Assessment of Environmental Effects

Proposal

Prepared for Waipā District Council
Prepared by New Zealand Motor Caravan Association

8 June 2022

New Zealand Motor Caravan Association

Contents

Contact Details

Rayya Ali

4 Graham Road, Takanini, 2110

Auckland.

Email: rayya@nzmca.org.nz

Prepared by:

Rayya Ali

Planning and Policy Advisor

New Zealand Motor Caravan Association

Reviewed by:

James Imlach

National Manager Property and Policy

New Zealand Motor Caravan Association

Introduction

1.1 Purpose

This assessment of environmental effects report has been prepared in support of New Zealand Motor Caravan Association Inc. (NZMCA) resource consent application to establish a motor caravan park at Pirongia Road in Te Awamutu ("the site"). The site is owned by Waipā District Council and is popularly known as the Te Awamutu landfill site (south landfill) which has been closed for a few years now.

This report has been prepared in accordance with section 88 and Schedule 4 of the Resource Management Act 1991 (RMA) and the Waipā District Plan.

It contains the following information:

- Description of the site and surrounding locality;
- Description of the proposed activity;
- Assessment of effects; and
- Analysis of the provisions of the RMA and the relevant statutory documents.
- Appendices
    - Appendix A: Certificate of Title
    - Appendix B: Site Plan
    - Appendix C: Detailed Site Investigation
    - Appendix D: Membership Code of Conduct
    - Appendix E: Traffic Impact Assessment
    - Appendix F: Vehicle Movement Survey
    - Appendix G: Signage
    - Appendix H: Pre-application Meeting Notes and Preliminary Planning Assessment
    - Appendix I: Acoustics Evidence
    - Appendix J: Stormwater Management

1.2 Background

The NZMCA currently operates 52 motor caravan parks across New Zealand for the temporary use by its members traveling in their purpose-built self-contained vehicles. These parks support one of the core objects of the Association, which is to "Promote the provision of safe overnight motor caravan parking facilities for members throughout New Zealand"

NZMCA parks provide a safe location for members to park overnight while travelling and exploring New Zealand. The membership principally consists of retirees, matured couples and families. NZMCA members are strictly required by their membership rules and park conditions, to abide by a code of conduct and to the rules of the park. NZMCA have appointed park custodians who frequently visit the park to ensure compliance is met by the members in addition to actively monitoring members through a self-regulated system.

Consequently, the motor caravan parks are very quiet, low-key operations which enable members to stay near the townships and areas they are visiting.

2 Description of the existing environment

2.1 Location, land use and zoning

The site is situated on a portion of the closed Te Awamutu landfill site located off Pirongia Road (the land parcel). Access to the site is via a long driveway at the rear of 4 Pirongia Road. The NZMCA is currently working on a lease agreement with Waipā District Council to lease approximately 0.83ha of the land parcel and operate a motor caravan park (see Figure 1 below). The land parcel has a total area of 3.9ha with a legal description Lot PT A lot 317 Mangapiko PSH Lot 3 DPS 62851.

The site is a vacant paddock with the northern portion of the land used for grazing purposes. It is irregular in shape with a relatively flat landform. The topography of the land is generally flat with low lying land and riparian planting located along the Mangapiko River to the north.

Figure 1: location of the land parcel outlined in black with NZMCA only leasing 8300m^2 of land shaded in blue.

The site is located within the territorial authority of Waipā District Council with the following zoning and overlays:

Waipā District Plan	Zoning and overlays
Zone	Rural
Designation	D80 Old dump site & Imhoff tanks effluent outlet. Used to process and dispose of wastes, sewage, liquid and sludges.
Policy Areas	Cultural Landscape Area Alert Cultural Landscape Area Battle Site
Hazard Areas	Within a flood hazard area

The surrounding area comprises of rural sites to the north and west, specialised industrial zone with a mixture of residential zone to the east and residential zone with new subdivision to the south (see Figure 2 below).

