CAPTION SHEET AND SUMMARY OF FACTS

- ***For resolution***

CRI-2017-063-3196

PROSECUTOR			**DEFENDANT**
Bay of Plenty Regional Council	**-v-**	**NAME**	**Rotorua District Council**
		ADDRESS	**1061 Haupapa Street Rotorua**

Charges:

CRN	Date	Charge	Provision	Max. penalty
17063501060 (RDC)	6 April 2017	Discharging a contaminant (namely stormwater contaminated with leachate) onto or into land in circumstances where it may enter water	Sections 338(1)(a) and 15(1)(b) of the RMA	$600,000

BACKGROUND

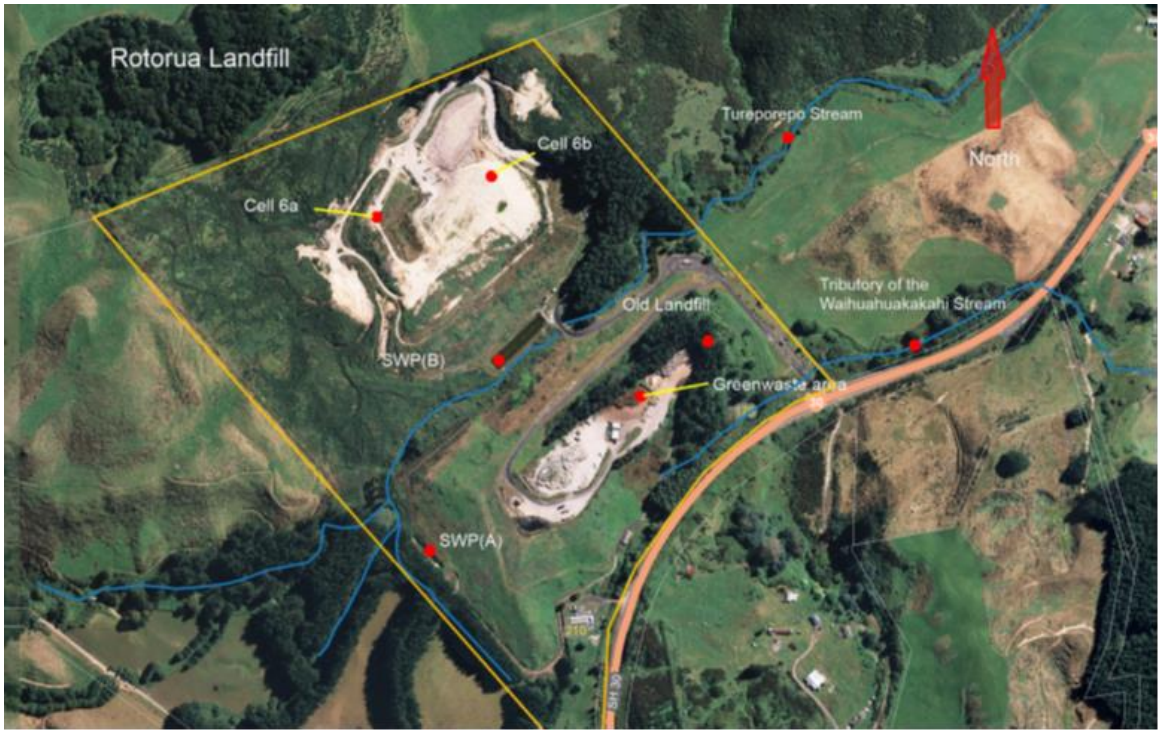
Introduction

1. This prosecution relates to a discharge of contaminated stormwater from the Rotorua landfill at 170 State Highway 30, Rotorua (**the landfill site**) in April 2017.

2. Rotorua District Council (**RDC**) owns and operates the landfill site.

3. From 1 July 2016 RDC engaged a Site Operatoor to manage the landfill site. Nothing in this summary of facts asserts or implies that the Site Operator was criminally responsible for the discharges of leachate on 6 April 2017 addressed in this summary of facts.

