BENTHIC HABITAT REPORT

Swan River Crossings, Fremantle

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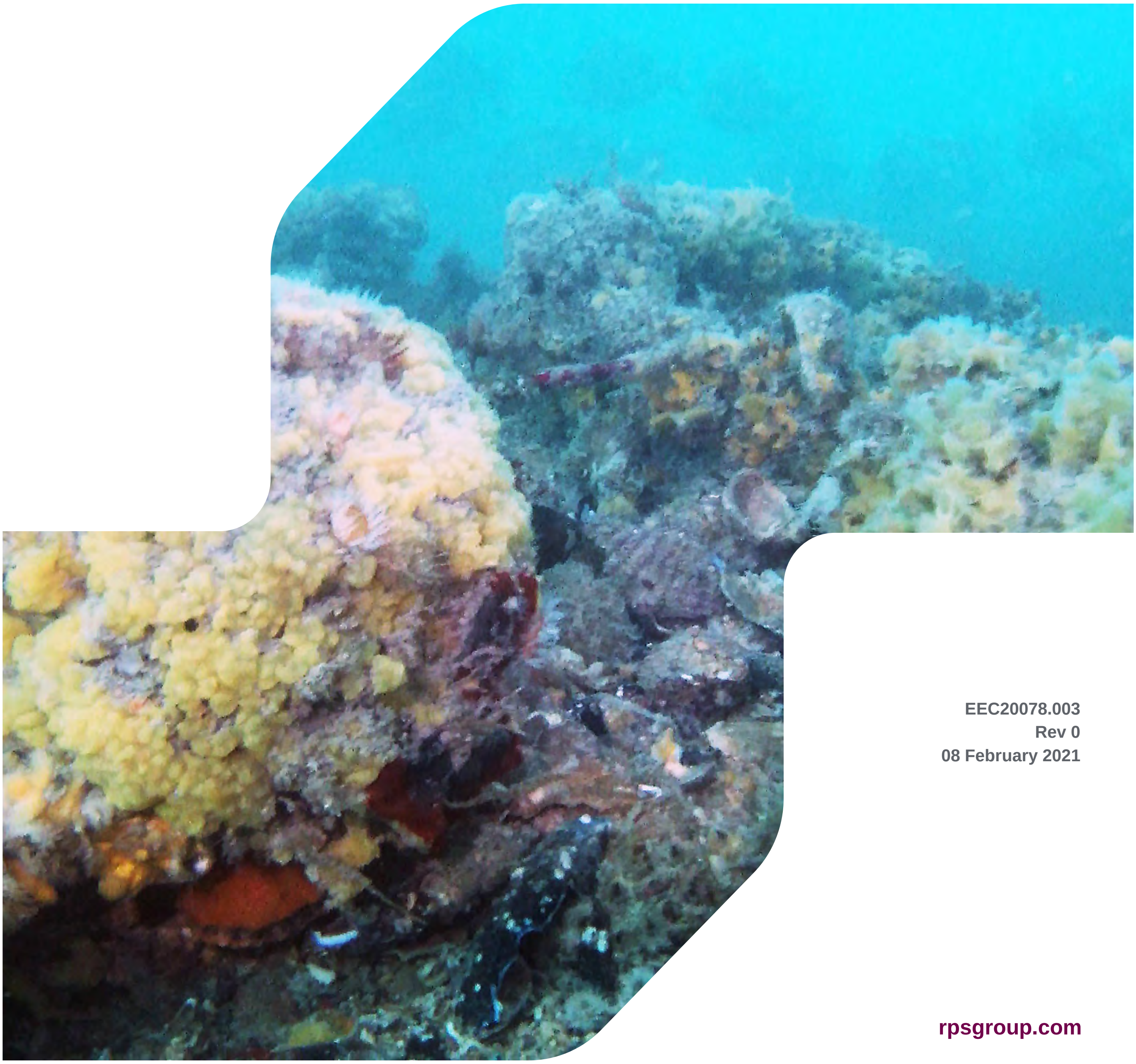

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1 INTRODUCTION

1.1 Project background

Main Roads Western Australia (MRWA) is proposing to redesign and reconstruct the existing Fremantle traffic and rail bridges and to develop an integrated solution incorporating four traffic lanes, three rail lines (two passenger, one freight) and pedestrian/cyclist facilities.

The Fremantle Traffic Bridge has a permanent listing on the Heritage Council of WA's register of heritage places and is associated with a Ferry Capstan Base found on the southern bank of the river. Whilst the heritage listing covers both, the main association between the two is that together they represent continuous river crossing at this location over a period of almost 200 years. Nevertheless, different engineers constructed the two at different times. This site is also identified as a major river crossing for the Noongar people and as such represents a place of crossing for tens of thousands of years.

Arup, on behalf of MRWA, has commissioned RPS Australia West Pty Ltd (RPS) to undertake a seabed habitat survey. As identified in the Preliminary Environmental Impact Assessment (MRWA 2020a), benthic habitats have the potential to be impacted during demolition of the old bridge structure and the construction of the new bridge. As such, baseline information on the presence and distribution of habitats in the study area was required to inform a future Construction Environment Management Plan (CEMP) monitoring program. The study area for this benthic habitat survey extends from Victoria Bridge (Stirling Highway) to 50 m downstream of the rail bridge (i.e. the western extent of the proposal area), as shown on Figure 1-1. A single survey was undertaken in October 2020.

1.2 Benthic habitats of the lower Swan River estuary

The WA Environmental Protection Authority (EPA) has an objective to "protect benthic communities and habitats so that biological diversity and ecological integrity are maintained". This objective supports the WA EPA's assessment of proposals under Part IV of the *Environmental Protection Act 1986*, where benthic communities and habitats are identified as a key environmental factor. Benthic communities are communities of aquatic flora and fauna that are primarily associated with seabed habitats.

The benthic habitat and aquatic fauna survey will provide key baseline information to support the assessment of impacts associated with the proposed development in the *Swan and Canning Rivers Management Act 2006* Development Control Area.

The benthic habitats and marine fauna of the development control area are expected to comprise soft sediment habitats and communities, scattered areas of rocky habitats and communities and marine biofouling on the existing bridge supports. The river is an estuarine system but is predominantly marine near the river mouth where the project is situated. Although freshwater flows out of the river in winter after heavy rain, it is mainly on the surface and the benthic communities remain strongly influenced by tidal movements of the underlying salt water 'wedge' for most of the year.

The river is fast flowing near its mouth and the water is generally turbid (MRWA 2020b). The development area is not expected to support large areas of high conservation habitats such as corals or perennial seagrasses but may have patches of ephemeral seagrasses. Benthic marine fauna of recreational and commercial significance, including river prawns and crabs, are resident or pass through the area in seasonal migrations. Hard substrates in the area may support populations of seahorses which are of conservation significance and, being strongly associated with a small area of habitat, could be affected by removal of hard substrates e.g. old piles and rocks. For other riverine developments, sea horses have been relocated from areas to be disturbed.

Figure 1-1: Swan River Crossings proposal area

Previous geotechnical sampling of the study area indicated that the sediments to the west of the rail bridge, between the rail and traffic bridges and in the shallow areas adjacent to the southern bank were dominated by shelly/gravelly sand or coarse (“rocky”) sand. The sediments to the east of the Fremantle Traffic Bridge and in the shallows adjacent to the northern bank were found to be finer, characterised as sand or silty/clayey sand (CMW GeoSciences 2016).

The lower Swan estuary has a greater number of marine benthic species, relative to the middle and upper Swan estuary making it distinct. The range of marine species can extend further upstream during dry winters, but ranges returned to the lower estuary during subsequent wet periods. This extension of range is (at least in part) due to recolonisation by planktonic larvae. The distribution and composition of benthic faunal assemgblages changes on a seasonal basis, but also inter-annualy and over longer periods, which is usually related to salnity profiles up the river (Chalmers et al. 1976, Semeniuk 2000, Tweedley & Valesini 2008, Mariano & Barros 2015, Sheaves 2015).

Habitat-forming biota, such as seagrass, are an important habitat in Western Australia, providing a wide range of ecosystem servies from shoreline protection, sediment stability, and nutrient cycling to nursery habitats. Three species of seagrass are found in the Swan Canning Riverpark:

- *Zostera meulleri*
- *Ruppia megacarpa*
- *Halophila ovalis* (the dominant species in the estuary).

Highest seagrass biomass occurs in summer, with autumn biomass also relatively high compared to winter and spring (Department of Water 2010). Seagrass habitat has reduced by almost one third in the Swan-Canning estuary since the 1980s (Department of Water 2014). The deepest limit of seagrass recorded in the lower estuary from surveys undertaken in 2012 and 2013 was -4.5 m water depth.

The riverpark also supports a diverse array of biota, including:

- More than 130 species of fish (e.g. bull shark, herring, mulllet, cobbler, whiting, black bream, flathead and blowfish)
- Indo-Pacific bottlenose dolphins
- Crustaceans (e.g. king prawn, western school prawn and blue manna crabs)
- Estuarine mussels
- Seahorses
- At least two species of jellyfish.