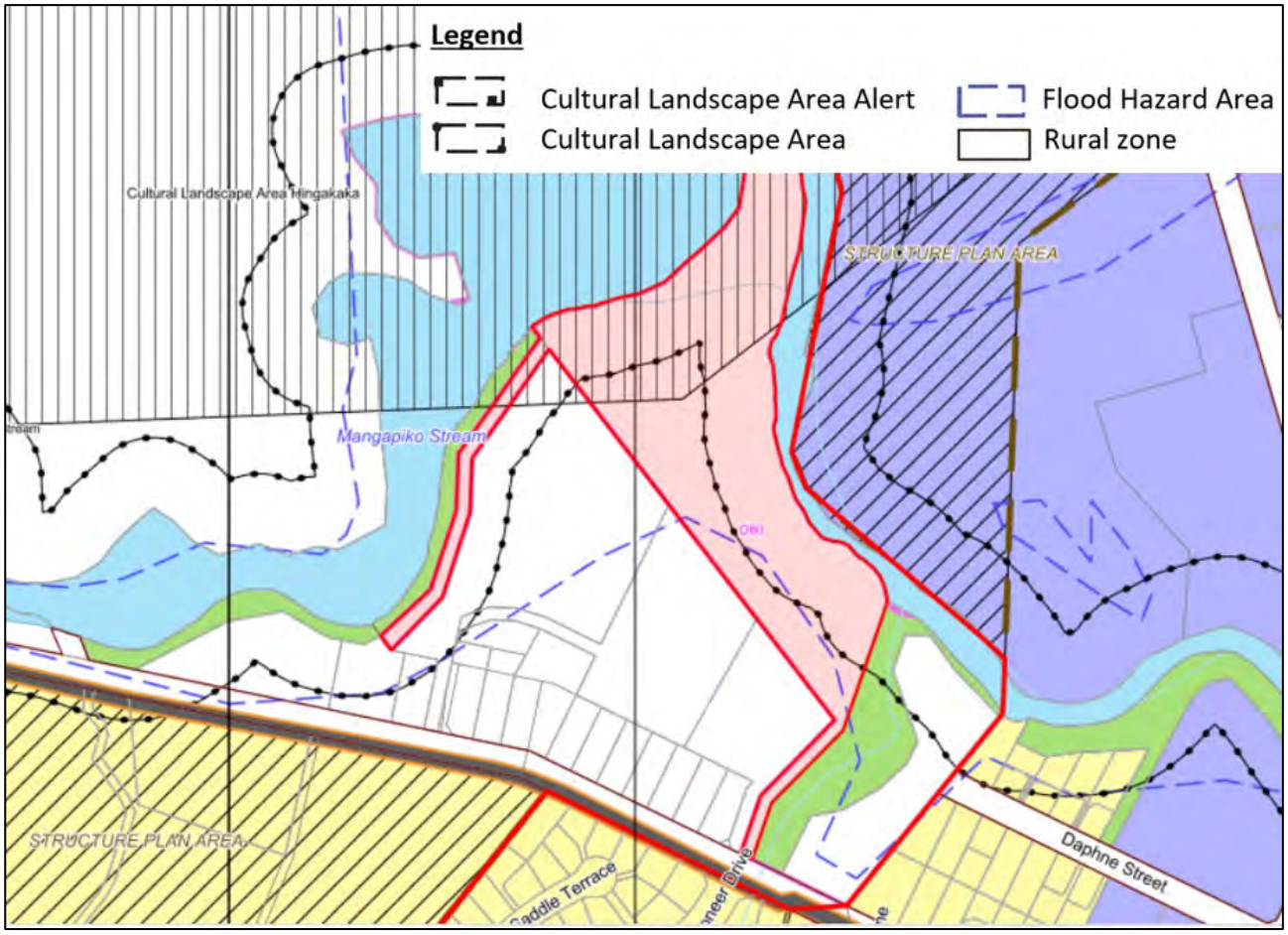


Figure 2: shows the location of the site shaded in red with the various district plan overlays.

2.2 Site Photos

Figure 3: shows the view of the site looking west.

Figure 4: shows the accessway to the site. The view is from the site looking south.

Figure 5: shows the existing trees and view along the southern boundary.

Figure 6: shows the view of the site looking north towards the Mangapiko Stream

2.3 Historical land use and contamination

Council records confirm that the site was previously used as a landfill with resource consent held by Waipā District Council under regional consent numbers 940126 and APP142220. The Te Awamutu Closed Landfill site comprises of two landfill areas (referred to as the North Landfill and South Landfill) which are separated by the Mangapiko Stream. The smaller Southern Landfill closed over 50 years ago with the Northern Landfill closed 28 years ago.

