

# EXMOUTH GULF BENTHIC COMMUNITIES AND HABITAT SURVEY REPORT

PREPARED FOR:

SUBSEA 7

**subsea 7**

NOVEMBER 2018

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## LEARMONTH BUNDLE FABRICATION FACILITY EXMOUGH GULF BENTHIC COMMUNITIES AND HABITAT SURVEY REPORT

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## 1. INTRODUCTION

Subsea 7 (Australia) Contracting Pty Ltd (Subsea 7) is investigating the option to build a new Pipeline Bundle fabrication site in Western Australia to further support growth within the Asia Pacific region. Subsea 7 has installed over 78 Pipeline Bundles in the North Sea, three in Australia and eight in Africa.

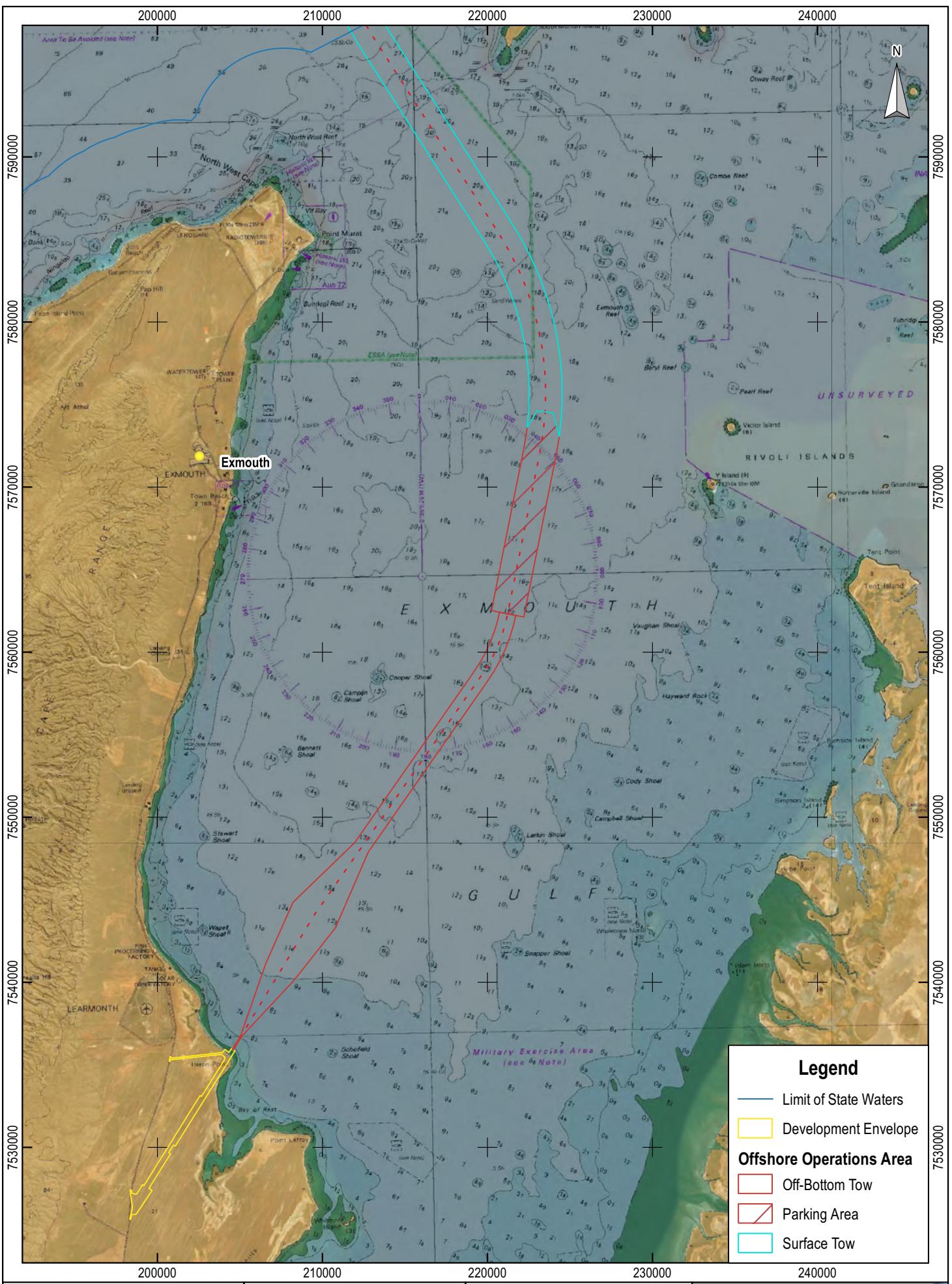
The Learmonth Pipeline Fabrication Facility (the Proposal) is located adjacent to the western shoreline of Exmouth Gulf, at Learmonth, to the east of the Minilya-Exmouth Road, approximately 35 km south of the Exmouth townsite and 2.5 km south east of the RAAF Learmonth base.

The Proposal is to construct and operate a new pipeline fabrication facility, in order to build Bundles for the offshore oil and gas industry. A pipeline Bundle, used in the development of offshore gas fields, co-locates a number of services within a single pipeline, which is constructed onshore before being launched and towed offshore to the field under development.

The Proposal includes construction of a fabrication shed, where the Bundles will be constructed, a storage area where the Bundle materials will be stored prior to use, and two approximately 10 km long Bundle tracks along which each Bundle will be constructed and then launched. A Bundle launchway, crossing the beach and extending into the shallow subtidal area, will facilitate the launch of each Bundle. Following launch, each Bundle will be towed offshore along a pre-determined route (Figure 1).

Once the Bundle has been launched off the launchway, it will be towed through the 'Off-Bottom Tow' tow section of the Offshore Operations area. Within this section the Bundle chains (attached to provide stability control and lift under offshore towing conditions) will be in contact with the seafloor. After the arrival at the Bundle 'Parking Area' the Bundle will be stopped and various checks and reconfiguration for the subsequent 'Surface Tow' completed. The Bundle will be completely off the bottom of the seafloor (including chains) during the 'Surface Tow' section of the Bundle tow route.

The primary objective of this study was to characterise and map the key benthic communities and habitat (BCH) within the proposed marine operations area (Figure 1).



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Figure 1

Proposed Bundle Tow  
 Route and Parking Area

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## 2. STATE GUIDANCE

Several guidance documents exist relating to the characterisation and assessment of potential impacts to BCH, as outlined below.

### 2.1 ENVIRONMENTAL PRINCIPLES, FACTORS, AND OBJECTIVES (EPA 2016A)

The EPA's Statement of Environmental Principles, Factors and Objectives (EPA 2016a) presents the principles of the *Environmental Protection Act 1986*, the environmental factors (those parts of the environment that may be impacted by an aspect of a proposal) and the objectives for each factor. For the factor 'Benthic Communities and Habitat' the objective is:

*"To protect benthic communities and habitats so that biological diversity and ecological integrity are maintained."*

### 2.2 BENTHIC COMMUNITIES AND HABITATS (EPA 2016B)

EPA Technical Guidance – The Benthic Communities and Habitats (EPA 2016b) lists the considerations of environmental impact assessment (EIA) for the factor Benthic Communities and Habitats to include:

- Application of the mitigation hierarchy to avoid and minimise impacts to benthic communities and habitats, where possible.
- The benthic communities and habitat types affected by the proposal and their significance.
- The alternative design options considered, and the management measures and approaches proposed, to avoid and minimise impacts to benthic communities and habitats.
- The spatial and temporal scale of the residual impacts to benthic communities and habitats from the proposal, in combination with historical and approved losses, and the flow-on implications for ecological integrity and biodiversity.
- The current state of knowledge of the affected benthic communities and habitats, including the services they provide, and the level of confidence underpinning the predicted residual impacts.
- The risk posed to benthic communities and habitats and their associated environmental values and ecological integrity should those predictions be incorrect.
- Whether proposed mitigation measures are technically and practically feasible.

Where Benthic Communities and Habitats has been identified as an environmental factor, the EPA is likely to require the proponent to provide information or studies within the following broad topics:

- Appropriate scale mapping showing the types of benthic communities and habitats and their distribution extending to the edge of the zone of influence of the proposal.
- Assessment of the environmental values and significance of the benthic communities likely to be impacted at relevant scales (i.e. local, regional and state-wide).
- Identification of the threats and pressures the proposal is likely to have on the benthic communities and associated habitats and prediction of the extent, severity and duration of direct and indirect impacts (this is likely to involve predictive modelling to determine the 'most likely worst case' and 'most likely best case' loss scenarios).
- Description of the likely consequences for ecological integrity and biological diversity.
- The likely impact that any changes in the benthic communities and/or habitat will have on other dependent factors.

- Design options and management measures and approaches to be implemented to avoid and/or minimise impacts on benthic communities and habitat.
- Cumulative impacts from other existing and approved developments in order to determine whether the proposal, in combination with other developments, will significantly impact benthic communities and/or their habitat, and any consequent impacts to ecological integrity and biodiversity.
- Proposed methods for determining actual losses of benthic communities and their habitats resulting from implementation of the development, and evaluation against the predicted loss.
- Analyses of the above to a standard consistent with recognised published guidance where available; and specification of how the results of monitoring and evaluation of actual impacts on benthic communities and habitats will be publically reported.

## 2.3 PROTECTION OF BENTHIC COMMUNITIES AND HABITATS (EPA 2016c)

EPA Technical Guidance – Protection of Benthic Communities and Habitats (EPA 2016c) sets out:

- The EPA's contemporary approach for considering activities which may directly or indirectly cause impact or serious damage to, or irreversible loss of, benthic communities and habitats.
- Considerations for impact mitigation and how they should be applied.
- A framework for considering cumulative loss of benthic communities and habitats and the potential consequences for marine ecological integrity and biological diversity.
- The EPA's expectations for information to be supplied by proponents for EIA.
- The boundaries of a local assessment unit for the Port of Port Hedland that replaces Environmental Protection Bulletin 14 (EPA 2011) and is to be used when assessing benthic impacts and cumulative losses of benthic communities and habitats in the area.

EPA (2016c) supersedes Environmental Assessment Guideline No. 3 - Protection of Benthic Primary Producer Habitats in Western Australia's Marine Environment (EAG 3) (EPA 2009) which focussed on the Benthic Primary Producer Habitat (BPPH) components of BCH. EPA (2016c) lists BCH to include filter feeder communities growing on hard or soft substrates that may include sponges, ascidians, soft corals or hydroids; soft substrate infaunal communities that may include worms, molluscs and crustaceans; and hard and soft substrate benthic primary producer communities such as coral reefs, algal-dominated biogenic reefs, algal-dominated rocky reefs, seagrass meadows and mangrove forests. Algal mats and salt marshes growing on intertidal sand/mud flats are also classed as benthic primary producer communities. Benthic habitats are areas of seabed that have the necessary attributes, such as substrate type, water depth and clarity, degree of exposure to wave energy, to support these communities.

EPA (2016c) states that “*Local assessment units (LAUs) are location specific and should be configured to take into account aspects of the local marine environment such as bathymetry and position of offshore reefs/islands, substrate type, water circulation patterns, exposure to waves and currents and biological attributes such as habitat types. Wherever possible, other variables related to the functional ecology of the system, (e.g. the length scales of key ecological processes such as trophic connectivity and larval dispersion) should also be considered when defining LAU boundaries. Other relevant information such as administrative (e.g. zoning schemes within marine conservation reserves) and jurisdictional (e.g. State coastal waters) boundaries should also be taken into account. All things considered, in WA's marine environment LAUs would typically be approximately 50 km<sup>2</sup> (e.g. a rectangular area defined by a 10 km stretch of coastline extending 5 km offshore (or to the limit of State Waters)). Larger or smaller LAUs will be considered if well justified.*

## 3. PREVIOUS STUDIES

### 3.1 LEARMONT HABITAT SURVEYS 2017

Two BCH surveys were completed off Heron Point. The initial ground-truth survey was undertaken in December 2016, and focused on the proposed bundle launch route including a 400 m buffer to the north and south, and a 1 km buffer offshore.

A local assessment unit (LAU) was subsequently developed (Heron Point LAU), in discussions with the Marine Ecosystems Branch (MEB) of Environmental Protection Authority (EPA) Services. Additional surveys were undertaken within the Heron Point LAU during May / June 2017 to ground-truth the remaining habitat (83 km<sup>2</sup>) (Figure 2).

Surveys included visual inspection of the intertidal habitats (including northern mangroves in the Bay of Rest, south of the Heron Point LAU) and soft sediment infauna characterisation (refer 360 Environmental 2017).

#### 3.1.1 Intertidal Survey Results

The intertidal surveys identified three principal BCH types recorded within the Heron Point LAU:

- Fine sand.
- Pavement reef.
- Reef with macroalgae (occasional observation of hard and soft corals within the lower-littoral zone).

The BCH types are well represented outside the survey area within the south western shore of Exmouth Gulf and widespread throughout the north west of Australia tropical / sub-tropical coasts (360 Environmental 2017).

#### 3.1.2 Subtidal Habitat Survey Results

A total of six principal BCH types were classified within the Heron Point LAU:

- Soft sediment.
- Soft sediment with sparse seagrass.
- Soft sediment with turf algae.
- Soft sediment with filter feeders.
- Reef with macroalgae.
- Reef with macroalgae and filter feeders.

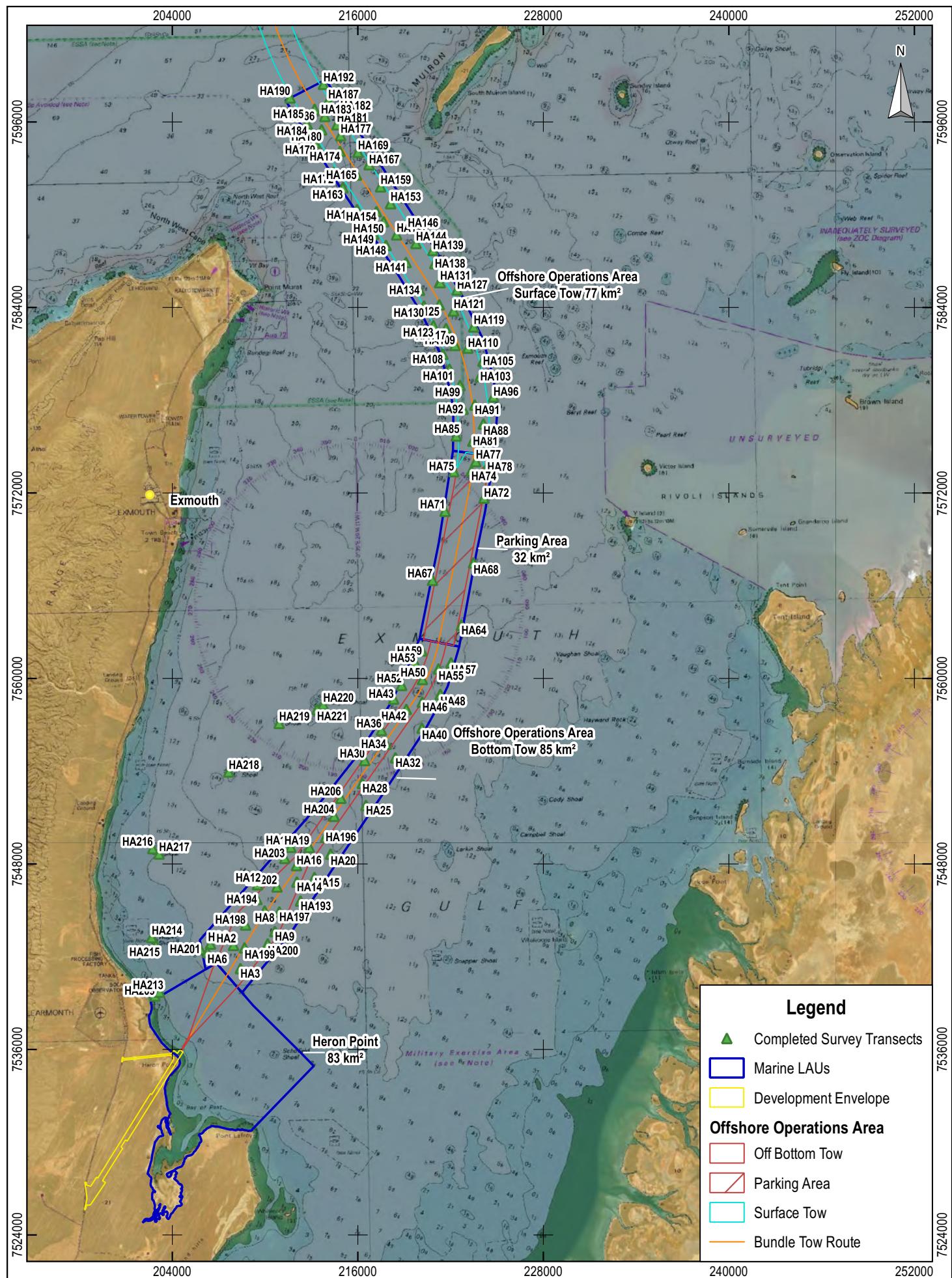
The majority of the LAU was represented by unvegetated soft sediment. Occasional isolated patches of turf algae ( $\leq 50\%$ ) were present closer to shore, however became absent with increasing distance offshore. The then proposed Bundle launch route and associated disturbance envelope was primarily characterised by soft sediment (86.7%) with some areas of reef with macroalgae, reef with macroalgae and filters feeders, and soft sediment with filter feeders mapped (360 Environmental 2017).

## 3.2 SECTION 38 BUNDLE LAYDOWN AREA

A separate survey was undertaken for the proposed Bundle laydown area, with 21 towed video transects completed and six subtidal infauna samples collected. The laydown area was characterised by soft sediment (Figure 3). Infauna sampling indicated that the infauna was annelid worm-dominated.

It is noted that the proposed Bundle parking area is within the Exmouth Gulf Prawn Fishery area. Since the 1980s trawling effort in Exmouth Gulf is focused on the deeper central and north western sections, however historically there has been some impacts on shallower areas within the gulf (<12 m) containing sponge habitats. After forty years of trawling in Exmouth Gulf, the areas that are the subject of ongoing trawling activity are likely to have become stable habitats. Visual observation of these areas has identified mostly bare sands with virtually no epibenthos, and very limited motile organisms present (RPS 2004, MBS 2018). Figure 4 shows the current trawled area within Exmouth Gulf.

Since the survey in September 2017, the Bundle laydown area has been re-named the ‘Bundle Parking Area’ and the alignment of this area has changed slightly to align with a revised tow route (Figure 4).



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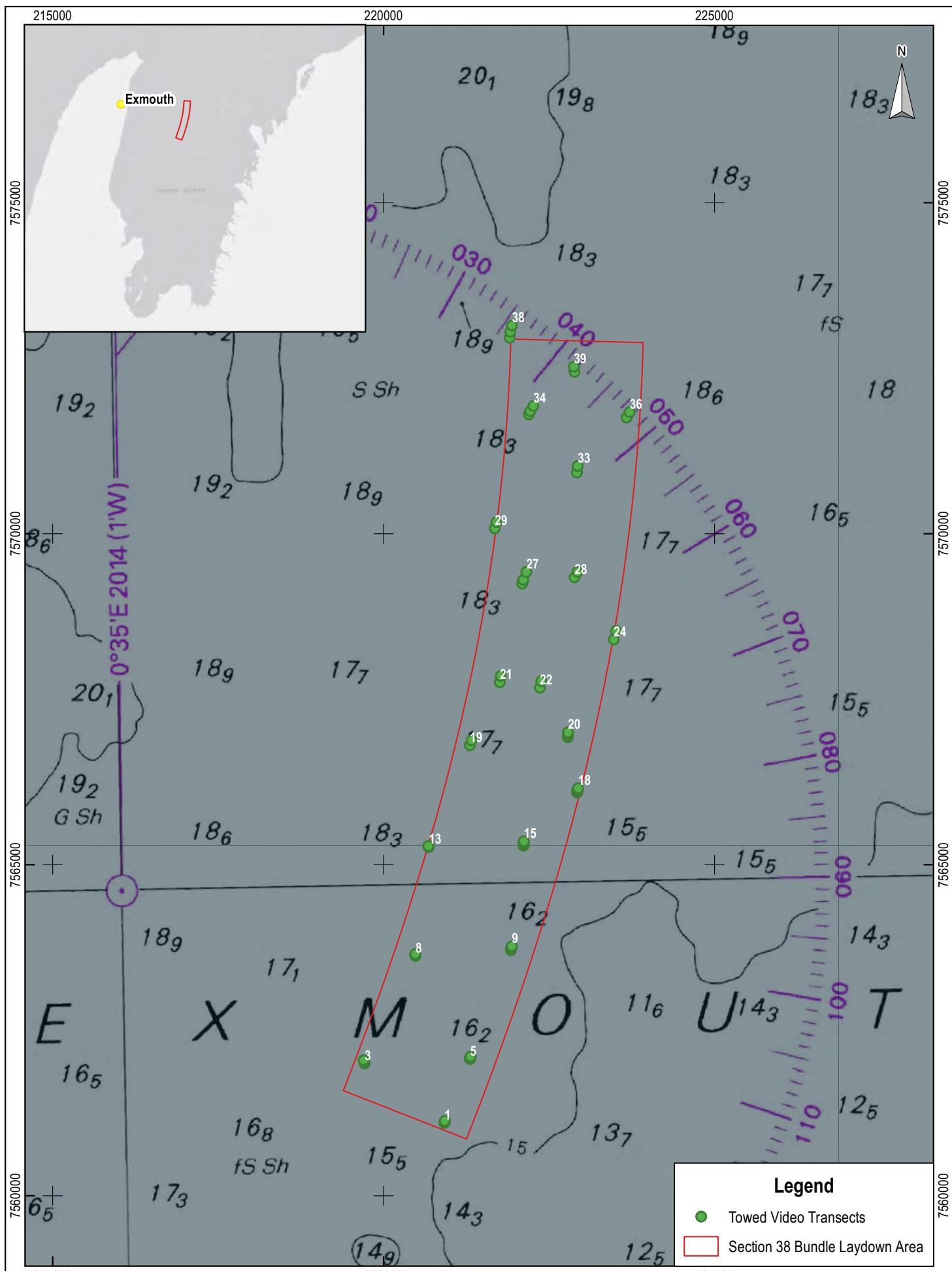
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**Figure 2**

## **Local Assessment Units and BCH Transects**

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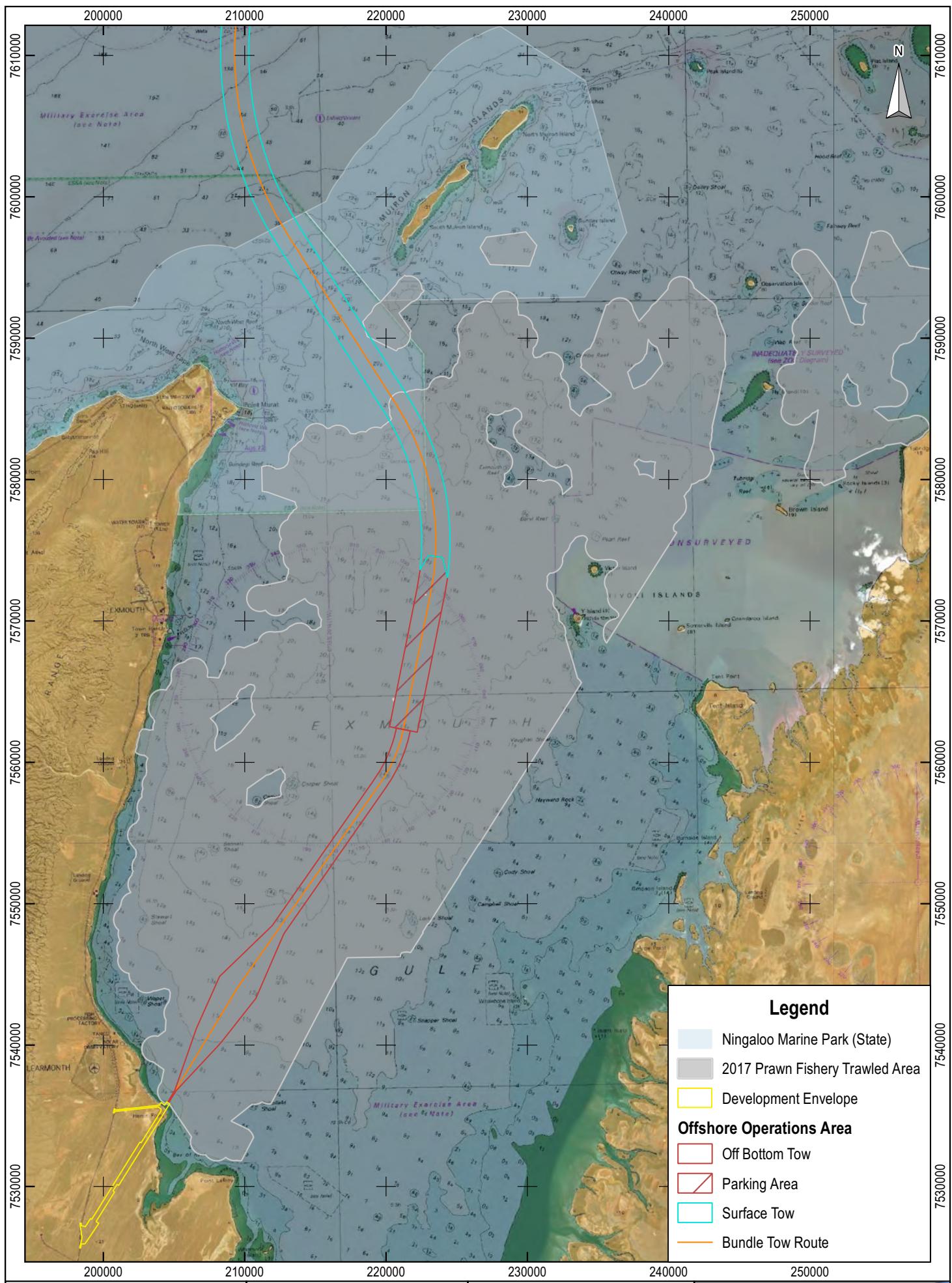
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**Figure 3**  
**Towed Video Transects  
Within the Bundle Laydown  
Area**

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Figure 4

Exmouth Gulf Prawn  
Fishery 2017 Trawled Area

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## 4. SURVEY METHODS

### 4.1 LOCAL ASSESSMENT UNITS

The EPA uses a spatial assessment framework for evaluating cumulative, temporary and irreversible loss of and/or serious damage to benthic communities and habitats. The evaluation scheme is based on cumulative changes within a defined area and includes determining the spatial extent of benthic communities and their habitats:

- Prior to all human-induced disturbance.
- Existing at the time of the proposal.
- Remaining after implementation of the proposal (EPA 2016d).

To support this assessment approach, a number of Local Assessment Units (LAUs) have been defined offshore of Heron Point, and along the proposed Bundle launch and tow route, to support the quantitative assessment of potential direct and indirect impacts on BCH.

EPA (2016e) states that “*Local assessment units (LAUs) are location specific and should be configured to take into account aspects of the local marine environment such as bathymetry and position of offshore reefs/islands, substrate type, water circulation patterns, exposure to waves and currents and biological attributes such as habitat types*”. The LAUs were defined taking account this guidance and in consultation with DWER.

Given the location of the launchway at Heron Point within the area previously nominated for reservation, and within the Bay of Rest mangrove area (EPA 2001), a single LAU (LAU ‘Heron Point’) was initially developed based on these datasets (Figure 2). The LAU was developed to be broadly consistent with the general guidance presented in Section 4.2 of EPA (2016c), and utilises the existing mapped boundaries of the above proposed conservation zones. LAU ‘Heron Point’ was discussed with the Marine Ecosystems Branch of the EPA, and endorsed, prior to completion of habitat mapping across this area.

In addition to the previously defined Heron Point LAU, the three new LAU’s within the Offshore Operations Area were developed to be broadly consistent with the general guidance presented in Section 4.2 of EPA (2016), and were designed around the Offshore Operations Area including Bundle Parking Area and tow route disturbance envelope. The proposed LAU’s were discussed with the MEB of the EPA, and endorsed prior to completion of the habitat mapping across the area (Table 1).

Table 1: Size of LAU areas (km<sup>2</sup>)

LAU No.	LAU Name	Area	Short Description
1	Heron Point	83	Launchway and Bundle chains
2	Offshore Operations Area (Off-Bottom Tow)	84	Bundle chains
3	Parking Area	32	Bundle chains
4	Offshore Operations Area (Surface Tow)	77	None (Bundle surface tow only)

The survey area covered the proposed Bundle tow route within the offshore disturbance envelope where benthic habitats are likely to be disturbed, plus a buffer to the east and west of the disturbance envelope.

Surveys were completed in September 2018 within LAUs 2, 3 and 4 that encompass a total area of 193 km<sup>2</sup> (Table 1).