The most common species of macroalgae found in the Swan-Canning estuary is red alga *Gracilaria comosa* (DBCA 2018). This species has been shown to be resistant to salinity, temperate and nutrient fluctuations, but is sensitive to reduced light levels (Thomsen & Wernberg 2009).

Changes in the benthic macroinvertebrate fauna of the Swan-Canning estuary between 1986–1987 and 2003–2004 are indicative of deteriorating environmental conditions. The number of species and abundances of individuals declined during this period, particularly those susceptible to environmental stress (particularly molluscs and crustaceans). More tolerant ploychaete abundances and diversity increased during this period. However, comparison of taxonomic distinctness between widely-spaced sampling sites indicated that changes in benthic fauna were not as extreme as in the Peel-Harvey estuary (Wildsmith et al. 2011).

The invasive gastropod mollusc *Batillaria australis* (the Australian mud whelk), occurs in the Swan-Canning estuary, and is considered to have been introduced around 70 years ago. This species is likely to have a negative impact on the ecology of benthic habitats due to its high abundance, broad distribuion across the estuary, large relative size, and habtiat modification through persistent shell and bioturbating behaviour (Thomsen & Wernberg 2009).

1.3 Review of hydroacoustic data

Review of available hydroacoustic survey data indicated that it was of sufficient quality to support the benthic video survey design. The depth range of seagrass is well known from previous studies (Department of Water 2014), and equates to 0 m to >4.5 m below the surface of the river. For the purposes of the design for the benthic habtiat survey, seagrass habitat had the potential to occur in three of the four blue zones of Figure

1-2 (i.e. 0 to -2 m, -2 to -4 m and -4 to -6 m water depth). This information was used in planning locations for the video transects, to ensure that areas suitable for seagrass growth were captured in the survey design. Therefore transects were extended beyond the study area in a westerly direction to capture information on potential occurrence of seagrass beds in shallow areas within the river. Two extra transects were also undertaken in the shallow waters on the northern side of the river, and transects in the centre of the river were designed to capture data in the limited area of shallower habitats here.

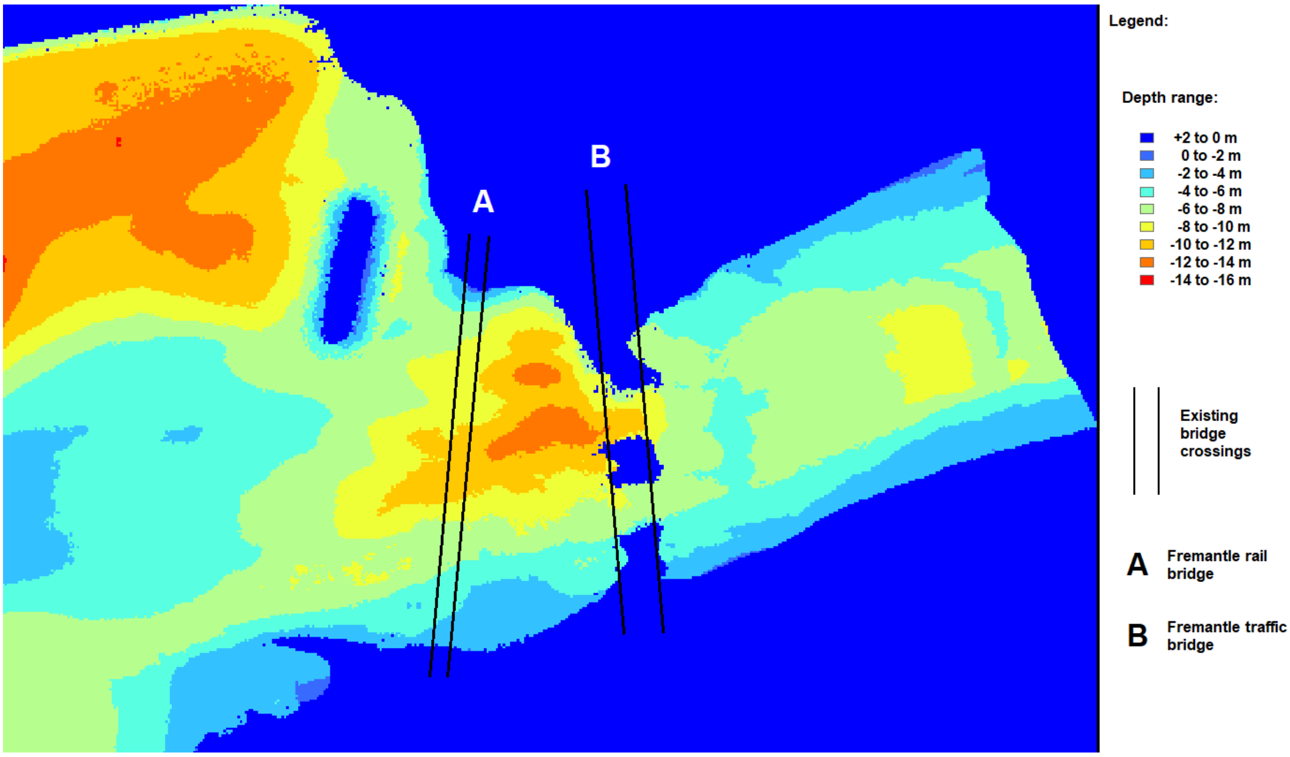

Figure 1-2: Hydroacoustic depth data of the Swan River in the western end of the study area, overlaid with the Fremantle rail (A) and traffic (B) bridges

1.4 Rationale

The key component of the Swan River Crossings project is the demolition of the existing road traffic bridge and construction of a new road and rail traffic bridge over the Swan River.

Any large-scale development with in-river works is likely to present risk of direct and indirect loss of benthic communities and habitats, the potential for disturbance of contaminated sediments, and the longitudinal distribution of these sediments. Smothering of benthic fauna from uncontained sediment plumes is an additional, but more readily controlled risk.

The Western Australian Environmental Protection Agency (WA EPA) have an objective to “protect benthic communities and habitats so that biological diversity and ecological integrity can be maintained” (WA EPA 2016). This study was required to characterise benthic habitats and communities within and adjacent to the project area to allow an objective assessment of potential for (and relative importance of) irreversible loss and recoverable impacts from the proposal. This would enable an assessment of the need for and potential value of potential impact mitigation methods.

1.5 Objective

The objective of the benthic habitat survey is to obtain baseline information on the benthic habitats and biological assemblages present within the extent of the bridges. This comprises both characterising benthic habitats and assemblages, and to use transect data to produce an interpolated map of the likely spatial extents of benthic habitat and assemblages.

2 METHODS

2.1 Survey detail and equipment

The survey was led by two experienced RPS marine scientists, who ensured that the towed camera transects were conducted according to the survey plan, while adding in drop camera sites to ensure a broad coverage of the survey area.

The survey vessel and skipper were provided by Innovative Corrosion Management (ICM) Pty Ltd. The benthic habitat survey was conducted on the 15 October 2020, from 07.30 am to 12.30 pm. On return to the office, video footage was uploaded onto the RPS network and the GPS waypoints coordinates were transcribed into MS excel once the field work was completed.

The primary camera used for the survey was a GoPro Hero 9Black, with a GoPro Hero 7 Silver as a back-up. A bespoke camera frame was constructed using PVC piping, and weighed down with dive weights (Plate 2-1). The camera was lowered on a rope from the survey vessel until it reached the seabed, then raised a few feet to undertake the video transect.

GPS coordinates were taken every 1-2 minutes during each transect. This allowed to the benthic transect to be mapped, and changes in benthic habitat type to be identified spatially.

Plate 2-1: Drop-down camera system used for the benthic habitat survey

2.2 Transect locations

The benthic habitat survey was designed to provide broad coverage of the benthic habitats in the project study area, extending from Stirling Bridge to 50 m downstream of the existing rail bridge. The team conducted 11 towed video transects, with a further 11 drop camera videos were taken ether from the vessel or from the footbridge underneath the traffic bridge on either side of the river (Figure 2-1).