Capping works were fully completed in August 2002 and both landfills now have well established pasture and good surface water drainage. Refer to section 2 of the application (WRC document #17166532) for further details regarding area, volume of waste, and capping works. The bores at each landfill have been monitored consistently on a biannual basis since 2003. This groundwater monitoring data provides a good understanding of the groundwater contaminant concentrations at the site and trends over time.

2.4 Detailed Site Investigation

NZMCA engaged WSP to undertake a detailed site investigation (DSI) for the land parcel including the area to be leased for the park which forms part of the South Landfill (See Appendix C). The purpose of this investigation was to assess the suitability of the site for the proposed development from a contamination perspective in terms of determining health, safety and environmental controls that may be required under the NES Regulations 2011 (National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health).

There was no evidence of landfill materials, slumping or seepage noted during the investigation. The DSI included 21 soil samples taken from 11 test pits which were hand augurs excavated across the while land parcel. Results from the DSI confirms that concentrations of metals/metalloids were found in the test samples, however, they do not pose a risk to human health. In addition to this, asbestos was not identified in any of the samples and do not present a risk to the recreational land users.

As such, the land is a contaminated piece of land in accordance with clause 7 of the NES. However, resource consent to implement the proposed activity will not be required under the NESCS and the proposal meets the permitted activity threshold. The use of land will be limited to overnight parking, which given the existing caping layer above the landfill material is not expected to harm human health.

Based on the findings of the DSI, the following recommendations were made:

Recommendation from the DSI	Compliance Comment
1. No excavations into the landfill cap should be completed, material should be placed onto the site to construct the access road and parking locations to maintain the appropriate landfill capping depth.	The proposed activity will include excavation works that will be shallow in nature and not compromise the landfill cap onsite (which is reported to be 700mm bgl). The works will be carried out by a contractor and overseen by a professional as required.
2. Planting of trees should not be completed within the landfill cap. These have the potential to be windblown and could damage the landfill cap exposing waste material. Planting of native shrubs or flax species in raised bunds is more suitable.	The proposed planting will be of shallow depths and mostly on planted on mounds. This is to ensure the existing landfill cap or materials are not compromised.
3. Although the landfill material was not tested as part of the detailed site investigation, the likelihood of asbestos contaminated material at	The NZMCA will engage a field professional to prepare the appropriate management plan as required. This management plan will be

depth means the installation of the proposed dump station and tap water facility should be overseen by a licensed asbestos removalist. A contaminated sites management plan (CSMP) should be prepared to address such soil disturbance activities.	implemented throughout the project and will address soil disturbance activities.
4. Should any other ground conditions be encountered that are not covered in the DSI, a Suitably Qualified and Experience Practitioner (SQEP) specialising in contaminated land assessment should be consulted in order to assess the risks to human health and sensitive receptors.	A suitably qualified professional will be engaged should any grounds conditions not covered in the DSI that pose a risk to human health and safety be encountered.

3 Description of Proposal

The proposal is to establish a motor caravan park to be used by NZMCA members for temporary overnight accommodation in their self-contained vehicles. An indicative plan is shown in Figure 7 below with a site layout plan of the park provided in Appendix B.