## 4.2 HABITAT MAPPING

As reported from previous habitat mapping exercises in Exmouth Gulf, it was not possible to consistently differentiate reef, algae and seagrass areas from aerial imagery alone. Therefore ground-truth surveys, using towed video, were undertaken to enable such habitats to be mapped, and to provide more detailed information on these habitats.

A towed video system consisting of a high definition (1080p) video camera mounted on a tow frame was used to record video footage at each survey location. The system was deployed on the port side of the vessel and towed at a speed of approximately 1-2 km/h, at a height of approximately 0.2 – 1 m from the seabed. The height from the seabed was determined on the topography of the seabed. Footage was recorded directly to a hard drive, and a system-integrated GPS recorded the survey position at approximately 30 second intervals.

A total of 104 towed video transects were conducted in the survey area, and an additional 10 transects near the shoreline and at shoals within 10 km of the survey area. Video recording from transects were used to characterise and map BCH throughout the LAU's (Figure 2).

## 4.3 VIDEO IMAGERY ANALYSIS

On return to the office, the video record was reviewed and data corresponding to each GPS waypoint collected along each transect. Habitat descriptions were defined by reviewing video footage for 30 second long sections of recorded video transect along the seabed.

A number of habitat descriptors were recorded from approximately 30 second sections of video footage including:

- Dominant seabed type (e.g. soft sediment, reef).
- The percentage cover of flora (macroalgae).
- The abundance of fauna of different genera/species (e.g. sponges, soft corals, hard corals).
- Other features or mobile fauna as visible within the footage.

The GPS tracklog points collected along each video track were then classified according to the seabed and habitat data (refer Appendix 1 and Appendix 2).

## 5. SURVEY RESULTS

### 5.1 OFFSHORE OPERATIONS AREA OFF-BOTTOM TOW AND PARKING AREA

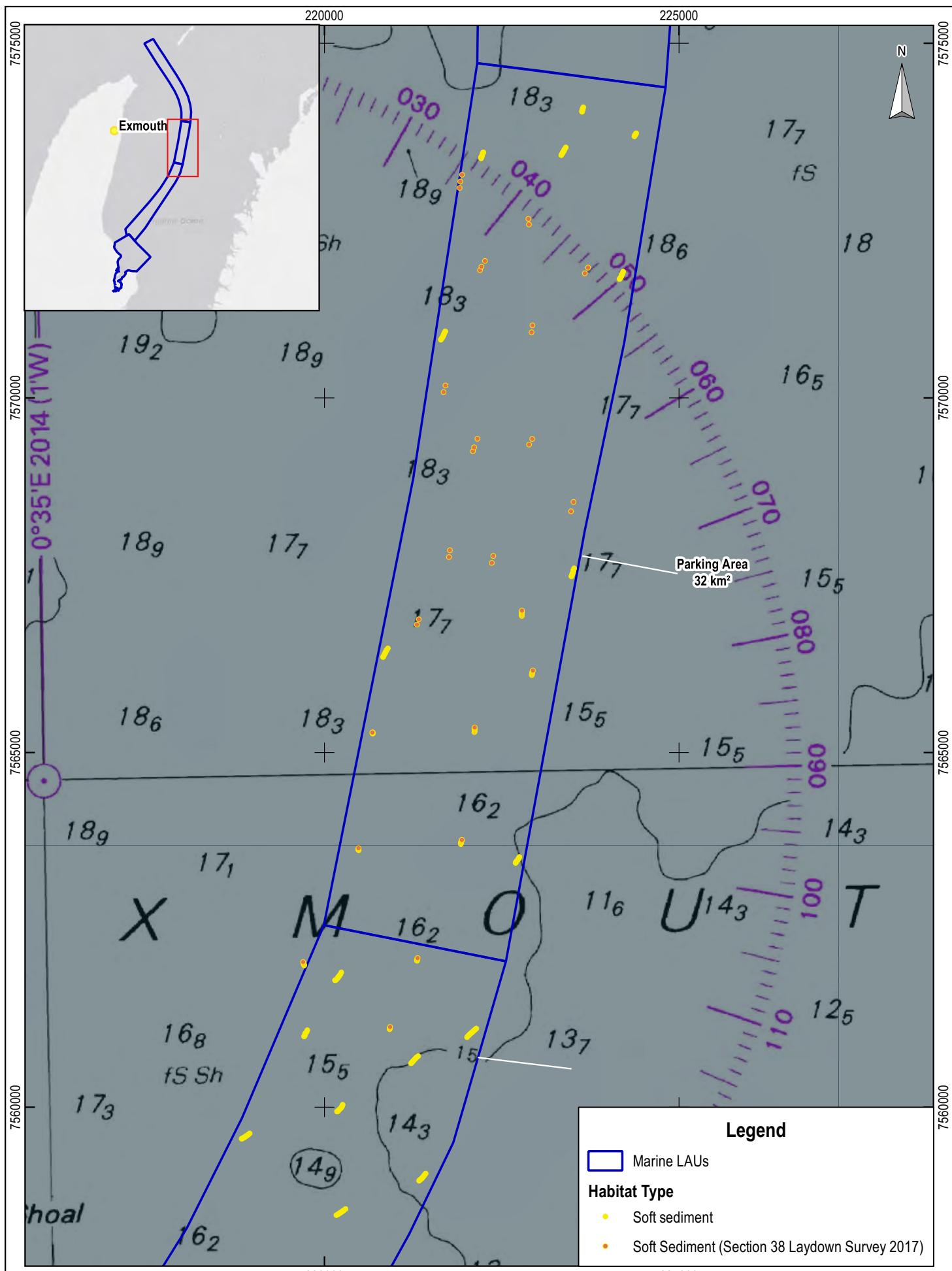
The Offshore Operations Area Off-Bottom Tow and Parking Area LAU's were characterised by soft sediment. The soft sediment habitat was found to be mostly (>95%) unvegetated and had varying degrees of bioturbation visible (Plate 1, Figure 5, and Figure 6). There were some isolated areas with a sparse covering of macroalgae (e.g. site HA50). However, most of the observed macroalgae present was considered to be drift and not attached. The visibility throughout both LAU's was poor due to elevated turbidity, improving as the survey progressed north towards Ningaloo Marine Park.



Plate 1: Soft Sediment Habitat

Filter feeders were observed to occur rarely – occasional, with the majority of the 30 second transect sections containing no individuals. However, there were sections where several individuals (mainly sponges or ascidians) were observed in numbers between one and five over a 30 second period. No hard corals were observed during the towed video transects within these LAU's.

Macroalgae cover was low with most of transects containing 0% overall cover throughout all the 30 second transect sections. There were some sections that contained up to 5% cover, however much of this was likely drift and not attached to the seafloor.



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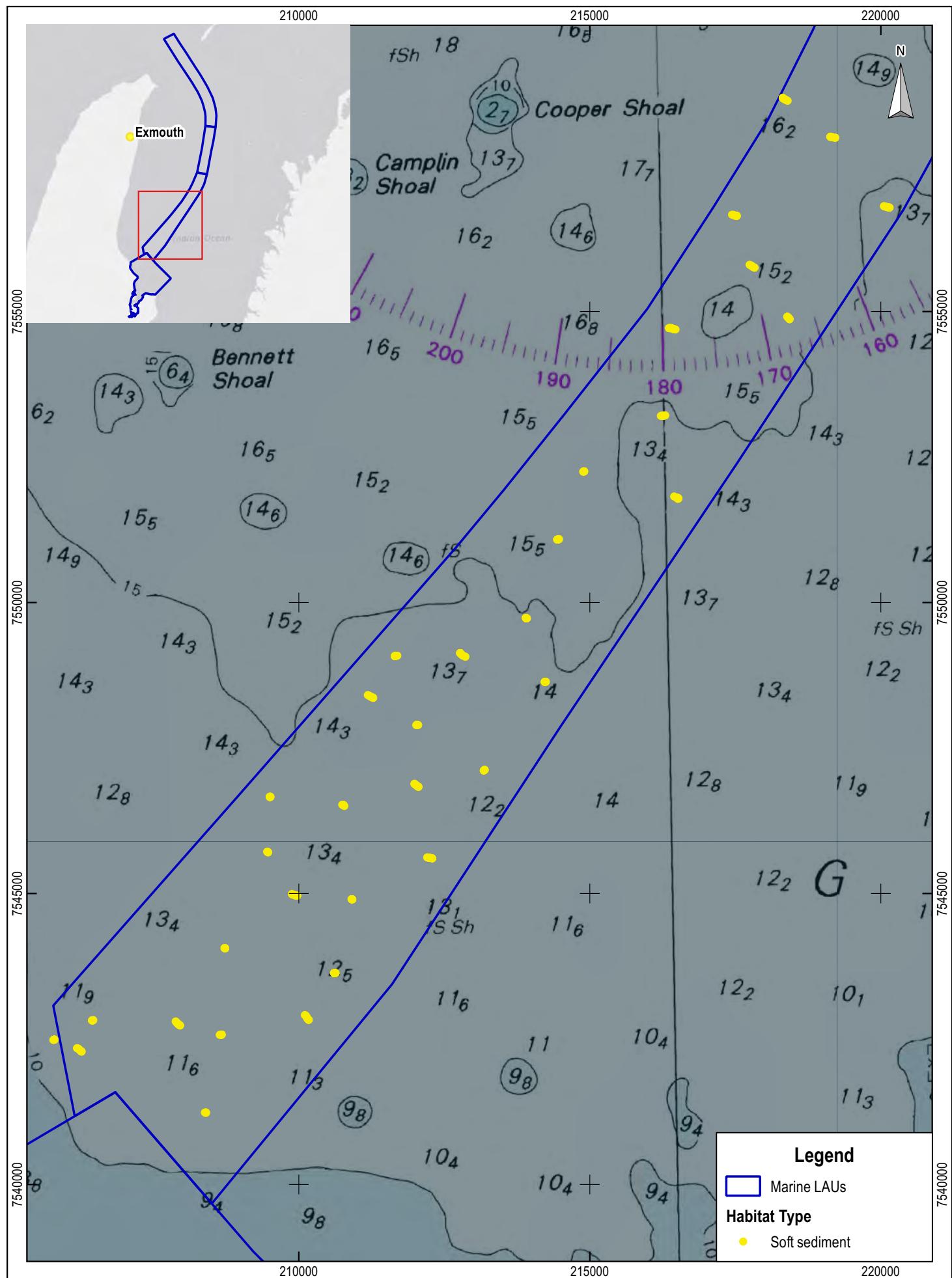
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**Figure 5**

## Habitat Type Within Parking Area and Northern Bottom Tow LAUs

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**Figure 6**

## Habitat Types Within Bottom Tow LAU

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## 5.2 OFFSHORE OPERATIONS AREA SURFACE TOW

The Surface Tow LAU, which is situated mostly inside Ningaloo Marine Park was characterised by soft sediment and pavement reef substrate (Figure 7). Four principal BCH types were recorded within the LAU:

- Soft sediment.
- Pavement reef (little/no biota).
- Pavement reef with filter feeders.
- Pavement reef with macroalgae and filter feeders (Table 2, Figure 7, Figure 8).

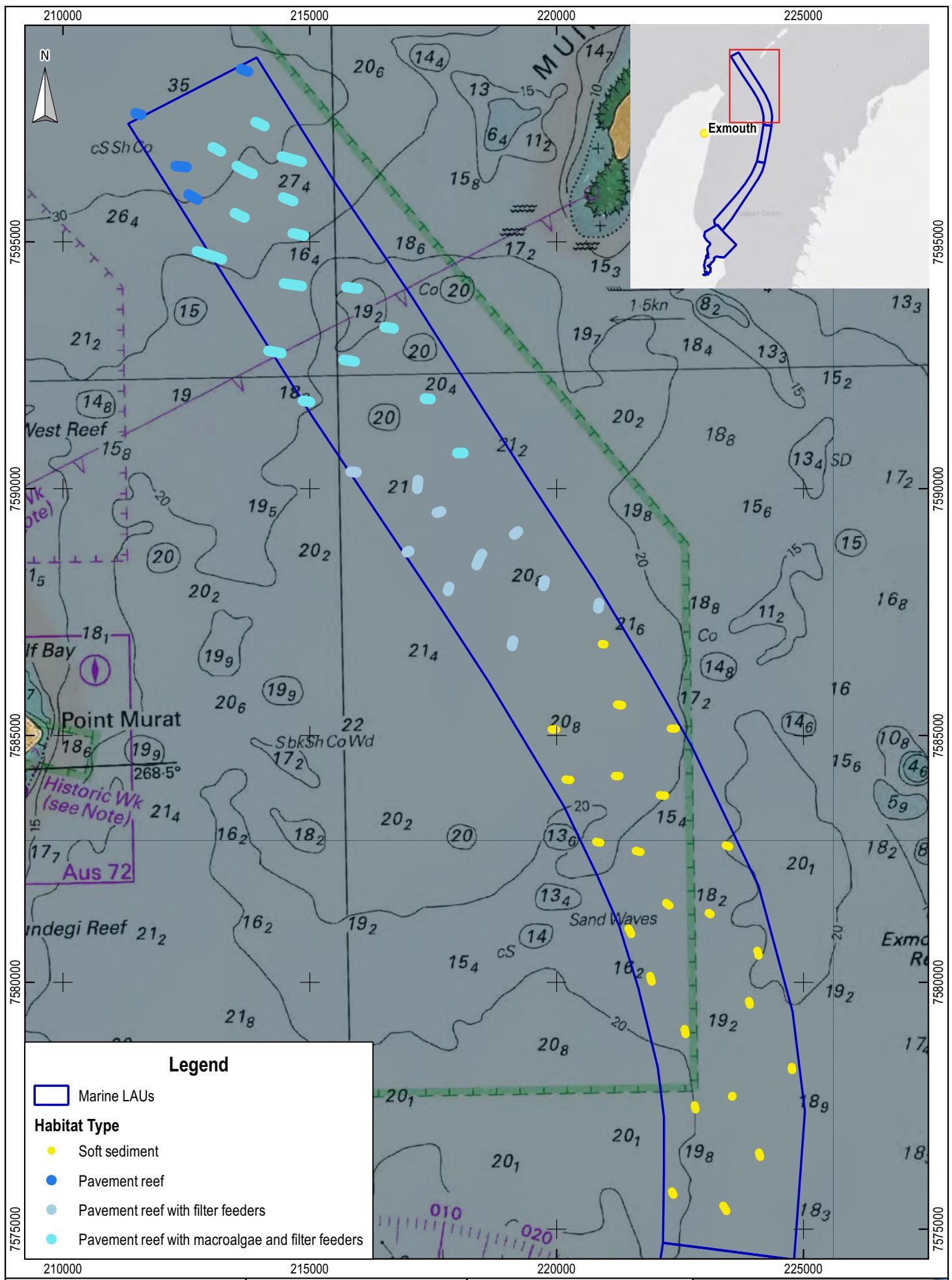
Most of the LAU within Ningaloo Marine Park is characterised as pavement reef with a patchy distribution of macroalgae and filter feeders. The very northern section of the LAU exhibited a mix of soft sediment and pavement reef. Macroalgae within the LAU is small to medium sized (e.g. filamentous and wiry).

As the survey progressed southwards towards the parking area, the abundance of macroalgae and filter feeders started to decrease. This trend continued until a gradual transition from the hard gravelly bottom pavement reef to softer sediments. No distinct border of pavement reef and soft sediment was observed, and it is thought that a gradient of change exists within the vicinity of the Ningaloo Marine Park boundary.

Table 2 provides a breakdown of the BCH types within the Surface Tow LAU.

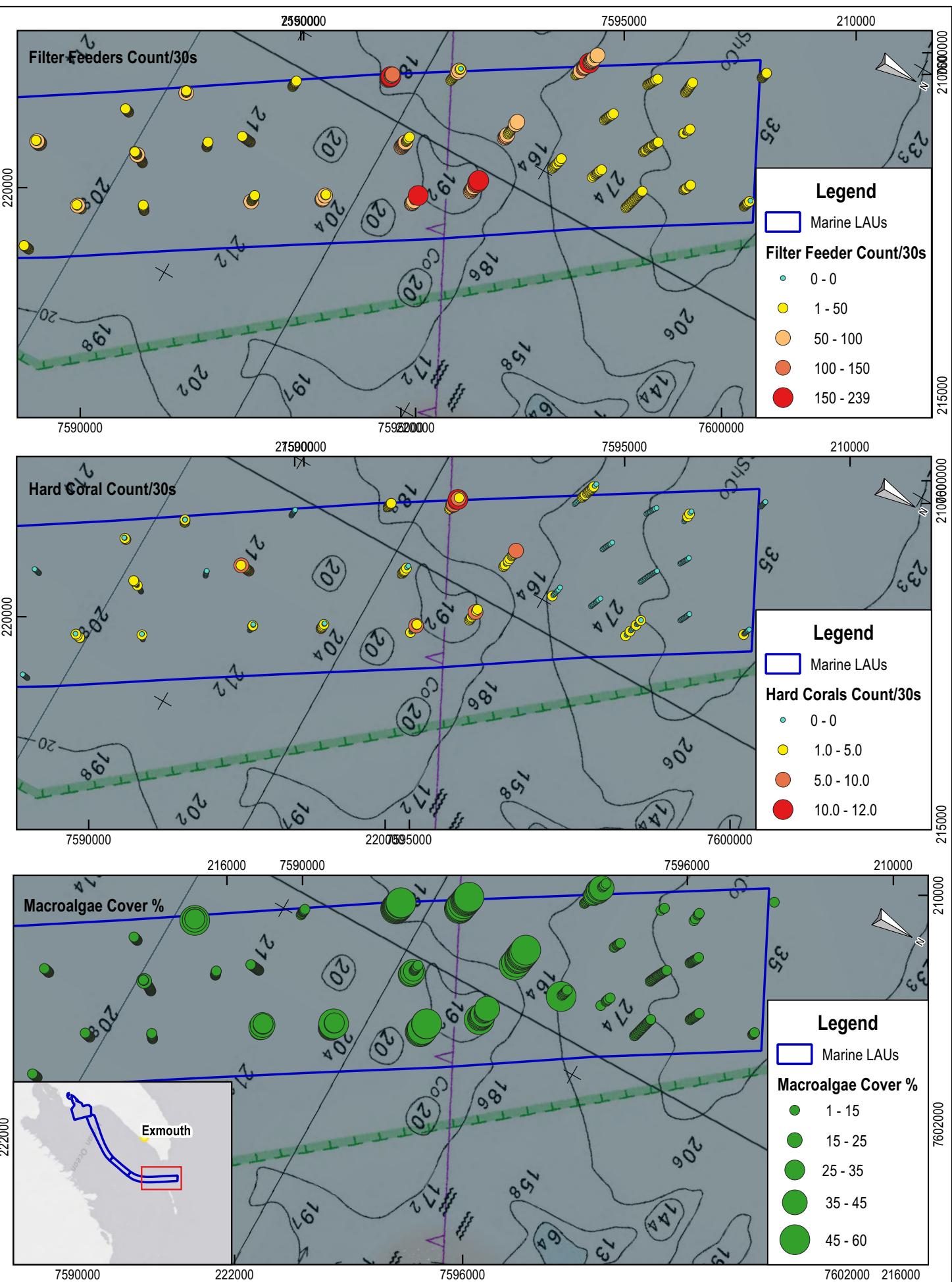
Table 2: Subtidal Habitats Identified in the Surface Tow LAU

BCH Type	Description	Photograph
Soft sediment	Mud and sand dominated habitats with bioturbation. Rare – Occasional occurrence of macroalgae and filter feeders.	
Pavement reef (little/no biota)	Gravelly hard bottom with rare occurrence of macroalgae and filter feeders	
Pavement reef with filter feeders	Gravelly hard bottom with the presence of filter feeders and patches of macroalgae with the rare hard coral.	
Pavement reef with macroalgae and filter feeders	Gravelly hard bottom with filter feeders, coral, and macroalgae.	



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## 5.3 BUNDLE PARKING AREA

The original Bundle ‘Laydown Area’ (Section 3.2) has been realigned since the previous survey (September 2017), therefore additional transects have been completed to characterise the new area of seafloor.

A total of nine transects were completed within the revised Bundle ‘Parking Area’ (Figure 2). Single filter feeders and corals were occasionally recorded.

Macroalgae cover was minimal throughout all nine transects, with most of the observed macroalgae likely drift and not attached to the seafloor.

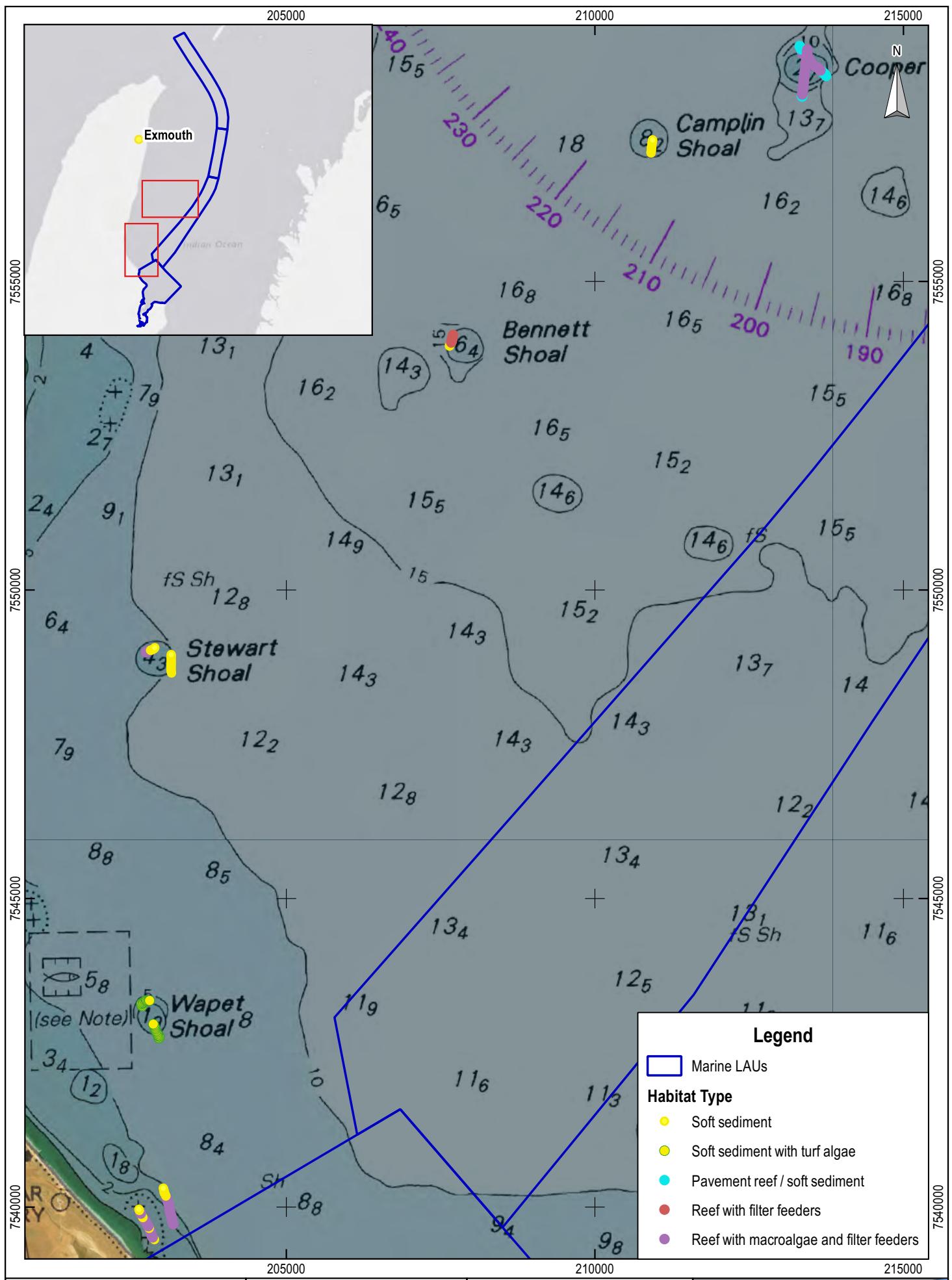
## 5.4 AREAS OF INTEREST OUTSIDE OF SURVEY AREA

Six areas of interest outside the LAUs were investigated to broadly categorise these areas. The areas selected were the nearshore reef to the north of Heron Point, and shoals within 10 km of the Bundle tow route. Two transects were completed in an attempt to broadly define the extent of the reef with macroalgae and filter feeder habitat to the north of Heron Point, and eight transects were undertaken across five shoals (Wapet, Stewart, Bennett, Camplin, and Cooper).

Wapet, Stewart, and Camplin Shoals were found to be the least diverse and lacked high abundance of filter feeders, macroalgae, and corals and were mainly soft sediment dominated (Figure 9). The lack of biota and macroalgae for these shoals is most likely a result of historical trawling (DPRID 2017). Habitat at Wapet shoal consisted of a veneer of filamentous turf algae that covered the seafloor. Filter feeders and corals were present throughout transects, however their abundance was low (rare to occasional). Stewart shoal had slightly greater numbers of filter feeders, and corals, however was still soft sediment dominated with a low abundance of biota and macroalgae when compared to the other shoals. Camplin Shoal was observed to be comprised of >95% unvegetated soft sediment; with filter feeders, macroalgae, and corals absent from transects.

Bennett Shoal was observed to be a low relief reef comprised of mainly filter feeders. Cooper Shoal was observed to be dominated by large brown macroalgae, small to large corals (mainly *Turbinaria* spp. and *Acropora* spp.), and a variety of filter feeders (Figure 9). Both shoals were in better condition than Wapet, Stewart, and Camplin hosting a variety of filter feeders and corals. The abundance of corals at Cooper Shoal was greater than all the other shoals with counts reaching over 50 in some 30 second sections of the transects (Figure 10, Figure 11, and Figure 12).

The two transects that were completed across the inshore reef north of Heron Point were between 15 – 20 minutes in length (c.600 – 800 m). Both transects were dominated by large brown macroalgae and abundant filter feeders and small hard corals (*Turbinaria* spp.). This reef continues northwards following depth contours. As the depth increases, the abundance of macroalgae, filter feeders, and hard corals seemed to decrease (Figure 9, Figure 10, Figure 11, and Figure 12).