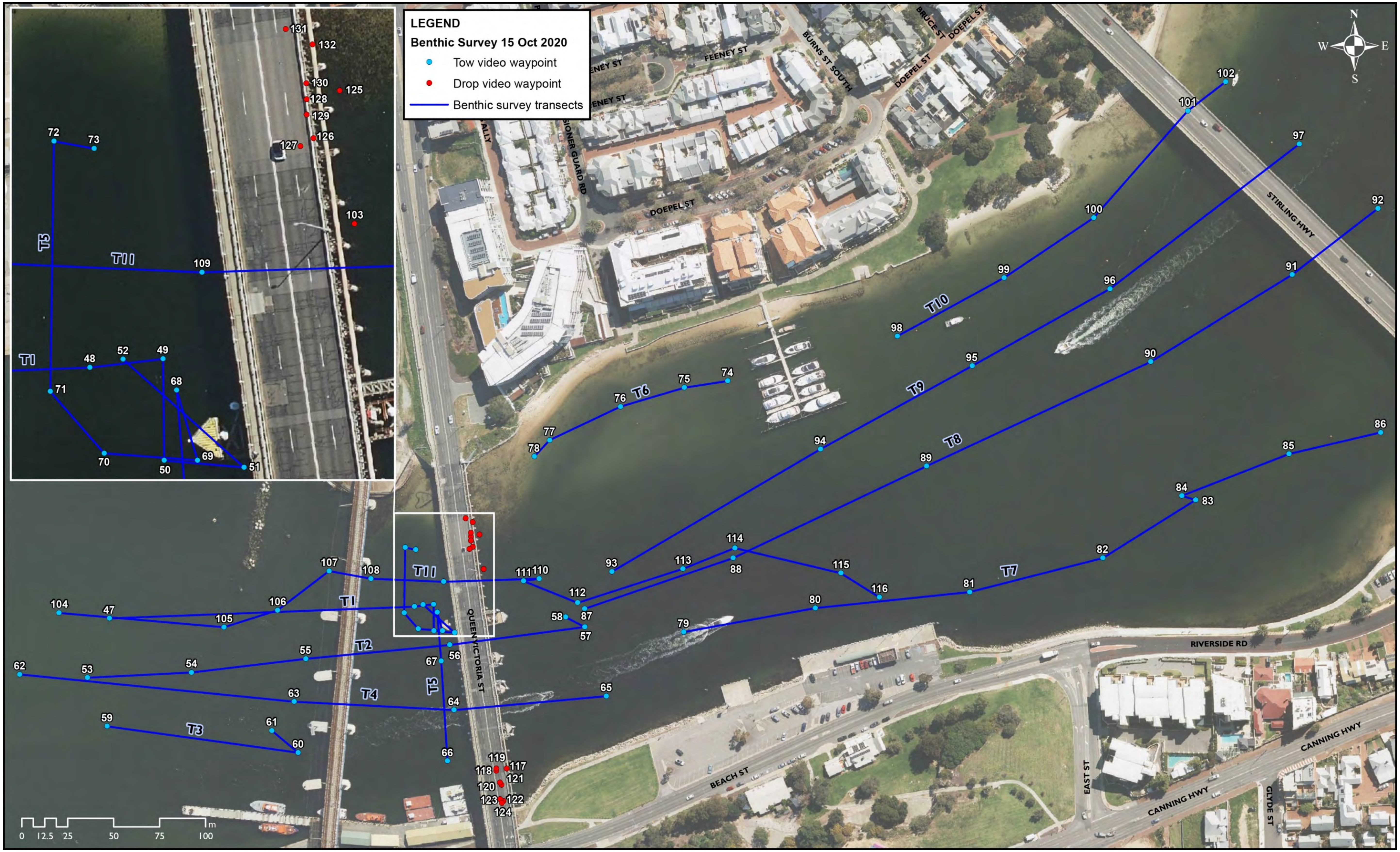

Figure 2-1: Location of towed video transects and drop camera sites

2.3 Data analysis

Benthic habitat video imagery was analysed by an RPS marine scientist. The habitat and biota were described along each transect and drop. Although strong tidal currents tended to push the video system sideways (resulting in an image where the sediment-water interface was not parallel to the top and bottom of the image frame), the area of seabed in the image was sufficient to robustly characterise the benthic habitat in most cases. Where the imagery was not sufficient to robustly capture clear imagery of benthic habitats, a 'No data (camera off seabed)' classification was assigned in lieu of a habitat description. The time on the video was related to GPS time to relate GPS waypoint positions to video imagery. The spatial distribution of habitats could then be mapped.

Representative still images were extracted from the video imagery and were analysed in more detail to characterise the benthic habitats and assemblages recorded within the study area.

2.4 Habitat and biota classifications

The benthic habitat classifications were based on the following characteristics:

- Seabed relief
  - Flat
  - Low relief
  - Medium relief
- Seabed features
  - Sand ripples
  - Sand waves
  - Bioturbation
  - Pipeline
- Substrate type
  - Silt
  - Silty sand
  - Sand
  - Coarse sand
  - Shell fragments
  - Sediment veneer (thin layer)
  - Hard substrate (/reef)
  - Cobble (>5 cm)
  - Boulders (>25 cm)
  - Bedrock
- Biotic habitats and epibiota
  - Bare (no apparent epibiota)
  - Algae
  - Seagrass
  - Sea pens
  - Sponges (laminar, cup, branched, encrusting, burrowing, massive and globular (ball-shaped))
  - Hydroids
  - Crinoids
  - Others as described e.g. specific fish taxa, crustaceans.

3 RESULTS

3.1 Habitats

A total of 11 broad habitat types were recorded across the study area. These were defined using the following habitat components in a hierarchical format.

Table 3-1: Habitat components identified from imagery used in habitat classification

Hierarchy level 1	Hierarchy level 2	Hierarchy level 3	Hierarchy level 4
Relief	Features	Substrate	Conspicuous biota
Flat	Ripples	Slightly silty sand	Macroalgae (very sparse to sparse)
Low	Sand waves	Coarse sand	Macroalgae (sparse to medium)
Medium	Bioturbation	Coarse sand with shell	Macroalgae (medium to dense patches)
		Coarse sand with cobbles/rock	Macroalgae (medium density) and *Batillaria australis*
		Coarse sand with shell and cobbles/rock	Sponges
		Rock with coarse sand veneer and shell	Macroalgae (sparse) and sponges
			Macroalgae (high density) and sponges
			Mixed invertebrates and macroalgae assemblage

The following broad benthic habitat types were identified from the survey imagery:

- Flat, coarse sand and shell with medium/dense macroalgal patches
- Flat coarse sand and shell with cobbles/rock and sponges
- Flat, rippled coarse sand and shell with (very) sparse macroalgae
- Flat rippled coarse sand and shell with cobbles/rock
- Flat rippled and bioturbated coarse sand with medium density macroalgae and *Batillaria australis*
- Low relief bioturbated slightly silty sand with sparse/medium density macroalgae
- Low relief rock with coarse sand/shell veneer and mixed macroinvertebrates and macroalgae
- Low relief sand waves of coarse sand with cobbles/rock, sparse macroalgae and sponges
- Low relief pipeline
- Medium relief sand waves and rippled coarse sand with shell
- Medium relief rocky reef with coarse sand/shell veneer, high density macroalgae and sponges.

These areas ranged from areas of flat, rippled coarse sand with shell fragments (e.g. bivalve shell such as mussel shell) and very sparse patches of algae around the centre of the river (Plate 3-1), to areas of medium relief reef, covered in coarse sand with shell fragments and high density algae and sponges on the southern side of the river (in the vicinity of the East St Jetty; Plate 3-17). The locations of each plate are presented in Figure 3-1.

3.1.1 Soft sediment habitats

The soft sediment seabed relief was either flat or consisted of low profile ripples and sand waves (Plate 3-1, Plate 3-2, Plate 3-3, Plate 3-4, Plate 3-5, Plate 3-6, Plate 3-7, Plate 3-8, Plate 3-9, Plate 3-10, Plate 3-11). Soft sediment habitats were comprised of coarse sand and slightly silty sand. Most of these habitats were characterised by sparse algae, shell and bioturbation.

Plate 3-1: Rippled coarse sand with bivalve mollusc shell fragments (mainly mussels) and very sparse patches of algae

Plate 3-2: Rippled coarse sand with bivalve mollusc shell fragments (mainly mussels) and sparse patches of algae

Plate 3-3: Flat coarse sand with bivalve mollusc shell fragments (mainly mussels) and medium patches of algae

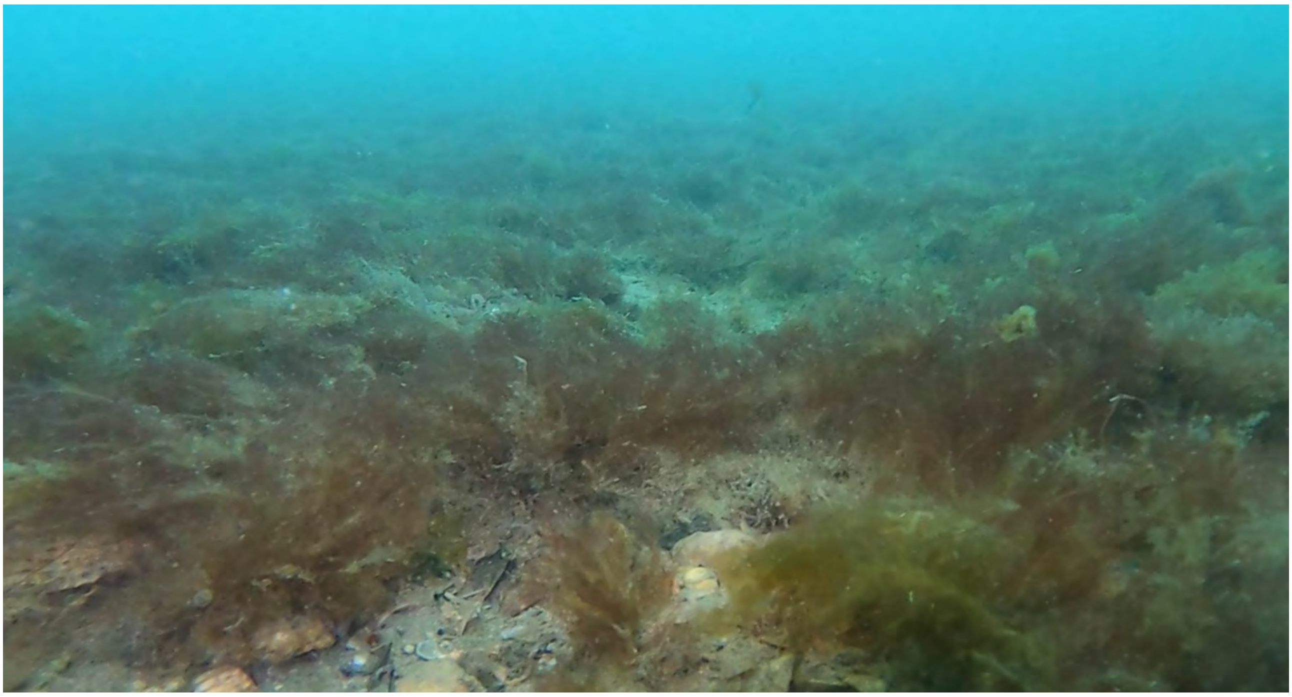

Plate 3-4: Flat coarse sand with bivalve mollusc shell fragments (mainly mussels) and dense algae

