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**Horowhenua District Council & Hokio Environmental Kaitiaki Alliance Inc. Landfill Agreement Project Management Group**

**WORKSHOP MINUTES**

Minutes of a Workshop of Horowhenua District Council & Hokio Environmental Kaitiaki Alliance Inc. Landfill Agreement Project Management Group and Tonkin & Taylor held in Ante Room, Horowhenua District Council, Oxford Street Levin on 29 October 2019 at 10am.

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**IN ATTENDANCE:**

<b>Chairperson/s</b>	Jenny Rowan and Lisa Slade
<b>Members</b>	David Moore, David Clapperton
<b>Project Manager</b>	Greg Carlyon
<b>Tonkin &amp; Taylor</b>	Chris Purchas, Simone Eldridge
<b>Meeting Secretary</b>	Natasha Breen

**Welcome and Karakia**

David M opened the meeting with a Karakia

**Apologies**

None

**Presentation from Tonkin & Taylor**

Simone provided hardcopies of presentation to meeting attendees

- **Objectives**
  - Landfill conceptual site model
  - Landfill water balance model
  - Review of water quality information
  - Identification and high level assessment of option for leachate mitigation
- **Site Layout**
  - Unlined Site
  - Variable cap permeability
  - Undulating top surface with some surface water ponding
  - No perimeter surface water cut off
  - Old waste so degradation process expected to decrease with time
- **Site Model**
  - Potential groundwater inflow
    - Upward water movement from deep aquifer to shallow aquifer
    - Flow direction toward Tatana Drain and Hokio Stream
    - Surface water drainage towards Tatana Drain and Hokio Stream
    - Shallow Groundwater inflow to Tatana Drain and Hokio Stream
- **Groundwater Flow**
  - Shallow aquifer (sand)
  - Deep aquifer (gravel)

- **Potential Leachate Sources**
  - Leachate generation
    - Inflow from off site
    - Surface infiltration
    - Localised ponding at top of cap leading to additional infiltration
    - Shallow groundwater inflow to base of waste
    - not clear-cut that just leachate deteriorate drain
    - don't see direct measurable impacts on Hokio Stream, receiving environment seems more capable of dealing than in the past
  - Leachate pathways
    - Leachate discharge to deep groundwater not likely given upward gradient from deep to shallow groundwater
    - Elevated leachate levels in waste leading to surface water seeps in down gradient sand dunes
    - Shallow groundwater discharge to Tatana Drain
    - Shallow groundwater bypasses Tatana Drain and discharges in Hokio Stream
- **Water Quality – Down Gradient Wells**
  - Leachate water chemistry is distant from groundwater
    - Elevated ammoniacal-N, boron and chloride concentrations, compared to up gradient wells, indicative of leachate impacts
  - Potential leachate impacts identified in shallow groundwater wells
  - Potential leachate impacts not identified in any of the deep aquifer bores
- **Water Quality – Tatana Drain & Hokio Stream**
  - Tatana Drain
    - Elevated ammonia and chloride concentrations
    - Concentrations decrease as the distance from the landfill increases
  - Hokio Stream
    - No measurable direct leachate impacts
    - No clear trends between upstream and downstream water quality
- **Water Quality Summary**
  - Groundwater quality reported to be relatively consistent over time
  - Wells closest to the unlined landfill have the highest concentration of analytes associated with leachate
  - Leachate in shallow groundwater is subject to natural attenuation and dilution
  - Upward hydraulic gradient from the deep to the shallow aquifer which isolates deep aquifer from leachate impacts
  - No evidence of impacts from the operating (lined) landfill
- **Infiltration**
  - Landfill cap permeability
    - Average measured permeability of top deck after additional clay capping
    - Portions of top deck have higher measured permeability, of up to 2.0e-6 m/s
    - Side slopes capped with sand. As was allowed by the regulations at the time
- **HELP Results – Leachate Generation**
- **Remedial Options**
  - Reduce leachate generation
  - Collect leachate
  - Manage impacts
- **Additional Capping**
- **Permeability Through Cap**
- **Potential Effects of Additional Capping**
- **Perimeter Drain Improvements**
- **Cover System – Drainage Improvements**
- **Leachate Interceptor Trench**
- **Landfill Closure**

- **Key Cost Impacts – Waste Disposal**
  - Contribution to council overheads
  - Monitoring and maintenance
  - Landfill operation
  - After care provision
  - Depreciated, rates, consent fees
  - Disposal revenue or costs
- **Current Arrangements**
- **Future – Transport out of District**
- **Future – Landfill Continues Operation**
- **Annual Costs – Landfill vs Export**
  - 'what if' discussion on pricing on the community of waste being taken out of region by external contractors
- **Key Differences**
  - Discussion on if NZ are looking at what other countries do with their rubbish
  - Discussion on the financial impact to Council and impacts to the community

### **Meeting with the New Mayor and Council**

Discussion took place on the PMG briefing the New Council and it was decided the briefing would consist of primarily the environmental and financial factors.

Discussion took place on the best way of getting Councils support using Lake Horowhenua and the broader catchment in the discussion with Council.

A very good communication strategy to be in place and then go to the community with Council's support.

Consideration on the old and new Landfill being completely separate. (The closed Landfill and the existing Landfill).

It was agreed the next steps will be that Greg and Lisa meet tomorrow (30 October 2019) and Greg and Lisa will set a time for the next meeting.

David C gave an overview of the LTP process.

It was agreed that Greg will go back to Tonkin & Taylor within two weeks and provide detail to on the format required for information to be supplied to the PMG.

The Environment Court is still in place for 12 December 2019 which may take place remotely. Judge Dwyer has decided to dispose of the Enforcement Order and Declarations.

David Moore closed the meeting with a karakia

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