Biological report on an area located in northern Blackwood Bay, in relation to a proposed boat shed and floating platform

Research, Survey and Monitoring Report Number 448

A report prepared for:

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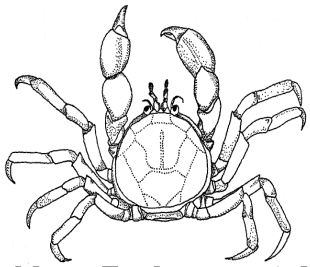

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Introduction

Davidson Environmental Ltd. has been asked to provide a report on the biological features under and adjacent to a proposed boat shed, platform and floating jetty in northern Blackwood Bay. An assessment of biological representativeness and ecological importance of the proposed development area has also been conducted as part of the present report.

Study area

Blackwood Bay is located approximately 10 km northeast of Picton Harbour. The Bay is approximately 1.4 km wide at its entrance and 2.5 km long. It has a maximum depth of 50 m, with the seabed dropping to 30 m depth often within 100 m from shore (Figure 1).

The catchment at the northern part of the Bay is privately owned. Ruakaka Scenic Reserve is located on the western and eastern side of Blackwood Bay. Ruakaka Recreation Reserve (1.6 ha) is located on the southern headland of Pirapu Bay, while Sounds Foreshore Reserve extends around most of the Bay, including the area adjacent to the presently proposed structures.

The land adjacent to the presently proposed structures is privately owned and is dominated by early regeneration broadleaf and fern communities.

Methods

A search of existing marine biological information for Blackwood Bay was conducted as part of the present write-up. This consisted of searching bibliographic records for published and unpublished material held by Davidson Environmental Ltd. and in Marlborough District Council records.

The site was visited on 24 November 2003. During the visit, the tide was high and dropped over the duration of the study. During the investigation, two shore transects were established extending from the mean low water mark offshore for 50 m distance (Figure 1). Along each transect, depth, distance and dominant substratum were recorded by divers. In addition, the presence of any species or communities of particular, scientific, conservation, or fisheries interest were recorded.

Quantitative counts of particular conspicuous invertebrates were collected from soft bottom and hard shore habitats. A list of conspicuous species recorded from each major habitat type was also collected by divers.

Underwater video footage was collected from along the length of transect 2 and has been archived should it be required by any submitters or Council staff.

Results

Existing studies and biological information

One scientific study was sourced during the literature search for Blackwood Bay. This study by the Department of Conservation has not been published, however, seven dive sites were described by the authors in the Bay (Table 1). The authors did not report any species of particular biological or conservation importance as being present within the Bay.

Table 1 Summary of existing information known from Blackwood Bay.

Station name	Evidence or report by:	ID	Environment ty	Status
Tauranga Bay (north of)(66)	Duffy, Cook, Davidson, Brown, (in prep).	1286	Subtidal	None
Hinwhera Point (bay east	Duffy, Cook, Davidson, Brown, (in prep).	1287	Subtidal	None
Hiwhera Point (65)	Duffy, Cook, Davidson, Brown, (in prep).	1288	Subtidal	None
Blackwood Bay	Duffy, Cook, Davidson, Brown, (in prep).	1289	Subtidal	None
Tunoamai Point (north of)(63)	Duffy, Cook, Davidson, Brown, (in prep).	1290	Subtidal	None
Tunoamai Point (62)	Duffy, Cook, Davidson, Brown, (in prep).	1291	Subtidal	None
Parikohikohi Point (60)(south	Duffy, Cook, Davidson, Brown, (in prep).	1292	Subtidal	None

Shore profiles

The shore profile for each of the two transects were very similar, with depths, distances and substratum being virtually identical (Figure 2).