Plate 3-5: Sand waves (<0.5 m) of coarse rippled sand, with shell fragments

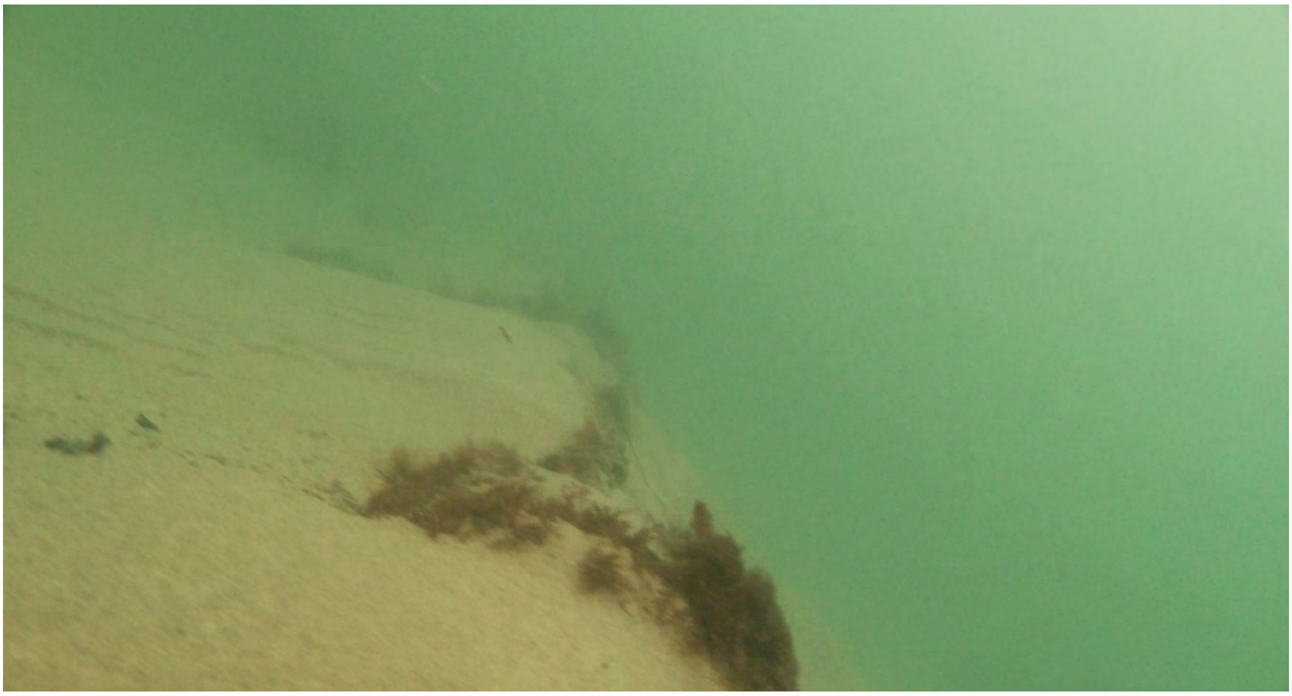

Plate 3-6: Sand waves (~0.5 m) of coarse sand, with scattered rocks, sparse patches algae and sponge

Plate 3-7: Slightly silty sand with very sparse algae, and high-density bioturbation from infaunal biota (e.g. annelid worms, crustaceans and molluscs) and fish

Plate 3-8: Slightly silty sand with sparse algae and medium density bioturbation

Plate 3-9: Slightly silty sand with sparse algae, medium density bioturbation and scattered rocks

Plate 3-10: Slightly silty sand with medium algae and medium density bioturbation

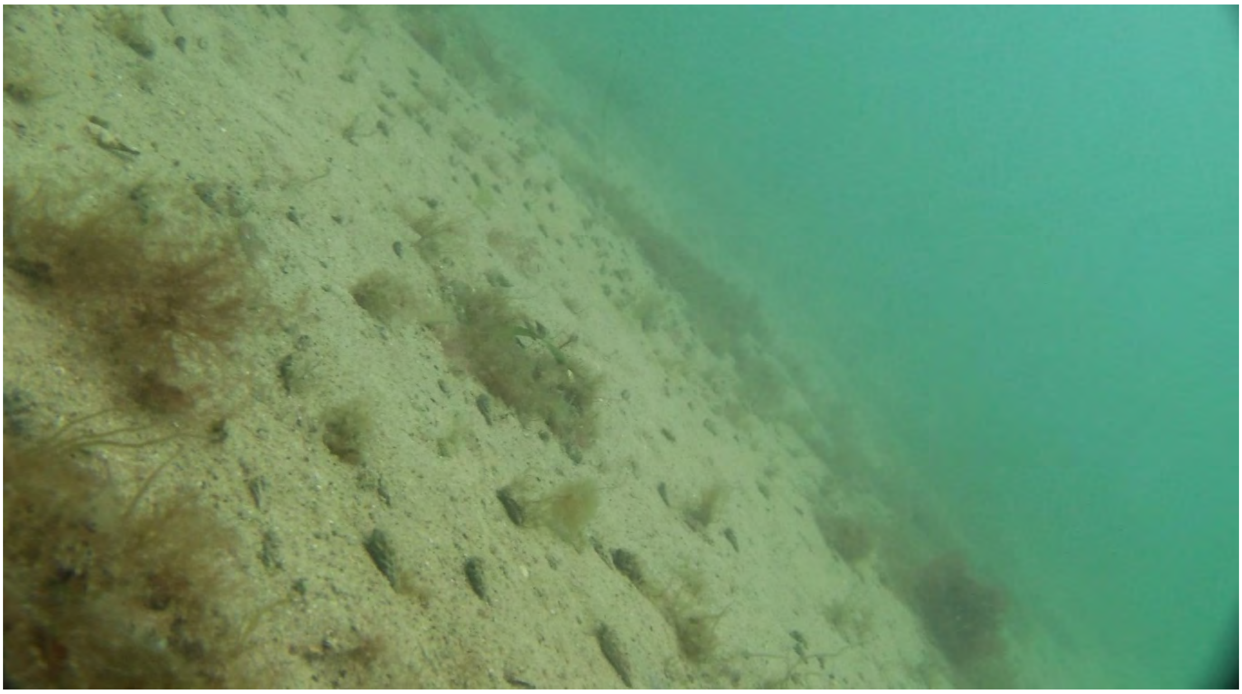

Plate 3-11: Low profile coarse rippled sand with medium density algae (transect 10). Medium density bioturbation, and high densities of *Batillaria australis*, and a single seagrass frond

3.1.2 Hard substrates

The hard substrates in the study area ranged from rippled coarse sand with emergent rocks and shell fragments (Plate 3-12, Plate 3-13), to medium relief reef, with a coarse sand veneer, shell fragments and high-density algae and sponges (Plate 3-14, Plate 3-15, Plate 3-16, Plate 3-17). Areas of seabed habitat with anthropogenic structures, such as bridge pilings, shipwrecks and old, submerged vehicles that had become habitat for various algae and sponges (e.g. Plate 3-18, Plate 3-19) were also recorded. These areas were particularly found under the bridges and near jetties. Cut-off sections of old bridge or jetty pilings were recorded in Transect 7 and transect 8 (Plate 3-20), with a concrete pipeline also found in transect 11 (Plate 3-21).