Rotorua District Council landfill



4. The landfill site is 45 hectares in size and is approximately 6 km south of Rotorua.[1] It has been used as a municipal and commercial landfill by RDC since 1970.

5. The landfill site has been developed in stages. Stage 1 was the original landfill but has subsequently been capped and converted into a greenwaste

[1] Further aerial photographs of the landfill site are at **Tab 1**.

collection area. From 1997 RDC began developing two new landfill areas at the landfill site – Cells/Stages 6a and 6b.

6. The Tureporepo Stream runs through the middle of the landfill site - to the north of Stage 1 (i.e. the green waste area) and to the south of Cells 6a and 6b. The Tureporepo Stream drains the northern and western parts of the landfill site.

7. The Tureporepo Stream originates on the eastern side of the Mamaku ranges and after flowing through the landfill site joins the Waipa and Kauaka Streams to form the Puarenga Stream approximately 2 kms from the landfill site. The Puarenga Stream flows through Whakarewarewa Village and into Lake Rotorua approximately 5 kms from the landfill site.

8. A tributary stream of the Waihuahuakakahi Stream flows from the southern boundary of the landfill site (below the green waste area). That tributary stream flows into the Waihuahuakakahi Stream approximately 600 metres from the eastern corner of the landfill site. Waihuahuakakahi Stream flows into the Puarenga Stream approximately 5 kms from the landfill site.

Resource consent 02 3996

9. Since 2001 discharges of contaminants at the landfill site to water and to land where they may enter water have been authorised by resource consent 02 3996. That consent authorises RDC:

   (a) To discharge contaminants onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water; and

   (b) To discharge stormwater to water and land in circumstances where it may enter water.

10. Those discharges are authorised subject to conditions, including:

   (a) Condition 17, which states:

Permanent Stormwater System

17.1 The permanent stormwater detention pond shall be fully operational when the stormwater network is connected.

17.2 The consent holder shall ensure that landfill leachate is not to enter the stormwater treatment system.

17.3 The consent holder shall ensure that the stormwater system and associated works are adequately maintained at all times …

(b) Condition 18.3 provides that the consent holder will not allow any substance that is toxic to aquatic life to enter the stormwater system.

(c) Condition 20.1 states that the leachate collection system is to be maintained to ensure effective collection of leachate from the fill.

(d) Condition 20.4 states the stormwater cutoff drains, detention pond and spillway to Stages A, B, C1 and C2, 1, 2, 4, 5, and 6a and 6b shall be maintained and operated to the satisfaction of the Chief Executive of the Regional Council or delegate.

11. The effect of the conditions of consent 02 3996 is that:

(a) All stormwater discharged from Stage 6 of the landfill site (which includes Stages/Cells 6a and 6b) is intended to be captured and directed to stormwater pond B, where it is treated for suspended solids and then discharged into the Tureporepo Stream.

(b) The stormwater captured at the landfill site and discharged into the surrounding tributary streams is to be free of leachate. All leachate is to be captured by the landfill site's underlying leachate liner and reticulation system and then pumped into RDC's wastewater pipeline system.

RDC's compliance history at landfill site

12. The following compliance issues have arisen at the landfill site since 1998:

    (a) In 1998, RDC was convicted of three offences arising from earthworks during the formation of the Stage 6 area in 1998.

    (b) In 2008, an abatement notice was issued in respect of the discharge of leachate from the Stage 6b part of the landfill to the Tureporepo Stream.

    (c) On 20 August 2014, RDC notified the Regional Council that there had been a discharge of leachate from the landfill site to land where it entered water.

Offences in 1998

13. In 1998 the Regional Council prosecuted RDC for three offences in the Stage 6a area of the landfill site – an offence of discharging sediment into the Tureporepo Stream during earthworks, an offence of carrying out earthworks without the necessary consent and an offence of failing to comply with consent conditions relating to earthworks.

14. RDC pleaded guilty to these offences and in May 1999 was convicted and sentenced to pay a fine and costs of $24,000.00.