The shore was initially dominated by bedrock material that ended relatively abruptly less than 1 m distance from mean low water. Small boulders, cobbles, pebbles, shell and fine sand extended from the bedrock edge to approximately 15 m distance from low water at each profile. Beyond this substratum was a silt base, with fine sand and a low percentage composition of cobbles and pebbles (15 m to 25 m distance from low water). Offshore of 25 m distance, the substratum was characterised by a silt base,

shell and a layer of granule material on the surface. This extended to the end of each profile at 50 m distance and beyond.

Species, communities, and their abundance

A list of species recorded by divers in northern Blackwood Bay has been displayed in Appendix 1. The species observed and their relative abundance recorded from the study area was typical of sheltered bays along the central Queen Charlotte Sound area. No rare species or species with restricted distribution in the Marlborough Sounds or New Zealand were recorded by divers.

Density calculations for selected species from soft substrata (Appendix 2) and hard substrata (Appendix 3) showed that the area can be considered representative of many sheltered bays in Queen Charlotte Sound. Of note were occasional scallops on the soft substratum. All scallops were observed from > 30 m distance from shore on soft substratum. No other species with fisheries importance were observed during the present study. Notably absent were blue cod, tarakihi, blue moki and banded wrasse.

Duffy *et al,* (in prep.) recorded elephant fish egg cases from Kumototo Bay, but not Blackwood Bay. No egg cases, alive or dead, were recorded during the present study from Blackwood Bay.

Discussion

Based on a combination of historic information and information collected during the present investigation, it can be concluded that the study area is representative of sheltered bay side habitats in central and inner Queen Charlotte Sound. No species, habitats or communities of particular biological, conservation or fisheries importance were recorded during the present study. A relatively low density of scallops were, however, recorded from the study area, but all were located offshore of the proposed structure.

The proposed structures will have a relatively minor impact on the biology of the area. Most of the structure is supported on timber and railway iron piles while the jetty is floating and anchored by screw anchors. Based on observations collected from under existing jetties and wharf structures, it can be concluded that few changes will occur to the biology of the area. Most noticeable will be colonisation of particular species on the piles and floating structures. These will be dominated by species already common

in the intertidal and subtidal environment of Blackwood Bay. The species that dominate these surfaces will depend on the time of year that they are installed. Species composition may also change under the timber platform. Species that prefer shade may become more abundant below the decking and boat shed area (e.g. the slug *Onchidella nigricans*). Minor disturbance of the area may occur during the construction, however, this is minor in scale and a temporary event.

On biological grounds it can be concluded that the presently proposed site is suitable for consideration for the proposed development. It is not expected that any more than minor impacts or changes will occur as a result of the proposed structure being built.

References

Duffy, C.A.J., Davidson, R.J., Cook, S. de C., and Brown, D.A. (in prep). Shallow subtidal habitats and associated fauna of Marlborough Sounds, New Zealand. Department of Conservation, Nelson/Marlborough Conservancy.