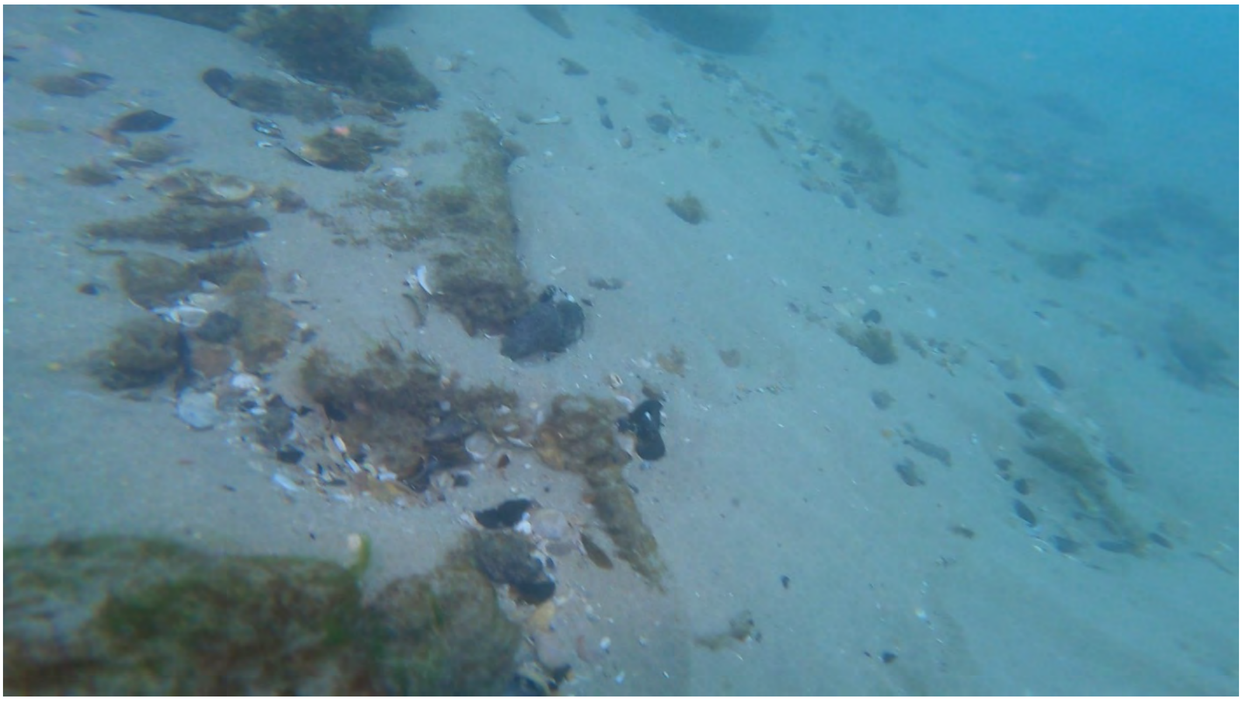

Plate 3-12: Low profile rippled coarse sand with emergent rock and shell fragments

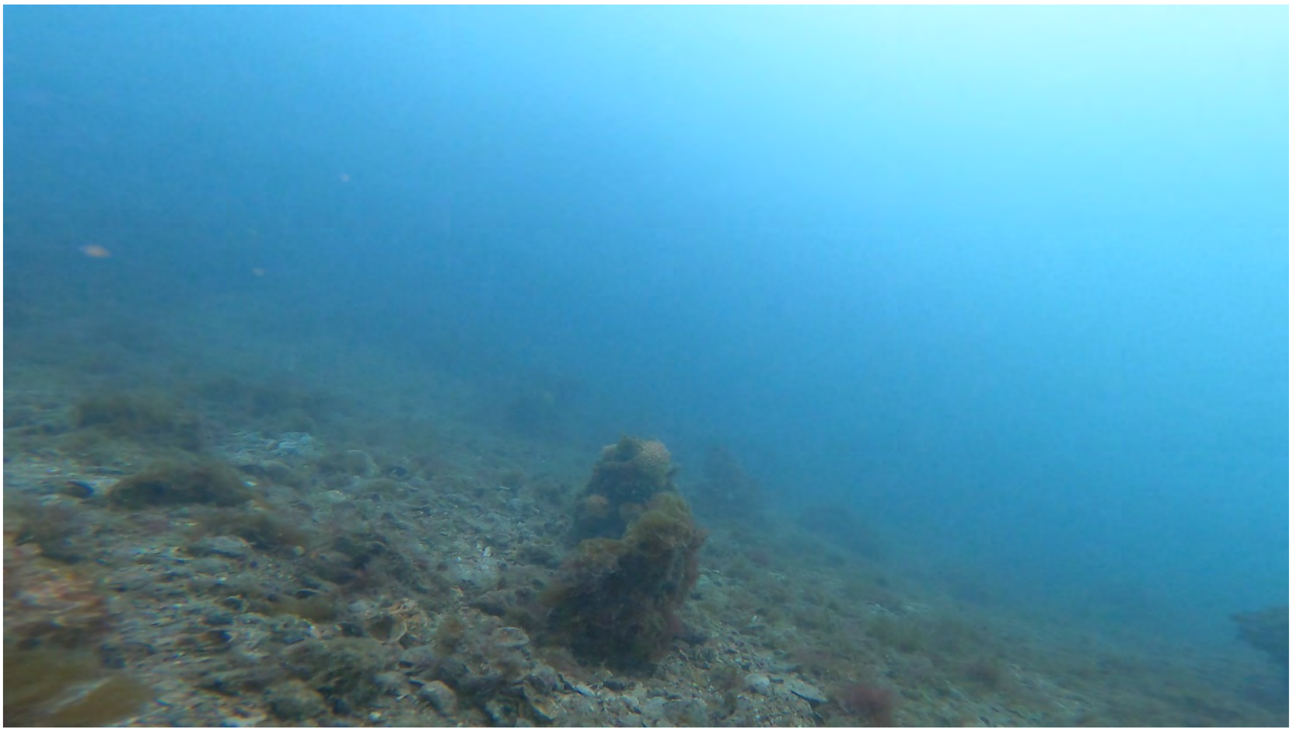

Plate 3-13: Flat, coarse sand with shell fragments (mussels) and dense algae and patches of higher relief rocks and sponges

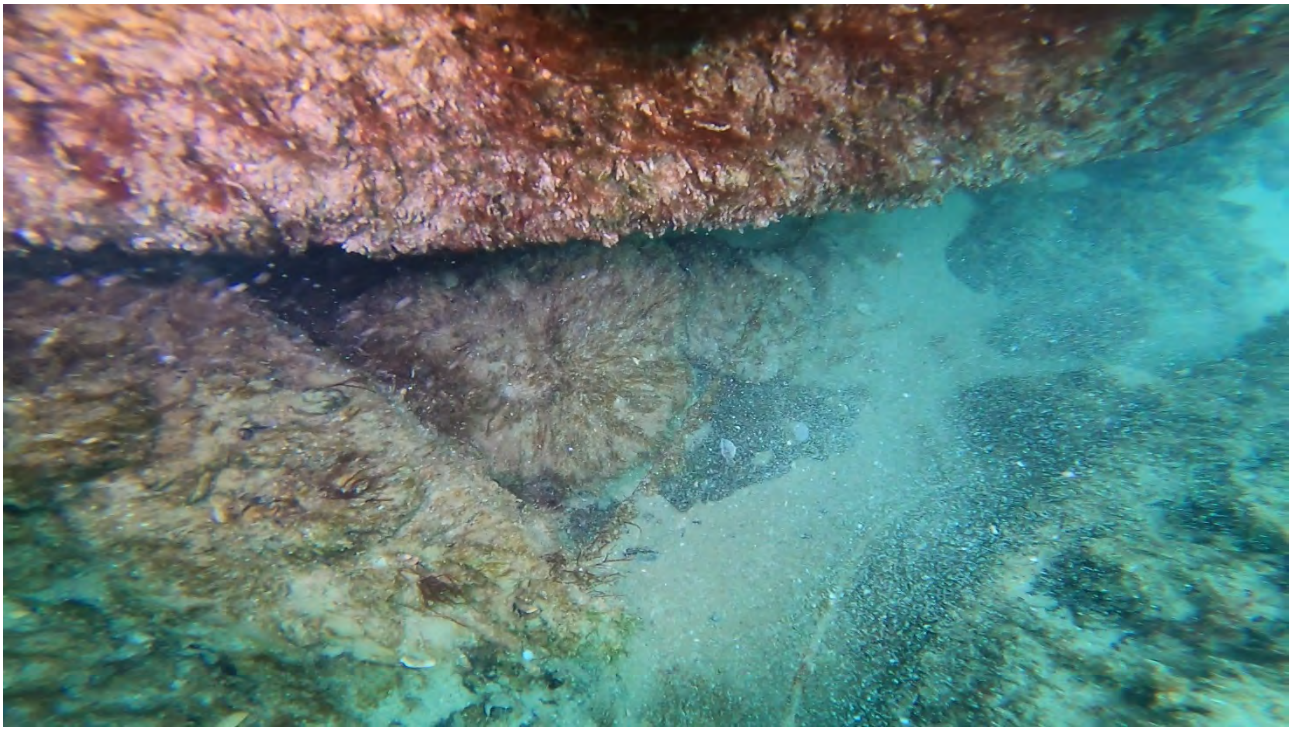

Plate 3-14: Rock/concrete slabs covered in dense algae and sponges (transect 2)

