

## 1.0 TECHNICAL MEMO – STORMWATER

<b>To:</b>	Stacey Sharp & Blair Masefield, Beca (consultant planners)
<b>From:</b>	John McLaren, Senior Civil Engineer, Haigh Workman Limited
<b>Ref:</b>	Northland Regional Council: APP.005055.38.01 Whangārei District Council: LU2200107
<b>Date:</b>	16 November 2023

## 2.0 PURPOSE

The purpose of this supplementary memorandum is to respond to technical matters, pertaining to stormwater, raised during initial hearings proceedings.

This memorandum is to be read in conjunction with the initial stormwater technical memorandum appended to the Council s42A Officers Report.

For the avoidance of doubt, the opinions and conclusions expressed in both the above-referenced documents remain unchanged.

## 3.0 TECHNICAL RESPONSE TO MATTERS RAISED

This memorandum covers the following matters:

- ‘Groundwater contamination’ from the unlined stormwater system – canals;
- ‘Groundwater contamination’ from the unlined stormwater system – water quality pond; and
- ‘At Source’ stormwater monitoring parameters.

A line of questioning from Commissioner Leersnyder raised an issue of groundwater discharges of contaminants from the stormwater system (canals and ponds), and what effect on groundwater had been considered.

### 3.1 Groundwater - Canals and Forebay

The base of the canals and forebay is lined with sand for filtration. The sand lining is replaced annually. The forebay is maintained annually.

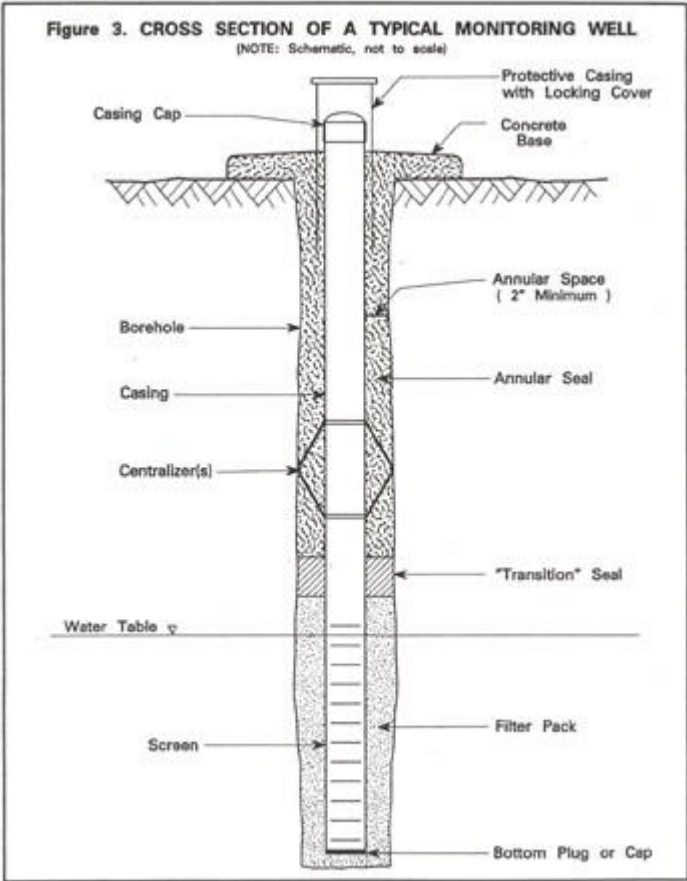
Sediment monitoring of the canals was conducted by 4Sight Consulting in April 2023 (attached). The monitoring showed elevated levels of Total Petroleum Hydrocarbons

(TPH's) (C7-C36) within the canals<sup>1</sup>. The testing shows that the sand within the canals is doing its job in filtering contaminants. There was no sediment monitoring test within the forebay.

While the sand lining in canals is replaced annually and forebay maintained annually, there is currently no visibility over effects, if any, of the impact on discharge to groundwater.

I recommend that a groundwater monitoring and management plan be a consent condition. The groundwater monitoring and management plan may include monitoring wells – example below.

I understand that there may be contaminated groundwater plumes from the refinery site. If contaminated groundwater is identified in the wells, further investigation may be required to identify the source of contamination.



### 3.2 Groundwater – Ponds

<sup>1</sup> Table 1, s2.2.1, p3, Stormwater System Sediment Disposal Monitoring Report for Northport Ltd; 4Sight Consulting Ltd (April 2023)

The pond is unlined and has a sandy base. Sediment monitoring of the pond was conducted by 4Sight Consulting in April 2023. The monitoring showed elevated levels of Nickel, Zinc and Total Petroleum Hydrocarbons (TPH's) (C7-C36) within the pond sediment<sup>2</sup>.

I recommend that a groundwater monitoring and management plan for the stormwater system be included. The management plan would need to:

- to detail the methodology for monitoring groundwater for the purpose of minimise the potential discharge of stormwater system contaminants to groundwater
- Identify the appropriate location of at least three (3) down gradient bores for monitoring the quality of shallow groundwater in relation to the Stormwater System
- Determine representative groundwater quality for shallow groundwater in relation to the perimeter of the Stormwater system owned by the Consent Holder
- Set out the procedures and protocols by which baseline groundwater quality for the water quality parameters of TPH, copper, lead, zinc and aluminium will be characterised.
- Set out the procedures and protocols by which groundwater quality parameters of TPH, copper, lead, zinc and aluminium will be monitored through the term of the consent.
- Set out the criteria by which trigger levels for groundwater quality parameters of TPH, copper, lead, zinc and aluminium will be set. Trigger levels will provide an early warning indicator or potential changes of groundwater quality as a result of activities authorised by this consent.

I recommend that a sludge management plan for the stormwater pond be included in the conditions. The management plan would need to:

- to detail the methodology for managing sludge build up in the stormwater basin so as to minimise the potential discharge of a contaminants to groundwater
- The inspection regime and record keeping requirements for the canals and ponds;
- Maintenance requirements and the sediment testing regime for TPH, copper, lead, zinc and aluminium
- The predicted frequency of desludging; and
- The disposal location, including any secondary approvals required if contaminant levels do not meet cleanfill guidelines and the disposal site is not to a consented

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<sup>2</sup> Table 1, s2.2.1, p3, Stormwater System Sediment Disposal Monitoring Report for Northport Ltd; *4Sight Consulting Ltd* (April 2023)

disposal facility.

**3.3 At Source’ stormwater monitoring parameters**

Please refer to the attached memo dated 15 November 2023. I support the approach to ‘at source’ groundwater monitoring and the attached memo sets out the rationale for the appropriate attributes of the relevant contaminants.

**4.0 CONCLUSION AND RECOMMENDATIONS**

**4.1 Conclusion**

Overall, in consideration of the above I remain of the opinion that, subject to conditions, the actual and potential adverse effects from operational Stormwater discharges will be appropriately managed and the approach represents the best practicable option.

The monitoring and management plan is to ensure monitoring outcomes and achieved and to provide a mechanism to make changes if required, to ensure effects remain reasonable for the foreseeable future.

<b>Memo prepared by:</b>	John McLaren, Senior Engineer, Haigh Workman
<b>Date:</b>	16 November 2023
<b>Memo reviewed and approved for release by:</b>	Blair Masefield, Technical Director, Beca Limited
	On behalf of the Whangārei District Council and Northland Regional Council
<b>Date:</b>	16 November 2023