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Commonwealth of Australia (2018)  
Grid: EPSG:28350  
0 0.5 1 1.5 2 km

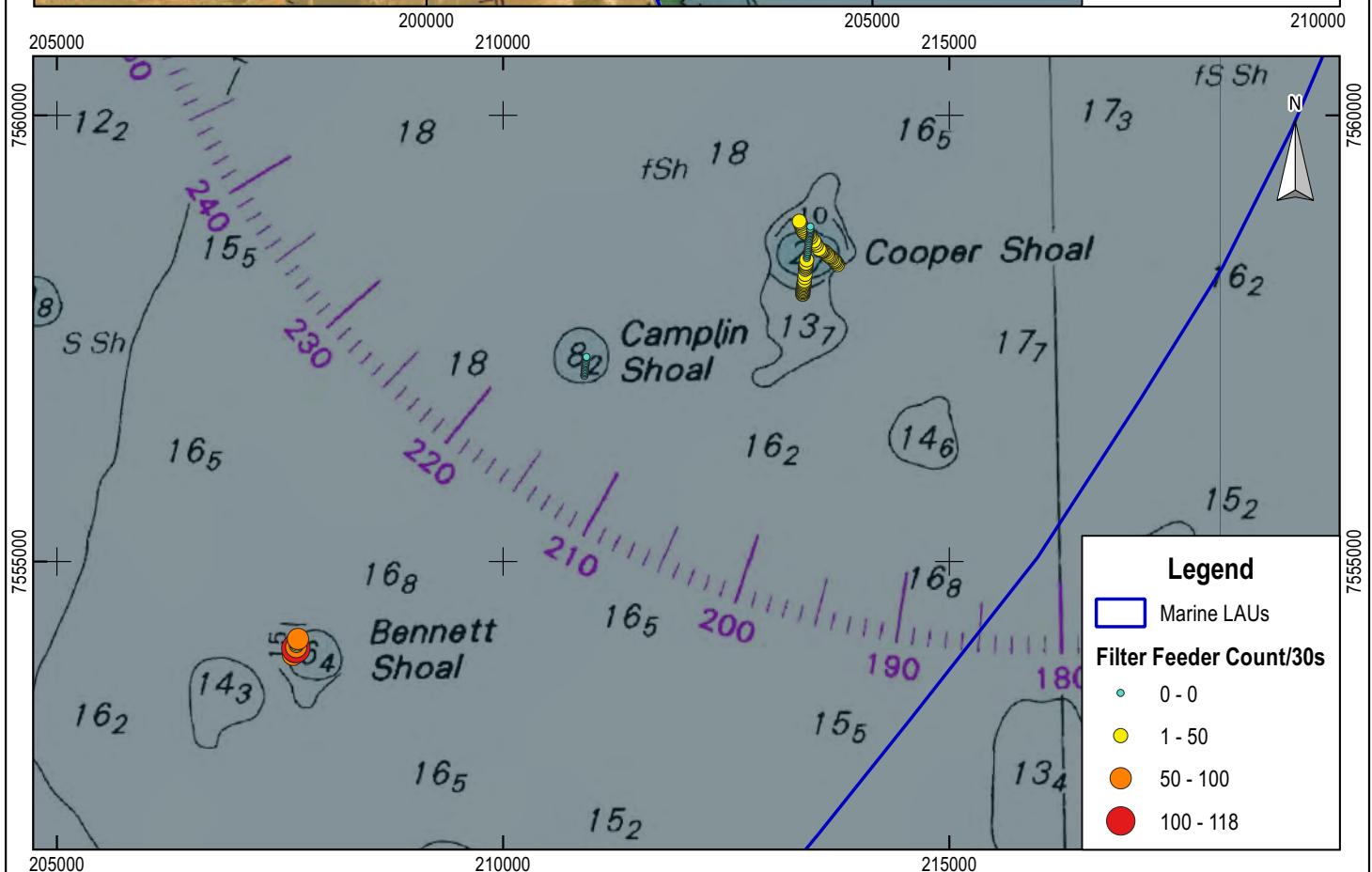
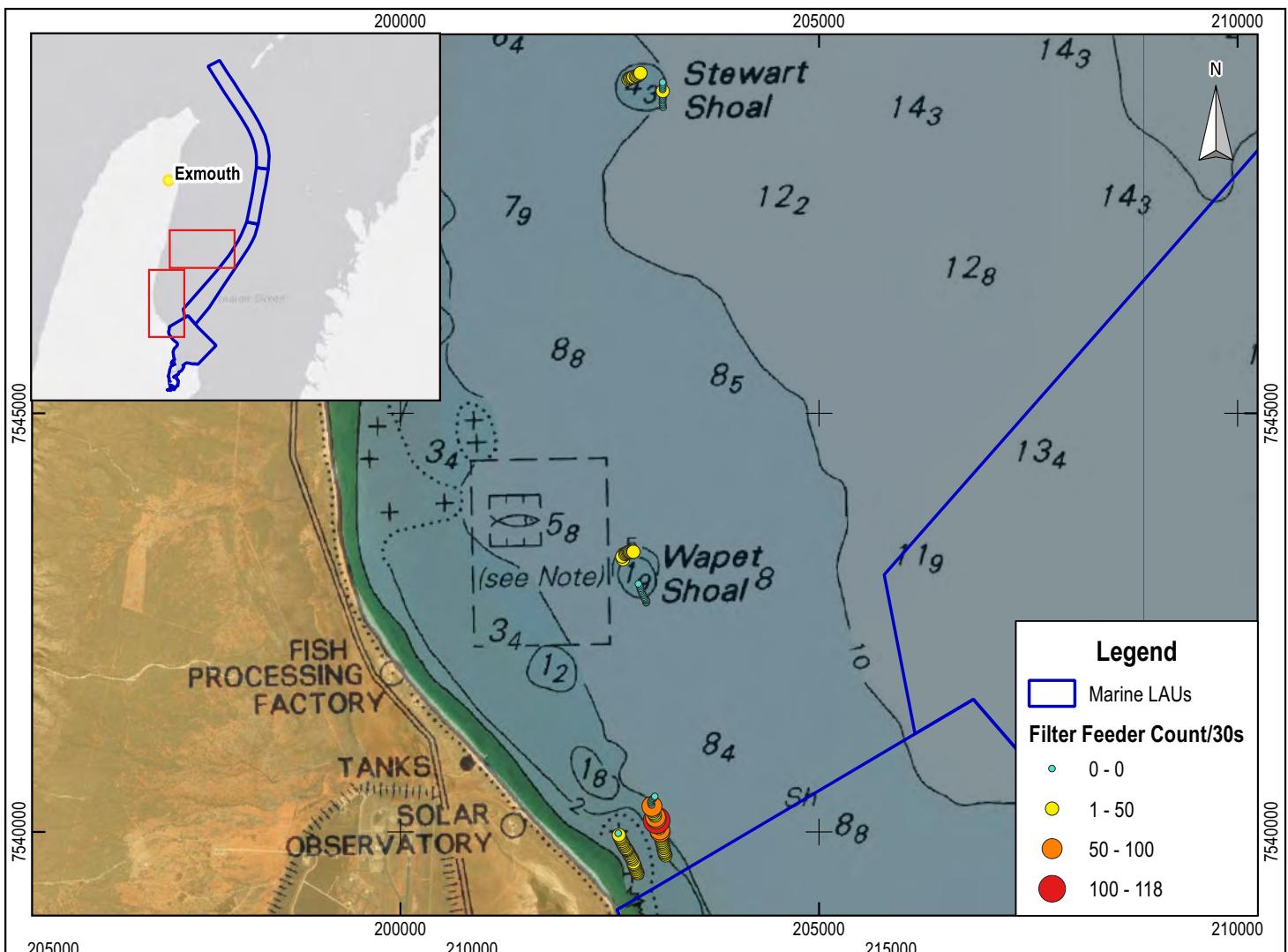
Subsea7  
Learmonth Pipeline  
Fabrication Facility

**Figure 9**

**Areas of Interest Habitat Type**

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Scale: 1:80000  
Original Size: A4  
Commonwealth of Australia (2018)  
Grid: EPSG:28350  
0 0.5 1 1.5 2 km

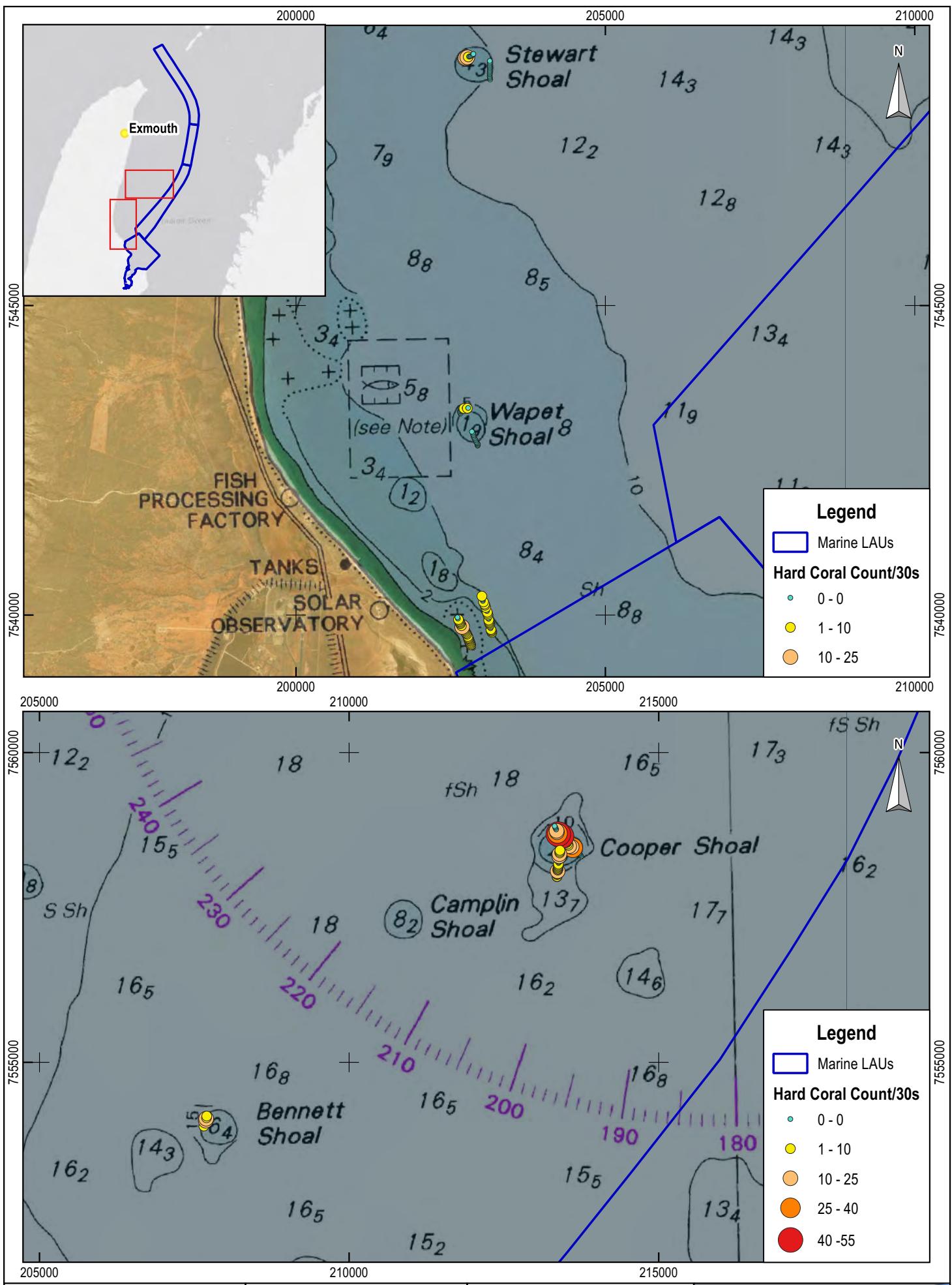
Subsea7  
Learmonth Pipeline  
Fabrication Facility

**Figure 10**

**Areas of Interest Filter Feeder Habitat Counts**

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Scale: 1:80000  
Original Size: A4  
Commonwealth of Australia (2018)  
Grid: EPSG:28350  
0 0.5 1 1.5 2 km

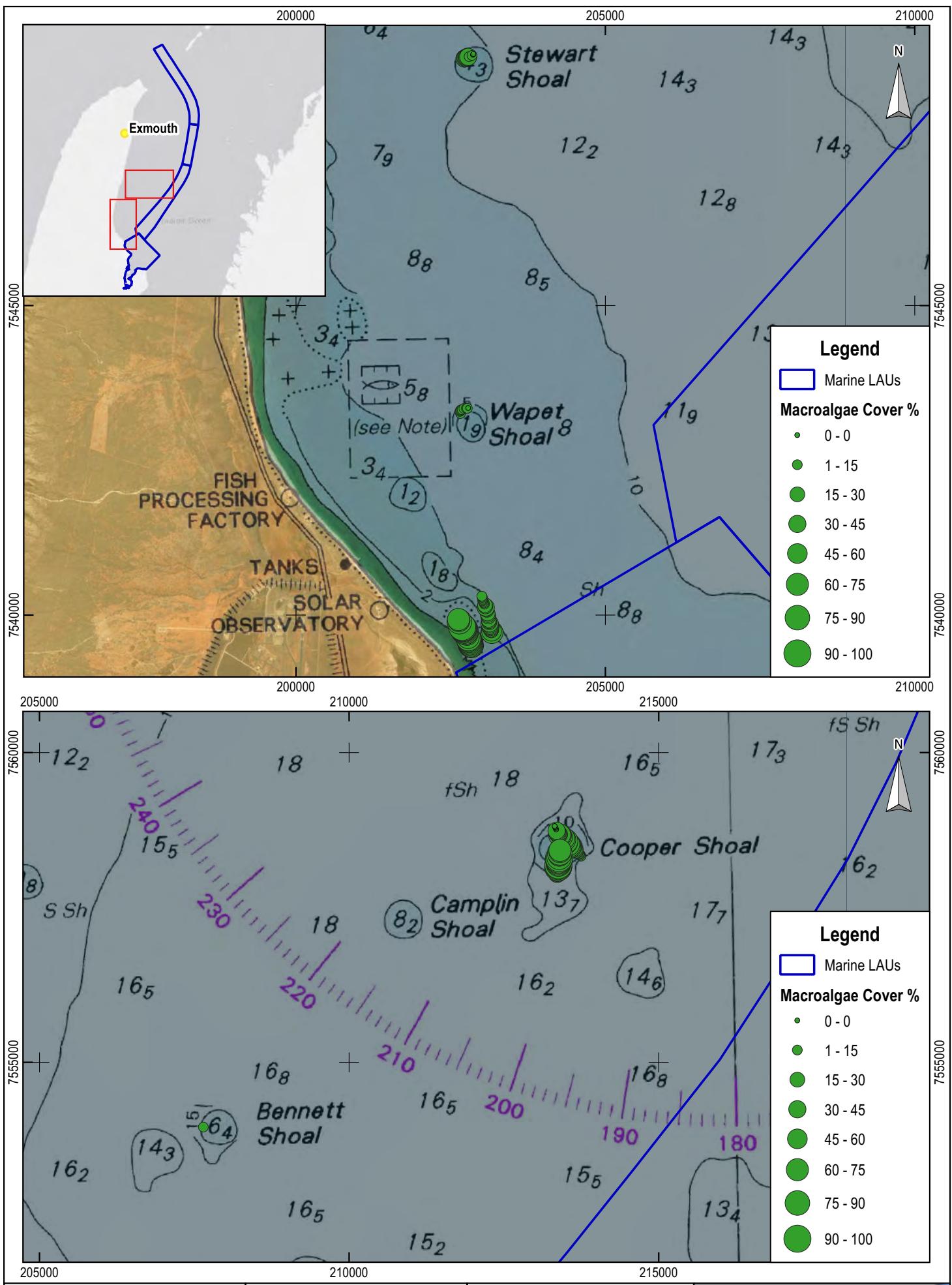
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Figure 11

Areas of Interest Hard Coral  
Habitat Counts

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Scale: 1:80000  
Original Size: A4  
Commonwealth of Australia (2018)  
Grid: EPSG:28350  
0 0.5 1 1.5 2 km

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Figure 12

Areas of Interest  
Macroalgae Cover

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## 6. HABITAT MAPPING

Based on the subtidal habitat recorded during the 2018 video transects, previous mapping conducted in 2017, and a review of aerial imagery; the habitat map presented in Figure 13 has been developed. Table 3 provides the extent of each BCH type over the four LAU's.

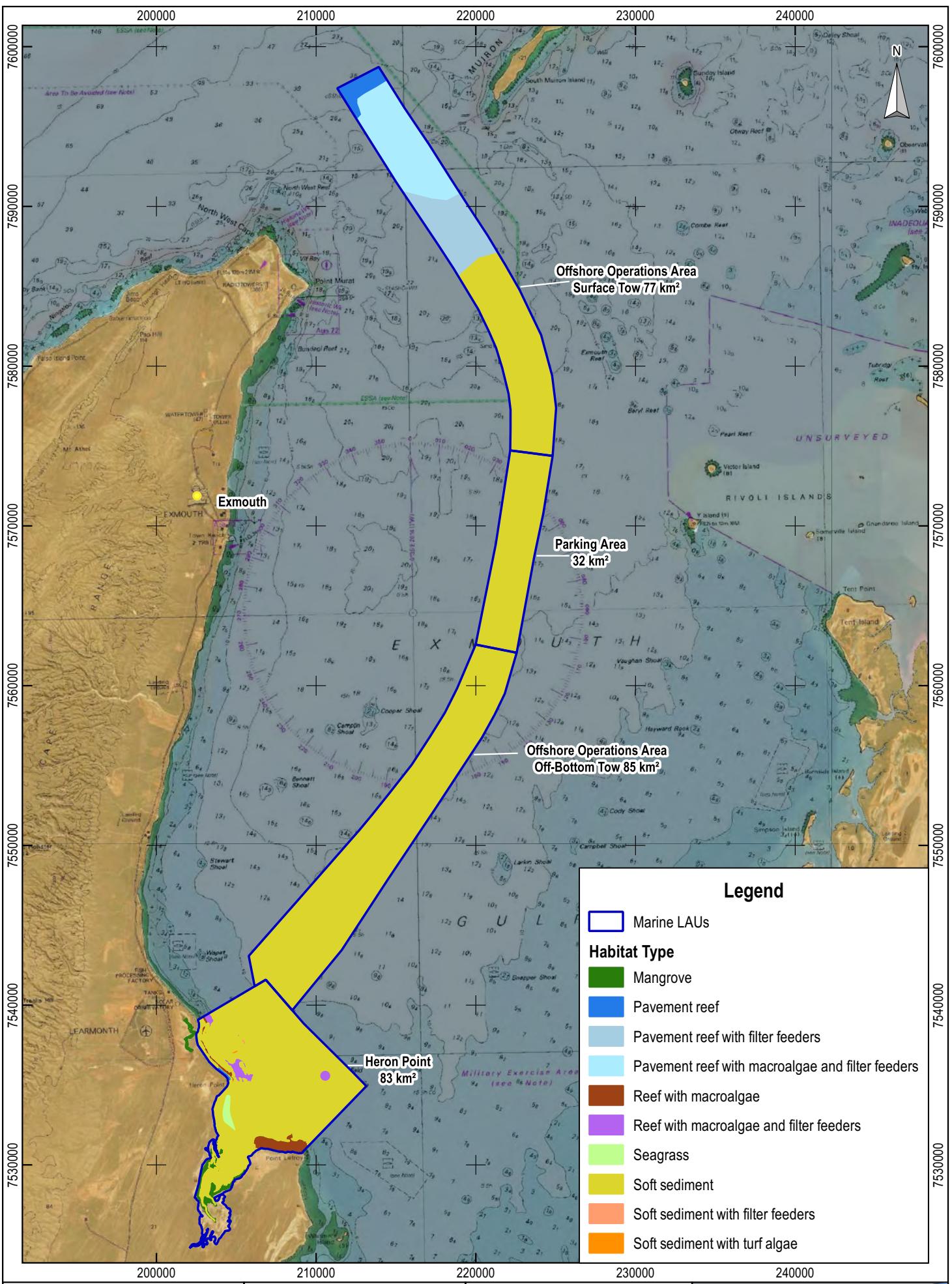
Table 3: Recorded BCH Types across all the LAUs

BCH Type	2018 Survey Area (ha)	2018 Survey Percent Cover (%)	Total Area (ha)	Total Extent (%)
Soft sediment	15,468.6	79.27	22,399.2	81.81
Soft sediment with filter feeder			6.8	0.02
Soft sediment with turf algae			6.3	0.02
Reef with macroalgae			347.8	1.27
Reef with macroalgae and filter feeders			206.5	0.75
Pavement Reef	389.9	2.00	393.0	1.44
Pavement reef with filter feeders	1,414.1	7.25	1,414.1	5.16
Pavement reef with macroalgae and filter feeders	2,239.8	11.48	2,239.8	8.18
Seagrass			109.7	0.40
Mangroves			261.3	0.95
<b>Total</b>	<b>19,512.40</b>	<b>100%</b>	<b>27,384.50</b>	<b>100%</b>

The principal BCH types within each LAU are provided in Table 4. The majority of each LAU was dominated by soft sediment with the exception of the Operations Area Surface Tow LAU where pavement reef was the dominant BCH type.

Table 4: Recorded Principle BCH Type Within each LAU

LAU	Heron Point		Operations Area Off-Bottom Tow		Parking Area		Operations Area Surface Tow	
BCH Type	Area (ha)	Percent Cover (%)	Area (ha)	Percent Cover (%)	Area (ha)	Percent Cover (%)	Area (ha)	Percent Cover (%)
Soft sediment	6,930.7	88.1	8,533.1	100.0	3,259.0	100	3,676.5	47.6
Soft sediment with filter feeder	6.8	0.1	0	0	0.0	0	0.0	0.0
Soft sediment with turf algae	6.3	0.1	0	0	0.0	0	0.0	0.0
Reef with macroalgae	347.8	4.4	0	0	0.0	0	0.0	0.0
Reef with macroalgae and filter feeders	206.5	2.6	0	0	0.0	0	0.0	0.0
Pavement Reef	3.1	0.0	0	0	0.0	0	389.9	5.1
Pavement reef with filter feeders	0.0	0.0	0	0	0.0	0	1,414.1	18.3
Pavement reef with macroalgae and filter feeders	0.0	0.0	0	0	0.0	0	2,239.8	29.0
Seagrass	109.7	1.4	0	0	0.0	0	0.0	0.0
Mangroves	261.3	3.3	0	0	0.0	0	0.0	0.0
Total	7,872.2	100.0	8,533.1	100.0	3,259.0	100	7,720.3	100



Scale: 1:310000  
Original Size: A4  
Commonwealth of Australia (2018)  
Grid: EPSG:28350

0 2 4 6 8 km

Subsea 7  
Learmonth Pipeline  
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Figure 13

Habitat Map

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## 7. DISCUSSION

The September 2018 survey covered the proposed offshore operations area and augmented the three previous surveys which covered the Heron Point LAU and the original Bundle laydown area.

The 2018 survey was undertaken over five days (19 – 23 September 2018), with a total of 114 video transects completed over the LAUs and areas of interest (10 transects). A total of four BCH types were recorded within the LAUs (excluding the Heron Point LAU):

- Soft sediment.
- Pavement reef (little/no biota).
- Pavement reef with filter feeders.
- Pavement reef with macroalgae and filter feeders.

Unvegetated soft sediment was the dominant habitat throughout the three offshore LAUs making up 79% (15,469 ha) of the total habitat mapped during the 2018 survey. The soft sediment habitat extended up to the Ningaloo Marine Park boundary through the Operations Area Off-Bottom Tow, Bundle Parking Area, and part of the Operations Area Surface Tow LAUs.

The dominant substrate type within the Surface Tow LAU was pavement reef, covering 52% (4,084 ha). The pavement reef substrate supported three BCH types:

- Pavement reef (little/no biota) (e.g. sites HA185, HA190, and HA192) that was observed to have an absence of filter feeders, hard corals, and macroalgae. The substrate was variable with bare pavement reef to a transition substrate of pavement reef/soft sediment. The occasional hydroid was present through each transect.
- Pavement reef with filter feeders habitat, with the filter feeders mainly comprised of ascidians.
- Pavement reef with filter feeders and macroalgae habitat that exhibited filter feeders (ascidians, sponges, and soft corals), large patches of small to medium sized macroalgae, and with some sporadic patches of corals.

The inshore reef to the north of Heron Point extended northwards and was representative of the habitat surveyed previously within the Heron Point LAU. Of the five shoals surveyed, Cooper Shoal was the least degraded and had the highest abundance of corals (*Turbinaria* spp. and *Acropora* spp.).

Unvegetated soft sediment was the dominant BCH type recorded throughout the offshore LAUs (excluding Heron Point LAU), covering 82% of the surveyed areas.