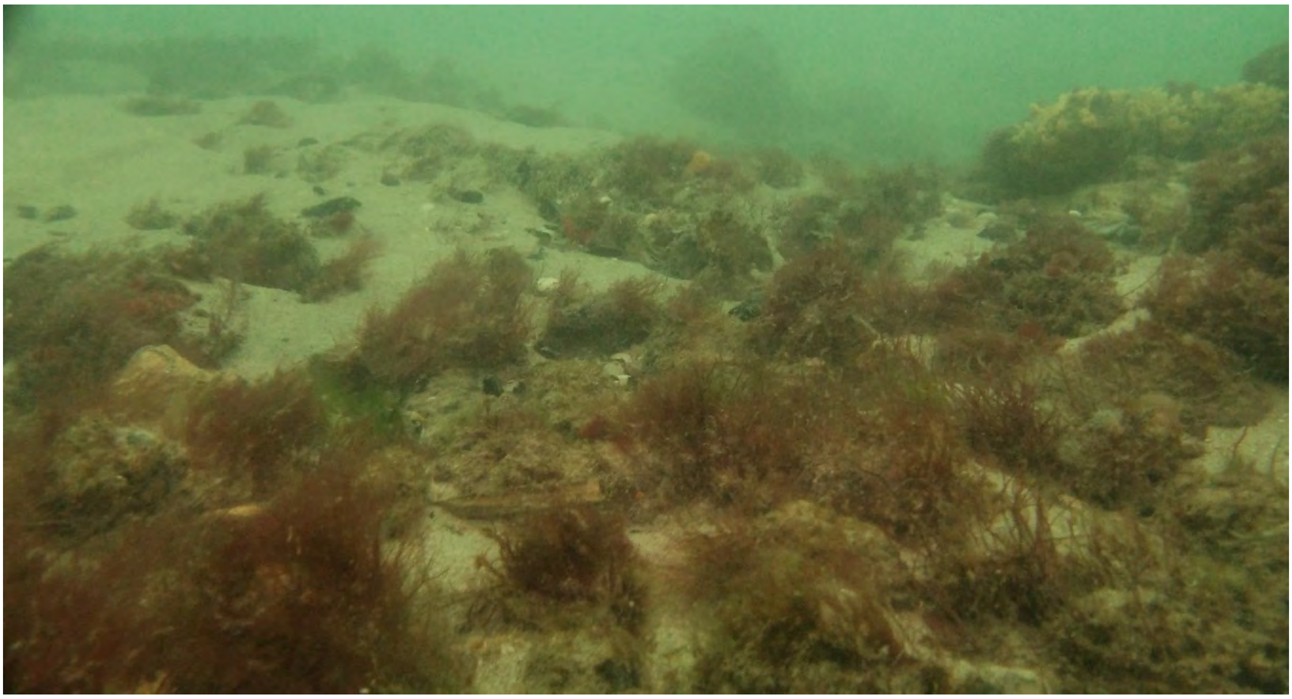

Plate 3-15: Small sand waves (~0.2 to 0.5 m) of coarse sand with shell fragments and large rocks

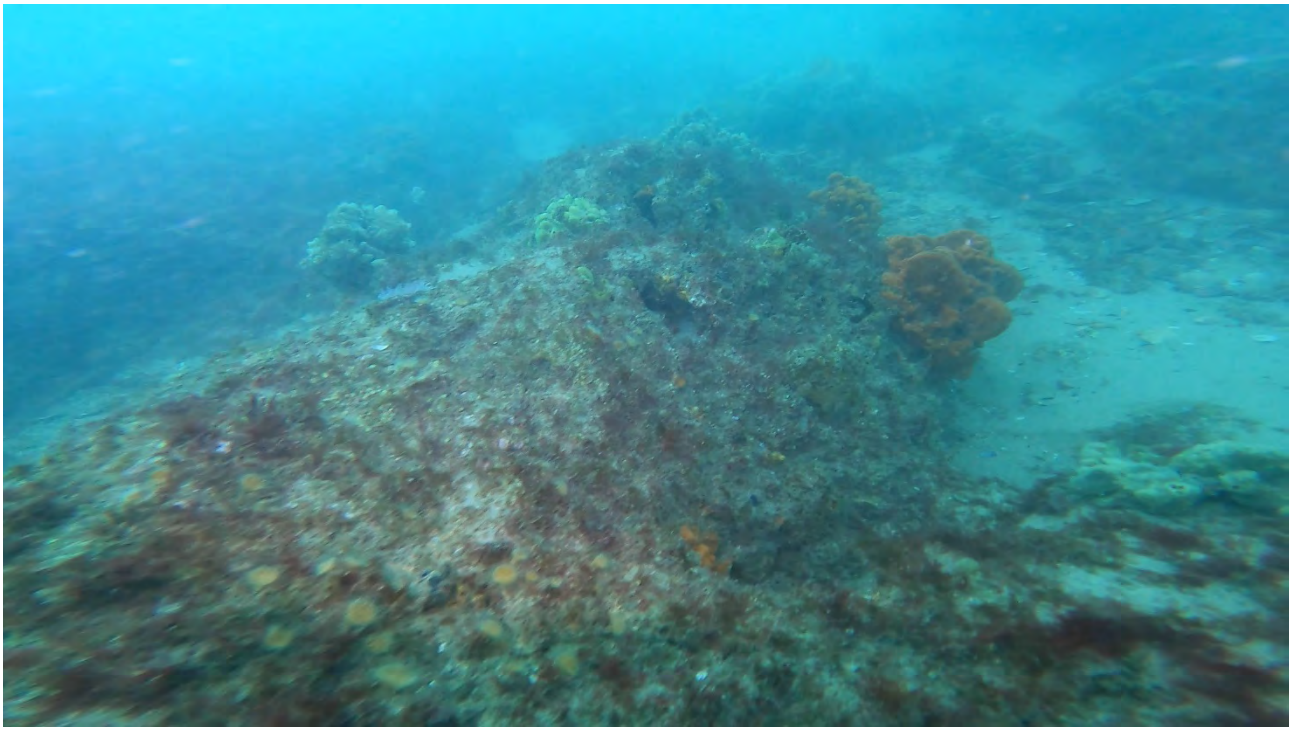

Plate 3-16: Medium relief bedrock/boulders covered in coarse sand with shell fragments and medium density algae and large sponges

Plate 3-17: Medium relief reef and high-density algae and sponges, with patchy veneers of coarse sand and shell fragments

Plate 3-18: Sponges, hydroids, and algae on rock (cobbles/boulders/bedrock) and anthropogenic structures under the Fremantle Traffic Bridge

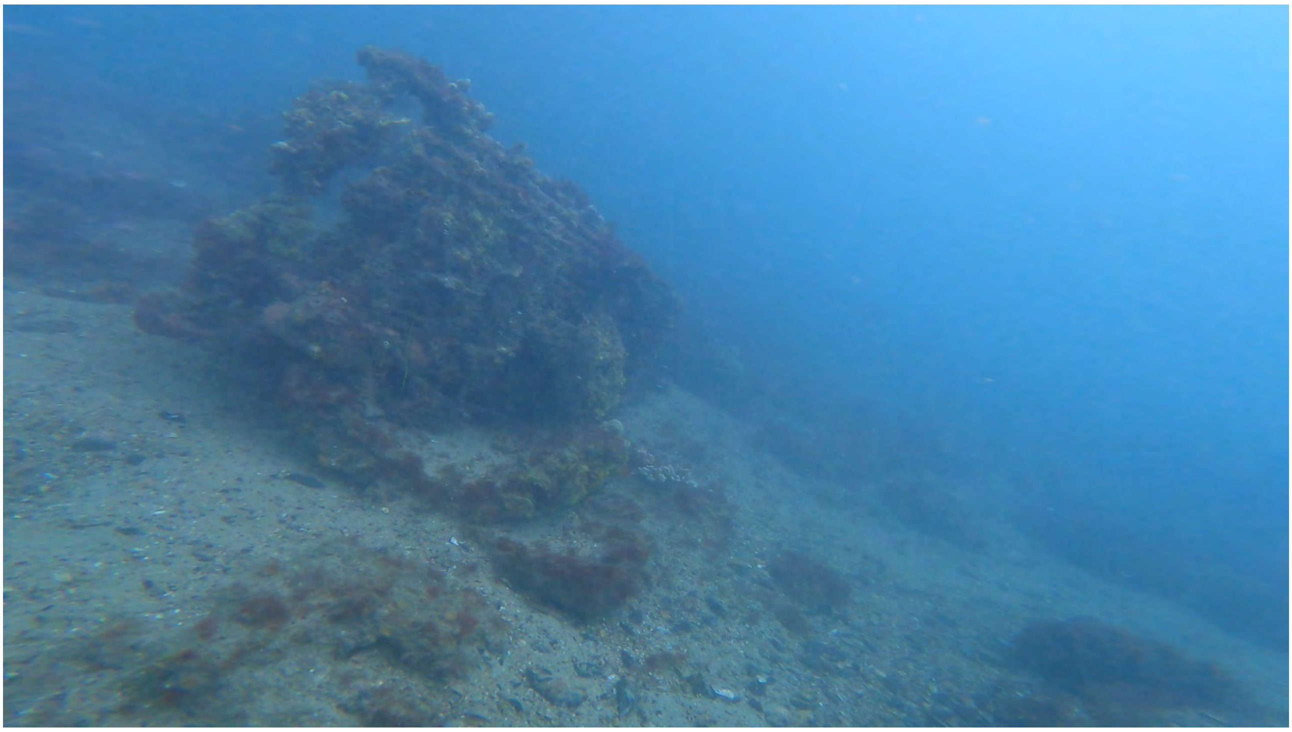

Plate 3-19: Hard substrate of anthropogenic origin from transect 5

Plate 3-20: Cut-off bridge or jetty pilings recorded from transect 8

Plate 3-21: Steep slope- cement pipeline covered by sand, recorded from transect 11

3.1.3 Representative habitat map

A map of the broader habitat types based on spatial data collected in the field was created in a global information system (GIS; Figure 3-1).