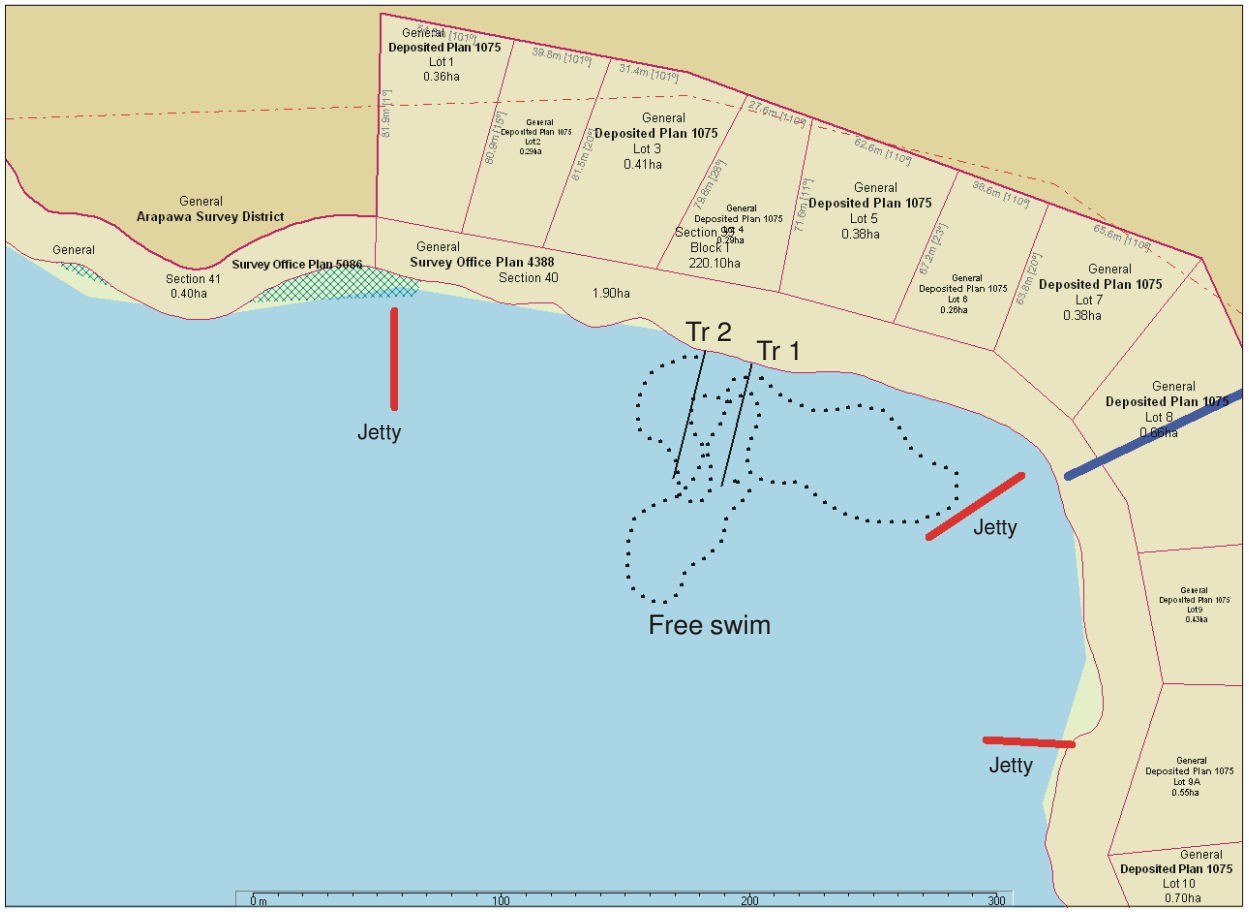

Figure 1 Location of shore transects (black lines) and approximate location of diver free swims (doted lines).