Leachate issues in the Stage 6 area

15. During compliance inspections in November 1999, August 2006, August 2007 and May 2008 Regional Council officers found leachate discharging from the Stage 6 landfill face and entering stormwater pond B (which discharges to the Tureporepo Stream).

16. In May 2008 the Regional Council issued an abatement notice (2008/A011) to RDC requiring it to cease discharging leachate from the Stage 6b part of the landfill to the Tureporepo Stream. In September 2008, the Regional Council cancelled abatement notice 2008/A011 at the request of RDC.

17. At some stage, RDC realised that leachate in the Stage 6 area was "perching". Perching is when impervious compacted layers of waste are created in a landfill that prevent leachate from percolating down to the leachate capture and reticulation system. To deal with this issue, RDC

installed a series of perforated vertical pipes to improve the drainage of leachate down through the landfill and into the underlying leachate collection system. However, the vertical pipes did not address the issue and from time to time leachate continued to break out through the side of the landfill. To address this, RDC constructed a leachate pond (**pond 2**) to intercept the breakouts of leachate and prevent them from flowing into the stormwater system. The leachate captured in the leachate pond has a vertical perforated pipe which drains to an underlying liner. There is also a valved pipeline that can direct leachate from the leachate pond to the leachate pipeline when levels become too high in pond 2.

18. In November 2009, May 2010 and January 2011 the Regional Council found leachate had again broken through the face of the Stage 6 area of the landfill site, and flowed down into stormwater pond B, which discharges into the Tureporepo Stream. In August 2011 and again in May 2013, the Regional Council issued inspection field sheets to RDC, advising it needed plans to manage stormwater at the landfill site given the pattern of increasing rainfall in the area, and to upgrade the leachate pump and reticulation system.

19. On 20 August 2014, RDC notified the Regional Council that there had been a discharge of leachate from the landfill site to land where it entered water. The Regional Council investigated the discharge and found that:

    (a) The discharge of leachate was the result of high intensity rainfall.

    (b) Leachate had discharged from a manhole riser and the recirculation pump station to the Tureporepo Stream.

    (c) The leachate pipe going from the manhole riser (manhole riser 3 (**MH3**)) to the pump station was too small to handle the increased flow from rainfall events.

    (d) RDC had told the Regional Council that RDC was going to upgrade the leachate pipe but at the time of the discharge that had not occurred.

    (e) At the time of the discharge, the recirculation pump that was supposed to pump leachate from MH 3 when flows were too great for the pipe's capacity had been removed for repair.

(f) Other measures that RDC had taken to address the risk of leachate discharges had not worked. For example, the valve on the pipe from pond 2 to MH 1 could not be turned off during the rain event.

20. Following its investigation, the Regional Council issued abatement notice 2014/A106 dated 10 February 2015 to RDC requiring it to cease discharging landfill leachate to land where it may enter the Tureporepo Stream. When the Council issued the abatement notice to RDC, it included a final warning letter stating that it had considered prosecuting RDC for the leachate discharge but instead decided to issue an abatement notice and a final warning to RDC. That letter concluded by asking that RDC provide a report by 13 March 2015 outlining what steps RDC would take to ensure there would be no further leachate discharges.[2]

21. RDC did not appeal or otherwise contest abatement notice 2014/A106.

22. In response to the landfill site's ongoing leachate issues, in 2015 RDC engaged Tonkin & Taylor (**T&T**) to conduct a review of the risks and operations at the landfill site. T&T provided its report in September 2015. That report included the following statements:

(a) T&T suggested that RDC install drainage pipes along the front face of the Stage 6 area to collect leachate and discharge it into the leachate network.

(b) The leachate pipeline has been subject to a number of overflows during high rainfall events and a recent overflow in February 2015 had occurred as a result of the pipeline being blocked.

(c) RDC needed to resolve the leachate issues to ensure that all practicable steps were being taken to avoid leachate overflows.

(d) RDC needed to consider an overall leachate management plan.

(e) RDC needed to compile as-built data for the leachate collection system.

