



NAPIER OUTFALL LEAK AND DIFFUSER INSPECTION AND REPAIRS

REPORT NUMBER: NOLD01 050520

NAPIER CITY COUNCIL

30 APRIL – 5 MAY 2020

NAPIER, NEW ZEALAND

Reviewed

A handwritten signature in blue ink, appearing to read "Lana Stevens".

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Lana Stevens
National Operations
Coordinator

Released

A handwritten signature in blue ink, appearing to read "Emma White".

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Emma White
Wellington Regional Business
and Operations Manager

1. INTRODUCTION

A New Zealand Diving and Salvage Ltd (NZDS) dive team lead by Dive Supervisor Mr. M. Moeke was engaged by Napier City Council (NCC) to conduct inspections onsite on the Napier Outfall from the 30th day of April through to the 5th day of May 2020.

2. SCOPE OF WORK

Conduct an inspection and maintenance on the Napier Outfall inclusive of the below items:

- a. Conduct an inspection on the leak (inshore of previous leak) to determine the location, size, mechanism for the leak (ie joint, anchor strike etc), position on pipe, possible repair options. Excavation may be required.
- b. Undertake repairs to the leak if possible – if it is a joint leak NCC has a couple of clamps which are to be carried onboard MV IL2.
- c. Inspection of the fibreglass joint (no excavation) noting observations, scale of leak, locations etc.
- d. Check all diffuser port to ensure they are flowing. If any are not flowing these need to be cleared.
- e. Provision of a written report using the supplied template and supporting media (video footage), visibility permitting.

3. INITIAL INSPECTION FINDINGS

a. New Leak Site

A leak was located approximately 60m inshore of the fibreglass clamp site (CH750). The pipe was observed to be buried between approximately 300 – 700mm below the seabed.

An airlift was utilised to excavate the leaking area. The leak appeared to be an old clamp repair site that had deteriorated. The clamp was found to be a steel band type and bolted on one side. The band was approximately 500mm wide and was positioned around a pipe join. The offshore edge of the band appeared to be damaged with the offshore edge of the band lifted away from the pipe with a tear approximately 250mm long. This exposed a horizontal crack in the concrete pipe which was approximately 200mm long propagating from the pipe join on the offshore pipe. A radial crack was observed under the clamp which was approximately 100mm offshore of the join. Access was limited under the steel band however the leaking was felt around to approximately the 3 o'clock position on the northern side and to at least the 10 o'clock position of the southern side. The offshore side of the radial cracking was approximately 25mm lower than the inshore side of the cracked pipe. The repair area was found to be supported by concrete blocks that appeared to be cement filled bags. The bags

appeared to have deteriorated and no fabric from these bags was observed to remain. These bags were observed under the pipe and stacked in a pyramid type formation to support the sides and protect the top of the pipe.

During this attendance the bags covering the top of the pipe and halfway down the sides were removed to gain access to inspect the old repair.

A temporary repair solution is still to be formulated and the leak area was left as is. Sketches of the findings are below.