The habitat map shows that soft habitat types are generally found in the sections of the river between the Stirling and Fremantle Traffic Bridges, while harder substrate habitat types are mostly associated with the location of the Fremantle traffic and rail bridges, where stronger tidal flows are remobilising particulate sediments. While most areas of the river are coarse sand, siltier sand is found on the north side, in between the Fremantle Traffic Bridge and the jetty, out of the main flow of the river. The seabed habitats to the west of the Fremantle Traffic Bridge generally consisted of coarse sand, with shell fragments (mussels) and varying densities of algae. The area directly under the Fremantle Traffic Bridge was predominantly hard substrate (rock or anthropogenic substrates) covered with sponges, hydroids and algae some coarse sand in depressions or in the lee of medium profile substrate. Medium relief rocky reef was identified near the Fremantle Traffic Bridge and towards the East St Jetty. Sand waves were found along the centre of the river, generally oriented along the prevailing direction of current flow. An area of transect 10 near the north riverbank and under the Stirling Bridge was comprised of coarse sand with high densities of the invasive marine gastropod *Batillaria australis*.

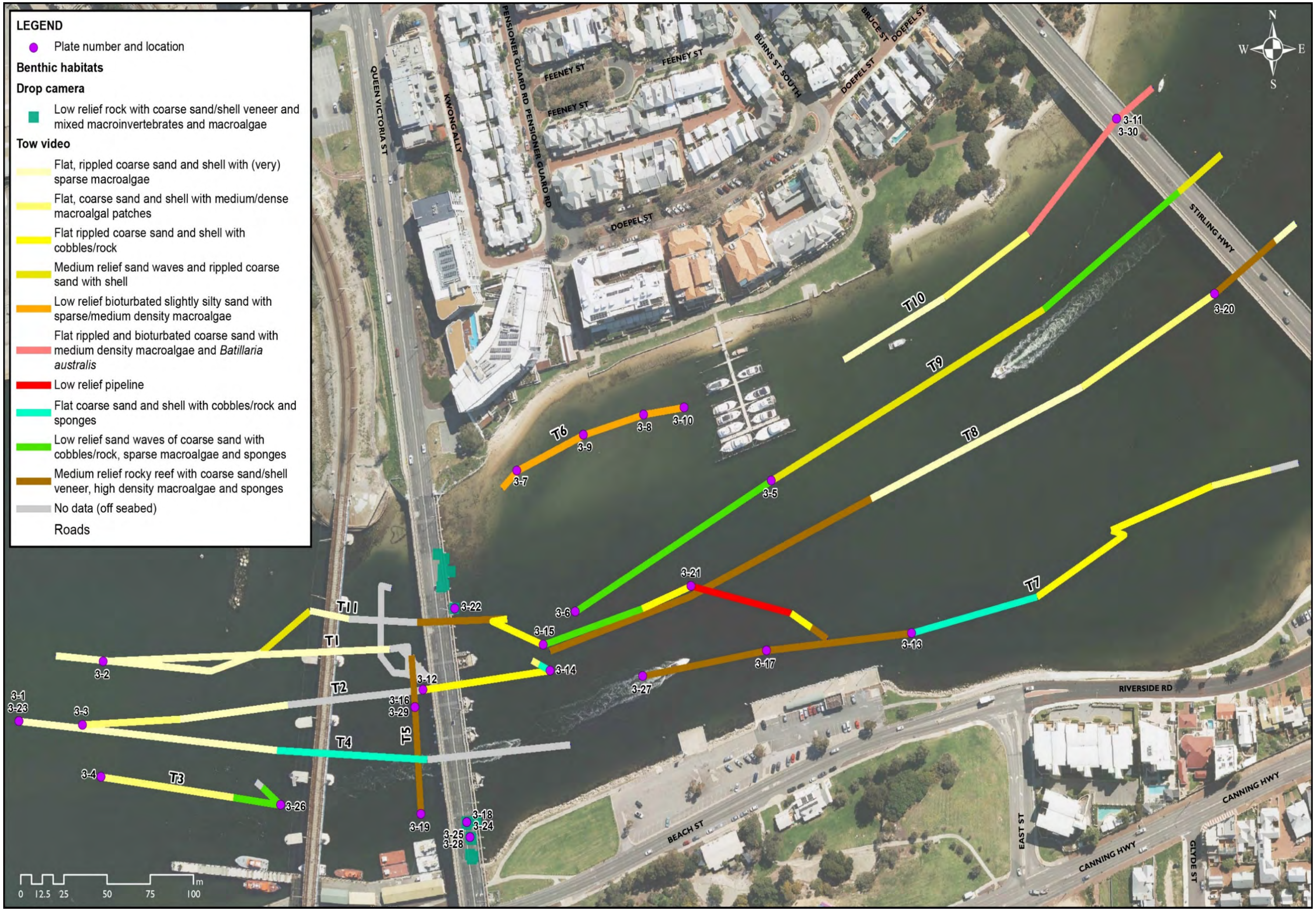

Figure 3-1: Distributions of different habitat types and distribution of Plates 3-1 to 3-30 across the study area

3.2 Fauna

3.2.1 Benthic invertebrate fauna

The benthic invertebrate fauna within the study area varied depending on the habitat type. Mussels (Mytilidae), scallops (Pectinidae) barnacles (Maxillipoda), sponges (Porifera), hydroids (Hydrozoa), anemones (Cnidaria), barnacles (Cirripedia), ascidians (Tunicata) and red and green macroalgae (Rhodophycae and Chlorophycae, respectively) were conspicuous members of the assemblages on the pilings underneath the bridges. Many different morphotypes of sponge were recorded across the area, including encrusting, burrowing, massive and globular (ball-shaped) forms Starfish (Asteroidea; Plate 3-23), anemones (*Cerianthus* sp.*)* and sea pens (Pennatulacea) were often seen on the soft sediment habitats. Blue swimmer crabs (*Portunus armatus;* Plate 3-24) and feather stars (crinoids; Plate 3-25) were commonly seen on more complex, structurally heterogenous habitats across the study area, either on rocky reef/anthropogenic structures or coarse sand with medium to high density algae. Occasional large bivalves were also recorded (e.g. *Pinna* sp.; Plate 3-26 recorded from transect 3).

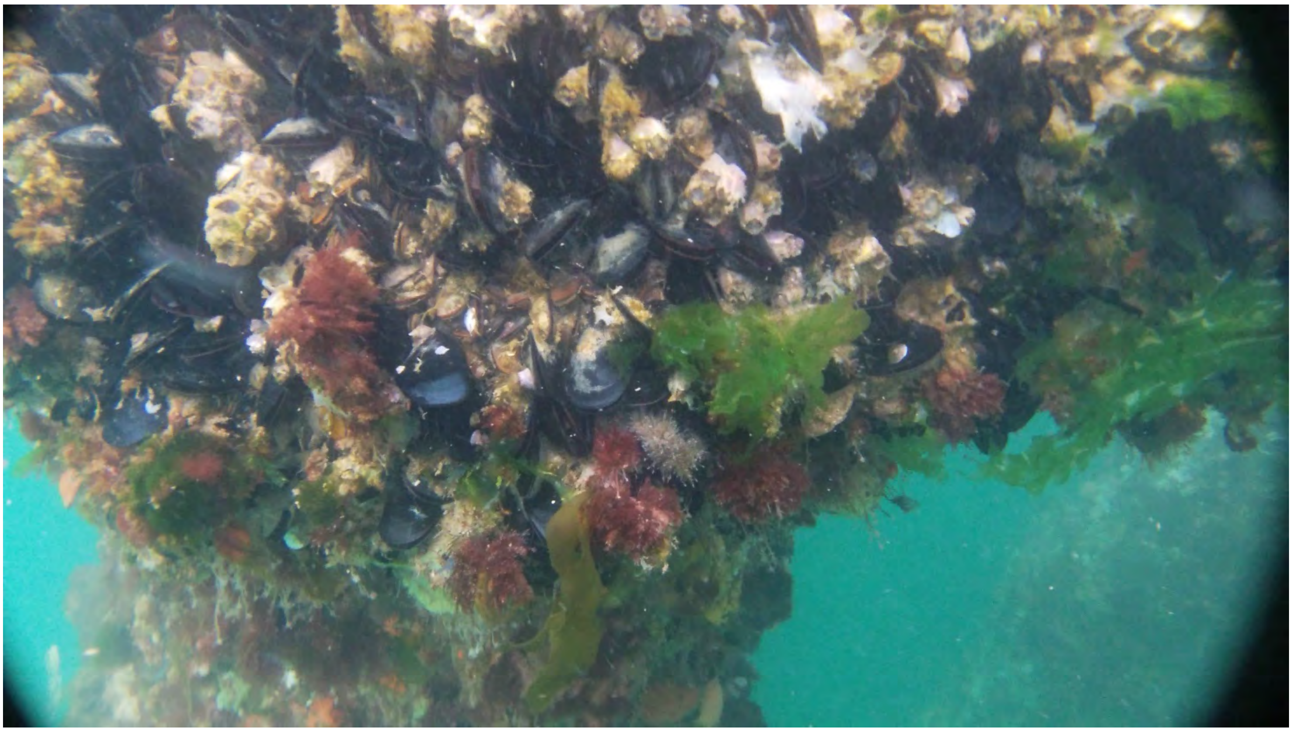

Plate 3-22: Mussels (*Mytilidae*) on a piling under the Fremantle Traffic Bridge

Plate 3-23: Starfish (Asteroidea) on a soft sediment habitat

Plate 3-24: Blue swimmer crab (*Portunus armatus)* next to a piling under the Fremantle Traffic Bridge