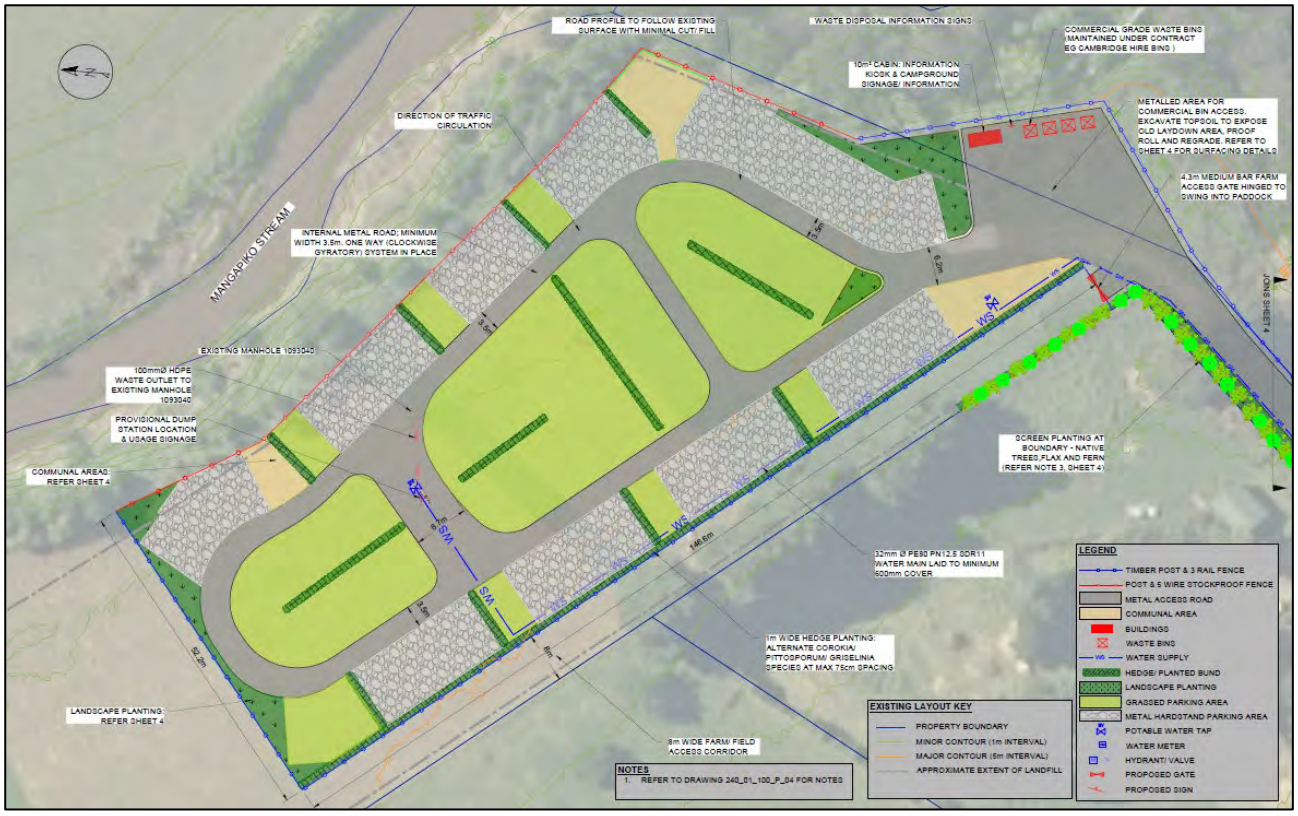


Figure 7: Indicative plan for the proposed motor caravan park.

The site will enable NZMCA members travelling in certified self-contained vehicles to temporarily park in a safe and secure place for overnight accommodation. The NZMCA currently operate 52 similar motor caravan parks nationwide and this site will be an addition to the Associations extensive network of parks in the Waikato region.

The layout of the site has been designed to safely accommodate up to 75 self-contained motorhomes and caravans (including tow vehicles). NZMCA parks accommodate a range of self-contained vehicles including small motorhomes and caravans (4 – 6m) to long fifth wheelers (12m+). As such, the preference is to have parking bays without demarcating each individual parking site, although the proposed site layout will help ensure members park in a uniformed manner and help manage site capacity. The site will comprise of the following features and amenities:

- Rubbish bins to be emptied by a local contractor on a regular basis;
- Potable water;
- Dump station for wastewater disposal; and
- Information and registration kiosk.

3.1 Site Management

All NZMCA members are bound by a Membership Code of Conduct (Appendix D) and need to follow site-specific rules whilst staying at NZMCA Parks. These rules require members to register their membership and vehicle details upon entry to the site at the registration kiosk (see Appendix D).

Adherence to site rules is monitored by fellow members and volunteer local park custodians who visit the site on a regular basis to monitor compliance and respond to any issues. The site management regime works well for NZMCA parks and is a similar approach adopted by the Department of Conservation. The contact details for the main custodian can be obtained via the NZMCA Travel App, NZMCA website and will be provided on site should an issue arise.

