

COASTAL PROCESSES



Experience growth.

Coastal processes are the dynamic forces that create, change and remove the landforms that make our coast look the way it does.

The shoreline is affected by waves (produced by wind at sea), tides (produced by the gravitational effect of the moon and sun) and sometimes also the wind itself. Some examples of coastal processes are erosion (wearing away the coast), transportation (sand drift) and deposition (sand build-up).

WHY ARE COASTAL PROCESSES IMPORTANT?

The coast is ever-changing, constantly being shaped by waves, tides and wind. Sometimes, the erosion and deposition process cancel each other out. However, there are also sections of coast that are receding inland through natural coastal processes.

Coastal processes shape the tidal zones of a coastal area, which in turn affects the Benthic Primary Producer Habitats (BPPHs) such as seagrasses, mangroves and algal mats (see Factsheet #1).

WHERE ARE THE TIDAL ZONES?

The key tidal zones adjacent to the Ashburton Salt Project are:

- **Subtidal:** below the low tide mark and always covered by water. This is the nearshore marine environment and potentially contains seagrass beds.
- **Intertidal:** repeatedly submerged (high tide) and then exposed to air (low tide). This zone is the beach, lower reaches of the mud flats and parts of the creek and mangrove system.
- **Supratidal:** above normal high tide but occasionally reached via the spring tides (just after a full moon). This is the elevated beach area, upper reaches of the mud flats and where the algal mats grow.

WILL RISING SEA LEVELS AFFECT THE TIDAL ZONES?

Sea levels have risen over the past century and are predicted to keep rising. The WA Government recommends that a rise in sea level of 0.9 m by 2110 should be allowed for when designing and building new projects. Rising sea levels affect low-lying areas, particularly coastal environments and tide-affected wetlands, estuaries and waterways (EPA, 2012).

The response of the ecosystems in these affected areas will vary. Ecosystems can adapt to changes over time, and they may be able to adapt to gradually rising sea levels. For example, mangroves and algal mats may move inland as the coastline recedes with the rising sea levels. It is important to design coastal infrastructure so that we don't create barriers that prevent the ecosystems from adapting to sea level rise (EPA, 2012).

HOW COULD THE PROJECT AFFECT COASTAL PROCESSES?

The Project is being designed to prevent and minimise any changes to coastal processes or landforms. The salt ponds will be positioned so that there is an adequate buffer between the ponds and the tidal zones. There will be some minor disturbance of the tidal zones required for a small jetty, pipes and roads. Dredging (deepening) the sea floor will be minimised (if required at all).



HOW WILL K+S AVOID AND MINIMISE IMPACTS TO COASTAL PROCESSES?

The Project has the flexibility to avoid and minimise environmental impact by changing the project design as environmental studies are completed. Any disturbance of the tidal zones required for infrastructure and dredging (if even needed) will be minimised.

The existing mangroves and algal mats have been mapped, and models will be created to predict their possible adaption response to rising sea levels. The Project layout will be engineered to minimise any barriers to adaption of mangroves and algal mats that might occur as sea levels rise.

K+S recognise that coastal processes and the tidal zones are important parts of the local environment and are committed to minimising any impacts to them.

REFERENCES

Environmental Protection Authority (EPA), 2012, Environmental Protection Bulletin 18 – Sea level rise.