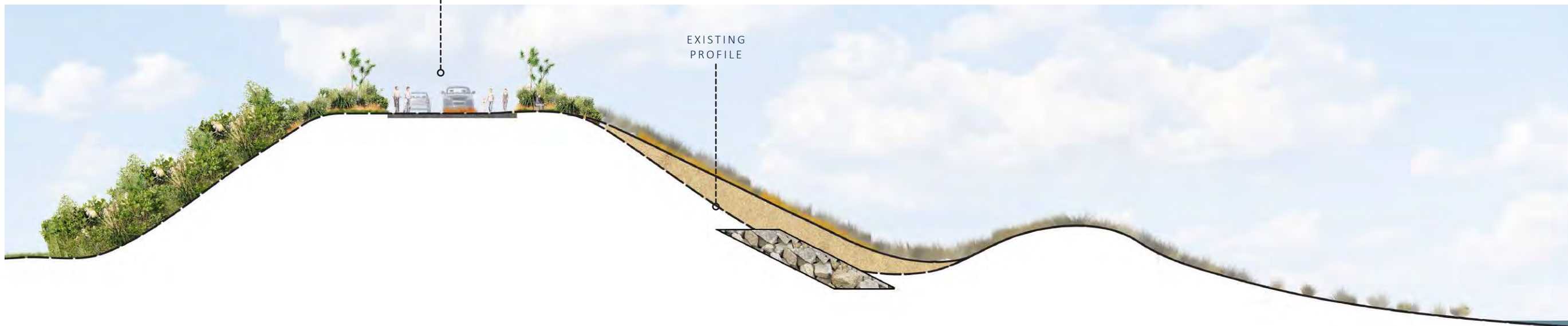


BEACH EROSION

A protection method at St Kilda is expected to result in increased beach lowering (erosion).

JOHN WILSON
OCEAN DRIVE

EXISTING
PROFILE



2030

WHEN COULD THIS HAPPEN

2100

ARTISTS IMPRESSION ONLY
FOR DISCUSSION



VEHICLE ACCESS

To maintain vehicle access along the coast.



WALKWAYS

To enhance access along the coast and to discourage access over the dunes.



REAR DUNE AND WETLAND PLANTING

To alleviate flooding and coastal inundation and to enhance the natural environment.



BROADENING OF BEACH AND DUNE

To establish longer-term protection and a more sustainable community and environmental asset.



DUNE PLANTING & MAINTENANCE

To support dune stability and biodiversity.



ECOLOGY

To protect and enhance native flora and wildlife habitats.



CONTINUE BEACH AND DUNE MONITORING

To help understand coastal change and to support in planning for the future.



2060

WHEN COULD THIS HAPPEN

2120

ARTISTS IMPRESSION ONLY
FOR DISCUSSION



VEHICLE ACCESS

To maintain vehicle access along the coast.



WALKWAYS

To enhance access along the coast and to discourage access over the dunes.



REAR DUNE AND WETLAND PLANTING

To alleviate flooding and coastal inundation and to enhance the natural environment.



BROADENING OF BEACH AND DUNE

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DUNE PLANTING & MAINTENANCE

To support dune stability and biodiversity.



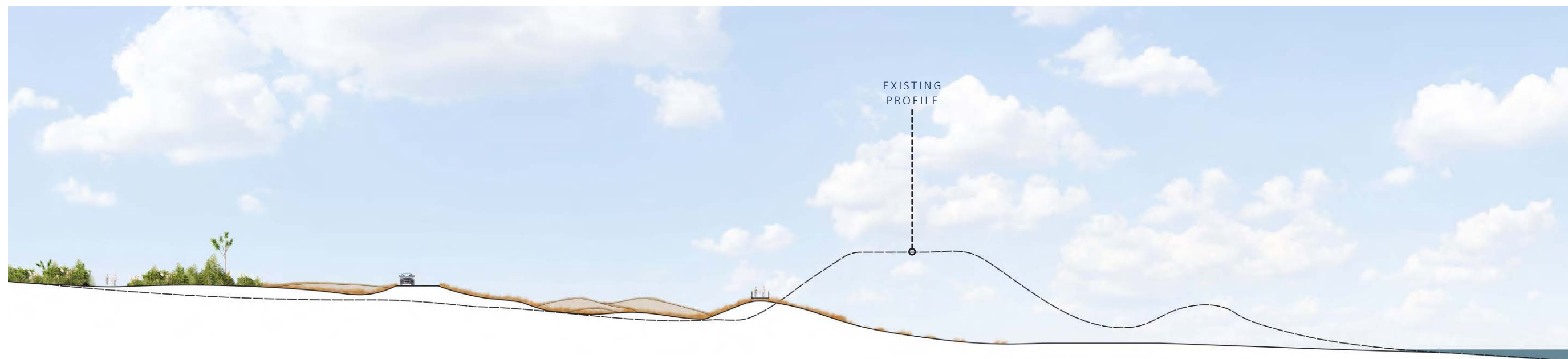
ECOLOGY

To protect and enhance native flora and wildlife habitats.



CONTINUE BEACH AND DUNE MONITORING

To help understand coastal change and to support in planning for the future.



ARTISTS IMPRESSION ONLY
FOR DISCUSSION

2060

WHEN COULD THIS HAPPEN

2120

 **DUNEDIN** CITY COUNCIL | kaunihera a-rohe o Ōtepoti

DUNE MANAGEMENT

HOLD THE LINE

ST KILDA
SETBACK

DO NOTHING

STATUS QUO

THIS CROSS SECTION SHOWS WHAT COASTAL SETBACK COULD LOOK LIKE AT ST KILDA. THIS SHOWS THE SORT OF LANDSCAPE THAT COULD DEVELOP IF JOHN WILSON OCEAN DRIVE WAS REMOVED.