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## APPENDICES

## APPENDIX 1: TOWED VIDEO TRANSECT CLASSIFICATIONS

Transect	Date	Time	X	Y	Depth (m)	Substrate	Macroalgae (%)	Filter Feeders (count/30s)	Corals (count/30s)	Notes
HA77	19/09/2018	12:34:03 PM	223633	7574034	20	Soft sediment	0	0	0	
HA77	19/09/2018	12:34:33 PM	223634	7574039	20	Soft sediment	0	0	0	
HA77	19/09/2018	12:35:03 PM	223635	7574044	20	Soft sediment	0	0	0	
HA77	19/09/2018	12:35:33 PM	223634	7574047	20	Soft sediment	0	0	0	
HA77	19/09/2018	12:36:03 PM	223635	7574049	20	Soft sediment	0	0	0	
HA77	19/09/2018	12:36:33 PM	223637	7574057	20	Soft sediment	0	0	0	
HA77	19/09/2018	12:37:03 PM	223639	7574064	20	Soft sediment	0	0	0	
HA77	19/09/2018	12:37:33 PM	223640	7574066	20	Soft sediment	0	0	0	
HA77	19/09/2018	12:38:03 PM	223641	7574068	20	Soft sediment	0	0	0	
HA77	19/09/2018	12:38:33 PM	223645	7574078	20	Soft sediment	0	0	0	
HA77	19/09/2018	12:39:00 PM	223650	7574098	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:49:03 PM	224371	7573687	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:49:33 PM	224374	7573692	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:50:03 PM	224374	7573694	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:50:33 PM	224380	7573704	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:51:03 PM	224382	7573709	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:51:33 PM	224383	7573710	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:52:03 PM	224385	7573712	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:52:33 PM	224387	7573715	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:53:03 PM	224392	7573724	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:53:33 PM	224393	7573727	20	Soft sediment	0	0	0	
HA78	19/09/2018	12:54:00 PM	224396	7573732	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:08:03 PM	222209	7573736	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:08:33 PM	222207	7573391	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:09:03 PM	222215	7573395	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:09:33 PM	222219	7573403	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:10:03 PM	222220	7573409	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:10:33 PM	222224	7573421	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:11:03 PM	222227	7573433	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:11:33 PM	222231	7573446	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:12:03 PM	222236	7573456	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:12:33 PM	222238	7573458	20	Soft sediment	0	0	0	
HA75	19/09/2018	1:13:00 PM	222241	7573461	20	Soft sediment	0	0	0	
HA74	19/09/2018	1:24:03 PM	223340	7573422	20	Soft sediment	0	1	0	
HA74	19/09/2018	1:24:33 PM	223343	7573426	20	Soft sediment	0	1	0	
HA74	19/09/2018	1:25:03 PM	223350	7573439	20	Soft sediment	0	0	0	
HA74	19/09/2018	1:25:33 PM	223356	7573450	20	Soft sediment	0	3	0	
HA74	19/09/2018	1:26:03 PM	223362	7573459	20	Soft sediment	0	1	0	
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HA74	19/09/2018	1:27:03 PM	223374	7573478	20	Soft sediment	0	0	0	
HA74	19/09/2018	1:27:33 PM	223378	7573490	20	Soft sediment	0	0	0	
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HA74	19/09/2018	1:29:00 PM	223404	7573531	20	Soft sediment	0	0	0	
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HA71	19/09/2018	2:06:03 PM	221679	7570885	19	Soft sediment	0	2	0	
HA71	19/09/2018	2:06:33 PM	221683	7570897	19	Soft sediment	0	2	0	
HA71	19/09/2018	2:07:03 PM	221689	7570910	19	Soft sediment	0	0	0	
HA71	19/09/2018	2:07:33 PM	221695	7570923	19	Soft sediment	0	2	0	
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HA68	19/09/2018	2:24:03 PM	223489	7567501	18	Soft sediment	0	0	0	
HA68	19/09/2018	2:24:33 PM	223495	7567512	18	Soft sediment	0	1	0	
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HA68	19/09/2018	2:25:33 PM	223502	7567531	18	Soft sediment	0	0	0	
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HA57	19/09/2018	3:20:03 PM	222036	7561013	15	Soft sediment	0	0	0
HA57	19/09/2018	3:20:33 PM	222045	7561022	15	Soft sediment	0	4	0
HA57	19/09/2018	3:21:03 PM	222054	7561031	15	Soft sediment	0	0	0
HA57	19/09/2018	3:21:33 PM	222066	7561042	15	Soft sediment	0	0	0
HA57	19/09/2018	3:22:03 PM	222076	7561048	15	Soft sediment	0	0	0
HA57	19/09/2018	3:22:33 PM	222086	7561057	15	Soft sediment	0	0	0
HA57	19/09/2018	3:23:03 PM	222097	7561069	15	Soft sediment	0	0	0
HA57	19/09/2018	3:23:33 PM	222108	7561079	15	Soft sediment	0	0	0
HA57	19/09/2018	3:24:03 PM	222120	7561088	15	Soft sediment	0	0	0
HA57	19/09/2018	3:24:33 PM	222131	7561099	15	Soft sediment	0	0	0
HA57	19/09/2018	3:25:00 PM	222141	7561107	15	Soft sediment	0	0	0
HA55	19/09/2018	3:33:03 PM	222121	7560617	15	Soft sediment	0	0	0
HA55	19/09/2018	3:33:33 PM	222133	7560629	15	Soft sediment	0	0	0
HA55	19/09/2018	3:34:03 PM	222141	7560639	15	Soft sediment	0	0	0
HA55	19/09/2018	3:34:33 PM	222149	7560647	15	Soft sediment	0	1	0
HA55	19/09/2018	3:35:03 PM	222157	7560657	15	Soft sediment	0	0	0
HA55	19/09/2018	3:35:33 PM	222166	7560666	15	Soft sediment	0	0	0
HA55	19/09/2018	3:36:03 PM	222175	7560675	15	Soft sediment	0	0	0
HA55	19/09/2018	3:36:33 PM	222184	7560685	15	Soft sediment	0	0	0
HA55	19/09/2018	3:37:03 PM	222191	7560694	15	Soft sediment	0	0	0
HA55	19/09/2018	3:37:33 PM	2221300	7560702	15	Soft sediment	0	0	0
HA55	19/09/2018	3:38:00 PM	2221322	7560719	15	Soft sediment	0	0	0
HA48	19/09/2018	3:47:03 PM	2221335	7558961	15	Soft sediment	0	0	0
HA48	19/09/2018	3:47:33 PM	2221342	7558970	15	Soft sediment	0	0	0
HA48	19/09/2018	3:48:03 PM	2221352	7558977	15	Soft sediment	0	0	0
HA48	19/09/2018	3:48:33 PM	2221358	7558982	15	Soft sediment	0	1	0
HA48	19/09/2018	3:49:03 PM	2221365	7558987	15	Soft sediment	0	0	0
HA48	19/09/2018	3:49:33 PM	2221377	7558997	15	Soft sediment	0	1	0
HA48	19/09/2018	3:50:03 PM	2221386	7559010	15	Soft sediment	0	0	0
HA48	19/09/2018	3:50:33 PM	2221396	7559023	15	Soft sediment	0	0	0
HA48	19/09/2018	3:51:03 PM	2221404	7559032	15	Soft sediment	0	0	0
HA48	19/09/2018	3:51:33 PM	2221414	7559044	15	Soft sediment	0	0	0
HA48	19/09/2018	3:52:00 PM	2221428	7559062	15	Soft sediment	0	0	0
HA46	19/09/2018	4:00:03 PM	2220168	7558476	16	Soft sediment	0	0	0
HA46	19/09/2018	4:00:33 PM	220183	7558484	16	Soft sediment	0	0	0
HA46	19/09/2018	4:01:03 PM	220196	7558491	16	Soft sediment	0	0	0
HA46	19/09/2018	4:01:33 PM	220208	7558500	16	Soft sediment	0	0	0
HA46	19/09/2018	4:02:03 PM	220222	7558508	16	Soft sediment	0	0	0
HA46	19/09/2018	4:02:33 PM	220233	7558516	16	Soft sediment	0	0	0
HA46	19/09/2018	4:03:03 PM	220244	7558523	16	Soft sediment	0	0	0
HA46	19/09/2018	4:03:33 PM	220254	7558531	16	Soft sediment	0	0	0
HA46	19/09/2018	4:04:03 PM	220263	7558536	16	Soft sediment	0	0	0
HA46	19/09/2018	4:04:33 PM	220273	7558544	16	Soft sediment	0	0	0
HA46	19/09/2018	4:05:00 PM	220297	7558563	16	Soft sediment	0	0	0
HA52	19/09/2018	4:15:03 PM	218832	7559554	17	Soft sediment	0	0	0
HA52	19/09/2018	4:15:33 PM	218837	7559555	17	Soft sediment	0	0	0
HA52	19/09/2018	4:16:03 PM	218849	7559562	17	Soft sediment	0	0	0
HA52	19/09/2018	4:16:33 PM	218863	7559570	17	Soft sediment	0	0	0
HA52	19/09/2018	4:17:03 PM	218876	7559577	17	Soft sediment	0	0	0
HA52	19/09/2018	4:17:33 PM	218885	7559583	17	Soft sediment	0	0	0
HA52	19/09/2018	4:18:03 PM	218895	7559590	17	Soft sediment	0	0	0
HA52	19/09/2018	4:18:33 PM	218906	7559598	17	Soft sediment	0	0	0
HA52	19/09/2018	4:19:03 PM	218917	7559606	17	Soft sediment	0	0	0
HA52	19/09/2018	4:19:33 PM	218928	7559614	17	Soft sediment	0	0	0
HA52	19/09/2018	4:20:00 PM	218944	7559628	17	Soft sediment	0	0	0
HA50	19/09/2018	4:28:03 PM	220177	7559938	17	Soft sediment	0	0	0
HA50	19/09/2018	4:28:33 PM	220179	7559938	17	Soft sediment	0	0	0
HA50	19/09/2018	4:29:03 PM	220191	7559942	17	Soft sediment	0	0	0
HA50	19/09/2018	4:29:33 PM	220198	7559952	17	Soft sediment	0	0	0
HA50	19/09/2018	4:30:03 PM	220210	7559966	17	Soft sediment	0	0	0
HA50	19/09/2018	4:30:33 PM	220221	7559976	17	Soft sediment	0	0	0
HA50	19/09/2018	4:31:03 PM	220231	7559986	17	Soft sediment	0	0	0
HA50	19/09/2018	4:31:33 PM	220239	7559994	17	Soft sediment	0	0	0
HA50	19/09/2018	4:32:03 PM	220245	7560007	17	Soft sediment	0	0	0
HA50	19/09/2018	4:32:33 PM	220250	7560017	17	Soft sediment	0	0	0
HA50	19/09/2018	4:33:00 PM	220257	7560033	17	Soft sediment	0	0	0
HA53	19/09/2018	4:43:03 PM	219713	7560997	17	Soft sediment	0	0	0
HA53	19/09/2018	4:43:33 PM	219715	7560999	17	Soft sediment	0	0	0
HA53	19/09/2018	4:44:03 PM	219720	7561007	17	Soft sediment	0	0	0
HA53	19/09/2018	4:44:33 PM	219726	7561017	17	Soft sediment	0	0	0
HA53	19/09/2018	4:45:03 PM	219729	7561033	17	Soft sediment	0	0	0
HA53	19/09/2018	4:45:33 PM	219729	7561037	17	Soft sediment	0	0	0
HA53	19/09/2018	4:46:03 PM	219729	7561037	17	Soft sediment	0	0	0
HA53	19/09/2018	4:46:33 PM	219732	7561039	17	Soft sediment	0	0	0
HA53	19/09/2018	4:47:03 PM	219744	7561055	17	Soft sediment	0	0	0
HA53	19/09/2018	4:47:33 PM	219750	7561063	17	Soft sediment	0	0	0
HA53	19/09/2018	4:48:00 PM	219758	7561084	17	Soft sediment	0	0	0
HA59	19/09/2018	4:54:03 PM	220149	7561789	18	Soft sediment	0	0	0
HA59	19/09/2018	4:54:33 PM	220151	7561789	18	Soft sediment	0	0	0
HA59	19/09/2018	4:55:03 PM	220165	7561794	18	Soft sediment	0	0	0
HA59	19/09/2018	4:55:33 PM	220175	7561807	18	Soft sediment	0	0	0
HA59	19/09/2018	4:56:03 PM	220183	7561816	18	Soft sediment	0	0	0
HA59	19/09/2018	4:56:33 PM	220191	7561827	18	Soft sediment	0	0	0
HA59	19/09/2018	4:57:03 PM	220199	7561837	18	Soft sediment	0	0	0
HA59	19/09/2018	4:57:33 PM	220207	7561849	18	Soft sediment	0	0	0
HA59	19/09/2018	4:58:03 PM	220215	7561859	18	Soft sediment	0	0	0
HA59	19/09/2018	4:58:33 PM	220223	7561870	18	Soft sediment	0	0	0
HA59	19/09/2018	4:59:00 PM	220238	7561899	18	Soft sediment	0	0	0
HA190	20/09/2018	7:42:50 AM	211585	7597574	39	Pavement reef / soft sediment	0	3	0
HA190	20/09/2018	7:43:20 AM	211571	7597577	39	Pavement reef / soft sediment	0	5	0
HA190	20/09/2018	7:43:50 AM	211558	7597581	39	Pavement reef / soft sediment	0	14	0
HA190	20/09/2018	7:44:20 AM	211543	7597584	39	Pavement reef / soft sediment	0	4	0
HA190	20/09/2018	7:44:50 AM	211530	7597587	39	Pavement reef / soft sediment	0	4	0
HA190	20/09/2018	7:45:20 AM	211515	7597590	39	Pavement reef / soft sediment	0	11	0

Patches of Hydroids throughout.  
Patches of Hydroids throughout.

HA190	20/09/2018	7:45:50 AM	211501	7597594	39	Pavement reef / soft sediment	0	8	0	Patches of Hydroids throughout.
HA190	20/09/2018	7:46:20 AM	211490	7597598	39	Pavement reef / soft sediment	0	9	0	Patches of Hydroids throughout.
HA190	20/09/2018	7:46:50 AM	211476	7597603	39	Pavement reef / soft sediment	0	16	0	Patches of Hydroids throughout.
HA190	20/09/2018	7:47:00 AM	211470	7597605	39	Pavement reef / soft sediment	0	15	0	Patches of Hydroids throughout.
HA192	20/09/2018	8:00:50 AM	213749	7598451	35	Pavement reef / soft sediment	0	10	0	
HA192	20/09/2018	8:01:20 AM	213733	7598456	35	Pavement reef / soft sediment	0	11	2	
HA192	20/09/2018	8:01:50 AM	213716	7598459	35	Pavement reef / soft sediment	0	23	0	
HA192	20/09/2018	8:02:20 AM	213701	7598464	35	Pavement reef / soft sediment	0	2	0	
HA192	20/09/2018	8:02:50 AM	213688	7598471	35	Pavement reef / soft sediment	0	1	0	
HA192	20/09/2018	8:03:20 AM	213672	7598476	35	Pavement reef / soft sediment	0	1	0	
HA192	20/09/2018	8:03:50 AM	213655	7598481	35	Soft Sediment	0	1	0	
HA192	20/09/2018	8:04:20 AM	213641	7598488	35	Soft Sediment	0	0	0	
HA192	20/09/2018	8:04:50 AM	213625	7598492	35	Soft Sediment	0	19	0	
HA192	20/09/2018	8:05:00 AM	213604	7598500	35	Soft Sediment	0	0	0	
HA187	20/09/2018	8:14:50 AM	214083	7597342	33	Pavement reef	0	0	0	
HA187	20/09/2018	8:15:20 AM	214066	7597352	33	Pavement reef	0	0	0	
HA187	20/09/2018	8:15:50 AM	214048	7597358	33	Pavement reef	0	0	0	
HA187	20/09/2018	8:16:20 AM	214033	7597365	33	Pavement reef	0	1	0	
HA187	20/09/2018	8:16:50 AM	214017	7597375	33	Pavement reef	0	1	0	
HA187	20/09/2018	8:17:20 AM	214001	7597385	33	Pavement reef	0	3	0	
HA187	20/09/2018	8:17:50 AM	213985	7597392	33	Pavement reef	0	2	0	
HA187	20/09/2018	8:18:20 AM	213967	7597399	33	Pavement reef	0	0	0	
HA187	20/09/2018	8:18:50 AM	213950	7597405	33	Pavement reef	0	0	0	
HA187	20/09/2018	8:19:20 AM	213932	7597413	33	Pavement reef	0	1	0	
HA187	20/09/2018	8:19:50 AM	213915	7597420	33	Pavement reef	0	1	0	
HA187	20/09/2018	8:20:00 AM	213901	7597427	33	Pavement reef	0	2	0	
HA186	20/09/2018	8:28:20 AM	213197	7596830	33	Pavement reef	0	0	0	Sea urchins along bottom
HA186	20/09/2018	8:28:50 AM	213179	7596838	33	Pavement reef	0	0	0	
HA186	20/09/2018	8:29:20 AM	213164	7596849	33	Pavement reef	0	1	0	
HA186	20/09/2018	8:29:50 AM	213148	7596857	33	Pavement reef	0	1	0	
HA186	20/09/2018	8:30:20 AM	213132	7596865	33	Pavement reef	0	0	0	
HA186	20/09/2018	8:30:50 AM	213117	7596873	33	Pavement reef	0	0	0	
HA186	20/09/2018	8:31:20 AM	213102	7596882	33	Pavement reef	0	0	0	
HA186	20/09/2018	8:31:50 AM	213087	7596891	33	Pavement reef	0	0	0	
HA186	20/09/2018	8:32:20 AM	213074	7596902	33	Pavement reef	0	3	0	
HA186	20/09/2018	8:32:50 AM	213056	7596908	33	Pavement reef	0	3	0	
HA186	20/09/2018	8:33:00 AM	213033	7596916	33	Pavement reef	0	1	0	
HA184	20/09/2018	8:42:20 AM	212725	7595855	30	Pavement reef	0	1	0	
HA184	20/09/2018	8:42:50 AM	212707	7595865	30	Pavement reef	0	5	0	
HA184	20/09/2018	8:43:20 AM	212688	7595873	30	Pavement reef	0	8	0	
HA184	20/09/2018	8:43:50 AM	212673	7595884	30	Pavement reef	0	1	0	
HA184	20/09/2018	8:44:20 AM	212658	7595893	30	Pavement reef	0	8	0	
HA184	20/09/2018	8:44:50 AM	212640	7595902	30	Pavement reef	0	6	0	
HA184	20/09/2018	8:45:20 AM	212621	7595912	30	Pavement reef	0	3	0	
HA184	20/09/2018	8:45:50 AM	212605	7595919	30	Pavement reef	0	4	0	
HA184	20/09/2018	8:46:20 AM	212588	7595931	30	Pavement reef	0	7	0	
HA184	20/09/2018	8:46:50 AM	212572	7595940	30	Pavement reef	0	3	0	
HA184	20/09/2018	8:47:00 AM	212544	7595960	30	Pavement reef	0	2	0	
HA183	20/09/2018	8:58:50 AM	213842	7596375	30	Pavement reef	0	0	0	
HA183	20/09/2018	8:59:20 AM	213824	7596382	30	Pavement reef	0	0	0	
HA183	20/09/2018	8:59:50 AM	213806	7596390	30	Pavement reef	0	3	0	
HA183	20/09/2018	9:00:20 AM	213788	7596398	30	Pavement reef	0	3	0	
HA183	20/09/2018	9:00:50 AM	213769	7596407	30	Pavement reef	0	3	0	
HA183	20/09/2018	9:01:20 AM	213751	7596414	30	Pavement reef	0	3	0	
HA183	20/09/2018	9:01:50 AM	213733	7596423	30	Pavement reef	0	0	0	
HA183	20/09/2018	9:02:20 AM	213714	7596430	30	Pavement reef	0	2	0	
HA183	20/09/2018	9:02:50 AM	213697	7596439	30	Pavement reef	0	2	0	
HA183	20/09/2018	9:03:20 AM	213680	7596445	30	Pavement reef	0	1	0	
HA183	20/09/2018	9:03:50 AM	213665	7596455	30	Pavement reef	0	4	0	
HA183	20/09/2018	9:04:20 AM	213648	7596466	30	Pavement reef	0	1	0	
HA183	20/09/2018	9:04:50 AM	213631	7596475	30	Pavement reef	0	3	0	
HA183	20/09/2018	9:05:20 AM	213612	7596484	30	Pavement reef	0	0	0	
HA183	20/09/2018	9:05:50 AM	213596	7596491	30	Pavement reef	0	4	0	
HA183	20/09/2018	9:06:20 AM	213581	7596500	30	Pavement reef	0	2	0	
HA183	20/09/2018	9:06:50 AM	213565	7596510	30	Pavement reef	0	3	0	
HA183	20/09/2018	9:07:20 AM	213550	7596520	30	Pavement reef	0	2	0	
HA183	20/09/2018	9:07:50 AM	213533	7596530	30	Pavement reef	0	1	0	
HA183	20/09/2018	9:08:00 AM	213521	7596536	30	Pavement reef	0	4	0	
HA182	20/09/2018	9:22:20 AM	214834	7596621	29	Pavement reef	0	4	0	
HA182	20/09/2018	9:22:50 AM	214814	7596628	29	Pavement reef	0	15	1	
HA182	20/09/2018	9:23:20 AM	214791	7596633	29	Pavement reef	0	6	0	
HA182	20/09/2018	9:23:50 AM	214769	7596639	29	Pavement reef	0	2	0	
HA182	20/09/2018	9:24:20 AM	214748	7596645	29	Pavement reef	0	4	0	
HA182	20/09/2018	9:24:50 AM	214726	7596651	29	Pavement reef	0	6	0	
HA182	20/09/2018	9:25:20 AM	214704	7596656	29	Pavement reef	0	7	3	
HA182	20/09/2018	9:25:50 AM	214683	7596661	29	Pavement reef	0	4	0	
HA182	20/09/2018	9:26:20 AM	214662	7596667	29	Pavement reef	0	7	0	
HA182	20/09/2018	9:26:50 AM	214640	7596673	29	Pavement reef	0	8	0	
HA182	20/09/2018	9:27:20 AM	214621	7596678	29	Pavement reef	0	6	0	
HA182	20/09/2018	9:27:50 AM	214597	7596682	29	Pavement reef	0	6	0	
HA182	20/09/2018	9:28:20 AM	214577	7596689	29	Pavement reef	0	3	0	
HA182	20/09/2018	9:28:50 AM	214555	7596696	29	Pavement reef	0	8	2	
HA182	20/09/2018	9:29:20 AM	214535	7596700	29	Pavement reef	0	3	0	
HA182	20/09/2018	9:29:50 AM	214515	7596704	29	Pavement reef	0	6	0	
HA182	20/09/2018	9:30:20 AM	214496	7596710	29	Pavement reef	0	4	0	
HA182	20/09/2018	9:30:50 AM	214475	7596715	29	Pavement reef	0	2	0	
HA182	20/09/2018	9:31:20 AM	214456	7596723	29	Pavement reef	0	5	0	
HA182	20/09/2018	9:31:50 AM	214438	7596727	29	Pavement reef	0	13	1	
HA182	20/09/2018	9:32:00 AM	214431	7596727	29	Pavement reef	0	7	0	
HA181	20/09/2018	9:41:20 AM	214664	7595822	25	Pavement reef	0	5	0	
HA181	20/09/2018	9:41:50 AM	214645	7595829	25	Pavement reef	0	0	0	
HA181	20/09/2018	9:42:20 AM	214628	7595834	25	Pavement reef	0	15	0	
HA181	20/09/2018	9:42:50 AM	214611	7595841	25	Pavement reef	0	0	0	
HA181	20/09/2018	9:43:20 AM	214590	7595850	25	Pavement reef	0	2	0	
HA181	20/09/2018	9:43:50 AM	214571	7595859	25	Pavement reef	0	2	0	
HA181	20/09/2018	9:44:20 AM	214553	7595865	25	Pavement reef	0	4	0	
HA181	20/09/2018	9:44:50 AM	214535	7595871	25	Pavement reef	0	1	0	
HA181	20/09/2018	9:45:20 AM	214516	7595877	25	Pavement reef	0	4	0	

HA181	20/09/2018	9:45:50 AM	214498	7595881	25	Pavement reef	0	1	0
HA181	20/09/2018	9:46:00 AM	214461	7595901	25	Pavement reef	0	2	0
HA180	20/09/2018	9:53:20 AM	213678	7595491	26	Pavement reef	0	0	0
HA180	20/09/2018	9:53:50 AM	213659	7595497	26	Pavement reef	0	1	0
HA180	20/09/2018	9:54:20 AM	213638	7595507	26	Pavement reef	0	4	0
HA180	20/09/2018	9:54:50 AM	213618	7595515	26	Pavement reef	0	2	0
HA180	20/09/2018	9:55:20 AM	213601	7595522	26	Pavement reef	0	2	0
HA180	20/09/2018	9:55:50 AM	213583	7595531	26	Pavement reef	0	1	0
HA180	20/09/2018	9:56:20 AM	213566	7595539	26	Pavement reef	0	2	0
HA180	20/09/2018	9:56:50 AM	213547	7595547	26	Pavement reef	0	2	0
HA180	20/09/2018	9:57:20 AM	213532	7595558	26	Pavement reef	0	3	0
HA180	20/09/2018	9:57:50 AM	213515	7595567	26	Pavement reef	0	3	0
HA180	20/09/2018	9:58:00 AM	213481	7595581	26	Pavement reef	0	3	0
HA185	20/09/2018	10:07:20 AM	212502	7596512	34	Pavement reef	0	1	0
HA185	20/09/2018	10:07:50 AM	212480	7596512	34	Pavement reef	0	3	0
HA185	20/09/2018	10:08:20 AM	212460	7596516	34	Pavement reef	0	2	0
HA185	20/09/2018	10:08:50 AM	212442	7596522	34	Pavement reef	0	2	0
HA185	20/09/2018	10:09:20 AM	212424	7596523	34	Pavement reef	0	3	0
HA185	20/09/2018	10:09:50 AM	212400	7596524	34	Pavement reef	0	3	1
HA185	20/09/2018	10:10:20 AM	212381	7596523	34	Pavement reef	0	2	0
HA185	20/09/2018	10:10:50 AM	212358	7596527	34	Pavement reef	0	2	0
HA185	20/09/2018	10:11:20 AM	212339	7596529	34	Pavement reef	0	9	2
HA185	20/09/2018	10:11:50 AM	212316	7596530	34	Pavement reef	0	3	0
HA185	20/09/2018	10:12:00 AM	212283	7596536	34	Pavement reef	0	3	0
HA179	20/09/2018	10:26:20 AM	213219	7594647	23	Pavement reef	0	13	0
HA179	20/09/2018	10:26:50 AM	213200	7594655	23	Pavement reef	0	35	0
HA179	20/09/2018	10:27:20 AM	213179	7594660	23	Pavement reef	0	18	0
HA179	20/09/2018	10:27:50 AM	213156	7594668	23	Pavement reef	0	40	0
HA179	20/09/2018	10:28:20 AM	213134	7594677	23	Pavement reef	0	27	0
HA179	20/09/2018	10:28:50 AM	213112	7594685	23	Pavement reef	0	63	0
HA179	20/09/2018	10:29:20 AM	213089	7594695	23	Pavement reef	0	40	0
HA179	20/09/2018	10:29:50 AM	213067	7594700	23	Pavement reef	0	8	0
HA179	20/09/2018	10:30:20 AM	213045	7594707	23	Pavement reef	0	138	3
HA179	20/09/2018	10:30:50 AM	213023	7594715	23	Pavement reef	0	119	2
HA179	20/09/2018	10:31:20 AM	213000	7594722	23	Pavement reef	0	51	2
HA179	20/09/2018	10:31:50 AM	212978	7594729	23	Pavement reef	0	4	1
HA179	20/09/2018	10:32:20 AM	212955	7594736	23	Pavement reef	0	48	0
HA179	20/09/2018	10:32:50 AM	212932	7594743	23	Pavement reef	0	74	3
HA179	20/09/2018	10:33:20 AM	212909	7594749	23	Pavement reef	0	177	5
HA179	20/09/2018	10:33:50 AM	212889	7594757	23	Pavement reef	0	122	5
HA179	20/09/2018	10:34:20 AM	212869	7594763	23	Pavement reef	0	116	5
HA179	20/09/2018	10:34:50 AM	212847	7594770	23	Pavement reef	0	125	5
HA179	20/09/2018	10:35:20 AM	212825	7594779	23	Pavement reef	0	67	2
HA179	20/09/2018	10:35:50 AM	212801	7594783	23	Pavement reef	0	62	2
HA179	20/09/2018	10:36:20 AM	212778	7594788	23	Pavement reef	0	37	1
HA179	20/09/2018	10:36:50 AM	212755	7594796	23	Pavement reef	0	50	0
HA179	20/09/2018	10:37:00 AM	212713	7594807	23	Pavement reef	0	57	0
HA177	20/09/2018	10:54:50 AM	214879	7595122	20	Pavement reef	1	24	0
HA177	20/09/2018	10:55:20 AM	214854	7595126	20	Pavement reef	0	15	1
HA177	20/09/2018	10:55:50 AM	214832	7595134	20	Pavement reef	0	13	0
HA177	20/09/2018	10:56:20 AM	214812	7595141	20	Pavement reef	0	7	0
HA177	20/09/2018	10:56:50 AM	214789	7595144	20	Pavement reef	0	3	0
HA177	20/09/2018	10:57:20 AM	214768	7595150	20	Pavement reef	0	6	0
HA177	20/09/2018	10:57:50 AM	214746	7595157	20	Pavement reef	0	0	0
HA177	20/09/2018	10:58:20 AM	214724	7595162	20	Pavement reef	0	3	0
HA177	20/09/2018	10:58:50 AM	214702	7595167	20	Pavement reef	0	5	0
HA177	20/09/2018	10:59:00 AM	214652	7595172	20	Pavement reef	0	10	0
HA174	20/09/2018	11:12:50 AM	214837	7594102	20	Pavement reef	0	69	5
HA174	20/09/2018	11:13:20 AM	214815	7594107	20	Pavement reef	1	134	2
HA174	20/09/2018	11:13:50 AM	214792	7594110	20	Pavement reef	0	62	2
HA174	20/09/2018	11:14:20 AM	214768	7594114	20	Pavement reef	0	54	0
HA174	20/09/2018	11:14:50 AM	214747	7594118	20	Pavement reef	1	32	0
HA174	20/09/2018	11:15:20 AM	214724	7594120	20	Pavement reef	0	32	0
HA174	20/09/2018	11:15:50 AM	214701	7594123	20	Pavement reef	0	17	3
HA174	20/09/2018	11:16:20 AM	214680	7594125	20	Pavement reef	0	4	0
HA174	20/09/2018	11:16:50 AM	214657	7594129	20	Pavement reef	1	23	1
HA174	20/09/2018	11:17:20 AM	214635	7594131	20	Pavement reef	1	16	0
HA174	20/09/2018	11:17:50 AM	214613	7594135	20	Pavement reef	0	15	0
HA174	20/09/2018	11:18:20 AM	214591	7594137	20	Pavement reef	1	9	1
HA174	20/09/2018	11:18:50 AM	214572	7594142	20	Pavement reef	1	16	4
HA174	20/09/2018	11:19:20 AM	214549	7594145	20	Pavement reef	1	37	2
HA174	20/09/2018	11:19:50 AM	214525	7594149	20	Pavement reef	1	51	3
HA174	20/09/2018	11:20:00 AM	214474	7594154	20	Pavement reef	1	79	7
HA169	20/09/2018	11:34:20 AM	215976	7594053	21	Pavement reef	1	86	4
HA169	20/09/2018	11:34:50 AM	215952	7594054	21	Pavement reef	0	72	2
HA169	20/09/2018	11:35:20 AM	215929	7594056	21	Pavement reef	0	69	1
HA169	20/09/2018	11:35:50 AM	215908	7594059	21	Pavement reef	0	106	2
HA169	20/09/2018	11:36:20 AM	215886	7594063	21	Pavement reef	0	99	0
HA169	20/09/2018	11:36:50 AM	215862	7594066	21	Pavement reef	0	44	3
HA169	20/09/2018	11:37:20 AM	215839	7594069	21	Pavement reef	0	60	2
HA169	20/09/2018	11:37:50 AM	215817	7594072	21	Pavement reef	0	106	3
HA169	20/09/2018	11:38:20 AM	215795	7594075	21	Pavement reef	0	147	6
HA169	20/09/2018	11:38:50 AM	215773	7594078	21	Pavement reef	0	239	4
HA169	20/09/2018	11:39:00 AM	215736	7594081	21	Pavement reef	0	235	5
HA167	20/09/2018	11:51:20 AM	216699	7593243	21	Pavement reef	1	131	4
HA167	20/09/2018	11:51:50 AM	216680	7593247	21	Pavement reef	1	95	0
HA167	20/09/2018	11:52:20 AM	216660	7593250	21	Pavement reef	1	72	0
HA167	20/09/2018	11:52:50 AM	216639	7593255	21	Pavement reef	1	98	0
HA167	20/09/2018	11:53:20 AM	216618	7593257	21	Pavement reef	0	9	0
HA167	20/09/2018	11:53:50 AM	216599	7593260	21	Pavement reef	0	7	2
HA167	20/09/2018	11:54:20 AM	216579	7593262	21	Pavement reef	0	17	3
HA167	20/09/2018	11:54:50 AM	216561	7593266	21	Pavement reef	0	30	4
HA167	20/09/2018	11:55:20 AM	216541	7593269	21	Pavement reef	0	38	9
HA167	20/09/2018	11:55:50 AM	216522	7593270	21	Pavement reef	1	35	5
HA167	20/09/2018	11:56:00 AM	216515	7593272	21	Pavement reef	1	159	1
HA165	20/09/2018	12:03:20 PM	215910	7592573	21	Pavement reef	0	95	0
HA165	20/09/2018	12:03:50 PM	215890	7592576	21	Pavement reef	0	84	0
HA165	20/09/2018	12:04:20 PM	215870	7592580	21	Pavement reef	0	117	0

