MARINE RESERVE IMPLEMENTATION: PILBARA NEARSHORE

BIOLOGICAL DATA FROM A HABITAT AND SPATIAL GROUNDTRUTHING SURVEY OF THE PROPOSED DAMPIER ARCHIPELAGO/CAPE PRESTON MARINE CONSERVATION RESERVE (3-5 February 2003)

Data Report: MRI/PIN/DAR-62/2003

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Copies of this report may be obtained from:
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SUMMARY

This report presents the results of a habitat and spatial ground-truthing survey undertaken from 3 to 5 February 2003, in the Dampier Archipelago. The Marine Conservation Branch (MCB), in collaboration with the Karratha District of the Department of Conservation and Land Management, coordinated the field survey.

The objectives of the survey were to:

- i) Gather on-ground information on the spatial accuracy and appropriateness of specific zones in the draft zoning scheme for the proposed Dampier Archipelago/Cape Preston marine conservation reserve that have been identified as contentious by the Advisory Committee developing the proposal.
- ii) Gather habitat ground-truthing data to provide the Advisory Committee with an improved knowledge base to consider contentious issues with regards to the draft zoning scheme.

The spatial information and habitat data acquired during this survey will be used to spatially rectify boundaries, and confirm the benthic habitats, of specific zones of the draft zoning scheme that were identified as contentious by the Advisory Committee developing the proposal, and where appropriate make amendments to the draft indicative management plan for the proposed marine conservation reserve.

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1 INTRODUCTION

1.1 GENERAL BACKGROUND

This report presents the results of a habitat and spatial ground-truthing survey undertaken from 3 to 5 February 2003, in the Dampier Archipelago. This survey was coordinated by the Marine Conservation Branch (MCB) in collaboration with the Karratha District of the Department of Conservation and Land Management.

In 2000, as part of the State Government's commitment to establishing a system of representative marine conservation reserves in Western Australia, the planning process for the proposed Dampier Archipelago/Cape Preston marine conservation reserve was initiated. The Minister for the Environment and Heritage appointed a community-based Advisory Committee to develop an indicative management plan for the Dampier Archipelago/Cape Preston region, which included the development of a zoning scheme. Following extensive community consultation the Advisory Committee developed a draft zoning scheme for the proposed reserve.

During the eighth meeting of the Advisory Committee concerns were raised regarding whether the position of specific zones was practical and appropriate. The Advisory Committee highlighted contentious issues in regards to the draft zoning scheme, where ground-truthing was required to ensure the zones were practical from a user and management perspective and to confirm the benthic habitats of specific zones. This involved collecting on-ground information on the position of zone boundaries as compared to important benthic habitats, terrestrial islands and easily identifiable landmarks.

The spatial information and habitat data acquired during this survey will be used to spatially rectify boundaries, and confirm the benthic habitats, of specific zones of the draft zoning scheme and where appropriate make amendments to the draft indicative management plan for the proposed marine conservation reserve.

1.2 OBJECTIVES

The objectives of the survey were to:

- i) Gather on-ground information on the spatial accuracy and appropriateness of specific zones in the second draft zoning scheme for the proposed Dampier Archipelago/Cape Preston marine conservation reserve that were identified as contentious by the Advisory Committee developing the proposal.
- ii) Gather habitat ground-truthing data to provide the Advisory Committee with an improved knowledge base to consider contentious issues with regards to the draft zoning scheme.

2 METHODS

2.1 SURVEY AREA

The study area for this field survey lies within the Dampier Archipelago (Figure 1).

Figure 1: Study area: Dampier Archipelago

2.2 SITE SELECTION

There were six zones, within the proposed Dampier Archipelago/Cape Preston marine conservation reserve (Figure 2), pre-selected for spatial and biological ground-truthing. These zones included, the proposed:

- Legendre Island sanctuary zone;
- Delambre Island sanctuary zone;
- Goodwyn Island sanctuary zone;
- Rosemary Island sanctuary zone;
- Cleaverville special purpose (intertidal reef protection) zone; and,
- Nickol Bay Reef Flats special purpose (intertidal reef protection) zone.