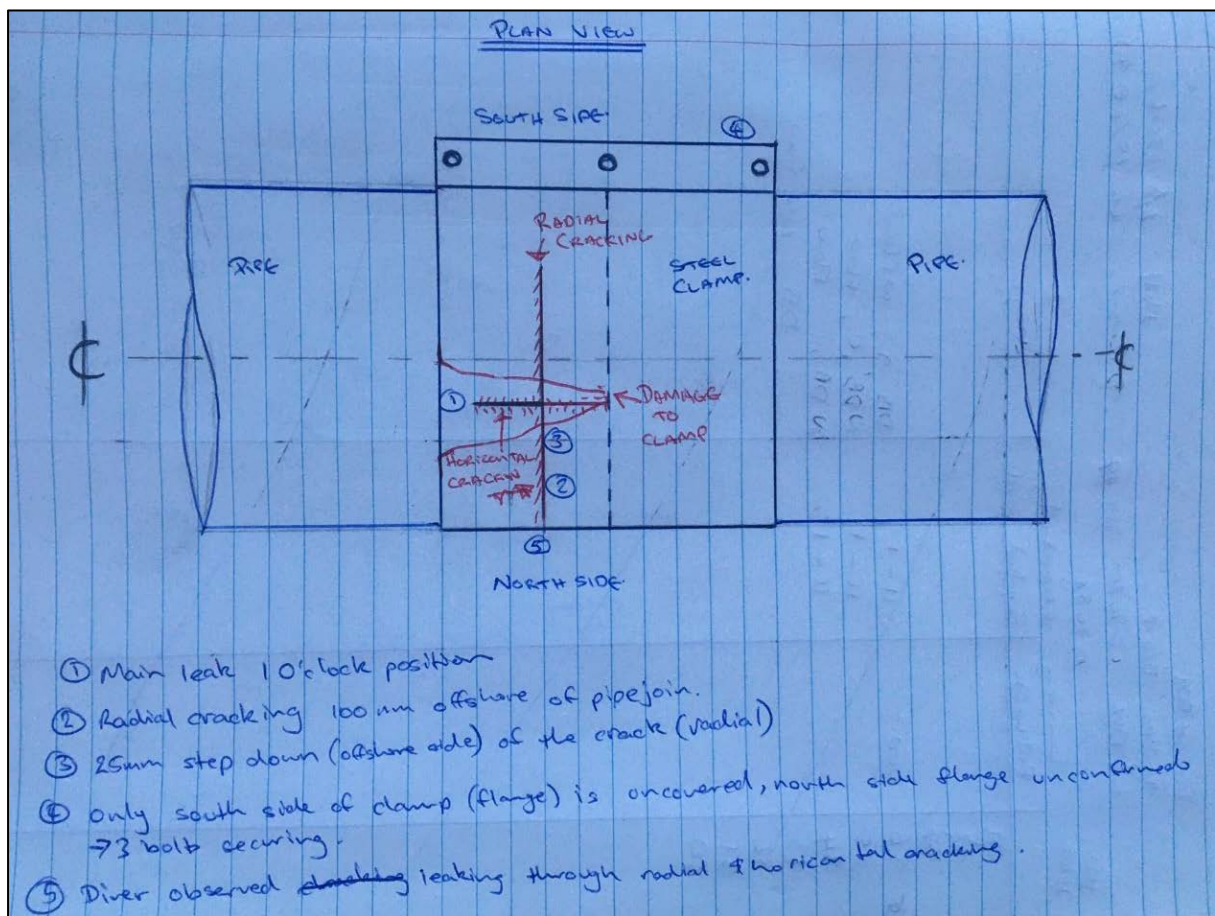


Image 2: Plan View

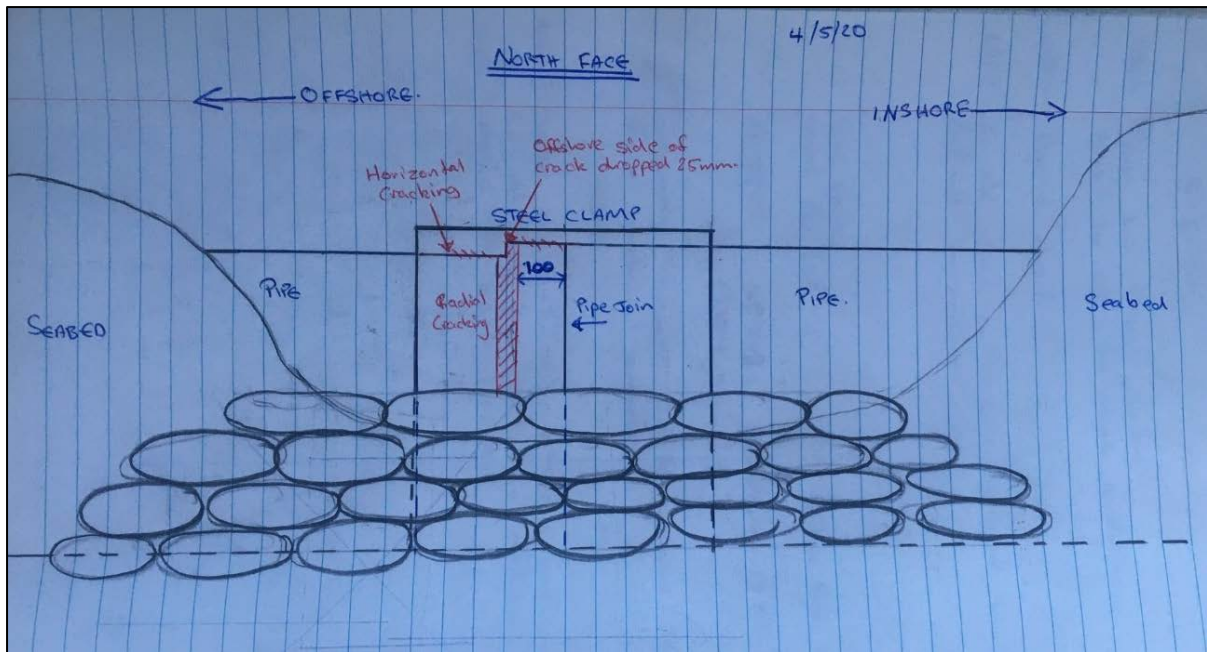


Image 2: Northern View

b. Fibreglass Clamp Inspection

The fibreglass repair site was located and found to be in the same condition as the previous inspection conducted in January / February 2020. The clamp was found to be approximately 60% exposed and the flange on the northern side exposed. The leaking was consistent with previous visits and there appeared to be no change in flow. The fixtures were found to be in place and secure with no damage sighted.

c. Offshore Diffusers

An inspection of the diffuser section was conducted. For the most part only the crown of the pipe was exposed with diffuser ports exposed through the sand.

All diffusers located were found to be discharging with steady flow with the exception of diffuser #27, #37, #38, #39 and #40 which were observed to have little or no flow.

Small amounts of fishing net were found along the diffuser section and was removed where possible. No damage appeared to have occurred between the previous inspection and this inspection.

Sediment build up in the pipe was also found to be consistent with the previous inspection. The differences from the previous inspection are highlighted in the table below.

An initial inspection was conducted on the diffuser section. The pipeline from the 10 o'clock to the 2 o'clock position was found to be exposed for the majority of the diffusing section.