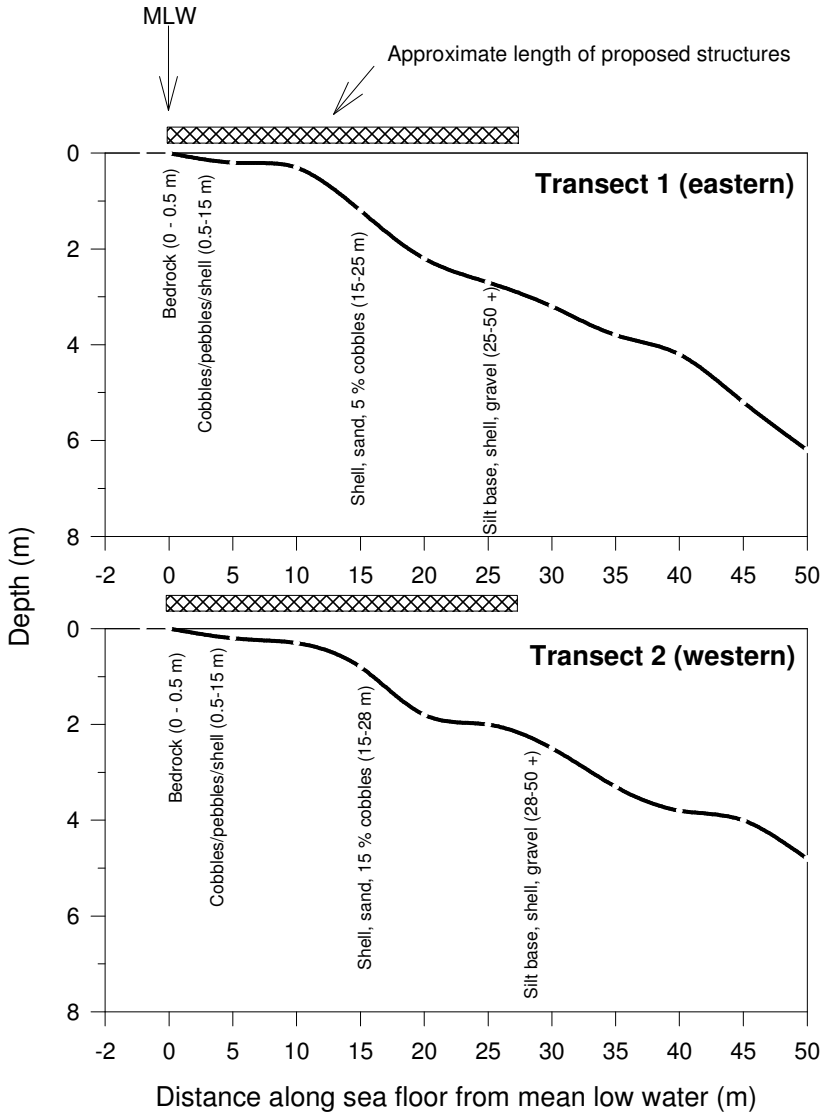

Figure 2 Subtidal shore profiles, and substratum from an area proposed for a proposed boat shed and platform in Blackwood Bay.

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Appendix 1 List of species recorded from Blackwood Bay study site.

ALGAE	**Habitat**	**Common name**
Carpophyllum flexuosum	Hard shore	wide flapjack
Colpomenia sp.	Hard shore	bubble weed
Corallina spp.	Hard shore	paint and geniculate
Hormosira banksii	Hard shore	Neptune's necklace
Microalgal mat	Soft shore	surface slime
UCHIURA		
Urechis novaezelandiae	Soft shore	Sausage worm
COELENTERATA		
Obelia sp.	Hard shore	hydroid fuzz
GASTROPODA		
Cellana spp.	Hard shore	limpet
Chiton pelliserpentis	Hard shore	green chiton
Cominella adspersa	Soft shore	whelk
Cookia sulcata	Hard shore	Cook's turban
Littorina unifasciata	Hard shore	periwinkle
Maoricolpus roseus	Soft shore	spire shell
Trochus viridus	Hard shore	top shell
Turbo smaragdus	Hard shore	cats eye
BIVALVIA		
Atrina zelandica	Soft shore	horse mussel
Chlamys diffenbachii	shell/rubble	queen scallop
Modiolarca impacta	Hard shore	nestling mussel
Monia zelandica	Hard shore	window oyster
Mytilus galloprovincialis	Hard shore	blue mussel
Pecten novaezelandiae	Soft shore	scallop
Perna canaliculus	Hard shore	green mussel
POLYCHAETA		
Branchiomma sp.	Soft shore	fan worm
Galeolaria hystrix	Hard shore	tube worm
Serpulid sp.	Soft shore	tube worm
Spriorbid sp.	Soft shore	tube worms
Serpulid sp.	Soft shore	tube worm
CRUSTACEA		
Pagurus spp	Soft shore	hermit crab
ECHINODERMATA		
Coscinasterias muricata	Hard/soft shore	11 arm star
Evechinus choroticus	Hard/soft shore	kina
Patiriella regularis	Hard/soft shore	cushion starfish
Pseudechinus albocinctus	Soft shore	pink urchin
Stichopus mollis	Hard/soft shore	cucumber
ASCIDEACEA		
Leptoclinides sp.	Hard shore	purple colonial
FISHES		
Forsterygion varium	Hard shore	variable trip.
Forsterygion lapillum	Hard shore	common trip.
Genyagnus novaezelandiae	Soft shore	Spotted stargazer
Hippocampus abdominalis	Hard/soft shore	sea horse
Notolabrus celidotus	Hard/soft shore	spotty