HA165	20/09/2018	12:04:50 PM	215851	7592584	21	Pavement reef	0	87	1
HA165	20/09/2018	12:05:20 PM	215831	7592587	21	Pavement reef	0	118	3
HA165	20/09/2018	12:05:50 PM	215816	7592592	21	Pavement reef	0	98	1
HA165	20/09/2018	12:06:20 PM	215800	7592595	21	Pavement reef	0	62	1
HA165	20/09/2018	12:06:50 PM	215784	7592596	21	Pavement reef	0	5	1
HA165	20/09/2018	12:07:20 PM	215768	7592598	21	Pavement reef	0	17	0
HA165	20/09/2018	12:07:50 PM	215750	7592600	21	Pavement reef	0	33	0
HA165	20/09/2018	12:08:20 PM	215734	7592602	21	Pavement reef	0	41	1
HA165	20/09/2018	12:08:50 PM	215716	7592604	21	Pavement reef	0	10	0
HA165	20/09/2018	12:09:00 PM	215681	7592611	21	Pavement reef	0	30	0
HA172	20/09/2018	12:17:20 PM	214426	7592744	20	Pavement reef	1	23	5
HA172	20/09/2018	12:17:50 PM	214406	7592746	20	Pavement reef	1	28	4
HA172	20/09/2018	12:18:20 PM	214386	7592749	20	Pavement reef	1	32	0
HA172	20/09/2018	12:18:50 PM	214367	7592754	20	Pavement reef	1	30	1
HA172	20/09/2018	12:19:20 PM	214347	7592757	20	Pavement reef	0	18	3
HA172	20/09/2018	12:19:50 PM	214328	7592761	20	Pavement reef	0	23	7
HA172	20/09/2018	12:20:20 PM	214310	7592766	20	Pavement reef	1	18	7
HA172	20/09/2018	12:20:50 PM	214294	7592768	20	Pavement reef	0	17	4
HA172	20/09/2018	12:21:20 PM	214275	7592770	20	Pavement reef	0	44	5
HA172	20/09/2018	12:21:50 PM	214257	7592774	20	Pavement reef	1	49	7
HA172	20/09/2018	12:22:20 PM	214236	7592777	20	Pavement reef	1	58	7
HA172	20/09/2018	12:22:50 PM	214217	7592782	20	Pavement reef	1	47	7
HA172	20/09/2018	12:23:20 PM	214198	7592785	20	Pavement reef	1	75	12
HA172	20/09/2018	12:23:50 PM	214180	7592787	20	Pavement reef	1	48	6
HA172	20/09/2018	12:24:00 PM	214161	7592791	20	Pavement reef	1	45	4
HA163	20/09/2018	12:35:50 PM	215005	7591753	20	Pavement reef	1	33	0
HA163	20/09/2018	12:36:20 PM	214988	7591758	20	Pavement reef	1	79	0
HA163	20/09/2018	12:36:50 PM	214972	7591762	20	Pavement reef	1	67	0
HA163	20/09/2018	12:37:20 PM	214957	7591766	20	Pavement reef	1	62	0
HA163	20/09/2018	12:37:50 PM	214941	7591766	20	Pavement reef	1	129	2
HA163	20/09/2018	12:38:20 PM	214925	7591770	20	Pavement reef	1	162	1
HA163	20/09/2018	12:38:50 PM	214907	7591773	20	Pavement reef	1	177	1
HA163	20/09/2018	12:39:20 PM	214890	7591776	20	Pavement reef	0	74	3
HA163	20/09/2018	12:39:50 PM	214873	7591778	20	Pavement reef	1	130	3
HA163	20/09/2018	12:40:00 PM	214859	7591781	20	Pavement reef	1	102	2
HA159	20/09/2018	12:56:50 PM	217445	7591813	22	Pavement reef	0	54	1
HA159	20/09/2018	12:57:20 PM	217432	7591815	22	Pavement reef	0	73	3
HA159	20/09/2018	12:57:50 PM	217419	7591815	22	Pavement reef	0	83	1
HA159	20/09/2018	12:58:20 PM	217404	7591817	22	Pavement reef	0	41	1
HA159	20/09/2018	12:58:50 PM	217392	7591817	22	Pavement reef	0	32	0
HA159	20/09/2018	12:59:20 PM	217379	7591818	22	Pavement reef	0	25	3
HA159	20/09/2018	12:59:50 PM	217367	7591820	22	Pavement reef	0	20	0
HA159	20/09/2018	1:00:20 PM	217353	7591821	22	Pavement reef	1	67	3
HA159	20/09/2018	1:00:50 PM	217342	7591822	22	Pavement reef	0	21	0
HA159	20/09/2018	1:01:00 PM	217330	7591824	22	Pavement reef	0	9	0
HA153	20/09/2018	1:26:20 PM	218113	7590721	23	Pavement reef	0	59	0
HA153	20/09/2018	1:26:50 PM	218098	7590722	23	Pavement reef	0	42	0
HA153	20/09/2018	1:27:20 PM	218087	7590721	23	Pavement reef	0	24	0
HA153	20/09/2018	1:27:50 PM	218072	7590721	23	Pavement reef	0	41	0
HA153	20/09/2018	1:28:20 PM	218058	7590722	23	Pavement reef	0	45	0
HA153	20/09/2018	1:28:50 PM	218045	7590723	23	Pavement reef	0	30	0
HA153	20/09/2018	1:29:20 PM	218033	7590723	23	Pavement reef	0	16	0
HA153	20/09/2018	1:29:50 PM	218023	7590725	23	Pavement reef	0	4	1
HA153	20/09/2018	1:30:20 PM	218011	7590723	23	Pavement reef	0	27	1
HA153	20/09/2018	1:30:50 PM	217998	7590723	23	Pavement reef	0	16	0
HA153	20/09/2018	1:31:00 PM	217987	7590721	23	Pavement reef	0	24	0
HA155	20/09/2018	1:40:20 PM	215949	7590333	21	Pavement reef	0	14	0
HA155	20/09/2018	1:40:50 PM	215937	7590333	21	Pavement reef	0	4	0
HA155	20/09/2018	1:41:20 PM	215923	7590333	21	Pavement reef	0	13	0
HA155	20/09/2018	1:41:50 PM	215915	7590334	21	Pavement reef	0	8	0
HA155	20/09/2018	1:42:20 PM	215903	7590335	21	Pavement reef	0	2	0
HA155	20/09/2018	1:42:50 PM	215892	7590336	21	Pavement reef	0	23	0
HA155	20/09/2018	1:43:20 PM	215880	7590338	21	Pavement reef	0	3	0
HA155	20/09/2018	1:43:50 PM	215868	7590340	21	Pavement reef	0	9	0
HA155	20/09/2018	1:44:20 PM	215857	7590339	21	Pavement reef	0	18	0
HA155	20/09/2018	1:44:50 PM	215845	7590340	21	Pavement reef	0	25	0
HA155	20/09/2018	1:45:00 PM	215826	7590342	21	Pavement reef	0	12	0
HA150	20/09/2018	1:57:20 PM	217661	7589539	22	Pavement reef	0	3	0
HA150	20/09/2018	1:57:50 PM	217651	7589537	22	Pavement reef	0	1	0
HA150	20/09/2018	1:58:20 PM	217642	7589531	22	Pavement reef	0	3	0
HA150	20/09/2018	1:58:50 PM	217632	7589529	22	Pavement reef	0	19	0
HA150	20/09/2018	1:59:20 PM	217626	7589526	22	Pavement reef	0	28	0
HA150	20/09/2018	1:59:50 PM	217617	7589524	22	Pavement reef	0	10	0
HA150	20/09/2018	2:00:20 PM	217610	7589522	22	Pavement reef	0	14	0
HA150	20/09/2018	2:00:50 PM	217599	7589518	22	Pavement reef	0	7	0
HA150	20/09/2018	2:01:20 PM	217585	7589516	22	Pavement reef	0	5	0
HA150	20/09/2018	2:01:50 PM	217577	7589515	22	Pavement reef	0	1	0
HA150	20/09/2018	2:02:00 PM	217574	7589513	22	Pavement reef	0	1	0
HA149	20/09/2018	2:10:50 PM	217015	7588733	22	Pavement reef	0	39	4
HA149	20/09/2018	2:11:20 PM	217008	7588731	22	Pavement reef	0	39	1
HA149	20/09/2018	2:11:50 PM	217003	7588729	22	Pavement reef	0	70	0
HA149	20/09/2018	2:12:20 PM	216999	7588728	22	Pavement reef	0	45	0
HA149	20/09/2018	2:12:50 PM	216995	7588726	22	Pavement reef	0	38	0
HA149	20/09/2018	2:13:20 PM	216992	7588724	22	Pavement reef	1	28	1
HA149	20/09/2018	2:13:50 PM	216981	7588718	22	Pavement reef	0	26	1
HA149	20/09/2018	2:14:20 PM	216971	7588713	22	Pavement reef	0	34	1
HA149	20/09/2018	2:14:50 PM	216966	7588710	22	Pavement reef	0	34	0
HA149	20/09/2018	2:15:00 PM	216971	7588713	22	Pavement reef	0	32	0
HA146	20/09/2018	2:27:50 PM	219218	7589133	22	Pavement reef	0	5	0
HA146	20/09/2018	2:28:20 PM	219210	7589127	22	Pavement reef	0	13	0
HA146	20/09/2018	2:28:50 PM	219202	7589120	22	Pavement reef	0	12	0
HA146	20/09/2018	2:29:20 PM	219194	7589111	22	Pavement reef	0	37	0
HA146	20/09/2018	2:29:50 PM	219187	7589104	22	Pavement reef	0	3	0
HA146	20/09/2018	2:30:20 PM	219179	7589097	22	Pavement reef	0	7	0
HA146	20/09/2018	2:30:50 PM	219171	7589091	22	Pavement reef	0	47	0
HA146	20/09/2018	2:31:20 PM	219162	7589084	22	Pavement reef	0	22	0
HA146	20/09/2018	2:31:50 PM	219153	7589077	22	Pavement reef	0	12	1
HA146	20/09/2018	2:32:00 PM	219140	7589070	22	Pavement reef	0	14	0

HA147	20/09/2018	2:41:20 PM	218489	7588676	23	Pavement reef	0	15	0
HA147	20/09/2018	2:41:50 PM	218484	7588671	23	Pavement reef	0	9	0
HA147	20/09/2018	2:42:20 PM	218479	7588663	23	Pavement reef	0	23	0
HA147	20/09/2018	2:42:50 PM	218474	7588657	23	Pavement reef	0	18	0
HA147	20/09/2018	2:43:20 PM	218470	7588648	23	Pavement reef	0	5	0
HA147	20/09/2018	2:43:50 PM	218464	7588640	23	Pavement reef	0	11	0
HA147	20/09/2018	2:44:20 PM	218460	7588633	23	Pavement reef	0	12	0
HA147	20/09/2018	2:44:50 PM	218455	7588624	23	Pavement reef	0	5	0
HA147	20/09/2018	2:45:20 PM	218450	7588617	23	Pavement reef	0	12	0
HA147	20/09/2018	2:45:50 PM	218446	7588608	23	Pavement reef	0	7	0
HA147	20/09/2018	2:46:20 PM	218441	7588600	23	Pavement reef	0	11	0
HA147	20/09/2018	2:46:50 PM	218436	7588591	23	Pavement reef	0	15	0
HA147	20/09/2018	2:47:20 PM	218434	7588582	23	Pavement reef	0	17	0
HA147	20/09/2018	2:47:50 PM	218430	7588573	23	Pavement reef	0	8	0
HA147	20/09/2018	2:48:20 PM	218425	7588561	23	Pavement reef	0	15	1
HA147	20/09/2018	2:48:50 PM	218422	7588551	23	Pavement reef	0	35	0
HA147	20/09/2018	2:49:20 PM	218417	7588542	23	Pavement reef	0	30	0
HA147	20/09/2018	2:49:50 PM	218414	7588533	23	Pavement reef	0	40	0
HA147	20/09/2018	2:50:20 PM	218410	7588525	23	Pavement reef	0	51	0
HA147	20/09/2018	2:50:50 PM	218407	7588519	23	Pavement reef	0	22	0
HA147	20/09/2018	2:51:20 PM	218404	7588510	23	Pavement reef	0	17	0
HA147	20/09/2018	2:51:50 PM	218399	7588499	23	Pavement reef	0	10	0
HA147	20/09/2018	2:52:20 PM	218394	7588488	23	Pavement reef	0	20	0
HA147	20/09/2018	2:52:50 PM	218391	7588480	23	Pavement reef	0	35	1
HA147	20/09/2018	2:53:20 PM	218388	7588471	23	Pavement reef	0	2	0
HA147	20/09/2018	2:53:50 PM	218383	7588458	23	Pavement reef	0	19	0
HA147	20/09/2018	2:54:20 PM	218380	7588449	23	Pavement reef	0	20	0
HA147	20/09/2018	2:54:00 PM	218384	7588460	23	Pavement reef	0	20	1
HA144	20/09/2018	3:03:20 PM	219758	7588139	22	Pavement reef	0	35	2
HA144	20/09/2018	3:03:50 PM	219755	7588130	22	Pavement reef	0	34	1
HA144	20/09/2018	3:04:20 PM	219749	7588117	22	Pavement reef	0	17	0
HA144	20/09/2018	3:04:50 PM	219749	7588105	22	Pavement reef	0	31	0
HA144	20/09/2018	3:05:20 PM	219747	7588093	22	Pavement reef	0	31	0
HA144	20/09/2018	3:05:50 PM	219747	7588083	22	Pavement reef	0	30	0
HA144	20/09/2018	3:06:20 PM	219746	7588073	22	Pavement reef	0	28	1
HA144	20/09/2018	3:06:50 PM	219742	7588065	22	Pavement reef	0	24	0
HA144	20/09/2018	3:07:20 PM	219738	7588051	22	Pavement reef	0	57	0
HA144	20/09/2018	3:07:50 PM	219737	7588041	22	Pavement reef	0	36	1
HA144	20/09/2018	3:08:00 PM	219733	7588029	22	Pavement reef	0	27	0
HA139	20/09/2018	3:17:20 PM	220858	7587682	22	Pavement reef	<1	17	0
HA139	20/09/2018	3:17:50 PM	220856	7587670	22	Pavement reef	<1	20	0
HA139	20/09/2018	3:18:20 PM	220854	7587659	22	Pavement reef	<1	23	0
HA139	20/09/2018	3:18:50 PM	220853	7587647	22	Pavement reef	<1	13	0
HA139	20/09/2018	3:19:20 PM	220852	7587634	22	Pavement reef	<1	17	0
HA139	20/09/2018	3:19:50 PM	220850	7587625	22	Pavement reef	<1	6	0
HA139	20/09/2018	3:20:20 PM	220848	7587614	22	Pavement reef	<1	18	0
HA139	20/09/2018	3:20:50 PM	220847	7587604	22	Pavement reef	<1	16	0
HA139	20/09/2018	3:21:20 PM	220847	7587591	22	Pavement reef	<1	10	0
HA139	20/09/2018	3:21:50 PM	220845	7587581	22	Pavement reef	<1	15	0
HA139	20/09/2018	3:22:00 PM	220844	7587574	22	Pavement reef	<1	8	0
HA141	20/09/2018	3:32:20 PM	219117	7586918	22	Pavement reef	<1	20	0
HA141	20/09/2018	3:32:50 PM	219117	7586910	22	Pavement reef	<1	40	0
HA141	20/09/2018	3:33:20 PM	219115	7586901	22	Pavement reef	<1	33	0
HA141	20/09/2018	3:33:50 PM	219113	7586891	22	Pavement reef	<1	65	0
HA141	20/09/2018	3:34:20 PM	219110	7586881	22	Pavement reef	<1	52	0
HA141	20/09/2018	3:34:50 PM	219105	7586872	22	Pavement reef	<1	56	0
HA141	20/09/2018	3:35:20 PM	219104	7586859	22	Pavement reef	<1	64	0
HA141	20/09/2018	3:35:50 PM	219101	7586849	22	Pavement reef	<1	60	0
HA141	20/09/2018	3:36:20 PM	219099	7586839	22	Pavement reef	<1	69	0
HA141	20/09/2018	3:36:50 PM	219097	7586828	22	Pavement reef	<1	47	0
HA141	20/09/2018	3:37:00 PM	219096	7586813	22	Pavement reef	<1	45	0
HA148	20/09/2018	3:48:50 PM	217823	7588010	22	Pavement reef	0	1	0
HA148	20/09/2018	3:49:20 PM	217819	7587997	22	Pavement reef	0	14	0
HA148	20/09/2018	3:49:50 PM	217817	7587991	22	Pavement reef	0	22	0
HA148	20/09/2018	3:50:20 PM	217816	7587978	22	Pavement reef	0	20	0
HA148	20/09/2018	3:50:50 PM	217812	7587970	22	Pavement reef	0	2	1
HA148	20/09/2018	3:51:20 PM	217810	7587964	22	Pavement reef	0	6	1
HA148	20/09/2018	3:51:50 PM	217807	7587955	22	Pavement reef	0	2	0
HA148	20/09/2018	3:52:20 PM	217803	7587944	22	Pavement reef	0	11	4
HA148	20/09/2018	3:52:50 PM	217800	7587936	22	Pavement reef	0	8	0
HA148	20/09/2018	3:53:00 PM	217797	7587925	22	Pavement reef	0	9	0
HA154	20/09/2018	4:07:20 PM	217195	7590175	22	Pavement reef	0	8	3
HA154	20/09/2018	4:07:50 PM	217193	7590166	22	Pavement reef	0	11	1
HA154	20/09/2018	4:08:20 PM	217192	7590156	22	Pavement reef	0	6	1
HA154	20/09/2018	4:08:50 PM	217191	7590145	22	Pavement reef	0	8	2
HA154	20/09/2018	4:09:20 PM	217189	7590134	22	Pavement reef	0	9	2
HA154	20/09/2018	4:09:50 PM	217189	7590124	22	Pavement reef	0	17	2
HA154	20/09/2018	4:10:20 PM	217188	7590114	22	Pavement reef	0	25	2
HA154	20/09/2018	4:10:50 PM	217187	7590105	22	Pavement reef	0	18	2
HA154	20/09/2018	4:11:20 PM	217185	7590095	22	Pavement reef	0	12	1
HA154	20/09/2018	4:11:50 PM	217184	7590084	22	Pavement reef	0	16	2
HA154	20/09/2018	4:12:20 PM	217182	7590072	22	Pavement reef	0	26	4
HA154	20/09/2018	4:12:50 PM	217183	7590064	22	Pavement reef	0	22	0
HA154	20/09/2018	4:13:20 PM	217182	7590053	22	Pavement reef	0	24	1
HA154	20/09/2018	4:13:50 PM	217181	7590042	22	Pavement reef	0	26	2
HA154	20/09/2018	4:14:20 PM	217180	7590032	22	Pavement reef	0	7	0
HA154	20/09/2018	4:14:50 PM	217177	7590022	22	Pavement reef	0	10	0
HA154	20/09/2018	4:15:20 PM	217176	7590012	22	Pavement reef	0	16	1
HA154	20/09/2018	4:15:50 PM	217176	7590002	22	Pavement reef	0	34	6
HA154	20/09/2018	4:16:00 PM	217176	7589996	22	Pavement reef	0	31	5
HA81	21/09/2018	8:09:20 AM	223441	7575362	20	Soft sediment	0	0	0
HA81	21/09/2018	8:09:50 AM	223435	7575372	20	Soft sediment	0	0	0
HA81	21/09/2018	8:10:20 AM	223429	7575384	20	Soft sediment	0	0	0
HA81	21/09/2018	8:10:50 AM	223423	7575395	20	Soft sediment	0	0	0
HA81	21/09/2018	8:11:20 AM	223416	7575407	20	Soft sediment	0	0	0
HA81	21/09/2018	8:11:50 AM	223408	7575419	20	Soft sediment	0	0	0
HA81	21/09/2018	8:12:20 AM	223402	7575431	20	Soft sediment	0	0	0
HA81	21/09/2018	8:12:50 AM	223394	7575442	20	Soft sediment	0	0	0

HA81	21/09/2018	8:13:20 AM	223388	7575453	20	Soft sediment	0	0	0
HA81	21/09/2018	8:15:50 AM	223382	7575465	20	Soft sediment	0	0	0
HA81	21/09/2018	8:14:00 AM	223375	7575474	20	Soft sediment	0	0	0
HA85	21/09/2018	8:21:20 AM	222368	7575692	21	Soft sediment	0	0	0
HA85	21/09/2018	8:21:50 AM	222363	7575700	21	Soft sediment	0	0	0
HA85	21/09/2018	8:22:20 AM	222360	7575709	21	Soft sediment	0	0	0
HA85	21/09/2018	8:22:50 AM	222355	7575717	21	Soft sediment	0	0	0
HA85	21/09/2018	8:23:20 AM	222352	7575723	21	Soft sediment	0	0	0
HA85	21/09/2018	8:23:50 AM	222346	7575732	21	Soft sediment	0	0	0
HA85	21/09/2018	8:24:20 AM	222344	7575736	21	Soft sediment	0	0	0
HA85	21/09/2018	8:24:50 AM	222341	7575743	21	Soft sediment	0	0	0
HA85	21/09/2018	8:25:20 AM	222338	7575750	21	Soft sediment	0	0	0
HA85	21/09/2018	8:25:50 AM	222334	7575763	21	Soft sediment	0	0	0
HA88	21/09/2018	8:37:00 AM	224122	7576466	20	Soft sediment	0	0	0
HA88	21/09/2018	8:37:20 AM	224125	7576460	20	Soft sediment	0	0	0
HA88	21/09/2018	8:37:50 AM	224121	7576469	20	Soft sediment	0	0	0
HA88	21/09/2018	8:38:20 AM	224119	7576474	20	Soft sediment	0	0	0
HA88	21/09/2018	8:38:50 AM	224116	7576482	20	Soft sediment	0	0	0
HA88	21/09/2018	8:39:20 AM	224113	7576492	20	Soft sediment	0	0	0
HA88	21/09/2018	8:39:50 AM	224111	7576503	20	Soft sediment	0	0	0
HA88	21/09/2018	8:40:20 AM	224109	7576512	20	Soft sediment	0	0	0
HA88	21/09/2018	8:40:50 AM	224105	7576523	20	Soft sediment	0	0	0
HA88	21/09/2018	8:41:20 AM	224101	7576529	20	Soft sediment	0	0	0
HA88	21/09/2018	8:41:50 AM	224099	7576536	20	Soft sediment	0	0	0
HA88	21/09/2018	8:42:00 AM	224099	7576553	20	Soft sediment	0	0	0
HA92	21/09/2018	8:50:20 AM	222816	7577422	21	Soft sediment	0	0	0
HA92	21/09/2018	8:50:50 AM	222814	7577430	21	Soft sediment	0	0	0
HA92	21/09/2018	8:51:20 AM	222810	7577440	21	Soft sediment	0	0	0
HA92	21/09/2018	8:51:50 AM	222808	7577446	21	Soft sediment	0	0	0
HA92	21/09/2018	8:52:20 AM	222807	7577455	21	Soft sediment	0	0	0
HA92	21/09/2018	8:52:50 AM	222805	7577469	21	Soft sediment	0	0	0
HA92	21/09/2018	8:53:20 AM	222803	7577480	21	Soft sediment	0	0	0
HA92	21/09/2018	8:53:50 AM	222802	7577486	21	Soft sediment	0	0	0
HA92	21/09/2018	8:54:20 AM	222798	7577497	21	Soft sediment	0	0	0
HA92	21/09/2018	8:54:50 AM	222797	7577508	21	Soft sediment	0	0	0
HA96	21/09/2018	9:05:00 AM	224773	7578220	20	Soft sediment	0	0	0
HA96	21/09/2018	9:05:20 AM	224770	7578221	20	Soft sediment	0	0	0
HA96	21/09/2018	9:05:50 AM	224769	7578225	20	Soft sediment	0	0	0
HA96	21/09/2018	9:06:20 AM	224769	7578226	20	Soft sediment	0	0	0
HA96	21/09/2018	9:06:50 AM	224770	7578233	20	Soft sediment	0	0	0
HA96	21/09/2018	9:07:20 AM	224769	7578238	20	Soft sediment	0	0	0
HA96	21/09/2018	9:07:50 AM	224768	7578241	20	Soft sediment	0	0	0
HA96	21/09/2018	9:08:20 AM	224766	7578247	20	Soft sediment	0	0	0
HA96	21/09/2018	9:08:50 AM	224766	7578248	20	Soft sediment	0	0	0
HA96	21/09/2018	9:09:20 AM	224765	7578252	20	Soft sediment	0	0	0
HA96	21/09/2018	9:09:50 AM	224765	7578256	20	Soft sediment	0	0	0
HA96	21/09/2018	9:10:00 AM	224764	7578285	20	Soft sediment	0	0	0
HA99	21/09/2018	9:21:20 AM	222613	7578946	20	Soft sediment	0	0	0
HA99	21/09/2018	9:21:50 AM	222611	7578955	20	Soft sediment	0	1	0
HA99	21/09/2018	9:22:20 AM	222610	7578965	20	Soft sediment	0	0	0
HA99	21/09/2018	9:22:50 AM	222608	7578976	20	Soft sediment	0	1	0
HA99	21/09/2018	9:23:20 AM	222605	7578986	20	Soft sediment	0	0	0
HA99	21/09/2018	9:23:50 AM	222602	7578995	20	Soft sediment	0	1	0
HA99	21/09/2018	9:24:20 AM	222600	7579003	20	Soft sediment	0	0	0
HA99	21/09/2018	9:24:50 AM	222599	7579010	20	Soft sediment	0	1	0
HA99	21/09/2018	9:25:20 AM	222599	7579017	20	Soft sediment	0	0	0
HA99	21/09/2018	9:25:50 AM	222596	7579027	20	Soft sediment	0	0	0
HA99	21/09/2018	9:26:20 AM	222596	7579029	20	Soft sediment	0	0	0
HA99	21/09/2018	9:26:50 AM	222594	7579038	20	Soft sediment	0	1	0
HA99	21/09/2018	9:27:00 AM	222592	7579053	20	Soft sediment	0	0	0
HA103	21/09/2018	9:37:20 AM	223914	7579543	20	Soft sediment	0	0	0
HA103	21/09/2018	9:37:50 AM	223914	7579547	20	Soft sediment	0	0	0
HA103	21/09/2018	9:38:20 AM	223913	7579550	20	Soft sediment	0	0	0
HA103	21/09/2018	9:38:50 AM	223911	7579561	20	Soft sediment	0	0	0
HA103	21/09/2018	9:39:20 AM	223908	7579572	20	Soft sediment	0	0	0
HA103	21/09/2018	9:39:50 AM	223905	7579584	20	Soft sediment	0	0	0
HA103	21/09/2018	9:40:20 AM	223904	7579591	20	Soft sediment	0	0	0
HA103	21/09/2018	9:40:50 AM	223902	7579599	20	Soft sediment	0	0	0
HA103	21/09/2018	9:41:20 AM	223900	7579606	20	Soft sediment	0	0	0
HA103	21/09/2018	9:41:50 AM	223896	7579618	20	Soft sediment	0	0	0
HA103	21/09/2018	9:42:00 AM	223896	7579618	20	Soft sediment	0	0	0
HA105	21/09/2018	9:54:20 AM	224092	7580537	20	Soft sediment	0	0	0
HA105	21/09/2018	9:54:50 AM	224089	7580545	20	Soft sediment	0	0	0
HA105	21/09/2018	9:55:20 AM	224090	7580551	20	Soft sediment	0	0	0
HA105	21/09/2018	9:55:50 AM	224088	7580559	20	Soft sediment	0	0	0
HA105	21/09/2018	9:56:20 AM	224087	7580573	20	Soft sediment	0	0	0
HA105	21/09/2018	9:56:50 AM	224084	7580582	20	Soft sediment	0	0	0
HA105	21/09/2018	9:57:20 AM	224082	7580590	20	Soft sediment	0	0	0
HA105	21/09/2018	9:57:50 AM	224078	7580601	20	Soft sediment	0	0	0
HA105	21/09/2018	9:58:20 AM	224075	7580610	20	Soft sediment	0	0	0
HA105	21/09/2018	9:58:50 AM	224073	7580618	20	Soft sediment	0	0	0
HA105	21/09/2018	9:59:00 AM	224065	7580638	20	Soft sediment	0	0	0
HA101	21/09/2018	10:12:20 AM	221928	7580008	21	Soft sediment	0	0	0
HA101	21/09/2018	10:12:50 AM	221923	7580019	21	Soft sediment	0	0	0
HA101	21/09/2018	10:13:20 AM	221920	7580030	21	Soft sediment	0	0	0
HA101	21/09/2018	10:13:50 AM	221916	7580040	21	Soft sediment	0	0	0
HA101	21/09/2018	10:14:20 AM	221912	7580051	21	Soft sediment	0	0	0
HA101	21/09/2018	10:14:50 AM	221909	7580061	21	Soft sediment	0	0	0
HA101	21/09/2018	10:15:20 AM	221905	7580074	21	Soft sediment	0	0	0
HA101	21/09/2018	10:15:50 AM	221904	7580083	21	Soft sediment	0	0	0
HA101	21/09/2018	10:16:20 AM	221901	7580094	21	Soft sediment	0	0	0
HA101	21/09/2018	10:16:50 AM	221897	7580106	21	Soft sediment	0	0	0
HA101	21/09/2018	10:17:00 AM	221895	7580128	21	Soft sediment	0	0	0
HA108	21/09/2018	10:25:20 AM	221512	7580974	20	Soft sediment	0	0	0
HA108	21/09/2018	10:25:50 AM	221505	7580984	20	Soft sediment	0	0	0
HA108	21/09/2018	10:26:20 AM	221502	7580995	20	Soft sediment	0	0	0
HA108	21/09/2018	10:26:50 AM	221498	7581006	20	Soft sediment	0	0	0
HA108	21/09/2018	10:27:20 AM	221492	7581016	20	Soft sediment	0	0	0