The following table details approximate measurements and depths obtained during this attendance. The internal diameter of the pipeline was approximately 914mm and outside diameter was approximately 1,194mm. The diffuser section was approximately 1,200mm long. The GPS location of the start of the diffuser section was: 39°32.4963S / 176°56.1717E.

The highlighted details are the items that have changed since the last inspection.

Diffuser #	Spacing Between Diffusers (mm)	Diffuser Height (mm)	Seabed Level from Pipeline Crown	Orientation of Diffuser (O'clock)	Internal Sediment (mm)	Additional Details
1		180	12 o'clock	12	0	Onshore pipe #52, steady flow, no DB, S diffuser, marker buoy
2	200	450	12 o'clock	12	0	Steady flow, DB, C diffuser
3	2,000	450	10 – 2 o'clock	12	0	Steady flow, DB, C diffuser
4	2,000	450	10 – 2 o'clock	10	0	Steady flow, DB, C diffuser
5	200	150	10 – 2 o'clock	10	0	Steady flow, no DB, S diffuser
6	700	450	10 – 2 o'clock	2	0	Steady flow, DB, C diffuser
7	300	200	10 – 2 o'clock	2	0	No flow, no DB, S diffuser
8	6,500	450	12 o'clock	12	0	Steady flow, DB, C diffuser
9	7,000	350	10 – 2 o'clock	10	0	Steady flow, DB, S diffuser
10	200	300	10 – 2 o'clock	10	0	Steady flow, DB, C diffuser
11	1,500	150	10 – 2 o'clock	2	0	Moderate flow, no DB, S diffuser
12	1,500	400	10 – 2 o'clock	10	0	Steady flow, DB, S diffuser cleaned duckbill
13 No tag	1,500	450	10 – 2 o'clock	10	0	Steady flow, DB, S diffuser