Field time and logistical constraints meant that the proposed special purpose zones at Cleaverville, and Nickol Bay Reef Flats were not visited during the field survey.

2.3 SAMPLING METHODOLOGY

2.3.1 Habitat Ground-truthing

At selected sites a visual observation of the seabed was made using a digital drop-down video camera, which was lowered over the side of the vessel and approximately 30 seconds of video footage of the seabed was recorded. The site number, date, time, water depth, GPS coordinates and habitat description were recorded in pro-forma habitat data sheets for each site.

2.3.2 Spatial Ground-truthing

At selected sites an observation (visual and with the use of a hand held GPS) of the location of boundaries as compared to benthic habitats, terrestrial islands and easily identifiable landmarks was made and recorded in a notebook and as waypoints in the GPS.

Opportunistic collection of video footage and digital stills for educational purposes were taken using a hand-held digital video camera and a digital still camera.

3 RESULTS

A total of 38 habitat ground-truthing sites were surveyed. These sites were all located within the Dampier Archipelago:

- Legendre Island (13 sites).
- Delambre Island (17 sites).
- Rosemary Island (8 sites).

The location details for each site are presented in Appendix I.

A standardized classification scheme for the mapping of shallow-water marine habitats in Western Australia (Bancroft, in prep.) was used to broadly classify the habitat data that was collected during the survey. Eight habitats were identified:

- Silt.
- Sand.
- Coral reef communities (intertidal).
- Coral reef communities (subtidal).
- Nearshore intertidal reef platform.

Figure 2: Second draft zoning scheme for the proposed Dampier Archipelago/Cape Preston marine conservation reserve

- Reef pavement (subtidal).
- Filter feeder communities.
- Ephemeral seagrass (sparse).

Habitat details for each site including site number, location, water depth, date, time, latitude, longitude, habitat type, biological assemblage and video tape number are presented in Appendix II.

Spatial observations (visual and with the use of a hand held GPS) to ensure spatial accuracy and appropriateness of zone boundaries were recorded at Legendre, Delambre, Rosemary and Goodwyn islands.

4 DATA MANAGEMENT

4.1 DATA REPORT

Hard copies of this report will be held at the following locations:

- 1. Marine Conservation Branch, Department of Conservation and Land Management, 47 Henry St., Fremantle, Western Australia, 6160. Ph (08) 9336 0100 Fax (08) 9430 5408.
- 2. Woodvale Library, Science and Information Division, Department of Conservation and Land Management, Ocean Reef Rd., Woodvale, Western Australia, 6026. Ph (08) 9405 5100 Fax (08) 9306 1641.
- 3. Archived with CD ROM, Woodvale Library, Science and Information Division, Department of Conservation and Land Management, Ocean Reef Rd., Woodvale, Western Australia, 6026. Ph (08) 9405 5100 Fax (08) 9306 1641.
- 4. Karratha District, Department of Conservation and Land Management, Mardie Road, Karratha Industrial Estate, Karratha, Western Australia, 6714. Ph (08) 9143 1488 Fax (08) 9144 1118.

Digital copies of this report will be held at the following:

- The Marine Conservation Branch server: Shareddata on 'Calm-frem-1'
 [T:\144-Marine Conservation Branch\Shared Data\Current MCB reports\MRI\mri 6203]
- The Marine Conservation Branch server full backup DAT tape: Shareddata on 'Calm-frem-1'
 [T:\144-Marine Conservation Branch\Shared Data\Current MCB reports\MRI\mri 6203]
- 3. CD ROMs held at Marine Conservation Branch and Woodvale Library: CD-ROM [mri 6203]

4.2 HABITAT DATA

Collected raw data has been entered into the Habitats Database (site numbers DAR_0364 to DAR_401), which is located at the Marine Conservation Branch Server: Shareddata on 'Calm-frem-1' [T:\144-Marine Conservation Branch\Shared Data\Databases\Biological inventory\Habitats.mdb].