Any significant matters arising at the parks are investigated by the NZMCA's disciplinary committee and members can be suspended or removed from NZMCA, if required. This system has proven to be successful at other NZMCA parks. Members are extremely proactive and keep the National Office well informed of any issues which may arise. The NZMCA will work alongside Waipā District Council, as and when required to ensure the site is appropriately managed.

During the busier periods of the year, e.g. summer months and special events, NZMCA may appoint a temporary site caretaker who would be stationed on site to provide additional site management support.

3.2 Capacity, Duration and Parking Arrangements

The site has capacity to accommodate up to 75 motorhomes and caravans (including tow vehicles). As member travel tends to be seasonal, NZMCA expects that use of the site during off-peak season and winter months will be less than half the numbers of peak season and summer months, even at busiest times. The NZMCA engaged Ray Talbot, who has Civil and Traffic Engineering expertise to prepare a traffic impact assessment (TIA) for the purpose of this resource consent application (see Appendix E).

In 2016, the NZMCA commissioned WSP (formerly Opus) to provide a vehicle movement report based on studies carried out at four representative NZMCA parks across New Zealand (see Appendix F). Based on our observations and data collated at another NZMCA park in the Waikato region between 1 January 2019 to 31 December 2019, we anticipate the site will accommodate on average less than 30 vehicles per day for majority of the year.

The short duration of stay reflects NZMCA's objective for providing parks for short term use only. Members will be permitted to stay on site on a temporary basis. No semi-permanent or permanent residence will be allowed.

3.3 Structures

3.3.1 Kiosk

A small information kiosk will be placed on site for registration purposes. This is a non-habitable structure up to 10sqm in size. The kiosk will provide a sheltered area to display park rules which are required to be observed and for members to sign in upon arrival to the site. Examples of this signage have been provided in Appendix G.

3.3.2 Fencing

Fencing will be located around the boundary of the park to mitigate security risk and allow members to park within fenced areas. Shallow post and rail type fencing is proposed along the northern and western boundaries of the park with batten and wire fencing along the eastern boundary.

3.4 Signage

NZMCA signage will be located at the Pirongia Road accessway which directs members to the location of the park, at the park gates and within the site. A total of seven signs are proposed and examples of these are included in Appendix G.

- Up to 2m^2 directional signage located on a 2m high pole at the corner of Pirongia Road and the park entrance;
- Up to 2m^2 welcome sign located next to the main entrance gate;
- 1 x 0.2m^2 sign located at the gate reminding visitors that access is restricted to NZMCA members only;
- 1 x 0.5m^2 hazard sign located next to the main entrance gate;
- 1 x 2m^2 information sign affixed outside the kiosk;
- 1 x 0.4m^2 'one way' directional sign positioned at the intersection of the driveway and ring road advising members to turn left as they enter the park. The maximum height from the ground will be approximately 2m; and
- 1 x 0.2m^2 sign near the entrance inside the gates of the park reminding members leaving the park to watch for pedestrians. This sign will not be visible from the road. The maximum height from the ground will be approximately 2m.

3.5 Water and Wastewater Infrastructure

All NZMCA motorhomes and caravans using the site need to be self-contained with on-board freshwater tanks, wastewater tanks, and an accessible toilet. This ensures that all toilet and grey water waste is contained within the vehicle with no permitted discharge. A new dump station will be installed onsite for members use only. Members are required to empty their toilets and waste tanks at approved dump station. The dump station will be built to NZS 5465 requirements with a water trap to prevent the release of foul odours.

We understand the site may have water available. However, this is currently being investigated with Council's property services team. Members will have access to proper drinking water once we have established whether water can be drawn from the existing water source.

3.6 Stormwater

The proposal may result in minor increase in the rate of stormwater discharge from the site. The existing grassed paddock will be retained surrounding the park. The granular metalled ring road and some of the gravel parking areas around the site has potential to generate an increase in stormwater. However, there are no sealed surfaces that will generate any substantial increased flow rates. The granular surfaces have some permeability, and the coarse surface texture impedes any rapid surface water discharge. In addition, the majority of the land parcel remains in grass and the existing grassed areas and parking bays located within the site boundaries will provide surface water soakage.