(f) RDC needed to satisfactorily investigate and remedy the leachate overflow issue, including developing a long term

[2] A copy of abatement notice 2014/A106 and the Regional Council's warning letter are attached at **Tab 2**.

leachate management strategy for increased volumes of leachate.

23. While RDC then decided to contract a waste management specialist company to manage the landfill going forward, none of the foregoing recommendations were implemented by RDC at the time of this offending.

24. In August 2016 a Regional Council officer met with RDC managers to discuss what RDC would do to mitigate the ongoing risks of high levels of contamination from the landfill entering into the nearby watercourses.

25. It was agreed at the meeting that RDC would develop a plan to manage the contaminated water discharging from that area so the discharges complied with consent 23996, abatement notice 2016/A039 and the RMA. RDC said it would provide details of its intended actions to the Regional Council by 19 August 2016.

The Site Operator

26. Under its landfill management agreement with RDC, from 1 July 2016 the Site Operator assumed responsibility for the landfill operations, maintaining new fixtures, installations or other infrastructure constructed by the Site Operator and maintaining the existing roads and infrastructure within the landfill. The Site Operator was to ensure that all of its operations and activities complied with all applicable resource consent conditions and the RMA. The Site Operator was also responsible for the ongoing operation and management of the landfill's leachate systems up to the points they discharged off-site.

27. On 7 July 2016 a Regional Council officer met with the staff of the Site Operator in Rotorua who were involved in managing the landfill site and explained to them:

    (a) The Regional Council had had a number of issues with the landfill site over the last 10 years.

    (b) There had been uncontrolled discharges from the leachate system to the Tureporepo Stream and RDC were on a final warning in respect to leachate discharges to the Tureporepo Stream.

(c) The Council had issued RDC an abatement notice requiring RDC to cease discharges of leachate to land where it could enter water.

(d) It was important that the Site Operator was vigilant at the landfill site because the Council was at the end of its patience over these issues and it was likely that the next discharge of leachate to the stream at the site would result in a prosecution.

(e) As the new managers of the landfill site, the Site Operator needed to be aware that they may be found liable if there was a further discharge, due to the strict liability provisions of the RMA.

28. Shortly after taking over management of the landfill site, the Site Operator discovered that leachate was breaking out of the face of Stages 6a and 6b of the landfill and flowing over the road and downhill towards the Tureporepo Stream[3].

29. The Site Operator engaged Tonkin & Taylor (**T&T**) to assist with work on the Stage 6 area. T&T provided the Site Operator a report in November 2016 that included the following statements:

(a) There are significant areas of leachate break-out on the front face of the landfill. A leachate collection drain should be installed at the bottom of the capped area to discharge through a shaft to the existing leachate collection pipes beneath Stage 6a and 6b.

(b) During construction it may be decided to run lateral drains from the worst areas of leachate breakout to this main collector pipe to control the potential for leachate to seep from below the geomembrane cap.

Offence

6 April 2017 - discharge of leachate contaminated stormwater from Stage 6

30. At 10am on 6 April 2017 a Regional Council officer carried out an inspection of the landfill site. When she arrived, the officer found that leachate had breached the bund of leachate pond 1 in two places and was flowing down

[3] Photographs showing leachate breaking out from the landfill face are attached at **Tab 5**.

the tip face and into leachate pond 2 (**pond 2**). The following photographs show leachate flowing from pond 1 to pond 2.

31. The bund of pond 2 (which is in the north-eastern corner of Stage 6b) had also been breached and leachate from pond 2 was overflowing at a high rate into an open stormwater drain. At the time, the officer thought that this open drain led to the leachate system but later that day she was advised that the drain actually flowed to stormwater pond B.

32. The following photographs show the leachate overflowing from pond 2 and into the stormwater drain on the morning of 6 April.

33. During her inspection the Council officer also found that water from stormwater pond B was overflowing into the Tureporepo Stream.

34. At the time of the officer's visit, staff and contractors of the Site Operator were attempting to address the leachate issues at the active tipping area of cell 6b by pumping leachate from there to a point on the side of the landfill where it could flow to a leachate pond (pond 1). However, as stated, the leachate in pond 1 was overflowing from two points and then flowing down the side of the hill to pond 2, which was in turn overflowing its bund and discharging to the stormwater system which was flowing into the Tureporepo Stream.