4.3 VIDEO RECORDS

Collected mini digital video (MDV) footage will be held at two locations:

1. Video masters (MDV) to be archived in Box Hold 08 at the Information Management Branch, Department of Conservation and Land Management, 50 Hayman Road, Como, Western Australia. Ph (08) 9334 0264 Fax (08) 9334 0357.

2. MDV copies to be stored at the Marine Conservation Branch, Department of Conservation and Land Management, 47 Henry Street, Fremantle, Western Australia. Ph (08) 9336 0100 Fax (08) 9430 5408.

4.4 SLIDE RECORDS

All digital photographic stills to be stored at the Marine Conservation Branch, Department of Conservation and Land Management, 47 Henry Street, Fremantle, Western Australia. Ph (08) 9336 0100 Fax (08) 9430 5408.

5 REFERENCES

Bancroft, K.P. (In Prep.). A standardized classification scheme for the mapping of shallow-water marine habitats in Western Australia. Marine Conservation Branch, Department of Conservation and Land Management. Perth, Western Australia.

APPENDICES

APPENDIX I: LATITUDE AND LONGITUDE FOR SITES SAMPLED IN THE PROPOSED DAMPIER ARCHIPELAGO/CAPE PRESTON MARINE CONSERVATION RESERVE

	Databasa							
Infield No.	Database No.*	Location	Lat (dec deg)	Long (dec deg)	Time	Date	Datum	GPS type
DAR_001	DAR_0364	Legendre Island	-20.33678	116.84105	1010	4/02/2003	WGS84	GPS
DAR_002	DAR_0365	Legendre Island	-20.35353	116.84127	1020	4/02/2003	WGS84	GPS
DAR_003	DAR_0366	Legendre Island	-20.35308	116.84145	1030	4/02/2003	WGS84	GPS
DAR_004	DAR_0367	Legendre Island	-20.35085	116.84237	1040	4/02/2003	WGS84	GPS
DAR_005	DAR_0368	Legendre Island	-20.3495	116.8425	1045	4/02/2003	WGS84	GPS
DAR_006	DAR_0369	Legendre Island	-20.3495	116.8425	1050	4/02/2003	WGS84	GPS
DAR_007	DAR_0370	Legendre Island	-20.35343	116.83962	1115	4/02/2003	WGS84	GPS
DAR_008	DAR_0371	Legendre Island	-20.39078	116.898	1225	4/02/2003	WGS84	GPS
DAR_009	DAR_0372	Legendre Island	-20.38993	116.89763	1230	4/02/2003	WGS84	GPS
DAR_010	DAR_0373	Legendre Island	-20.38908	116.89775	1235	4/02/2003	WGS84	GPS
DAR_011	DAR_0374	Legendre Island	-20.38628	116.89853	1238	4/02/2003	WGS84	GPS
DAR_012	DAR_0375	Legendre Island	-20.38073	116.898	1245	4/02/2003	WGS84	GPS
DAR_013	DAR_0376	Legendre Island	-20.36137	116.89793	1255	4/02/2003	WGS84	GPS
DAR_014	DAR_0377	Delambre Island	-20.41735	117.05817	1345	4/02/2003	WGS84	GPS
DAR_015	DAR_0378	Delambre Island	-20.41652	117.07943	1355	4/02/2003	WGS84	GPS
DAR_016	DAR_0379	Delambre Island	-20.42047	117.08292	1400	4/02/2003	WGS84	GPS
DAR_017	DAR_0380	Delambre Island	-20.42685	117.08953	1408	4/02/2003	WGS84	GPS
DAR_018	DAR_0381	Delambre Island	-20.42885	117.0911	1415	4/02/2003	WGS84	GPS
DAR_019	DAR_0382	Delambre Island	-20.43083	117.09142	1420	4/02/2003	WGS84	GPS
DAR_020	DAR_0383	Delambre Island	-20.43205	117.09245	1422	4/02/2003	WGS84	GPS
DAR_021	DAR_0384	Delambre Island	-20.43113	117.10505	1430	4/02/2003	WGS84	GPS
DAR_022	DAR_0385	Delambre Island	-20.43023	117.11257	1437	4/02/2003	WGS84	GPS
DAR_023	DAR_0386	Delambre Island	-20.42868	117.11743	1445	4/02/2003	WGS84	GPS
DAR_024	DAR_0387	Delambre Island	-20.42777	117.12612	1450	4/02/2003	WGS84	GPS
DAR_025	DAR_0388	Delambre Island	-20.45643	117.11735	1503	4/02/2003	WGS84	GPS
DAR_026	DAR_0389	Delambre Island	-20.46198	117.11527	1509	4/02/2003	WGS84	GPS
DAR_027	DAR_0390	Delambre Island	-20.48327	117.11267	1519	4/02/2003	WGS84	GPS
DAR_028	DAR_0391	Delambre Island	-20.4833	117.09222	1530	4/02/2003	WGS84	GPS
DAR_029	DAR_0392	Delambre Island	-20.48303	117.0657	1540	4/02/2003	WGS84	GPS
DAR_030	DAR_0393	Delambre Island	-20.48227	117.04968	1550	4/02/2003	WGS84	GPS
DAR_031	DAR_0394	Rosemary Island	-20.43328	116.60155	1107	5/02/2003	WGS84	GPS
DAR_032	DAR_0395	Rosemary Island	-20.44632	116.60538	1125	5/02/2003	WGS84	GPS
DAR_033	DAR_0396	Rosemary Island	-20.44555	116.60488	1130	5/02/2003	WGS84	GPS
DAR_034	DAR_0397	Rosemary Island	-20.44467	116.604	1134	5/02/2003	WGS84	GPS
DAR_035	DAR_0398	Rosemary Island	-20.44337	116.60292	1136	5/02/2003	WGS84	GPS
DAR_036	DAR_0399	Rosemary Island	-20.44133	116.60103	1142	5/02/2003	WGS84	GPS
DAR_037	DAR_0400	Rosemary Island	-20.43618	116.59707	1152	5/02/2003	WGS84	GPS
DAR_038	DAR_0401	Rosemary Island	-20.42748	116.58848	1200	5/02/2003	WGS84	GPS