Appendix 2 Raw data for selected species in Blackwood Bay. Raw data represent number per 1m square area, mean values represent a 1 m square area.

SOFT SUBSTRATA

Species	Common name	1	2	3	4	5	6	7	8	9	10	11	12	13	Mean	SD	SE
BIVALVES																	
Pecten novaezelandiae	Scallop	0.1	0	0	0	0	0	0.1	0	0	0	0	0.1	0	0.02	0.04	0.01
GASTROPODA																	
Austrofusus glans	Whelk	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
Chiton pelliserpentis	Chiton	0.1	0	0	0.2	0	0	0	0	0	0	0	0	0	0.02	0.06	0.02
Cominella adspersa	Whelk	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.01	0.03	0.01
Maoricolpus roseus	Turret shell	1.3	1.4	2.3	1.4	1.8	2.3	1.9	1.9	1.6	2	2	2.3	1.4	1.82	0.37	0.10
Turbo smaragdus	Cats eye snail	0.9	1.6	0	2.3	1.7	2.2	1.2	2	1.9	2	2.1	0.9	2.5	1.64	0.71	0.20
SEASTARS																	
Coscinasterias muricata	11 arm seastar	0	0.1	0.2	0.3	0.4	0	0.1	0.3	0.1	0.1	0.3	0	0.5	0.18	0.16	0.05
Evechinus choroticus	Kina	0	0	0	0.1	0.1	0	0	0.1	0	0.1	0	0	0	0.03	0.05	0.01
Patiriella regularis	Cushion seastar	0.1	0	0	0.1	0.1	0.1	0	0.1	0	0	0	0	0	0.04	0.05	0.01
Stichopus mollis	Sea cucumber	0	0	0	0	0	0.3	0.1	0	0.2	0.5	0	0	0.1	0.09	0.16	0.04
CRUSTACEANS																	
Paguridae	Hermit crabs	0.4	0.8	0.7	0.4	0.6	0	0.3	0.1	0	0.3	0.1	0.3	0.2	0.32	0.26	0.07
ASCIDEACEA																	
Solitary squirt	Saddle squirt	0.3	0.3	0.4	0	0.1	0	0.1	0.2	0.7	0	0.2	0.1	0	0.18	0.20	0.06

Appendix 3 Raw data for selected species in Blackwood Bay. Raw data represent number per 1m square area, mean values represent a 1 m square area.

HARD SUBSTRATA

Species	Common name	1	2	3	4	5	6	7	Mean	SD	SE
GASTROPODA											
Cookia sulcata	Cooks turban	0	0	0	0	0.1	0	0	0.01	0.04	0.01
SEASTARS											
Coscinasterias muricata	11 arm seastar	0.1	0	0.1	0	0.1	0.2	0	0.07	0.08	0.02
Evechinus choroticus	Kina	0.6	0.7	0.4	0.6	0.4	0.3	0.4	0.49	0.15	0.04
Patiriella regularis	Cushion seastar	0.1	0.3	0	0.1	0	0.1	0	0.09	0.11	0.03
Pseudechinus albocinctus	Pink urchin	0	0	0.1	0	0	0	0.2	0.04	0.08	0.02
Stichopus mollis	Sea cucumber	0	0.1	0	0	0	0	0	0.01	0.04	0.01