35. No one working at the landfill site appeared to be aware that leachate was overflowing from pond 2. When the officer pointed out to the staff at the landfill site that leachate had broken through the leachate pond's bund and was overflowing into a drain, staff at the landfill immediately arranged for the breach of the bund to be blocked. This stopped leachate from discharging from that pond into the stormwater drain.

36. About two hours after the Regional Council officer had visited the landfill site, an RDC Manager sent the Regional Council an email stating:

> In case you are not aware, leachate has discharged from the eastern corner of the landfill over a bund and into the sediment retention pond. The pond was discharging to water at the time. A pump has been set up to empty the pond

into the sewer network and plant is coming on site to increase the height of the bund to cease the discharge of leachate to the stormwater network.

37. After receiving this email two Regional Council officers immediately went to the landfill site. The officers inspected the area where the leachate had overflowed from pond 2 and into the stormwater drain. Leachate was not discharging into the stormwater drain at this time because the breach in pond 2's bund had been repaired.

38. One of the Council officers took a sample of the leachate that remained in the flowpath from pond 2 to the stormwater drain at the location shown in the following photograph.

39. When that sample was analysed it was found to have faecal coliform levels of 21 million cfu/100mL. An aerial photograph showing where this sample was taken is attached at **Tab 8**.

40. At that time, staff members of the Site Operator were pumping water from stormwater pond B to the leachate system to reduce the levels of contaminated stormwater in stormwater pond B. However, stormwater contaminated with leachate was still flowing from stormwater pond B into the Tureporepo Stream.

41. While the officers were inspecting the landfill site on the afternoon of 6 April 2017 they noticed a sudden increase in the volume of water flowing along the stormwater drain and into stormwater pond B. (As stated, at that time stormwater was still overflowing from stormwater pond B into the Tureporepo Stream.) The officers walked upstream to determine the source of the increased flow in the drain and found it was leachate that had broken out from the front face of Cell 6b. That leachate had previously been contained by a bund but that bund had just collapsed.

42. The following photographs show where the leachate was breaking out from the front face of Cell 6b and the resulting leachate flowpath from the collapsed bund towards the stormwater drain.[4]

43. The discharges of stormwater from stormwater pond B that the Regional Council officers observed on 6 April 2017 were not authorised by consent 02 3996 because they contained leachate. The discharge of leachate contaminated stormwater to land where it then entered the Tureporepo Stream was also a contravention of abatement notice 2014/A106.

44. A staff member of the Site Operator explained to the Council officers that the discharge of leachate into the stormwater pond that day had occurred because pipes that drain leachate from the liner and from pond 2 had been blocked by sediment. This had caused the leachate levels in pond 2 to rise and then overflow over the top of the pond's bund. The leachate had then flowed down the side of the landfill and into the stormwater drain that led to stormwater pond B.

45. When Council officers checked the flow levels through the leachate pipeline at a manhole riser at the base of Stages 6a and 6b they found the flow levels were low, which indicated that leachate was not getting down to the liner where the pipes are situated.

[4] Other photographs taken by the officers on the afternoon of 6 April 2017 are attached at **Tab 9**.

46. When Regional Council officers asked the Site Operator's staff on 6 April 2017 what their understanding of the leachate system was, they said they had been shown it when they started work at the site in July 2016 but were not contracted to operate it and did not have a good understanding of it. They also said that RDC had told them that the valves in the leachate pipelines were always fully open.

Events after 6 April 2017

47. After the offending in April 2017, the Site Operator made a number of improvements at the landfill site, including creating new temporary leachate ponds to attempt to contain the ongoing leachate breakouts, and installing new bunding to minimise the runoff of stormwater to the main leachate pond (pond 2). The landfill site is now checked daily for leachate issues and when rain is forecast, the Site Operator checks the ponds carefully to ensure they have capacity and that stormwater will be diverted away from the leachate pond.