^{*} Database number – the number recorded in the Habitats Database (see section 4.2).

APPENDIX II: MARINE ECOLOGICAL COMMUNITY DATA FOR THE SITES SAMPLED IN THE PROPOSED DAMPIER ARCHIPELAGO/CAPE PRESTON MARINE CONSERVATION RESERVE

Infield No.	Database No.*	Location	Lat (dec	Long (dec	Depth	Substrate	Habitat Type	Biological Assemblage	Video number	Record	Date	Time
	DAR_0364	Legendre Island	-20.33678	116.84105	-18		Coral reef communities (subtidal)	Coral reef communities, high relief, steep drop-off and spur and groove. High coral cover, Pocillopora, Acropora (digitate and plates).			04/02/03	1010
DAR_002	DAR_0365	Legendre Island	-20.35353	116.84127	-14	Limestone	Coral reef communities (subtidal)	Coral reef communities, high relief, Acropora (digitate and plates).	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1020
DAR_003	DAR_0366	Legendre Island	-20.35308	116.84145	-29	Pavement	Reef pavement (subtidal)	Subtidal reef pavement overlaid by coarse sand and rubble. Some corals (gorgonians), sponges and macroalgae.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1030
DAR_004	DAR_0367	Legendre Island	-20.35085	116.84237	-33	Pavement	Reef pavement (subtidal)	Subtidal reef pavement overlaid by coarse sand and rubble. Some sponges and macroalgae.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1040
DAR_005	DAR_0368	Legendre Island	-20.3495	116.8425	-36	Pavement	Reef pavement (subtidal)	Subtidal reef pavement overlaid by coarse sand with macroalgae, sponges and some corals.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1045
DAR_006	DAR_0369	Legendre Island	-20.3495	116.8425	-38	Pavement	Reef pavement (subtidal)	Subtidal reef pavement with coarse sand, some sponges, gorgonian corals.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1050
DAR_007	DAR_0370	Legendre Island	-20.35343	116.83962	-3	Limestone	Coral reef communities (intertidal)	Coral reef communities, predominately Acropora digitate, high relief, some Favites and soft corals.	MRI/PIN/DAR/HH#1-02/2003	JDA	04/02/03	1115
DAR_008	DAR_0371	Legendre Island	-20.39078	116.898	-3	Limestone	Coral reef communities (intertidal)	Coral reef communities, high relief, spur and groove, Acropora digitate.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1225
DAR_009	DAR_0372	Legendre Island	-20.38993	116.89763	-10	Limestone	Coral reef communities (subtidal)	Coral reef communities, low relief, high coral cover and high diversity, Acropora (plates, branching and digitate), Favites, Porites, Turbinaria.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1230
DAR_010	DAR_0373	Legendre Island	-20.38908	116.89775	-18	Pavement	Reef pavement (subtidal)	Subtidal reef pavement with coarse sand and rubble. Sparse octocorals, gorgonians and whip corals.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1235
DAR_011	DAR_0374	Legendre Island	-20.38628	116.89853	-23	Sand	Sand	Bare sand, seastars and very sparse corals.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1238
DAR_012	DAR_0375	Legendre Island	-20.38073	116.898	-31	Sand	Sand	Coarse sand (bare) with rubble and shell grit.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1245