The NZMCA engaged Ray Talbot to prepare a Stormwater Management Report (SMR) for the purpose of this application. The report demonstrates two areas of flow A – A and B – B both of which have adequate capacity to provide soakage and water quality treatment. Overall, stormwater can be adequately managed onsite without the need for additional stormwater management devices.

3.7 Earthworks

Earthworks are required for the gravelled ring road around the site and some of the parking areas located around the peripheral of the site. The ring road will need to be excavated to a depth of 0.1 to 0.25m below existing ground level. Based on an area of 1517m^2 for the ring road, the expected volume of soil disturbance

is between 151.7m^3 and 379.25m^3. The metalled parking areas will result in land disturbance of approximately 534m^3. The proposed earthworks will comply with District Plan Rule 4.4.2.75 which permits earthworks to not exceed a total volume of 1000m^3 in a single activity.

With regards to the recommendations in the DSI, earthworks undertaken onsite will be away from the landfill caps and not located within the immediate proximity to the area.

Planted mounds will be built up within the loop road utilising additional soil located within the site without any additional cut to the land. The mounding will look similar to that shown in Figure 8 below. This will be in compliance with the recommendations of the DSI.

Figure 8 – example of planted mounds at a NZMCA Park in Napier

3.8 Access and Movements

NZMCA engaged Ray Talbot who is a qualified engineer to prepare a TIA for the site. This sets out the proposed site access and associated transportation effects (see Appendix D). The TIA also includes assessment of the vehicle movement survey prepared by Opus in 2016 for the NZMCA. The following subsections summarise the key transport elements of the proposal.

3.8.1 Site Access

Members will access the site from Pirongia Road. The vehicle crossing will be extended to 7.5m wide with a gate setback 18m from the road boundary. The main entrance gate will be approximately 4.3m wide and allow for clear views of the driveway and any vehicle movement. There is a separate gate for pedestrian and cyclist access to access Pirongia Road. Unobstructed sight lines will be available from the vehicle crossing in accordance with minimum sight distances specified in the plan. Overall, safe and efficient access can be provided to the site.

3.8.2 Parking and on-site manoeuvring

A circular ring road will be constructed from the site access. The ring road will be approximately 3.5m wide with areas between 3.5 to 8.7 m wide between the loops. Onsite traffic will move along the ring road in a clockwise direction around the site to gain access to the parking bays. There will be traffic signage provided to inform and facilitate this onsite.

3.8.3 Traffic Generation

Based on the vehicle movement survey by Opus and NZMCA's experience operating other parks around the region, occupancy is expected to be less than 50% for majority of the year with the park only nearing maximum capacity during special events and peak holiday seasons.

Likely vehicle movements at new NZMCA Parks have been determined by using the trip generation study prepared by Opus in 2016 (the Opus report). Using the Opus report assessment of 2.02 vmpd per van, we estimate at its peak capacity (75 motor caravans) the park will generate up to 151 one-way movements per day. However, based on the Opus Report and our observations at other NZMCA Parks, peak movements at this frequency will only occur during special events, public holidays and intermittently throughout the peak season. We anticipate the park will operate at less than 50% max capacity for the majority of the year and therefore the park should generate, on average, less than 75 vmpd.

3.9 Landscaping

Landscaping is proposed along the western boundary of the park to screen the activity from the neighbouring properties located at 4 and 5/28 Pirongia Road and to enhance the overall amenity of the site. The landscaping proposed for this site can be found on the site layout plan attached in Appendix B.

Native trees will be planted around the park boundary for screening purposes and planted mounds will be located within the loop road area to provide a level of parking separation while also enhancing the natural character of the site. Irrigation will be provided to planted areas to ensure the plants remain healthy over drier months and during summer periods as required. Water will be available onsite for irrigation purposes.