HA108	21/09/2018	10:27:50 AM	221486	7581028	20	Soft sediment	0	0	0
HA108	21/09/2018	10:28:20 AM	221484	7581037	20	Soft sediment	0	0	0
HA108	21/09/2018	10:28:50 AM	221479	7581047	20	Soft sediment	0	0	0
HA108	21/09/2018	10:29:20 AM	221473	7581059	20	Soft sediment	0	0	0
HA108	21/09/2018	10:29:50 AM	221466	7581069	20	Soft sediment	0	0	0
HA108	21/09/2018	10:30:00 AM	221453	7581090	20	Soft sediment	0	0	0
HA110	21/09/2018	10:46:20 AM	223120	7581376	20	Soft sediment	0	0	0
HA110	21/09/2018	10:46:50 AM	223116	7581379	20	Soft sediment	0	0	0
HA110	21/09/2018	10:47:20 AM	223111	7581380	20	Soft sediment	0	0	0
HA110	21/09/2018	10:47:50 AM	223101	7581386	20	Soft sediment	0	0	0
HA110	21/09/2018	10:48:20 AM	223099	7581387	20	Soft sediment	0	0	0
HA110	21/09/2018	10:48:50 AM	223097	7581391	20	Soft sediment	0	0	0
HA110	21/09/2018	10:49:20 AM	223090	7581396	20	Soft sediment	0	0	0
HA110	21/09/2018	10:49:50 AM	223087	7581398	20	Soft sediment	0	0	0
HA110	21/09/2018	10:50:20 AM	223086	7581399	20	Soft sediment	0	0	0
HA110	21/09/2018	10:50:50 AM	223081	7581403	20	Soft sediment	0	0	0
HA110	21/09/2018	10:51:00 AM	223082	7581402	20	Soft sediment	0	0	0
HA109	21/09/2018	10:58:20 AM	222287	7581554	19	Soft sediment	0	0	0
HA109	21/09/2018	10:58:50 AM	222279	7581556	19	Soft sediment	0	0	0
HA109	21/09/2018	10:59:20 AM	222272	7581559	19	Soft sediment	0	0	0
HA109	21/09/2018	10:59:50 AM	222264	7581564	19	Soft sediment	0	0	0
HA109	21/09/2018	11:00:20 AM	222255	7581573	19	Soft sediment	0	0	0
HA109	21/09/2018	11:00:50 AM	222249	7581581	19	Soft sediment	0	0	0
HA109	21/09/2018	11:01:20 AM	222241	7581588	19	Soft sediment	0	0	0
HA109	21/09/2018	11:01:50 AM	222236	7581594	19	Soft sediment	0	0	0
HA109	21/09/2018	11:02:20 AM	222228	7581598	19	Soft sediment	0	0	0
HA109	21/09/2018	11:02:50 AM	222222	7581603	19	Soft sediment	0	0	0
HA109	21/09/2018	11:03:00 AM	222218	7581607	19	Soft sediment	0	0	0
HA119	21/09/2018	11:12:20 AM	223496	7582748	21	Soft sediment	0	0	0
HA119	21/09/2018	11:12:50 AM	223496	7582748	21	Soft sediment	0	0	0
HA119	21/09/2018	11:13:20 AM	223493	7582750	21	Soft sediment	0	0	0
HA119	21/09/2018	11:13:50 AM	223487	7582754	21	Soft sediment	0	0	0
HA119	21/09/2018	11:14:20 AM	223482	7582756	21	Soft sediment	0	0	0
HA119	21/09/2018	11:14:50 AM	223474	7582758	21	Soft sediment	0	0	0
HA119	21/09/2018	11:15:20 AM	223464	7582760	21	Soft sediment	0	0	0
HA119	21/09/2018	11:15:50 AM	223458	7582762	21	Soft sediment	0	0	0
HA119	21/09/2018	11:16:20 AM	223447	7582766	21	Soft sediment	0	0	0
HA119	21/09/2018	11:16:50 AM	223432	7582773	21	Soft sediment	0	0	0
HA119	21/09/2018	11:17:00 AM	223424	7582774	21	Soft sediment	0	0	0
HA117	21/09/2018	11:25:20 AM	221702	7582637	20	Soft sediment	0	0	0
HA117	21/09/2018	11:25:50 AM	221691	7582637	20	Soft sediment	0	0	0
HA117	21/09/2018	11:26:20 AM	221680	7582639	20	Soft sediment	0	0	0
HA117	21/09/2018	11:26:50 AM	221672	7582642	20	Soft sediment	0	0	0
HA117	21/09/2018	11:27:20 AM	221661	7582645	20	Soft sediment	0	0	0
HA117	21/09/2018	11:27:50 AM	221654	7582649	20	Soft sediment	0	0	0
HA117	21/09/2018	11:28:20 AM	221641	7582653	20	Soft sediment	0	0	0
HA117	21/09/2018	11:28:50 AM	221631	7582656	20	Soft sediment	0	0	0
HA117	21/09/2018	11:29:20 AM	221622	7582659	20	Soft sediment	0	0	0
HA117	21/09/2018	11:29:50 AM	221612	7582660	20	Soft sediment	0	0	0
HA117	21/09/2018	11:30:00 AM	221601	7582662	20	Soft sediment	0	0	0
HA123	21/09/2018	11:38:20 AM	220886	7582825	21	Soft sediment	0	0	0
HA123	21/09/2018	11:38:50 AM	220876	7582826	21	Soft sediment	0	0	0
HA123	21/09/2018	11:39:20 AM	220867	7582830	21	Soft sediment	0	0	0
HA123	21/09/2018	11:39:50 AM	220857	7582832	21	Soft sediment	0	0	0
HA123	21/09/2018	11:40:20 AM	220850	7582832	21	Soft sediment	0	0	0
HA123	21/09/2018	11:40:50 AM	220843	7582832	21	Soft sediment	0	0	0
HA123	21/09/2018	11:41:20 AM	220838	7582833	21	Soft sediment	0	0	0
HA123	21/09/2018	11:41:50 AM	220822	7582838	21	Soft sediment	0	0	0
HA123	21/09/2018	11:42:20 AM	220814	7582841	21	Soft sediment	0	0	0
HA123	21/09/2018	11:42:50 AM	220803	7582846	21	Soft sediment	0	0	0
HA123	21/09/2018	11:43:00 AM	220799	7582845	21	Soft sediment	0	0	0
HA121	21/09/2018	11:54:20 AM	221199	7583781	21	Soft sediment	0	1	0
HA121	21/09/2018	11:54:50 AM	221193	7583779	21	Soft sediment	0	0	0
HA121	21/09/2018	11:55:20 AM	221179	7583780	21	Soft sediment	0	1	0
HA121	21/09/2018	11:55:50 AM	221167	7583782	21	Soft sediment	0	0	0
HA121	21/09/2018	11:56:20 AM	221157	7583783	21	Soft sediment	0	0	0
HA121	21/09/2018	11:56:50 AM	221148	7583783	21	Soft sediment	0	0	0
HA121	21/09/2018	11:57:20 AM	221138	7583785	21	Soft sediment	0	1	0
HA121	21/09/2018	11:57:50 AM	221130	7583786	21	Soft sediment	0	0	0
HA121	21/09/2018	11:58:20 AM	221118	7583785	21	Soft sediment	0	0	0
HA121	21/09/2018	11:58:50 AM	221108	7583787	21	Soft sediment	0	1	0
HA121	21/09/2018	11:59:00 AM	221087	7583793	21	Soft sediment	0	0	0
HA127	21/09/2018	12:11:20 PM	222418	7585140	21	Soft sediment	0	0	0
HA127	21/09/2018	12:11:50 PM	222408	7585139	21	Soft sediment	0	0	0
HA127	21/09/2018	12:12:20 PM	222400	7585139	21	Soft sediment	0	0	0
HA127	21/09/2018	12:12:50 PM	222386	7585139	21	Soft sediment	0	0	0
HA127	21/09/2018	12:13:20 PM	222377	7585140	21	Soft sediment	0	0	0
HA127	21/09/2018	12:13:50 PM	222367	7585140	21	Soft sediment	0	0	0
HA127	21/09/2018	12:14:20 PM	222356	7585140	21	Soft sediment	0	0	0
HA127	21/09/2018	12:14:50 PM	222345	7585139	21	Soft sediment	0	0	0
HA127	21/09/2018	12:15:20 PM	222337	7585139	21	Soft sediment	0	0	0
HA127	21/09/2018	12:15:50 PM	222326	7585140	21	Soft sediment	0	0	0
HA127	21/09/2018	12:16:00 PM	222310	7585140	21	Soft sediment	0	0	0
HA125	21/09/2018	12:26:20 PM	221273	7584180	22	Soft sediment	0	0	0
HA125	21/09/2018	12:26:50 PM	221270	7584178	22	Soft sediment	0	0	0
HA125	21/09/2018	12:27:20 PM	221264	7584178	22	Soft sediment	0	0	0
HA125	21/09/2018	12:27:50 PM	221255	7584176	22	Soft sediment	0	0	0
HA125	21/09/2018	12:28:20 PM	221249	7584177	22	Soft sediment	0	0	0
HA125	21/09/2018	12:28:50 PM	221242	7584177	22	Soft sediment	0	0	0
HA125	21/09/2018	12:29:20 PM	221235	7584176	22	Soft sediment	0	0	0
HA125	21/09/2018	12:29:50 PM	221227	7584176	22	Soft sediment	0	0	0
HA125	21/09/2018	12:30:20 PM	221219	7584177	22	Soft sediment	0	0	0
HA125	21/09/2018	12:30:50 PM	221209	7584178	22	Soft sediment	0	0	0
HA125	21/09/2018	12:31:20 PM	221194	7584177	22	Soft sediment	0	0	0
HA125	21/09/2018	12:31:50 PM	221182	7584178	22	Soft sediment	0	0	0
HA125	21/09/2018	12:32:00 PM	221183	7584177	22	Soft sediment	0	0	0
HA130	21/09/2018	12:38:20 PM	220277	7584100	21	Soft sediment	1	1	0
HA130	21/09/2018	12:38:50 PM	220272	7584099	21	Soft sediment	0	0	0







HA25	22/09/2018	12:47:32 PM	216490	7551800	15	Soft sediment	0	0	0
HA25	22/09/2018	12:48:00 PM	216450	7551822	15	Soft sediment	0	0	0
HA28	22/09/2018	12:58:00 PM	216295	7553213	16	Soft sediment	0	0	0
HA28	22/09/2018	12:58:02 PM	216293	7553215	16	Soft sediment	0	0	0
HA28	22/09/2018	12:58:32 PM	216292	7553215	16	Soft sediment	0	0	0
HA28	22/09/2018	12:59:02 PM	216271	7553213	16	Soft sediment	0	0	0
HA28	22/09/2018	12:59:32 PM	216259	7553209	16	Soft sediment	0	0	0
HA28	22/09/2018	1:00:02 PM	216259	7553209	16	Soft sediment	0	0	0
HA28	22/09/2018	1:00:32 PM	216258	7553209	16	Soft sediment	0	0	0
HA28	22/09/2018	1:01:02 PM	216257	7553209	16	Soft sediment	0	0	0
HA28	22/09/2018	1:01:32 PM	216256	7553209	16	Soft sediment	0	0	0
HA28	22/09/2018	1:02:02 PM	216256	7553209	16	Soft sediment	0	0	0
HA28	22/09/2018	1:02:32 PM	216253	7553209	16	Soft sediment	0	0	0
HA28	22/09/2018	1:03:02 PM	216251	7553209	16	Soft sediment	0	0	0
HA28	22/09/2018	1:03:32 PM	216249	7553209	16	Soft sediment	0	0	0
HA28	22/09/2018	1:04:02 PM	216249	7553209	16	Soft sediment	0	0	0
HA28	22/09/2018	1:04:32 PM	216232	7553205	16	Soft sediment	0	0	0
HA28	22/09/2018	1:05:00 PM	216221	7553206	16	Soft sediment	0	0	0
HA30	22/09/2018	1:11:00 PM	216444	7554696	17	Soft sediment	0	0	0
HA30	22/09/2018	1:11:02 PM	216473	7554691	17	Soft sediment	0	0	0
HA30	22/09/2018	1:11:32 PM	216454	7554696	17	Soft sediment	0	0	0
HA30	22/09/2018	1:12:02 PM	216443	7554698	17	Soft sediment	0	0	0
HA30	22/09/2018	1:12:32 PM	216443	7554698	17	Soft sediment	0	0	0
HA30	22/09/2018	1:13:02 PM	216442	7554698	17	Soft sediment	0	0	0
HA30	22/09/2018	1:13:32 PM	216441	7554698	17	Soft sediment	0	0	0
HA30	22/09/2018	1:14:02 PM	216438	7554698	17	Soft sediment	0	0	0
HA30	22/09/2018	1:14:32 PM	216435	7554699	17	Soft sediment	0	0	0
HA30	22/09/2018	1:15:02 PM	216435	7554699	17	Soft sediment	0	0	0
HA30	22/09/2018	1:15:32 PM	216431	7554702	17	Soft sediment	0	0	0
HA30	22/09/2018	1:16:02 PM	216424	7554702	17	Soft sediment	0	0	0
HA30	22/09/2018	1:16:32 PM	216408	7554711	17	Soft sediment	0	0	0
HA30	22/09/2018	1:17:02 PM	216402	7554715	17	Soft sediment	0	0	0
HA30	22/09/2018	1:17:32 PM	216402	7554715	17	Soft sediment	0	0	0
HA30	22/09/2018	1:18:02 PM	216401	7554715	17	Soft sediment	0	0	0
HA30	22/09/2018	1:18:32 PM	216374	7554716	17	Soft sediment	0	0	0
HA30	22/09/2018	1:19:02 PM	216371	7554716	17	Soft sediment	0	0	0
HA30	22/09/2018	1:19:32 PM	216368	7554714	17	Soft sediment	0	0	0
HA30	22/09/2018	1:20:02 PM	216367	7554716	17	Soft sediment	0	0	0
HA30	22/09/2018	1:20:32 PM	216366	7554716	17	Soft sediment	0	0	0
HA30	22/09/2018	1:21:00 PM	216360	7554715	17	Soft sediment	0	0	0
HA32	22/09/2018	1:34:00 PM	218432	7554869	16	Soft sediment	0	0	0
HA32	22/09/2018	1:34:02 PM	218432	7554870	16	Soft sediment	0	0	0
HA32	22/09/2018	1:34:32 PM	218432	7554870	16	Soft sediment	0	1	0
HA32	22/09/2018	1:35:02 PM	218432	7554870	16	Soft sediment	0	0	0
HA32	22/09/2018	1:35:32 PM	218429	7554877	16	Soft sediment	0	0	0
HA32	22/09/2018	1:36:02 PM	218425	7554883	16	Soft sediment	0	1	0
HA32	22/09/2018	1:36:32 PM	218419	7554888	16	Soft sediment	0	0	0
HA32	22/09/2018	1:37:02 PM	218413	7554893	16	Soft sediment	0	0	0
HA32	22/09/2018	1:37:32 PM	218412	7554893	16	Soft sediment	0	0	0
HA32	22/09/2018	1:38:02 PM	218407	7554901	16	Soft sediment	0	0	0
HA32	22/09/2018	1:38:32 PM	218407	7554901	16	Soft sediment	0	0	0
HA32	22/09/2018	1:39:02 PM	218398	7554907	16	Soft sediment	0	0	0
HA32	22/09/2018	1:39:32 PM	218395	7554912	16	Soft sediment	0	0	0
HA32	22/09/2018	1:40:00 PM	218393	7554910	16	Soft sediment	0	0	0
HA34	22/09/2018	1:46:00 PM	217831	7555753	16	Soft sediment	0	0	0
HA34	22/09/2018	1:46:02 PM	217830	7555755	16	Soft sediment	0	0	0
HA34	22/09/2018	1:46:32 PM	217830	7555755	16	Soft sediment	0	0	0
HA34	22/09/2018	1:47:02 PM	217808	7555764	16	Soft sediment	0	0	0
HA34	22/09/2018	1:47:32 PM	217807	7555765	16	Soft sediment	0	0	0
HA34	22/09/2018	1:48:02 PM	217802	7555768	16	Soft sediment	0	1	0
HA34	22/09/2018	1:48:32 PM	217792	7555775	16	Soft sediment	0	0	0
HA34	22/09/2018	1:49:02 PM	217786	7555781	16	Soft sediment	0	1	0
HA34	22/09/2018	1:49:32 PM	217785	7555783	16	Soft sediment	0	0	0
HA34	22/09/2018	1:50:02 PM	217778	7555785	16	Soft sediment	0	0	0
HA34	22/09/2018	1:50:32 PM	217767	7555793	16	Soft sediment	0	0	0
HA34	22/09/2018	1:51:00 PM	217746	7555803	16	Soft sediment	0	0	0
HA36	22/09/2018	1:58:00 PM	217525	7556643	17	Soft sediment	0	0	0
HA36	22/09/2018	1:58:02 PM	217526	7556644	17	Soft sediment	0	0	0
HA36	22/09/2018	1:58:32 PM	217525	7556644	17	Soft sediment	0	1	0
HA36	22/09/2018	1:59:02 PM	217522	7556646	17	Soft sediment	0	0	0
HA36	22/09/2018	1:59:32 PM	217520	7556646	17	Soft sediment	0	1	0
HA36	22/09/2018	2:00:02 PM	217518	7556645	17	Soft sediment	0	0	0
HA36	22/09/2018	2:00:32 PM	217518	7556645	17	Soft sediment	0	0	0
HA36	22/09/2018	2:03:32 PM	217501	7556648	17	Soft sediment	0	0	0
HA36	22/09/2018	2:04:02 PM	217495	7556649	17	Soft sediment	0	0	0
HA36	22/09/2018	2:04:32 PM	217493	7556650	17	Soft sediment	0	1	0
HA36	22/09/2018	2:05:02 PM	217483	7556653	17	Soft sediment	0	0	0
HA36	22/09/2018	2:05:32 PM	217464	7556662	17	Soft sediment	0	0	0
HA36	22/09/2018	2:06:00 PM	217445	7556664	17	Soft sediment	0	0	0
HA40	22/09/2018	2:14:00 PM	220150	7556787	14	Soft sediment	0	0	0
HA40	22/09/2018	2:14:02 PM	220136	7556789	14	Soft sediment	0	0	0
HA40	22/09/2018	2:14:32 PM	220148	7556786	14	Soft sediment	0	1	0
HA40	22/09/2018	2:15:02 PM	220150	7556786	14	Soft sediment	0	0	0
HA40	22/09/2018	2:15:32 PM	220144	7556786	14	Soft sediment	0	0	0
HA40	22/09/2018	2:16:02 PM	220136	7556788	14	Soft sediment	0	1	0
HA40	22/09/2018	2:16:32 PM	220127	7556790	14	Soft sediment	0	0	0
HA40	22/09/2018	2:17:02 PM	220116	7556792	14	Soft sediment	0	0	0
HA40	22/09/2018	2:17:32 PM	220105	7556796	14	Soft sediment	0	0	0
HA40	22/09/2018	2:18:02 PM	220094	7556800	14	Soft sediment	0	0	0
HA40	22/09/2018	2:18:32 PM	220081	7556804	14	Soft sediment	0	0	0
HA40	22/09/2018	2:19:02 PM	220071	7556805	14	Soft sediment	0	0	0
HA40	22/09/2018	2:19:32 PM	220060	7556810	14	Soft sediment	0	0	0
HA40	22/09/2018	2:20:00 PM	220054	7556810	14	Soft sediment	0	1	0

HA42	22/09/2018	2:26:00 PM	219135	7558003	17	Soft sediment	0	0	0
HA42	22/09/2018	2:26:02 PM	219135	7558003	17	Soft sediment	0	0	0
HA42	22/09/2018	2:26:32 PM	219135	7558003	17	Soft sediment	0	0	0
HA42	22/09/2018	2:27:02 PM	219135	7558003	17	Soft sediment	0	0	0
HA42	22/09/2018	2:27:32 PM	219135	7558003	17	Soft sediment	0	0	0
HA42	22/09/2018	2:28:02 PM	219140	7558001	17	Soft sediment	0	0	0
HA42	22/09/2018	2:28:32 PM	219152	7557999	17	Soft sediment	0	1	0
HA42	22/09/2018	2:29:02 PM	219169	7557995	17	Soft sediment	0	0	0
HA42	22/09/2018	2:29:32 PM	219180	7557994	17	Soft sediment	0	0	0
HA42	22/09/2018	2:30:02 PM	219190	7557991	17	Soft sediment	0	0	0
HA42	22/09/2018	2:30:32 PM	219205	7557988	17	Soft sediment	0	0	0
HA42	22/09/2018	2:31:02 PM	219217	7557987	17	Soft sediment	0	0	0
HA42	22/09/2018	2:31:32 PM	219217	7557987	17	Soft sediment	0	0	0
HA42	22/09/2018	2:32:00 PM	219218	7557986	17	Soft sediment	0	0	0
HA43	22/09/2018	2:38:00 PM	218317	7558671	26	Soft sediment	0	0	0
HA43	22/09/2018	2:38:02 PM	218316	7558673	26	Soft sediment	0	0	0
HA43	22/09/2018	2:38:32 PM	218316	7558672	26	Soft sediment	0	0	0
HA43	22/09/2018	2:39:02 PM	218325	7558661	26	Soft sediment	0	0	0
HA43	22/09/2018	2:39:32 PM	218337	7558652	26	Soft sediment	0	0	0
HA43	22/09/2018	2:40:02 PM	218346	7558650	26	Soft sediment	0	0	0
HA43	22/09/2018	2:40:32 PM	218354	7558645	26	Soft sediment	0	0	0
HA43	22/09/2018	2:41:02 PM	218362	7558641	26	Soft sediment	0	0	0
HA43	22/09/2018	2:41:32 PM	218363	7558640	26	Soft sediment	0	0	0
HA43	22/09/2018	2:42:02 PM	218375	7558633	26	Soft sediment	0	0	0
HA43	22/09/2018	2:42:32 PM	218387	7558627	26	Soft sediment	0	0	0
HA43	22/09/2018	2:43:00 PM	218399	7558621	26	Soft sediment	0	0	0
HA19	23/09/2018	7:59:00 AM	212861	7549066	15	Soft sediment	0	0	0
HA19	23/09/2018	7:59:26 AM	212859	7549070	15	Soft sediment	0	0	0
HA19	23/09/2018	8:01:26 AM	212818	7549086	15	Soft sediment	0	0	0
HA19	23/09/2018	8:01:56 AM	212813	7549090	15	Soft sediment	0	0	0
HA19	23/09/2018	8:02:26 AM	212802	7549100	15	Soft sediment	0	0	0
HA19	23/09/2018	8:02:56 AM	212794	7549106	15	Soft sediment	0	0	0
HA19	23/09/2018	8:03:26 AM	212786	7549114	15	Soft sediment	0	0	0
HA19	23/09/2018	8:03:56 AM	212781	7549119	15	Soft sediment	0	0	0
HA19	23/09/2018	8:04:26 AM	212773	7549128	15	Soft sediment	0	0	0
HA19	23/09/2018	8:04:56 AM	212772	7549129	15	Soft sediment	0	0	0
HA19	23/09/2018	8:05:26 AM	212772	7549129	15	Soft sediment	0	0	0
HA19	23/09/2018	8:05:56 AM	212771	7549130	15	Soft sediment	0	0	0
HA19	23/09/2018	8:04:00 AM	212773	7549130	15	Soft sediment	0	0	0
HA203	23/09/2018	8:13:00 AM	211272	7548362	16	Soft sediment	0	0	0
HA203	23/09/2018	8:13:26 AM	211278	7548359	16	Soft sediment	0	0	0
HA203	23/09/2018	8:13:56 AM	211275	7548363	16	Soft sediment	0	0	0
HA203	23/09/2018	8:14:26 AM	211274	7548363	16	Soft sediment	0	0	0
HA203	23/09/2018	8:14:56 AM	211273	7548362	16	Soft sediment	0	0	0
HA203	23/09/2018	8:15:26 AM	211260	7548368	16	Soft sediment	0	0	0
HA203	23/09/2018	8:15:56 AM	211244	7548376	16	Soft sediment	0	0	0
HA203	23/09/2018	8:16:26 AM	211236	7548384	16	Soft sediment	0	0	0
HA203	23/09/2018	8:16:56 AM	211227	7548387	16	Soft sediment	0	0	0
HA203	23/09/2018	8:17:26 AM	211218	7548390	16	Soft sediment	0	0	0
HA203	23/09/2018	8:17:56 AM	211205	7548398	16	Soft sediment	0	0	0
HA203	23/09/2018	8:18:00 AM	211185	7548409	16	Soft sediment	0	0	0
HA14	23/09/2018	8:28:00 AM	212055	7546831	15	Soft sediment	0	0	0
HA14	23/09/2018	8:28:26 AM	212055	7546831	15	Soft sediment	0	0	0
HA14	23/09/2018	8:28:56 AM	212055	7546832	15	Soft sediment	0	0	0
HA14	23/09/2018	8:29:26 AM	212054	7546832	15	Soft sediment	0	0	0
HA14	23/09/2018	8:29:56 AM	212049	7546835	15	Soft sediment	0	0	0
HA14	23/09/2018	8:30:26 AM	212038	7546844	15	Soft sediment	0	0	0
HA14	23/09/2018	8:30:56 AM	212029	7546848	15	Soft sediment	0	0	0
HA14	23/09/2018	8:31:26 AM	212028	7546848	15	Soft sediment	0	0	0
HA14	23/09/2018	8:31:56 AM	212023	7546854	15	Soft sediment	0	0	0
HA14	23/09/2018	8:32:26 AM	212015	7546861	15	Soft sediment	0	0	0
HA14	23/09/2018	8:32:56 AM	212003	7546871	15	Soft sediment	0	0	0
HA14	23/09/2018	8:33:26 AM	211994	7546877	15	Soft sediment	0	0	0
HA14	23/09/2018	8:33:56 AM	211987	7546882	15	Soft sediment	0	0	0
HA14	23/09/2018	8:34:00 AM	211986	7546884	15	Soft sediment	0	0	0
HA193	23/09/2018	8:44:00 AM	212292	7545601	15	Soft sediment	0	0	0
HA193	23/09/2018	8:44:26 AM	212292	7545602	15	Soft sediment	0	0	0
HA193	23/09/2018	8:44:56 AM	212290	7545603	15	Soft sediment	0	0	0
HA193	23/09/2018	8:45:26 AM	212281	7545606	15	Soft sediment	0	0	0
HA193	23/09/2018	8:45:56 AM	212262	7545609	15	Soft sediment	0	0	0
HA193	23/09/2018	8:46:26 AM	212254	7545610	15	Soft sediment	0	0	0
HA193	23/09/2018	8:46:56 AM	212247	7545611	15	Soft sediment	0	0	0
HA193	23/09/2018	8:47:26 AM	212239	7545611	15	Soft sediment	0	0	0
HA193	23/09/2018	8:47:56 AM	212236	7545612	15	Soft sediment	0	0	0
HA193	23/09/2018	8:48:26 AM	212233	7545612	15	Soft sediment	0	0	0
HA193	23/09/2018	8:48:56 AM	212215	7545618	15	Soft sediment	0	0	0
HA193	23/09/2018	8:49:00 AM	212205	7545618	15	Soft sediment	0	0	0
HA8	23/09/2018	9:00:00 AM	209973	7544961	15	Soft sediment	0	0	0
HA8	23/09/2018	9:00:26 AM	209972	7544961	15	Soft sediment	0	0	0
HA8	23/09/2018	9:00:56 AM	209961	7544960	15	Soft sediment	0	0	0
HA8	23/09/2018	9:01:26 AM	209953	7544960	15	Soft sediment	0	0	0
HA8	23/09/2018	9:01:56 AM	209952	7544960	15	Soft sediment	0	0	0
HA8	23/09/2018	9:02:26 AM	209939	7544963	15	Soft sediment	0	0	0
HA8	23/09/2018	9:02:56 AM	209927	7544971	15	Soft sediment	0	0	0
HA8	23/09/2018	9:03:26 AM	209920	7544974	15	Soft sediment	0	0	0
HA8	23/09/2018	9:03:56 AM	209911	7544977	15	Soft sediment	0	0	0
HA8	23/09/2018	9:04:26 AM	209899	7544978	15	Soft sediment	0	0	0
HA8	23/09/2018	9:04:56 AM	209886	7544982	15	Soft sediment	0	0	0
HA8	23/09/2018	9:05:00 AM	209879	7544990	15	Soft sediment	0	0	0
HA200	23/09/2018	9:13:00 AM	210169	7542829	14	Soft sediment	0	0	0
HA200	23/09/2018	9:13:26 AM	210168	7542828	14	Soft sediment	0	0	0
HA200	23/09/2018	9:13:56 AM	210168	7542828	14	Soft sediment	0	0	0
HA200	23/09/2018	9:14:26 AM	210167	7542828	14	Soft sediment	0	0	0
HA200	23/09/2018	9:14:56 AM	210167	7542828	14	Soft sediment	0	0	0
HA200	23/09/2018	9:15:26 AM	210164	7542832	14	Soft sediment	0	0	0
HA200	23/09/2018	9:15:56 AM	210157	7542837	14	Soft sediment	0	0	0
HA200	23/09/2018	9:16:26 AM	210156	7542838	14	Soft sediment	0	0	0
HA200	23/09/2018	9:16:56 AM	210155	7542841	14	Soft sediment	0	0	0