Infield No.	Database No.*	Location	Lat (dec deg)	Long (dec	Depth	Substrate	Habitat Type	Biological Assemblage	Video number	Record	Date	Time
DAR_013	DAR_0376	Legendre Island	-20.36137	116.89793	-38	Sand	Sand	Bare sand with some shell grit.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1255
DAR_014	DAR_0377	Delambre Island	-20.41735	117.05817	-20	Sand	Ephemeral seagrass (sparse)	Sand with sparse Halophila sp.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1345
DAR_015	DAR_0378	Delambre Island	-20.41652	117.07943	-22	Sand	Sand	Bare sand.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1355
DAR_016	DAR_0379	Delambre Island	-20.42047	117.08292	-21	Pavement	Filter feeder communities	Sand overlaying pavement with filter feeders, whip coral, sponges, octocorals, gorgonians and some macroalgae.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1400
DAR_017	DAR_0380	Delambre Island	-20.42685	117.08953	-17	Pavement	Coral reef communities (subtidal)	Coral reef communities, low relief, medium coral cover, sand over limestone pavement, some rubble, some filter feeders.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1408
DAR_018	DAR_0381	Delambre Island	-20.42885	117.0911	-15.5	Pavement	Coral reef communities (subtidal)	Coral reef communities, low relief limestone overlaid with sand and rubble, sparse coral cover.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1415
DAR_019	DAR_0382	Delambre Island	-20.43083	117.09142	-7	Limestone	Coral reef communities (subtidal)	Coral reef communities, high relief, high coral cover, Pocillopora, Porites, Acropora (digitate and plates).	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1420
DAR_020	DAR_0383	Delambre Island	-20.43205	117.09245	-2	Limestone	Nearshore intertidal reef platform	Intertidal reef platform, low relief, sparse live coral cover, encrusting coralline algae, some stunted Porites and Acropora (digitate), broken reef, rubble.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1422
DAR_021	DAR_0384	Delambre Island	-20.43113	117.10505	-16	Pavement	Coral reef communities (subtidal)	Coral reef communities, low relief pavement covered with sand, some rubble, corals, sponges and whip coral.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1430
DAR_022	DAR_0385	Delambre Island	-20.43023	117.11257	-21	Pavement	Filter feeder communities	Pavement overlaid by sand with dense filter feeders, whip coral, sponges, bryozoans, Turbinaria.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1437
DAR_023	DAR_0386	Delambre Island	-20.42868	117.11743	-20	Pavement		Pavement covered with sand, sparse sponges, coral and macroalgae.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1445
DAR_024	DAR_0387	Delambre Island	-20.42777	117.12612	-18	Pavement	Filter feeder communities	Pavement with dense filter feeders, sponges, whip corals, fans. Some rubble and small boulders.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1450
DAR_025	DAR_0388	Delambre Island	-20.45643	117.11735	-17	Sand	Sano	Bare coarse sand with shell grit and sparse sponges.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1503
DAR_026	DAR_0389	Delambre Island	-20.46198	117.11527	-11	Sand	Sand	Bare sand (medium grained)	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1509