48. However, independent landfill experts engaged by the Regional Council in August 2017 identified the following remaining issues:[5]

    (a) Leachate breakouts continue from the face of Stage 6a of the landfill.

    (b) The temporary leachate ponds are not a suitable long-term option for managing leachate because they involve constant supervision and manual pump operation.

    (c) The low flow rate of leachate through the leachate pipeline at manhole 3 suggests significant perching of leachate and/or that the leachate collection system is not functioning effectively.

    (d) If a failure occurs in the leachate collection system that overloads the leachate pipeline at manhole 3, it would be difficult to prevent leachate from overflowing to the Tureporepo Stream.

    (e) The ability for the landfill operators to respond to heavy rainfall events with manually activated pumps is limited and there is the

[5] Report by Aecom New Zealand Limited dated 8 August 2017.

potential for the ponds to be overwhelmed if the site operator response is not prompt.

(f) Based on the size of leachate pond 2, the maximum capacity of the drainage pipes and the size of the stormwater catchment, it is likely that the leachate pond will be overwhelmed during heavy rain, resulting in discharges of leachate overflow towards stormwater pond B and the Tureporepo Stream.

(g) The large open area of refuse allows significant water ingress during rainfall which will be contributing to excessive leachate volumes at the landfill site.

Abatement notices – April 2017

49. On 26 and 27 April 2017 the Regional Council issued RDC three abatement notices:

(a) Notice A032 required RDC to cease contravening a number of conditions of its consent that related to providing the Regional Council monitoring and sampling results every six months. At the time abatement notice A032 was issued, RDC had not provided any monitoring or sampling results to the Regional Council since August 2016.

(b) Notice A033 required RDC to cease discharging stormwater contaminated with faecal bacteria to land.

(c) Notice A034 required RDC to cease contravening conditions 17.2, 18.1 and 18.3 of resource consent 23996.

50. RDC has not appealed these abatement notices or requested that any of them be cancelled.

Environmental effects

51. The Tureporepo and Waihuahuakakahi Streams are located in the western and southern areas of the Puarenga Stream catchment.

52. The Puarenga Stream has significant cultural values, with three marae situated along its banks, as well as the tourist attractions of Te Puia and

Whakarewarewa Village. The stream is recognised as a freshwater bathing site in Schedule 10 of the Regional Water and Land Plan.

53. The cumulative impact of high faecal contamination on the Puarenga catchment is of concern to human health. Ecological and health risks have been further heightened by break-outs of leachate reaching the landfill's stormwater system with the potential of reaching and impacting the local receiving environment.

Waihuahuakakahi Stream and its tributaries

54. The freshwater fish database indicates that freshwater crayfish or koura (*Paranephrops planifrons*) and shrimp (*Paratya curvirostris*) have been found in a tributary of the Waihuahuakakahi as recently as 2007, and rainbow trout (*Oncorhynchus mykiss*) have been observed in the Tureporepo and Kauaka streams in 1988.

55. Faecal coliform and E.coli concentrations further down the tributary have been detected at levels above the threshold for swimming water quality (550 *E.coli*/100ml).

56. Ammoniacal-nitrogen and nitrate-nitrogen levels have been recorded above recommended thresholds for aquatic organisms. Elevated ammonia can impact behaviour, growth and development of aquatic organisms, reproduction, mortality of fish eggs and fry, mortality of larvae and adult invertebrates.

57. Fish are sensitive to chemical contamination and are likely being excluded from some of this reach given the ammoniacal-nitrogen concentrations found. Lifecycle stages of aquatic species could also be impacted from increased contaminant concentrations.

Tureporepo Stream

58. In 1996 a fish population survey of the Tureporepo Stream found that rainbow trout and koura were abundant in the stream and Brook Char (a species of trout) was also present. This reflected that the stream had good water quality at that time.

59. On 6 April 2017 stormwater contaminated with leachate has entered the Tureporepo Stream through the overflow system from stormwater pond B.