Plate 3-25: Crinoid in rocky habitat under the pilings of the Fremantle Traffic Bridge

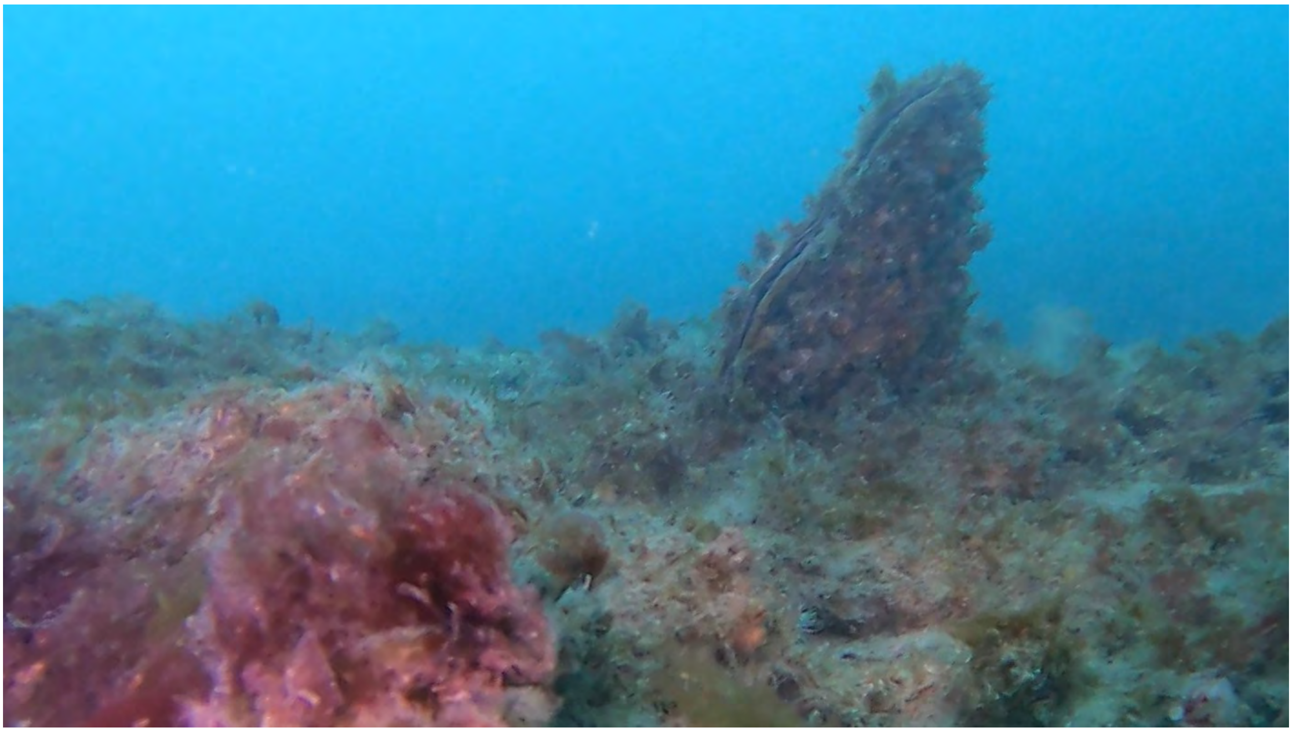

Plate 3-26: Large bivalve (potentially a fan mussel, *Pinna* sp.) recorded from transect 3

3.2.2 Demersal vertebrate fauna

The most commonly fish recorded across the study area was the common blowfish (*Torquigener pleurogramma*). These fish were mostly seen as adults; however juvenile blowfish were also seen in the shallow nearshore areas under the bridges (Plate 3-27).

Juvenile reef fish were also seen in the shallow nearshore areas under the Fremantle Traffic Bridge, including a banded sweep (*Scorpis georganus*), crested morwong (*Cheilodactylus nigripes*), blennies (Blenniformes), Australian stripey (*Microcanthus strigatus*) and some brownspotted wrasse (*Notolabrus parilusi)* (Plate 3-28).

Nearshore pelagic fish, most likely silver trevally (*Pseudocaranx dentex*) were also seen swimming around the pilings of the Fremantle Traffic Bridge and on rocky reef habitat near the East St Jetty (Plate 3-29).

Plate 3-27: Common blowfish swimming near rocky reef habitat

Plate 3-28: Common blowfish and juvenile Australian stripey swimming under the Fremantle Traffic Bridge

Plate 3-29: Trevally (*Pseudocaranx* sp.) on rocky reef habitat

3.2.3 Invasive marine species

On transect 10 from waypoint 100 to 102 (Figure 2-1) dense populations of the invasive gastropod the Australian mud whelk (*Batillaria australis*) which originates from south-east Australia were found on coarse sand habitat (Plate 3-30). *B. australis* is a large gastropod, likely introduced to the Swan River around 70 years ago (Thomsen & Wernberg 2009). This species was not found at any other location surveyed.

Plate 3-30: Dense populations of *B. australis* on coarse sand habitat

4 DISCUSSION

Seabed habitat in the study area was either dominated by coarse sands, or exposed hard substrate (rock and substrates of anthropogenic origin) beneath the bridges and jetty (e.g. transects 2, 4 and 5, and all drop camera locations). Habitat types observed during the towed video study were broadly consistent with substrate descriptions and benthic imagery from a previous diver core sites across the study area (CMW GeoSciences 2016). In the 2016 study, imagery of some hard substrate under the Fremantle Traffic Bridge was presented, but it must be noted that divers targeted patches of soft sediment (e.g. in predominantly hard substrate habitat where soft sediment coverage was likely to be inconsistent) for particle size sampling and sediment characterisation. Soft substrates were often mobile, characterised by either ripples or sand waves. This difference in dominant habitat type is generally indicative of the direct effect of anthropogenic structures (e.g. bridges, jetties, concrete slabs and wreckage) or their effects on local hydrodynamics, causing scouring/erosion of soft substrates and exposing underlying rock (historic disturbance). Old cut-off sections of bridge or jetty pilings were recorded in transect 7 and transect 8 and an area of ‘artificial’ reef comprised of what appeared to be concrete slabs was recorded in the mid-river area at the eastern end of transect two. Additional anthropogenic material was recorded across the study area, including potential parts of a wreck (transect 5), old tyres, fishing weights and line, glass bottles, beer cans, PVC piping, and the potential remains of wrecked vehicles. Soft sediment habitats are likely to be more representative of natural habitats in that stretch of the river, but sediment environmental sampling will confirm if these habitats are likely to be subject to other anthropogenic impacts. These aspects highlight that the study area is not pristine, but is affected by human activities and waste (including discarded materials and wreckage).

The use of a hierarchical system for habitat classification allows identification of relationships between hierarchical components, which helps understand the potential ecological significance of impacts from natural and/or anthropogenic disturbance. Comparison of baseline habitat maps/data against the results of monitoring following a development in the marine environment can be used to identify both the spatial scale of potential impacts of the development, but also the potential impact types (e.g. change in hydrodynamics, increased hard substrate) that are likely to have contributed to that change.

Invertebrate assemblages and macroalgae were common across the study area, particularly on hard substrates. The high relative abundance of filter feeders emphasises the dynamic nature of the hydrodynamic conditions. The dynamic environment also indicates that the benthic assemblages are likely to recover relatively quickly due to colonisation of new hard substrate by pelagic larval stages. Bioturbation of soft sediments was also commonly recorded, mostly due to the feeding or digging/burrowing actions of motile benthic fauna, but also in several cases likely due to demersal species (e.g. fish). No seagrass beds were recorded, though the occasional seagrass frond was recorded.

The invasive Australian mud whelk (*Batillaria australis*), which is normally found in south-east Australia, was recorded in a single, shallow near-shore area on the northern side of the river under the Stirling traffic bridge. This species was first recorded in the Swan River around 70 years ago.

No other species of local or regional significance were identified during the survey.

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