Infield No.	Database No.*	Location	Lat (dec deg)	Long (dec deg)	Depth	Substrate	Habitat Type	Biological Assemblage	Video number	Record	Date	Time
DAR_027	DAR_0390	Delambre Island	-20.48327	117.11267	-15	Pavement		Sand overlaying pavement with some filter feeders, sponges, whip corals, mostly sand.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1519
DAR_028	DAR_0391	Delambre Island	-20.4833	117.09222	-14	Sand	Sand	Bare sand.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1530
DAR_029	DAR_0392	Delambre Island	-20.48303	117.0657	-12	Sand	Reef pavement (subtidal)	Very sparse sponges on sand over pavement.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1540
DAR_030	DAR_0393	Delambre Island	-20.48227	117.04968	-13	Sand	Sand	Bare sand.	MRI/PIN/DAR/DD#1-02/2003	JDA	04/02/03	1550
DAR_031	DAR_0394	Rosemary Island	-20.43328	116.60155	-34	Silt	Sand	Bare sand with bioturbation.	MRI/PIN/DAR/DD#1-02/2003	JDA	05/02/03	1107
DAR_032	DAR_0395	Rosemary Island	-20.44632	116.60538	-9	Pavement	Coral reef communities (subtidal)	Coral reef communities, dense corals, many soft corals, some Acropora, whip corals and sand.	MRI/PIN/DAR/DD#1-02/2003	JDA	05/02/03	1125
DAR_033	DAR_0396	Rosemary Island	-20.44555	116.60488	-13	Sand	Sand	Bare sand	MRI/PIN/DAR/DD#1-02/2003	JDA	05/02/03	1130
DAR_034	DAR_0397	Rosemary Island	-20.44467	116.604	-17	Pavement	Coral reef communities (subtidal)	Coral reef communities, low relief, dense corals, many soft corals, whip corals and fans.	MRI/PIN/DAR/DD#1-02/2003	JDA	05/02/03	1134
DAR_035	DAR_0398	Rosemary Island	-20.44337	116.60292	-24	Pavement	Reef pavement (subtidal)	Sand over pavement with rubble and some corals (gorgonians) and sponges.	MRI/PIN/DAR/DD#1-02/2003	JDA	05/02/03	1136
DAR_036	DAR_0399	Rosemary Island	-20.44133	116.60103	-28	Sand	Silt	Bare silt with some bioturbation.	MRI/PIN/DAR/DD#1-02/2003	JDA	05/02/03	1142
DAR_037	DAR_0400	Rosemary Island	-20.43618	116.59707	-25	Sand	Sand	Bare sand with some bioturbation.	MRI/PIN/DAR/DD#1-02/2003	JDA	05/02/03	1152
DAR_038	DAR_0401	Rosemary Island	-20.42748	116.58848	-39	Silt	Silt	Bare silt with some bioturbation.	MRI/PIN/DAR/DD#1-02/2003	JDA	05/02/03	1200

^{*} Database number – the number recorded in the Habitats Database (see section 4.2).