60. Leachate is the liquid that drains or 'leaches' from a landfill. Leachate becomes an accumulation of suspended and soluble materials that originate from or are products of the degradation of the solid wastes that have been disposed of at the landfill. Leachate can have elevated concentrations of contaminants, such as ammoniacal-nitrogen, heavy metals, pathogens, and organic compounds.

61. Leachate can also be elevated in a range of microbial pathogens. Disease causing organisms can be present from a number of waste streams including sludge from wastewater treatment plants. Leachate contaminated with these organisms presents a risk to human and stock health on mixing with ground or survace waters.

62. A sample taken from the 6 April 2017 discharge of leachate onto land had elevated conductivity, choloride, ammoniacal-nitrogen and an extremely high faecal coliform concentration, namely 21,000,000 cfu/100ml. The high faecal coliform result is equivalent to the concentration found in raw sewage. While it is likely the leachate was diluted as it passed through stormwater pond B and after mixing in the receiving stream, there remains the concern that this concentrated toxicant source could have had an adverse impact on the Tureporepo Stream.

63. Faecal contaminant loading from the landfill site is a concern and the excessive numbers and potential pathogenic material that could be associated with these discharges has the potential to impact recreational water users downstream. For example, downstream of SWP(B) is the Whakarewarewa Village on the banks of the Puarenga River. At the entrance to this tourist attraction is a bridge which crosses the Puarenga River. There is a swimming hole where local children dive in the river for coins tossed off the bridge by tourists.

64. A variety of organisms are present in faecal matter such as viruses, bacteria, protozoa (single cell organisms) and helminths (nematodes). The impacts of pathogenic microorganisms on human health are commonly manifested as gastro-enteritis, but other common illnesses include respiratory problems and skin rashes. Serious illness can also be attributed to infection from pathogens contained in waters, for example, hepatitis A, campylobacteriosis and salmonellosis.

Explanations/interviews

65. Under the agreement with RLC, the Site Operator was in charge of the day to day management and operation of the landfill.

66. When interviewed on 2 May 2017, representatives of the Site Operator stated:

    (a) The Site Operator had four or five landfill specialists assess the landfill site, along with project engineers, when they first took it over in July 2016.

    (b) There was no handover between RDC's previous landfill manager and the Site Operator. Instead, two other staff from RDC explained how the leachate system worked.

    (c) RDC did not tell the Site Operator about the issues with perching leachate in Stage 6 (ie the build-up of leachate due to compacted, impervious layers within the landfill). However, the Site Operator discovered these issues and sent an email to RDC about them soon after it took over in July 2016.

    (d) When the Site Operator discovered that leachate was breaking through the faces of Stage 6a and 6b of the landfill they installed stormwater bunds to divert stormwater away from leachate and installed a separate drain to capture leachate that was breaking out of the face of the landfill and running across the road. That separate leachate drain was intended to prevent the leachate from discharging into the stormwater system.

    (e) There were no formal instructions from RDC about how the valves for the leachate system worked. The Site Operator understood from RDC that the valves were to be left fully open.

    (f) At the time of the April rain events the landfill was still relatively wet from the March rainfall. They had carried out a lot of excavation work on the tip face to create holes for the stormwater.

    (g) After the leachate issues occurred on 6 April 2017, the Site Operator had installed additional bunding to prevent leachate from entering the stormwater system, they had increased the

capacity of the leachate ponds and they had been pumping leachate to pond 2. Further, a staff member had monitored the site every six hours for 10 days to ensure there were no further leachate discharges. The Site Operator was now checking the landfill site for leachate issues every day.

(h) Now when rain is forecast, the Site Operator checks the ponds carefully and pump them out to ensure they have capacity and that all stormwater is diverted away from the leachate pond.

67. When interviewed on 4 May 2017, Tim Senington (RDC's Solid Waste Operations team leader) stated:

(a) RDC historically had been responsible for management of the landfill but in 2015 decided that they should engage someone else to manage it. The Site Operator was awarded the contract and were required to ensure the leachate system was working properly and that there were no breakouts or any leachate issues around the site. The Site Operator's responsibility for leachate ended at the pump station at the front gates.