HA200	23/09/2018	9:17:26 AM	210154	7542842	14	Soft sediment	0	0	0
HA200	23/09/2018	9:17:56 AM	210153	7542844	14	Soft sediment	0	0	0
HA200	23/09/2018	9:18:26 AM	210152	7542845	14	Soft sediment	0	0	0
HA200	23/09/2018	9:18:56 AM	210143	7542856	14	Soft sediment	0	0	0
HA200	23/09/2018	9:19:26 AM	210136	7542871	14	Soft sediment	0	0	0
HA200	23/09/2018	9:19:56 AM	210136	7542871	14	Soft sediment	0	0	0
HA200	23/09/2018	9:20:26 AM	210136	7542874	14	Soft sediment	0	0	0
HA200	23/09/2018	9:20:56 AM	210127	7542888	14	Soft sediment	0	0	0
HA200	23/09/2018	9:21:26 AM	210120	7542898	14	Soft sediment	0	0	0
HA200	23/09/2018	9:21:56 AM	210113	7542903	14	Soft sediment	0	0	0
HA200	23/09/2018	9:22:00 AM	210104	7542910	14	Soft sediment	0	0	0
HA2	23/09/2018	9:32:00 AM	207958	7542731	14	Soft sediment	0	0	0
HA2	23/09/2018	9:32:26 AM	207959	7542730	14	Soft sediment	0	0	0
HA2	23/09/2018	9:32:56 AM	207949	7542737	14	Soft sediment	0	0	0
HA2	23/09/2018	9:33:26 AM	207946	7542739	14	Soft sediment	0	0	0
HA2	23/09/2018	9:33:56 AM	207940	7542744	14	Soft sediment	0	0	0
HA2	23/09/2018	9:34:26 AM	207936	7542747	14	Soft sediment	0	0	0
HA2	23/09/2018	9:34:56 AM	207930	7542750	14	Soft sediment	0	0	0
HA2	23/09/2018	9:35:26 AM	207923	7542758	14	Soft sediment	0	0	0
HA2	23/09/2018	9:35:56 AM	207920	7542762	14	Soft sediment	0	0	0
HA2	23/09/2018	9:36:26 AM	207912	7542769	14	Soft sediment	0	0	0
HA2	23/09/2018	9:36:56 AM	207908	7542772	14	Soft sediment	0	0	0
HA2	23/09/2018	9:37:26 AM	207903	7542778	14	Soft sediment	0	0	0
HA2	23/09/2018	9:37:56 AM	207896	7542786	14	Soft sediment	0	0	0
HA2	23/09/2018	9:38:00 AM	207883	7542800	14	Soft sediment	0	0	0
HA6	23/09/2018	9:50:00 AM	206266	7542283	13	Soft sediment	0	0	0
HA6	23/09/2018	9:50:26 AM	206266	7542281	13	Soft sediment	0	0	0
HA6	23/09/2018	9:50:56 AM	206265	7542283	13	Soft sediment	0	0	0
HA6	23/09/2018	9:51:26 AM	206261	7542286	13	Soft sediment	0	0	0
HA6	23/09/2018	9:51:56 AM	206261	7542286	13	Soft sediment	0	0	0
HA6	23/09/2018	9:52:26 AM	206259	7542287	13	Soft sediment	0	0	0
HA6	23/09/2018	9:52:56 AM	206255	7542290	13	Soft sediment	0	0	0
HA6	23/09/2018	9:53:26 AM	206241	7542303	13	Soft sediment	0	0	0
HA6	23/09/2018	9:53:56 AM	206234	7542310	13	Soft sediment	0	0	0
HA6	23/09/2018	9:54:26 AM	206228	7542315	13	Soft sediment	0	0	0
HA6	23/09/2018	9:54:56 AM	206218	7542325	13	Soft sediment	0	0	0
HA6	23/09/2018	9:55:26 AM	206215	7542327	13	Soft sediment	0	0	0
HA6	23/09/2018	9:55:56 AM	206207	7542331	13	Soft sediment	0	0	0
HA6	23/09/2018	9:56:26 AM	206204	7542332	13	Soft sediment	0	0	0
HA6	23/09/2018	9:56:56 AM	206195	7542337	13	Soft sediment	0	0	0
HA6	23/09/2018	9:57:00 AM	206187	7542341	13	Soft sediment	0	0	0
HA209	23/09/2018	10:19:26 AM	202862	7539471		Soft sediment	0	0	0
HA209	23/09/2018	10:19:56 AM	202852	7539482		Soft sediment	0	0	0
HA209	23/09/2018	10:20:26 AM	202841	7539494		Soft sediment	0	0	0
HA209	23/09/2018	10:20:56 AM	202833	7539507		Reef with macroalgae and filter feeders	80	5	0
HA209	23/09/2018	10:21:26 AM	202825	7539519		Reef with macroalgae and filter feeders	80	16	3
HA209	23/09/2018	10:21:56 AM	202818	7539534		Reef with macroalgae and filter feeders	90	5	4
HA209	23/09/2018	10:22:26 AM	202812	7539553		Reef with macroalgae and filter feeders	90	11	7
HA209	23/09/2018	10:22:56 AM	202806	7539572		Reef with macroalgae and filter feeders	85	8	3
HA209	23/09/2018	10:23:26 AM	202800	7539589		Reef with macroalgae and filter feeders	90	12	4
HA209	23/09/2018	10:23:56 AM	202795	7539607		Reef with macroalgae and filter feeders	90	1	5
HA209	23/09/2018	10:24:26 AM	202788	7539620		Reef with macroalgae and filter feeders	80	5	8
HA209	23/09/2018	10:24:56 AM	202783	7539637		Reef with macroalgae and filter feeders	75	10	3
HA209	23/09/2018	10:25:26 AM	202777	7539654		Soft sediment	10	0	1
HA209	23/09/2018	10:25:56 AM	202771	7539671		Soft sediment	10	2	0
HA209	23/09/2018	10:26:26 AM	202762	7539688		Reef with macroalgae and filter feeders	75	7	5
HA209	23/09/2018	10:26:56 AM	202752	7539706		Reef with macroalgae and filter feeders	75	6	3
HA209	23/09/2018	10:27:26 AM	202740	7539724		Reef with macroalgae and filter feeders	85	12	4
HA209	23/09/2018	10:27:56 AM	202730	7539743		Reef with macroalgae and filter feeders	95	5	10
HA209	23/09/2018	10:28:26 AM	202721	7539761		Reef with macroalgae and filter feeders	95	8	5
HA209	23/09/2018	10:28:56 AM	202711	7539777		Reef with macroalgae and filter feeders	95	8	6
HA209	23/09/2018	10:29:26 AM	202704	7539788		Reef with macroalgae and filter feeders	95	12	6
HA209	23/09/2018	10:29:56 AM	202697	7539796		Reef with macroalgae and filter feeders	100	9	7
HA209	23/09/2018	10:30:26 AM	202687	7539808		Reef with macroalgae and filter feeders	100	9	15
HA209	23/09/2018	10:30:56 AM	202675	7539827		Soft sediment	25	15	4
HA209	23/09/2018	10:31:26 AM	202667	7539843		Soft sediment	0	9	0
HA209	23/09/2018	10:31:56 AM	202658	7539859		Soft sediment	25	14	10
HA209	23/09/2018	10:32:26 AM	202650	7539876		Soft sediment	5	13	2
HA209	23/09/2018	10:32:56 AM	202642	7539892		Reef with macroalgae and filter feeders	90	4	3
HA209	23/09/2018	10:33:26 AM	202633	7539911		Reef with macroalgae and filter feeders	75	5	3
HA209	23/09/2018	10:33:56 AM	202627	7539927		Reef with macroalgae and filter feeders	75	6	2
HA209	23/09/2018	10:34:26 AM	202618	7539943		Soft sediment	0	3	0
HA209	23/09/2018	10:34:56 AM	202610	7539962		Soft sediment	0	3	0
HA213	23/09/2018	10:44:26 AM	203167	7539719	6	Reef with macroalgae and filter feeders	65	17	5
HA213	23/09/2018	10:44:56 AM	203162	7539738	6	Reef with macroalgae and filter feeders	60	15	3
HA213	23/09/2018	10:45:26 AM	203156	7539751	6	Reef with macroalgae and filter feeders	30	12	1
HA213	23/09/2018	10:45:56 AM	203151	7539767	6	Reef with macroalgae and filter feeders	20	42	1
HA213	23/09/2018	10:46:26 AM	203145	7539786	6	Reef with macroalgae and filter feeders	25	50	0
HA213	23/09/2018	10:46:56 AM	203144	7539809	6	Reef with macroalgae and filter feeders	35	30	0
HA213	23/09/2018	10:47:26 AM	203139	7539826	6	Reef with macroalgae and filter feeders	35	22	0
HA213	23/09/2018	10:47:56 AM	203136	7539847	6	Reef with macroalgae and filter feeders	35	40	2
HA213	23/09/2018	10:48:26 AM	203129	7539865	6	Reef with macroalgae and filter feeders	35	25	3
HA213	23/09/2018	10:48:56 AM	203124	7539881	6	Reef with macroalgae and filter feeders	20	31	2
HA213	23/09/2018	10:49:26 AM	203120	7539900	6	Reef with macroalgae and filter feeders	25	41	1
HA213	23/09/2018	10:49:56 AM	203116	7539920	6	Reef with macroalgae and filter feeders	25	20	1
HA213	23/09/2018	10:50:26 AM	203113	7539939	6	Reef with macroalgae and filter feeders	5	15	0
HA213	23/09/2018	10:50:56 AM	203111	7539958	6	Reef with macroalgae and filter feeders	5	4	0
HA213	23/09/2018	10:51:26 AM	203109	7539977	6	Reef with macroalgae and filter feeders	25	39	0
HA213	23/09/2018	10:51:56 AM	203104	7540001	6	Reef with macroalgae and filter feeders	25	70	1
HA213	23/09/2018	10:52:26 AM	203098	7540024	6	Reef with macroalgae and filter feeders	30	55	2
HA213	23/09/2018	10:52:56 AM	203093	7540046	6	Reef with macroalgae and filter feeders	10	16	1
HA213	23/09/2018	10:53:26 AM	203087	7540065	6	Reef with macroalgae and filter feeders	15	4	0
HA213	23/09/2018	10:53:56 AM	203082	7540086	6	Reef with macroalgae and filter feeders	20	36	0
HA213	23/09/2018	10:54:26 AM	203075	7540103	6	Reef with macroalgae and filter feeders	30	86	0
HA213	23/09/2018	10:54:56 AM	203068	7540122	6	Reef with macroalgae and filter feeders	35	39	1
HA213	23/09/2018	10:55:26 AM	203061	7540138	6	Reef with macroalgae and filter feeders	30	104	0
HA213	23/09/2018	10:55:56 AM	203056	7540158	6	Reef with macroalgae and filter feeders	30	64	1
HA213	23/09/2018	10:56:26 AM	203048	7540177	6	Soft sediment	15	55	1

HA213	23/09/2018	10:56:56 AM	203040	7540195	6	Soft sediment	15	39	0
HA213	23/09/2018	10:57:26 AM	203032	7540212	6	Soft sediment	10	34	2
HA213	23/09/2018	10:57:56 AM	203020	7540229	6	Soft sediment	10	23	0
HA213	23/09/2018	10:58:26 AM	203019	7540248	6	Soft sediment	10	19	0
HA213	23/09/2018	10:58:56 AM	203017	7540268	6	Soft sediment	5	31	0
HA213	23/09/2018	10:59:26 AM	203012	7540287	6	Soft sediment	5	21	0
HA213	23/09/2018	10:59:56 AM	203005	7540305	6	Soft sediment	5	68	3
HA215	23/09/2018	11:14:26 AM	202938	7542739	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:14:56 AM	202942	7542756	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:15:26 AM	202937	7542769	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:15:56 AM	202925	7542778	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:16:26 AM	202916	7542790	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:16:56 AM	202908	7542806	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:17:26 AM	202902	7542825	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:17:56 AM	202892	7542841	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:18:26 AM	202885	7542856	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:18:56 AM	202876	7542875	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:19:26 AM	202872	7542892	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:19:56 AM	202867	7542910	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:20:26 AM	202862	7542929	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:20:56 AM	202856	7542947	9	Soft sediment with turf algae	0	0	0
HA215	23/09/2018	11:21:00 AM	202844	7542963	9	Soft sediment with turf algae	0	0	0
HA214	23/09/2018	11:24:26 AM	202660	7543256	7	Soft sediment with turf algae	10	2	0
HA214	23/09/2018	11:24:56 AM	202652	7543273	7	Soft sediment with turf algae	0	0	0
HA214	23/09/2018	11:25:26 AM	202650	7543289	7	Soft sediment with turf algae	5	1	0
HA214	23/09/2018	11:25:56 AM	202658	7543303	7	Soft sediment with turf algae	5	0	0
HA214	23/09/2018	11:26:26 AM	202672	7543310	7	Soft sediment with turf algae	5	0	0
HA214	23/09/2018	11:26:56 AM	202687	7543318	7	Soft sediment with turf algae	5	3	0
HA214	23/09/2018	11:27:26 AM	202701	7543328	7	Soft sediment with turf algae	0	3	0
HA214	23/09/2018	11:27:56 AM	202715	7543337	7	Soft sediment with turf algae	5	8	1
HA214	23/09/2018	11:28:26 AM	202728	7543345	7	Soft sediment with turf algae	0	4	0
HA214	23/09/2018	11:28:56 AM	202740	7543343	7	Soft sediment with turf algae	0	13	0
HA214	23/09/2018	11:29:26 AM	202754	7543339	7	Soft sediment with turf algae	5	11	0
HA214	23/09/2018	11:29:56 AM	202770	7543340	7	Soft sediment with turf algae	5	25	1
HA214	23/09/2018	11:30:00 AM	202784	7543345	7	Soft sediment with turf algae	0	17	0
HA216	23/09/2018	11:43:00 AM	202728	7548993	7	Reef with macroalgae and filter feeders	35	29	13
HA216	23/09/2018	11:43:26 AM	202726	7548991	7	Reef with macroalgae and filter feeders	40	17	9
HA216	23/09/2018	11:43:56 AM	202741	7549001	7	Reef with macroalgae and filter feeders	40	13	25
HA216	23/09/2018	11:44:26 AM	202754	7549008	7	Reef with macroalgae and filter feeders	40	13	8
HA216	23/09/2018	11:44:56 AM	202770	7549010	7	Reef with macroalgae and filter feeders	45	11	15
HA216	23/09/2018	11:45:26 AM	202784	7549017	7	Reef with macroalgae and filter feeders	45	6	10
HA216	23/09/2018	11:45:56 AM	202798	7549022	7	Soft sediment	5	0	0
HA216	23/09/2018	11:46:26 AM	202812	7549028	7	Soft sediment	0	3	0
HA216	23/09/2018	11:46:56 AM	202828	7549030	7	Soft sediment	0	5	0
HA216	23/09/2018	11:47:26 AM	202846	7549041	7	Soft sediment	5	2	0
HA216	23/09/2018	11:47:56 AM	202861	7549052	7	Soft sediment	0	2	0
HA216	23/09/2018	11:48:00 AM	202868	7549064	7	Soft sediment	0	6	0
HA217	23/09/2018	11:55:56 AM	203139	7548654	13	Soft sediment	0	0	0
HA217	23/09/2018	11:56:26 AM	203135	7548675	13	Soft sediment	0	0	0
HA217	23/09/2018	11:56:56 AM	203133	7548692	13	Soft sediment	0	0	0
HA217	23/09/2018	11:57:26 AM	203132	7548711	13	Soft sediment	0	0	0
HA217	23/09/2018	11:57:56 AM	203132	7548732	13	Soft sediment	0	0	0
HA217	23/09/2018	11:58:26 AM	203132	7548750	13	Soft sediment	0	0	0
HA217	23/09/2018	11:58:56 AM	203133	7548768	13	Soft sediment	0	0	0
HA217	23/09/2018	11:59:26 AM	203133	7548788	13	Soft sediment	0	0	0
HA217	23/09/2018	11:59:56 AM	203134	7548808	13	Soft sediment	0	0	0
HA217	23/09/2018	12:00:26 PM	203134	7548829	13	Soft sediment	0	0	0
HA217	23/09/2018	12:00:56 PM	203134	7548849	13	Soft sediment	0	1	0
HA217	23/09/2018	12:01:26 PM	203133	7548869	13	Soft sediment	0	0	0
HA217	23/09/2018	12:01:56 PM	203132	7548889	13	Soft sediment	0	0	0
HA217	23/09/2018	12:02:26 PM	203133	7548910	13	Soft sediment	0	0	0
HA217	23/09/2018	12:02:56 PM	203135	7548930	13	Soft sediment	0	0	0
HA217	23/09/2018	12:03:00 PM	203133	7548953	13	Soft sediment	0	0	0
HA218	23/09/2018	12:18:00 PM	207646	7553956	13	Soft sediment	0	58	0
HA218	23/09/2018	12:18:26 PM	207643	7553953	13	Soft sediment	0	32	0
HA218	23/09/2018	12:18:56 PM	207654	7553972	13	Soft sediment	0	50	2
HA218	23/09/2018	12:19:26 PM	207665	7553990	13	Soft sediment	0	78	0
HA218	23/09/2018	12:19:56 PM	207673	7554010	13	Reef with filter feeders	0	89	0
HA218	23/09/2018	12:20:26 PM	207678	7554027	13	Reef with filter feeders	0	118	4
HA218	23/09/2018	12:20:56 PM	207682	7554043	13	Reef with filter feeders	0	52	7
HA218	23/09/2018	12:21:26 PM	207684	7554060	13	Reef with filter feeders	0	24	13
HA218	23/09/2018	12:21:56 PM	207688	7554075	13	Reef with filter feeders	0	20	7
HA218	23/09/2018	12:22:26 PM	207692	7554091	13	Reef with filter feeders	0	22	15
HA218	23/09/2018	12:22:56 PM	207697	7554107	13	Reef with filter feeders	0	32	6
HA218	23/09/2018	12:23:00 PM	207701	7554134	13	Reef with filter feeders	0	60	1
HA219	23/09/2018	12:36:00 PM	210910	7557093	17	Soft sediment	1	0	0
HA219	23/09/2018	12:36:26 PM	210911	7557082	17	Soft sediment	1	0	0
HA219	23/09/2018	12:36:56 PM	210912	7557100	17	Soft sediment	1	0	0
HA219	23/09/2018	12:37:26 PM	210915	7557114	17	Soft sediment	1	0	0
HA219	23/09/2018	12:37:56 PM	210915	7557128	17	Soft sediment	0	0	0
HA219	23/09/2018	12:38:26 PM	210916	7557144	17	Soft sediment	1	0	0
HA219	23/09/2018	12:38:56 PM	210918	7557161	17	Soft sediment	0	0	0
HA219	23/09/2018	12:39:26 PM	210918	7557177	17	Soft sediment	0	0	0
HA219	23/09/2018	12:39:56 PM	210921	7557193	17	Soft sediment	1	0	0
HA219	23/09/2018	12:40:26 PM	210923	7557206	17	Soft sediment	0	0	0
HA219	23/09/2018	12:40:56 PM	210925	7557221	17	Soft sediment	0	0	0
HA219	23/09/2018	12:41:26 PM	210926	7557235	17	Soft sediment	0	0	0
HA219	23/09/2018	12:41:56 PM	210928	7557254	17	Soft sediment	0	0	0
HA219	23/09/2018	12:42:26 PM	210934	7557268	17	Soft sediment	1	0	0
HA219	23/09/2018	12:42:56 PM	210935	7557285	17	Soft sediment	1	0	0
HA219	23/09/2018	12:43:00 PM	210935	7557294	17	Soft sediment	1	0	0
HA220	23/09/2018	1:01:56 PM	213746	7558329	13	Pavement reef / soft sediment	10	12	0
HA220	23/09/2018	1:02:26 PM	213736	7558348	13	Pavement reef / soft sediment	15	17	0
HA220	23/09/2018	1:02:56 PM	213724	7558362	13	Pavement reef / soft sediment	10	6	0
HA220	23/09/2018	1:03:26 PM	213714	7558371	13	Pavement reef / soft sediment	10	2	0
HA220	23/09/2018	1:03:56 PM	213700	7558385	13	Pavement reef / soft sediment	10	2	0
HA220	23/09/2018	1:04:26 PM	213684	7558401	13	Pavement reef / soft sediment	5	3	0
HA220	23/09/2018	1:04:56 PM	213669	7558412	13	Pavement reef / soft sediment	10	3	0

HA220	23/09/2018	1:05:26 PM	213656	7558420	13	Reef with macroalgae and filter feeders	15	12	0
HA220	23/09/2018	1:05:56 PM	213641	7558432	13	Reef with macroalgae and filter feeders	35	2	1
HA220	23/09/2018	1:06:26 PM	213629	7558447	13	Reef with macroalgae and filter feeders	40	3	1
HA220	23/09/2018	1:06:56 PM	213612	7558465	13	Reef with macroalgae and filter feeders	45	9	26
HA220	23/09/2018	1:07:26 PM	213595	7558478	13	Reef with macroalgae and filter feeders	30	9	25
HA220	23/09/2018	1:07:56 PM	213580	7558480	13	Reef with macroalgae and filter feeders	40	5	10
HA220	23/09/2018	1:08:26 PM	213569	7558484	13	Reef with macroalgae and filter feeders	40	4	10
HA220	23/09/2018	1:08:56 PM	213554	7558491	13	Reef with macroalgae and filter feeders	90	8	13
HA220	23/09/2018	1:09:26 PM	213541	7558504	13	Reef with macroalgae and filter feeders	90	3	5
HA220	23/09/2018	1:09:56 PM	213526	7558525	13	Reef with macroalgae and filter feeders	90	0	4
HA220	23/09/2018	1:10:26 PM	213510	7558548	13	Reef with macroalgae and filter feeders	75	8	7
HA220	23/09/2018	1:10:56 PM	213495	7558571	13	Reef with macroalgae and filter feeders	85	2	10
HA220	23/09/2018	1:11:26 PM	213481	7558594	13	Reef with macroalgae and filter feeders	65	2	12
HA220	23/09/2018	1:11:56 PM	213465	7558616	13	Reef with macroalgae and filter feeders	70	0	18
HA220	23/09/2018	1:12:26 PM	213448	7558635	13	Reef with macroalgae and filter feeders	50	2	4
HA220	23/09/2018	1:12:56 PM	213431	7558653	13	Reef with macroalgae and filter feeders	45	11	55
HA220	23/09/2018	1:13:26 PM	213413	7558666	13	Reef with macroalgae and filter feeders	70	5	6
HA220	23/09/2018	1:13:56 PM	213399	7558672	13	Reef with macroalgae and filter feeders	65	5	20
HA220	23/09/2018	1:14:26 PM	213389	7558680	13	Reef with macroalgae and filter feeders	45	5	0
HA220	23/09/2018	1:14:56 PM	213378	7558685	13	Reef with macroalgae and filter feeders	45	7	45
HA220	23/09/2018	1:15:26 PM	213366	7558697	13	Reef with macroalgae and filter feeders	45	14	35
HA220	23/09/2018	1:15:56 PM	213356	7558717	13	Reef with macroalgae and filter feeders	45	8	18
HA220	23/09/2018	1:16:26 PM	213351	7558739	13	Reef with macroalgae and filter feeders	45	3	12
HA220	23/09/2018	1:16:56 PM	213344	7558761	13	Pavement reef / soft sediment	0	5	0
HA220	23/09/2018	1:17:26 PM	213334	7558782	13	Pavement reef / soft sediment	0	9	0
HA220	23/09/2018	1:17:56 PM	213327	7558799	13	Pavement reef / soft sediment	0	6	0
HA220	23/09/2018	1:18:00 PM	213319	7558815	13	Pavement reef / soft sediment	0	4	0
HA221	23/09/2018	1:39:00 PM	213358	7557996	11	Pavement reef / soft sediment	10	12	1
HA221	23/09/2018	1:39:26 PM	213358	7558002	11	Pavement reef / soft sediment	10	5	1
HA221	23/09/2018	1:39:56 PM	213357	7558018	11	Pavement reef / soft sediment	10	9	0
HA221	23/09/2018	1:40:26 PM	213359	7558030	11	Reef with macroalgae and filter feeders	15	14	1
HA221	23/09/2018	1:40:56 PM	213361	7558043	11	Reef with macroalgae and filter feeders	35	12	1
HA221	23/09/2018	1:41:26 PM	213364	7558058	11	Reef with macroalgae and filter feeders	35	10	10
HA221	23/09/2018	1:41:56 PM	213365	7558073	11	Reef with macroalgae and filter feeders	40	4	5
HA221	23/09/2018	1:42:26 PM	213368	7558088	11	Reef with macroalgae and filter feeders	45	3	13
HA221	23/09/2018	1:42:56 PM	213369	7558103	11	Reef with macroalgae and filter feeders	60	4	5
HA221	23/09/2018	1:43:26 PM	213372	7558116	11	Reef with macroalgae and filter feeders	50	8	2
HA221	23/09/2018	1:43:56 PM	213374	7558132	11	Reef with macroalgae and filter feeders	85	5	7
HA221	23/09/2018	1:44:26 PM	213376	7558149	11	Reef with macroalgae and filter feeders	95	1	3
HA221	23/09/2018	1:44:56 PM	213378	7558166	11	Reef with macroalgae and filter feeders	95	0	2
HA221	23/09/2018	1:45:26 PM	213379	7558183	11	Reef with macroalgae and filter feeders	95	2	1
HA221	23/09/2018	1:45:56 PM	213381	7558202	11	Reef with macroalgae and filter feeders	85	0	2
HA221	23/09/2018	1:46:26 PM	213384	7558220	11	Reef with macroalgae and filter feeders	90	1	0
HA221	23/09/2018	1:46:56 PM	213384	7558239	11	Reef with macroalgae and filter feeders	80	0	0
HA221	23/09/2018	1:47:26 PM	213386	7558257	11	Reef with macroalgae and filter feeders	65	0	0
HA221	23/09/2018	1:47:56 PM	213387	7558276	11	Reef with macroalgae and filter feeders	95	10	2
HA221	23/09/2018	1:48:26 PM	213391	7558295	11	Reef with macroalgae and filter feeders	95	3	2
HA221	23/09/2018	1:48:56 PM	213391	7558312	11	Reef with macroalgae and filter feeders	80	1	5
HA221	23/09/2018	1:49:26 PM	213393	7558330	11	Reef with macroalgae and filter feeders	50	3	13
HA221	23/09/2018	1:49:56 PM	213395	7558345	11	Reef with macroalgae and filter feeders	70	7	8
HA221	23/09/2018	1:50:26 PM	213398	7558363	11	Reef with macroalgae and filter feeders	75	0	12
HA221	23/09/2018	1:50:56 PM	213401	7558382	11	Reef with macroalgae and filter feeders	85	2	7
HA221	23/09/2018	1:51:26 PM	213403	7558402	11	Reef with macroalgae and filter feeders	75	0	3
HA221	23/09/2018	1:51:56 PM	213405	7558423	11	Reef with macroalgae and filter feeders	75	0	8

Filamentous turf algae.

Filamentous turf algae.

Filamentous turf algae.

Filamentous turf algae.