14	1,000	450	10 – 2 o'clock	2	0	Steady flow, DB, C diffuser
15 No tag	5,000	200	12 o'clock	12	0	Steady flow, no DB, S diffuser
16	1,500	300	12 o'clock	12	0	Steady flow, DB, S diffuser
17	200	400	12 o'clock	12	0	Steady flow, DB, C diffuser
18	2,000	450	12 o'clock	12	0	Moderate flow, DB, S diffuser
19	2,500	450	12 o'clock	12	0	Steady flow, DB, C diffuser
20	3,000	150	10 – 2 o'clock	10	0	Steady flow, no DB, C diffuser
21 No tag	3,000	150	10 – 2 o'clock	2	0	Moderate flow, DB, S diffuser
22	5,000	500	10 – 2 o'clock	12	0	No flow, DB, C diffuser
22.5 No tag	100	150	12 o'clock	10	0	Steady flow, no DB, S diffuser
23	2,000	150	10 – 2 o'clock	10	0	Steady flow, no DB, S diffuser
24	500	150	10 – 2 o'clock	10	0	No flow, no DB, C diffuser
25 No tag	2,000	0	11 – 1 o'clock	12	0	Steady flow hole in pipe
26	1,500	450	12 o'clock	12	0	Steady flow, DB, C diffuser
27	3,500	300	12 o'clock	10	0	Minimal flow, DB, C diffuser
28	1,500	200	12 o'clock	12	0	Moderate flow, No DB, C diffuser
29 No tag	3,000	450	9 – 3 o'clock	10	300	Moderate flow, DB, S diffuser
29.5 No tag	100	450	9 – 3 o'clock	12	300	Moderate flow, DB, T diffuser
30	2,000	450	12 o'clock	12	400	Steady flow, no DB, C diffuser
31	2,000	300	12 o'clock	2	300	Steady flow, no DB, C diffuser

32 No tag	1,500	350	12 o'clock	12	650	Steady flow, no DB, T diffuser
33	1,500	350	12 o'clock	2	600	Steady flow, DB, C diffuser
34 No tag	2,000	300	12 o'clock	12	600	Steady flow, no DB, C diffuser
35 No tag	1,000	200	12 o'clock	12	800	Steady flow, no DB, C diffuser
36	2,500	150	12 o'clock	12	800	Steady flow, no DB, T diffuser
36.5	200	450	250mm above the top of the pipe	1	800	Moderate flow, DB, S diffuser
37 No tag	800	200	12 o'clock	2	Full	No flow, no DB, C diffuser
38	1,500	450	12 o'clock	12	Full	No flow, DB, C diffuser, marker buoy, small amount of fishing net removed
39	3,500	450	10 – 2 o'clock	1	Full	No flow, DB, C diffuser
40	1,500	200	12 o'clock	10	Full	No flow, no DB, C diffuser
41	This section of the pipeline is still blocked and buried					
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Reference	Description
DB	Duckbill
S Diffuser	Stud fixture to diffuser ports
C Diffuser	Camlock fixture to diffuser ports
T Diffuser	T-bar fixture to diffuser ports

4. VIDEO

A USB accompanies this report and contains the media captured during this attendance.

NEW ZEALAND DIVING AND SALVAGE LIMITED

134 GRACEFIELD ROAD, SEAVIEW, LOWER HUTT
PO BOX 30 392, LOWER HUT, 5040, NEW ZEALAND
P: +64 4 568 2505 | E: nzds@nzds.co.nz | W: www.nzds.co.nz