(b) RDC had told the Site Operator (along with other tenderers) about the problems and issues RDC had had at the landfill site including those highlighted by the Regional Council's abatement notices and the 2015 Tonkin & Taylor report.

(c) RDC took no steps in advance of the heavy rain that was forecast for 5 and 6 April. It did not contact the Site Operator about the heavy rain that was forecast and no RDC staff went out to check the landfill site prior to that forecast rain.

(d) RDC had no monitoring system for the landfill site but went there on an "ad hoc basis".

(e) Four storm events had passed through Rotorua since the end of February so that would have filled up stormwater pond B. RDC did not know before the storms whether the recent work on Stage 6b would mean the site would handle the rain or if there was going "*to be leachate peeing out the bottom*" so they did not want to over-pump the stormwater into the leachate line, where that would have created a greater risk.

Work undertaken following 6 April 2017 discharge

68. Since the 6 April discharge, RDC and the Site Operator made a number of improvements to the way they manage stormwater at the landfill. The improvements at cells 6a and 6b include:

    a. Keeping the active area for receiving and compacting waste open to a minimum.

    b. Putting a large amount of cover (soil) over both cells to minimise the amount of rainfall infiltration into the leachate system.

    c. Directing stormwater runoff from a surface area of approximately 6,000m2 from the eastern side of cell 6b away from leachate pond 2.

    d. Having a pump pumping leachate from a permanent leachate breakout in cell 6b to leachate pond 2.

    e. Keeping the level of leachate in leachate pond 2 to a minimum by pumping the leachate directly to the leachate system at manhole 1.

    f. Regularly desludging leachate pond 2 and ensuring the down pipe is clear of rubbish and sediment.

    g. Making sure the leachate pond 2 levels are as low as possible before forecasted rain events.

    h. Having the Site Operator's staff monitor leachate pond 2 regulaly, particularly during significant rain events.

69. These improvements appear to have worked. Despite significant rainfall at the end of April 2018 (which resulted in widespread flooding in Rotorua and a state of emergency being declared in the Rotorua suburb of Ngongotaha), no issues involving the discharge of leachate from the stage 6 area into the stormwater system were identified.

70. Stage 6 of the landfill is now closed as a active landfill and has been completely capped. Refuse taken to the landfill now goes to a transfer station at the top of stage 6, from where it is transported off site. The leachate discharge from the old landfill at stage 6 is still actively managed and there have been no further incidents of leachate discharge into stormwater.

2017 Rainfall events

71. The landfill had experienced a prolonged and abnormal duration of rainfall prior to the leachate discharge on 6 April 2017. The Whakarewarewa rainfall gauge measured 388.6mm of rainfall during the month of March 2017 and 167.9mm during the first six days of April 2017. This is equivalent to an ARI of around 10 years. However, if the rainfall was measured on a 30 day rolling assessment, i.e., from 7 March 2017 (at 00.00 hours) to 5 April 2018 (at 23.59 hours), a total of 548.2mm of rainfall was recorded at the Rotorua Whakarewarewa gauge. This rainfall total (548.2mm) is the highest 30 day rolling rainfall total on record for Rotorua, as measured at the Whakarewarewa rainfall gauge and is equivalent to an ARI of greater than 200 years.

72. Even though the rainfall was not at extraordinary levels in the days immediately preceding the discharge, the cumulative volume of the rainfall in the preceding month or so meant the landfill was saturated. There is a time lag of a matter a days from when the rainfall lands on the landfill and permeates the refuse and exits through the leachate collection system.

73. Any stormwater contaminated by leachate that had reached the receiving environment would have been significantly diluted due to the volume of rainwater and saturated receiving environment.

Previous convictions

74. The Regional Council prosecuted RDC and its earthworks contractor in 1998 for three offences at the landfill. RDC pleaded guilty and was convicted and fined $24,000.00 in May 1999.[6]

[6] *Bay of Plenty Regional Council v Rotorua District Council & Phil Rouse Limited* attached at **Tab 11**.