## APPENDIX 2: TOWED VIDEO SURVEY NOTES

**SITE LOG:** Exmouth Gulf Benthic Communities and Habitat Survey  
**Start Date:** 19 September 2018  
**End Date:** 23 September 2018

Transect	Start		End		Notes
	Time	Waypoint	Time	Waypoint	
<b>19/09/2018 (11:15 – 17:45)</b>					
HA77	12:35	001	12:40	002	5 minute tow drifting North, depth 20m, Bioturbated soft sediment.
HA78	12:49	003	12:54	004	5 minute tow drifting Northeast, depth 20m, Bioturbated soft sediment.
HA75	13:08	005	13:14	006	6 minute tow drifting North Northeast, depth 20m, Bioturbated soft sediment.
HA74	13:24	007	13:29	008	5 minute tow drifting North Northeast, depth 20m, Bioturbated soft sediment dominated with some small sparse macroalgae throughout the tow (likely drift).
HA72	13:43	009	13:48	010	5 minute tow, depth 20m, Bioturbated soft sediment dominated with some sparse patches macroalgae present (likely drift).
HA71	14:03	011	14:08	012	5 minute tow, depth 19m, Bioturbated soft sediment dominated with some sparse patches macroalgae (likely drift). Potentially a few sponges throughout transect.
HA68	14:23	013	14:28	014	5 minute tow, depth 18m, Bioturbated soft sediment dominated with some sparse patches macroalgae (likely drift)
HA67	14:41	015	14:46	016	5 minute tow, depth 18m, Bioturbated soft sediment dominated with some sparse patches macroalgae (likely drift)
HA64	15:00	017	15:06	018	6 minute tow drifting Southwest, depth 15m, Bioturbated soft sediment dominated.
HA57	15:20	019	15:25	020	5 minute tow, depth 15m, Bioturbated soft sediment dominated.
HA55	15:33	021	15:38	022	5 minute tow, depth 15m, Bioturbated soft sediment dominated.
HA48	15:47	023	15:52	024	5 minute tow, depth 15m, low visibility due to turbidity, Bioturbated soft sediment dominated. White blob on screen at minute 3:10.

HA46	16:00	025	16:05	026	5 minute tow, depth 16m, low visibility due to turbidity, Bioturbated soft sediment dominated with some sparse patches of macroalgae ( <i>Sargassum</i> spp.? - likely drift).
HA52	16:15	027	16:20	028	5 minute tow, depth 17m, low visibility due to turbidity, Bioturbated soft sediment dominated.
HA50	16:28	029	16:20	030	5 minute tow, depth 17m, Bioturbated soft sediment dominated with slightly more sparse patches of macroalgae ( <i>Sargassum</i> spp.?) ranging from medium to large individuals (likely drift).
HA53	16:43	031	16:48	032	5 minute tow, depth 17m, low visibility due to turbidity, Bioturbated soft sediment dominated.
HA59	16:54	033	16:59	034	5 minute tow, depth 18m, low visibility due to turbidity, Bioturbated soft sediment dominated with very sparse macroalgae ( <i>Sargassum</i> spp. at minute 1:30 - likely drift).
<b>20/09/2018 (06:40 – 1700)</b>					
HA190	07:42	035	07:49	036	5 minute tow drifting North Northwest, depth 39m, good visibility, Soft sediment dominated with some sparse cover of macroalgae (minute 6:20 – 6:35).
HA192	08:00	037	08:05	038	5 minute tow drifting North Northwest, depth 35m, good visibility, Soft sediment dominated with increased cover of macroalgae on rocks (10-15% MA cover), sparse patches of turf algae (minute 4:20 top left screen), and sporadic individual seapens.
HA187	08:14	039	08:20	040	6 minute tow drifting North Northwest, depth 33m, good visibility, Soft sediment dominated with some sparse cover of macroalgae (minute 6:20 – 6:30).
HA186	08:28	041	08:33	042	5 minute tow drifting North Northwest, depth 33m, Soft sediment dominated with sparse patches of macroalgae at the end of the transect. Starfish observed at minute 3:20-3:30 and falling debris at minute 5:50-6:10.
HA184	08:42	043	08:47	044	5 minute tow drifting North Northwest, depth 30m, good visibility, Gravelly hard bottom (transition from soft sediment to pavement) with sparse covering of macroalgae ( <i>Sargassum</i> spp?).
HA183	08:58	045	09:08	046	10 minute tow looking for the boundary of pavement reef and

					soft sediment, depth 30m, good visibility, Pavement reef with sparse covering of macroalgae (and potentially turf algae). Starfish observed at minute 07:40 – 08:00.
HA182	09:21	047	09:32	048	11 minute tow looking for boundary of pavement reef and soft sediment, depth 29m, good visibility, Pavement reef with patchy covering of macroalgae (10 – 15% ) with some potential turf algae. Patches of soft sediment bottom from minute 5:00 onwards. Sparse patches of sponges (4:20 – 4:25 and 7:45 – 8:00).
HA181	09:42	049	09:47	050	Notes: 5 minute tow, depth 25m, good visibility, Pavement reef with sparse cover of macroalgae (and some turf algae potentially) and sponges (minute 1:10 – 1:15). Object of interest at minute 3:40 – 3:55.
HA180	09:53	051	09:58	052	Notes: 5 minute tow, depth 26m, good visibility, Pavement reef with sparse covering of macroalgae (and potentially some turf algae). Object of interest at minute 2:20 – 2:24 and starfish at minute 4:10 – 4:20.
HA185	10:07	053	10:12	054	Notes: 5 minute tow looking for pavement reef and soft sediment boundary, transect moved from original planned location c.100 – 200m south, depth 34m, good visibility, Pavement reef with sparse macroalgae present. Potential sea urchin or anemone at minute 2:40 – 2:45.
HA179	10:25	055	10:37	056	12 minute tow, depth 23m, good visibility, Pavement reef with 20 – 25% cover of macroalgae present throughout transect that increases to 30 – 40% cover of macroalgae at minute 6:00 just after a shelf at minute 5:37. At minute 7:50 object of interest. From minute 8:00 onwards appears to have more turf algae (algal mat) with white ribbons appearing in screen from minute 9:15 – 9:30. Patchy covering of sponges (fans) from minute 10:30 – 11:45. From minute 11:45 to end of transect macroalgae, turf algae and sponge cover drops off to more barren pavement reef.
HA177	10:55	057	11:00	058	5 minute tow, depth 21m, good visibility, Pavement reef with 40% macroalgae cover in the first 30 seconds of the transect then dropping off to less than 10% macroalgae cover. At

					minute 4:00 there is a colour variation in the pavement reef with light and dark gravel.
HA174	11:12	059	11:21	060	9 minute tow, depth 20m, good visibility, Pavement reef with 40% macroalgae cover and patches of sponges (minute 2:25 – 2:30) containing multiple large sponges. Patches of barren pavement reef throughout transect.
HA169	11:34	061	11:39	062	5 minute tow heading West Northwest, depth 21m, good visibility, Pavement reef with 30 – 40% cover of macroalgae. Sporadic patches of sponges (large sponge minute 3:30) and large macroalgae mixed in with barren pavement reef throughout transect. At minute 4:00 large group of sponges (10+ sea fans).
HA167	11:50	063	11:56	064	6 minute tow, depth 21m, good visibility, Pavement reef with 40 – 50% macroalgae cover with barren patches of pavement reef throughout the transect. Macroalgae decreases over transect to 20 – 25% cover. Patches of sporadic sponges (potentially coral?) and sea pens (minute 2:20 – 2:40) throughout transect. Eggs sacs or ascidians observed at minute 1:50 – 2:00, large object at minute 2:50 – 3:00, and sponge/coral interest at minute 3:45.
HA165	12:03	065	12:10	066	7 minute tow, depth 20m, good visibility, Pavement reef with multiple sponges (seafans) and macroalgae (30 – 40% cover). As transect progresses more barren patches of pavement reef increase with decreasing macroalgae (less than 5%) and sponge cover, few individual sponges at the end of transect (minute 4:00 to end of transect). At minute 3:10 – 3:15 object of interest.
HA172	12:17	067	12:24	068 and 069	7 minute tow, depth 20m, good visibility, Pavement reef with multiple sponge species and 40% macroalgae cover. As transect progresses macroalgae cover decreases (minute 2:30 – 3:05) and then becomes patchy altering between 30 – 40% to 5 – 10% cover with some potential turf algae present. Movement in screen at minute 5:00 – 5:10.
HA163	12:35	070	12:40	071	5 minute tow, depth 20m, good visibility, Pavement reef with multiple sponges (greater than 10 individuals in groups at

					minute 3:00 – 4:00) and 40% macroalgae cover. At the end of the transect pavement reef becomes more barren with some sparse covering of sponges and macroalgae.
HA159	12:56	072	13:01	073	5 minute tow, depth 22m, camera cards changed, good visibility, Pavement reef with multiple sponges and 30 – 40% cover of macroalgae with some sporadic barren patches of pavement reef.
HA153	13:26	074	13:31	075	5 minute tow, depth 23m, good visibility, Pavement reef with sparse covering of macroalgae (10 – 15%) and large number of white/yellow tubular sponges (greater than 30+ individuals). Large starfish observed at minute 3:35 – 3:42.
HA155	13:40	076	13:45	077	5 minute tow, depth 21m, good visibility, Bare pavement reef (90%) with a few sponges and 5% macroalgae cover. Sponges tend to be grouped together in patches (5 – 10 individuals – large sponge at minute 4:50 – 4:55).
HA150	13:57	078	14:02	079	5 minute tow, depth 22m, good visibility, Mostly bare pavement reef with some sparse patches of macroalgae and sponges throughout transect. Sponges tend to be grouped together from 3 – 10 individuals with several species of sponges present.
HA149	14:10	080	14:15	081	5 minute tow heading Southwest, depth 22m, good visibility, Pavement reef with 40 – 50% cover of macroalgae and congregations of sponges (5 – 10+), with other filter feeders most likely present as well. Large sponge at minutes 1:15 – 1:20 and 4:38.
HA146	14:27	082	14:32	083	5 minute tow, depth 22, good visibility, Bare pavement reef with sparse patches of sponges and macroalgae (5 – 10% cover). Large sponge observed at minute 5:30.
HA147	14:39	084	14:54	085	15 minute tow looking for the change of bare pavement reef and pavement reef with macroalgae and filter feeders, depth 23m, good visibility, over the course of the transect the bare pavement reef gradually changes to sparse macroalgae (5 – 10% cover) and filter feeder (sponge) abundance. At minute 8:30 an increase in macroalgae and filter feeders is observed to mirror HA149, however there are still more bare patches of

					pavement reef than macroalgae and filter feeders. As transect comes to an end habitat becomes patchy mixture of bare and macroalgae and filter feeder covered pavement reef.
HA144	15:03	086	15:08	087	5 minute tow, depth 22m, good visibility, Mostly bare pavement reef with patches of macroalgae and sponges throughout.
HA139	15:17	088	15:22	089	5 minute tow, depth 22m, good visibility, Pavement reef with sparse covering of macroalgae (less than 5%) and a few sponges (usually single individuals and not groups). As transect progresses the bottom substrate appears to become softer.
HA141	15:32	090	15:37	091	5 minute tow, depth 22m, good visibility, Mostly bare pavement reef with sparse scattering of sponges throughout (same species) with a large group of sponges (10+) at minute 5:00.
HA148	15:48	092	15:53	093	5 minute tow, depth 22m, good visibility, Pavement reef with patches of macroalgae and sponges (1 – 4 individuals) throughout transect. Large starfish at minute 2:50 – 2:55. Similar characterisation as HA147
HA154	16:06	094	16:16	095	10 minute tow, depth, good visibility, Pavement reef with patchy macroalgae (10 – 15% cover) and filter feeders (mostly sponges). Gradually changing between bare and patchy pavement reef at minute 9:00. Object of interest at minute 2:55 – 3:05/.
21/09/2018 (07:10 – 15:10)					
HA81	08:09	096	08:14	097	5 minute tow drifting North, depth 20m, low visibility due to turbidity, Bioturbated soft sediment with some sparse macroalgae (and potentially turf algae).
HA85	08:21	098	08:26	099	5 minute tow drifting North Northwest, depth 21m, low visibility due to turbidity, Bioturbated soft sediment with sparse macroalgae (and potentially some turf algae).
HA88	08:37	100	08:42	101	5 minute tow drifting North Northwest, depth 20m, low visibility due to turbidity, Bioturbated soft sediment.
HA92	08:50	102	08:55	103	5 minute tow drifting North Northwest, depth 21m, low visibility due to turbidity, Bioturbated soft sediment with some patches

					of sparse macroalgae cover (less than 5%).
HA96	09:05	104	09:10	105	5 minute tow drifting North, depth 20m, low visibility but improving and becoming less turbid, Soft sediment dominated with some bioturbation and sparse covering of macroalgae in patches (less than 5%).
HA99	09:22	106	09:27	107	5 minute tow drifting North, depth 20m, visibility improving but still low and slightly turbid, Soft sediment dominated with sparse covering of macroalgae (less than 5%) and sporadic individual sponges in transect. Object of interest at minute 1:40 – 1:50.
HA103	09:36	108	09:41	109	5 minute tow drifting North Northwest, depth 20m, low visibility due to turbidity, Soft sediment dominated with sparse cover of macroalgae patches (less than 5%) and some bioturbation throughout transect.
HA105	09:54	110	09:59	111	5 minute tow drifting North Northwest, depth 20m, low visibility due to turbidity, Bioturbated soft sediment with some potential sparse patches of macroalgae.
HA101	10:12	112	10:17	113	Camera cards changed.5 minute tow drifting North Northwest, depth 21m, improved visibility / slightly turbid, Soft sediment dominated with increased macroalgae (potentially turf algae) and sponges (some potential coral) as transect progresses.
HA108	10:25	114	10:30	115	5 minute tow drifting Northwest, depth 20m, low visibility / slightly turbid, Soft sediment dominated with sporadic patches of macroalgae in greater cover than previous transects (5 – 10% cover). Potential sea urchin within first few minutes of video.
HA110	10:46	116	10:51	117	5 minute tow drifting Northwest, depth 20m, improved visibility becoming less turbid, Soft sediment dominated with potential turf algal mat covering 30 – 50% (check video). Potential reef to the west of the transect. Objects of interest at minute 4:55 – 5:00 and 5:20.
HA109	10:58	118	11:03	119	5 minute tow drifting Northwest, depth 19m, improved visibility with decreased turbidity, Soft sediment bottom becoming harder substrate and more gravelly (pavement reef). Potentially 30 – 50% cover of turf algae mat on bottom (check

					video).
HA119	11:12	120	11:17	121	5 minute tow drifting Northwest, depth 21m, improved visibility / less turbid, Bottom substrate gradually changing from soft sediment to pavement reef. Almost no bioturbation present within transect. Potentially some patches of turf algae (30%) and sparse macroalgae (less than 5%).
HA117	11:25	122	11:30	123	5 minute tow drifting West Northwest, depth 20m, improving visibility, Bottom substrate still gradually changing from soft sediment dominated to gravelly pavement reef. Appears to have algal mat (turf algae) increasing in cover from 30 – 70% along to transect. As transect progresses the bottom becomes lumpy with a few macroalgae individuals.
HA123	11:38	124	11:43	125	5 minute tow drifting West Northwest, depth 21m, visibility improving, Bottom substrate still changing from soft sediment dominated to gravelly pavement reef, with more gravel hard bottom than previous transects. Fairly bare sea floor with patches of sparse macroalgae and potentially turf algal mat cover (30%). Fish observed at minute 5:00 – 5:10.
HA121	11:54	126	12:01	127	7 minute tow drifting West, depth 21m, visibility improving, Similar characteristics to HA123 with soft sediment gradually becoming more gravelly and pavement reef like. Sporadic sponge, macroalgae and sea pens seen within transect.
HA127	12:11	128	12:16	129	5 minute tow drifting West, depth 21m, visibility improving, similar characteristics to HA121 and HA123, Gravel hard bottom increasing more with soft sediment decreasing as transect progresses.
HA125	12:26	130	12:31	131	5 minute tow drifting West, depth 22m, visibility improving, more gravelly bottom with 50:50 soft sediment and pavement reef substrate, that is greater proportion of pavement reef as transect progresses. Some potential covering of turf algae (20-30%) and sparse macroalgae as transect progresses with lumpy bottom.
HA130	12:38	132	12:43	133	5 minute tow drifting West, depth 21m, visibility improving, Similar to HA125, more pavement reef (gravel) than soft sediment with gradual change still in effect. Macroalgae and

					some sponges sporadically through transect, with potentially some turf algae.
HA134	12:51	134	12:56	135	5 minute tow drifting West, depth 21m, improving visibility, Transition still from soft sediment to pavement reef; however bottom substrate is now more pavement reef dominated than soft sediment. Some potential covering of turf algae (20-30%) and sparse macroalgae as transect progresses with lumpy bottom.
HA131	13:04	136	13:06	137	2 minute tow drifting West, depth 22m, tow cut short due to camera flicker – recorded bottom is similar to HA134.
HA134.	13:36	138	13:41	139	Second tow of 5 minutes, depth 22m, no video on deck due to battery going flat. Watch video; however should have similar characteristics to HA134 and HA138/
HA138	13:23	140	13:28	141	5 minute tow drifting West, depth 22m, check video due to battery issues with topside viewing, Brief video watched indicates similar characteristics to HA 139. Transitional zone between pavement reef and soft sediment.
HA91	14:02	142	14:07	143	5 minute tow, depth 20m, transect completed to fill in gap for soft sediment habitat, watch video due to battery drain on topside viewing.
<b>22/09/2018 (07:15 – 15:20)</b>					
HA196	08:01	144	08:06	145	5 minute tow, depth 16m, drifting west, low visibility / turbid, Bioturbated soft sediment dominated. Absence of biota.
HA20	08:14	146	08:20	147	6 minute tow, depth 15m, drifting west, low visibility / turbid, similar to HA196 - Bioturbated soft sediment dominated. Absence of biota.
HA17	08:27	148	08:33	149	6 minute tow, depth 16m, drifting west, low visibility / turbid, similar to HA196 and HA20 – bioturbated soft sediment dominated. Absence of biota.
HA16	08:40	150	08:45	151	5 minute tow, depth 15m, drifting west, low visibility / turbid, similar to previous transects – bioturbated soft sediment dominated. Absence of biota.
HA15	08:54	152	08:59	153	5 minute tow moved c. 200m to the southwest of original transect location, depth 15m, drifting west, low visibility / turbid, similar to previous transects – bioturbated soft

					sediment dominated. Some presence of sparse macroalgae however appears to be drift. Absence of biota.
HA202	09:09	154	09:14	155	5 minute tow, depth 16m, drifting west northwest, low visibility / turbid, similar to previous transects – bioturbated soft sediment dominated with absence of biota.
HA12	09:24	156	09:29	157	5 minute tow, depth 16m, drifting west, low visibility / very turbid, similar to previous transects - bioturbated soft sediment dominated with absence of biota.
HA194	09:36	158	09:41	159	5 minute tow, depth 16m, minimal visibility / very turbid, similar to previous transects - bioturbated soft sediment dominated with absence of biota.
HA197	09:53	160	09:58	161	5 minute tow, depth 15m, drifting west northwest, minimal visibility / very turbid, similar to previous transects - bioturbated soft sediment dominated with absence of biota.
HA9	10:11	162	10:16	163	5 minute tow, depth 14m, drifting west northwest, poor visibility / very turbid, similar to previous transects - bioturbated soft sediment dominated with absence of biota.
HA198	10:24	164	10:29	165	5 minute tow, depth 15m, drifting west northwest, increasingly poor visibility / turbidity as transects move further inshore, similar to previous transects - bioturbated soft sediment dominated with absence of biota.
HA199	10:42	166	10:47	167	5 minute tow, depth 14m, drifting west, very turbid with poor visibility, similar to previous transects - bioturbated soft sediment dominated with absence of biota. Substrate appears to be very fine / muddy.
HA3	10:55	168	11:00	169	5 minute tow, depth 13m, drifting west, very turbid with poor visibility, similar to previous transects - bioturbated soft sediment dominated with absence of biota.
HA1	11:18	170	11:23	171	5 minute tow, depth 13m, drifting west, very turbid with poor visibility, similar to previous transects - bioturbated soft sediment dominated with absence of biota.
HA201	11:34	172	11:39	173	5 minute tow, transect moved approximately 1km southwest of original position, depth 15m, very turbid with poor visibility, similar to previous transects - bioturbated soft sediment dominated with absence of biota.

HA204	12:11	174	12:16	175	5 minute tow, depth 16m, less turbid than further inshore, however visibility is still minimal, similar to previous transects - bioturbated soft sediment dominated with absence of biota.
HA206	12:24	176	12:29	177	5 minute tow, depth 16m, drifting west northwest, less turbid than further inshore, however visibility is still minimal, similar to previous transects - bioturbated soft sediment dominated with absence of biota
HA25	12:39	178	12:48	179	9 minute tow, depth 15m, drifting west northwest, low visibility / turbid, bioturbated soft sediment dominated with sparse patches of low macroalgae cover (<5%).
HA28	12:58	180	13:05	181	7 minute tow, depth 16m, using engine thrust to head west due to current and wind speed drop off, low visibility / turbid, bioturbated soft sediment dominated with sparse patches of macroalgae cover (<5%) some of which is potentially drift.
HA30	13:11	182	13:21	183	10 minute tow, depth 17m, using engine thrust to head west due to current and wind speed drop off, low visibility / turbid, bioturbated soft sediment dominated with sparse patches of macroalgae cover (<5%) some of which is potentially drift.
HA32	13:34	184	13:40	185	6 minute tow, depth 16m, using engine thrust to head northwest due to current and wind speed drop off, low visibility / turbid, bioturbated soft sediment dominated with sparse patches of macroalgae cover (<5%) some of which is potentially drift and rare occurrence of single individual filter feeders (sponges).
HA34	13:46	186	13:51	187	5 minute tow, depth 16m, using engine thrust to head northwest due to current and wind speed drop off, low visibility / turbid, bioturbated soft sediment dominated with sparse patches of macroalgae cover (<5%) some of which is potentially drift.
HA36	13:58	188	14:06	189	8 minute tow depth 17m, using engine thrust to head west due to current and wind speed drop off, low visibility / turbid, bioturbated soft sediment dominated with sparse patches of macroalgae cover (<5%) some of which is potentially drift and rare occurrence of single individual filter feeders (sponges).
HA40	14:15	190	14:20	191	5 minute tow, depth 14m, using engine thrust to head west

					due to current and wind speed drop off, low visibility / turbid, bioturbated soft sediment dominated with sparse patches of macroalgae cover (<5%) some of which is potentially drift and rare occurrence of single individual filter feeders (sponges).
HA42	14:26	192	14:32	193	6 minute tow, depth 17m, using engine thrust to head southeast due to current and wind speed drop off, low visibility / turbid, bioturbated soft sediment dominated with sparse patches of macroalgae cover (<5%) some of which is potentially drift.
HA43	14:38	194	14:43	195	5 minute tow, depth 26m, using engine thrust to head southeast due to current and wind speed drop off, low visibility / turbid, bioturbated soft sediment dominated with sparse patches of macroalgae cover (<5%) some of which is potentially drift.
23/09/2018 (07:00 – 15:00): Additional transects completed within the Bottom Tow LAU to increase area covered due to short drift distances during transects on 22 September 2018.					
HA19	07:59	196	08:04	197	5 minute tow, depth 15m, using engine thrust to head northwest as current and wind speed insufficient for drift, transect similar to the previous days transects within the Bottom Tow LAU, low visibility / turbid, bioturbated soft sediment dominated with absence of biota.
HA203	08:13	198	08:18	199	5 minute tow, depth 16m, using engine thrust to head northwest as current and wind speed insufficient for drift, transect similar to the previous days transects within the Bottom Tow LAU, low visibility / turbid, bioturbated soft sediment dominated with absence of biota.
HA14	08:28	200	08:34	201	6 minute tow, depth 15m, using engine thrust to head northwest as current and wind speed insufficient for drift, transect similar to the previous days transects within the Bottom Tow LAU, low visibility / turbid, bioturbated soft sediment dominated with absence of biota.
HA193	08:44	202	08:49	203	5 minute tow, depth 15m, using engine thrust to head northwest as current and wind speed insufficient for drift, transect similar to the previous days transects within the Bottom Tow LAU, low visibility / turbid, bioturbated soft

					sediment dominated with absence of biota.
HA8	09:00	204	09:05	205	5 minute tow, depth 15m, using engine thrust to head northwest as current and wind speed insufficient for drift, transect similar to the previous days transects within the Bottom Tow LAU, low visibility / turbid, bioturbated soft sediment dominated with absence of biota.
HA200	09:13	206	09:22	207	9 minute tow, depth 14m, using engine thrust to head north northwest as current and wind speed insufficient for drift, transect similar to the previous days transects within the Bottom Tow LAU, low visibility / turbid, bioturbated soft sediment dominated with absence of biota.
HA2	09:32	208	09:38	209	6 minute tow, depth 14m, using engine thrust to head north northwest as current and wind speed insufficient for drift, transect similar to the previous days transects within the Bottom Tow LAU, low visibility / turbid, bioturbated soft sediment dominated with absence of biota.
HA6	09:50	210	09:57	211	7 minute tow, depth 13m, transect moved from original position to between transects HA1 and HA201, using engine thrust to head north northwest as current and wind speed insufficient for drift, transect similar to the previous days transects within the Bottom Tow LAU, low visibility / turbid, bioturbated soft sediment dominated with absence of biota.
HA209	10:19	212	10:35	213	16 minute transect, depth 4m, use of engines to head northwest, transect used to determine extent of previously identified and mapped reef with macroalgae and filter feeder habitat. The start of the transect was slightly turbid with soft sediment dominated habitat and little bioturbation present. As transect progresses reef with macroalgae and filter feeders becomes present with better visibility than soft sediment habitat. The reef was dominated by large brown macroalgae (45 – 65% cover) with frequent to abundant filter feeders. A thin veneer of turf algae was present in some of the filter feeders observed. Occasional hard corals were observed ( <i>Turbinaria</i> spp.). As the transect progresses there is a transition back and forth between soft sediment and reef with

					macroalgae and filter feeders. However, the extent of the transect can be described as reef with macroalgae and filter feeders with patches of soft sediment throughout.
HA213	10:44	214	11:04	215	20 minute transect , depth 6m, use of engines to head northwest, second transect used to determine extent of previously identified and mapped reef with macroalgae and filter feeder habitat. Similar to cover and abundance of macroalgae and filter feeders as HA209, with the occasional hard coral ( <i>Turbinaria</i> spp.). As the depth increases from 6 to 9m the visibility decreases and transitions into a bioturbated soft sediment dominated habitat with the sharp decrease of macroalgae, filter feeders, and hard corals. The rare to occasional filter feeder (sponges) and some patches of macroalgae (<10%) were present.
HA215	11:14	216	11:21	217	7 minute tow, depth 9m, use of engines to head northwest, transect completed to characterise Wapet Shoal, bioturbated soft sediment dominated with absence of macroalgae, filter feeders, hard corals.
HA214	11:24	218	11:30	219	6 minute tow, depth 7m, use of engines to head northwest, transect completed to characterise Wapet Shoal, Macroalgae cover present on the north side of the shoal (20 – 40 % cover) with the occasional filter feeder.
HA216	11:43	220	11:48	221	5 minute tow, depth 7m, use of engines to head north northwest, transect completed to characterise Stewart Shoal. The shallow areas of the shoal can be characterised as reef with macroalgae and filter feeders, which also has hard coral ( <i>Turbinaria</i> spp. and <i>Acropora</i> spp.). However as the depth increases (11m +) further from the centre of the shoal a transition to a soft sediment dominated habitat is observed. The occasional filter feeders (mainly sponges) and some patches of macroalgae (10 – 20%) is present.
HA217	11:55	222	12:03	223	8 minute tow, depth 13m, use of engines to head north, second transect undertaken to characterise Stewart Shoal, start of the transect was soft sediment dominated with bioturbation. As transect progressed over the shoal an

					increase in macroalgae and the occasional to frequent occurrence of filter feeders was observed. The rare to occasional hard coral ( <i>Turbinaria</i> spp.) was observed during the middle of the transect.
HA218	12:18	224	12:23	225	5 minute tow, depth 13m, use of engines to head northeast, transect undertaken to characterise Bennett Shoal, low visibility due to turbidity, beginning of transect starts out as soft sediment dominated then transitions to reef with filter feeders with a thin veneer of filamentous turf algae covering sponges and soft coral.. Low cover of macroalgae (<5%).
HA219	12:36	226	12:43	227	7 minute tow, depth 17m, use of engines to head north, transect undertaken to characterise Camplin Shoal, low visibility / turbid, soft sediment dominated with bioturbation with some sparse patches of macroalgae (<5%) and the rare occurrence of filter feeders.
HA220	13:01	228	13:18	229	17 minute tow, depth 13m, use of engines to head east, transect undertaken to characterise Cooper Shoal, the start of the transect was soft sediment dominated which transitions into reef with macroalgae and filter feeder habitat with dense large brown macroalgae and hard frequent to abundant hard corals. Towards the end of the transect there is transition back to soft sediment dominated habitat with the occasional filter feeder, hard coral, and some sporadic patches of brown macroalgae (less dense).
HA221	13:39	230	14:02	231	23 minute tow, depth 11m, use of engines to head north, second transect undertaken to characterise Cooper Shoal. This transect was similar to HA220 to habitat type with a transition from soft sediment dominated to reef with macroalgae and filter feeders with frequent to abundant hard coral back to soft sediment dominated once leaving the shallow shoal area. Both HA220 and HA221 had an abundance of <i>Turbinaria</i> spp. and <i>Acropora</i> spp. throughout the transect.