4 Planning Assessment

4.1 Resource Consents Sought

This section sets out the reasons for resource consent, and these activities that can be undertaken as permitted activities. Resource consent is required under the following plans:

- Waipā District Plan (WDP)

4.2 District Plan

The use of the site as a motor caravan park or camping ground is undefined under the WDP. Resource consent is sought for the following reason:

- Rule 4.4.1.5(b) requires consent for a **Non-complying Activity** as the activity is not listed in tables 4.4.1.1 to 4.4.1.4 and not listed as a prohibited activity. Campgrounds are not provided for in the rural zone.
- Rule 26.4.1 (e) and 26.4.2.1, setback from lakes and water bodies is 23m. For buildings, wastewater treatment system, earthworks, vegetation clearance erected or undertaken within 23m of the edge of any lake or water body as measured at its maximum annual water level, resource consent for a **Restricted Discretionary Activity** will be required. The proposed activity will consist of earthworks and parking bays within 23m of the Mangapiko Stream.
- Under Rule 25.4.1.2 **Controlled Activity** for earthworks and the installation of wastewater treatment systems is required in cultural landscapes area which includes Hingakaka for the site.

Overall, resource consent for a **Non-complying Activity** will be required.

It should be noted that the Designation D80 is not relevant to the southern landfill site. The site was previously used as the Te Awamutu Landfill and Effluent Disposal Site has a designation for processing and disposal of waste materials. This facility is no longer in use and has been closed for a few years now.

5 Assessment of Environmental Effects

The assessment of Environmental Effects (AEE) has been prepared in accordance with Schedule 4 of the RMA and the relevant matters of discretion from the district plan.

5.1 Positive Effects

The use of the site as a motor caravan park will have positive social, economic and environmental effects to both the NZMCA and the local community.

Socially, NZMCA parks enable members to camp together in a common and exclusive place where many continue to develop friendships with likeminded people in a safe and secure place. Members are not always comfortable camping next to younger generations (eg. International visitors' freedom camping) and prefer their own space.

Economically, members staying at the park and visiting the township will contribute to the economy by spending money locally visiting bars, restaurants, eateries, and businesses for supplies. In 2017, we commissioned NZ Tourism Research Institute to undertake member and community surveys at a couple of NZMCA Parks located within proximity to regional townships. The following is brief summary of the relevant survey results for NZMCA Park in Coromandel township:

Coromandel NZMCA park survey:

- Average length of stay per member = 2 nights
- 98% of members purchased goods or services within Coromandel township during their visit
- Average spend $44.90 per person per night / $89.80 per average membership per night (membership = 2 people)
- 9/10 members satisfied/very satisfied with the park noting its close proximity to town shops and amenities, safety and security
- Activities they took part in while visiting Coromandel township include eating out (78%), shopping (68%), and fishing/walking/tramping ($48%)
- Over 90% of local residents and 78% of the business respondents feel the park is good for the local economy, and half of the business operators and residents feel the park helps to create local employment.
- 91% of local residents and 64% of businesses feel the park brings more vibrancy to the local area.
- The majority (61% of residents and 78% businesses) feel that their interactions with park users (NZMCA members) are positive for both parties and that Coromandel presents a warm welcome to members.

The use of the closed landfill site as a NZMCA park will provide also provide improved landscape and contribute to enhanced amenity values for the site and the environment. The benefits of having NZMCA parks have been recognised previously and as such Cambridge has become a Motorhome Friendly Town (article link). Motorhome Friendly Towns are advertised as being towns where all motor caravanners will receive a warm welcome and an enjoyable visit.

The park will also help relieve pressure on freedom camping sites in the wider Te Awamutu and Waipa region.

5.2 Visual effects and Landscape amenity

The proposal involves locating a motor caravan park in the rural zone where a vacant paddock currently exists. The park will be located on apportion of the land parcel which will mostly remain vacant and occasionally used for grazing purposes. There are large trees located along the western boundary of the land parcel shared between 4 Pirongia Road property. The Mangapiko stream is located to the NE of the site with thick bush vegetation providing a thick layer of screening from the steam. To the east of the site is an esplanade reserve (Daphne Street Gully) which contains thick bush vegetation and provides a thick layer of screening from the properties to the east. The park itself will not be visibly prominent from the the main road and is mostly screened from the public viewpoint as it is located to the rear of 4 Pirongia Road property and can only be accessed via a long driveway off Pirongia Road.

The main type of visual effect is considered to be from motorhomes and caravans using the site, most of which are white and discernible within the rural greenery area. Whilst vehicles parked will predominately change the view of neighbours, landscaping proposed will create an attractive landscape boundary and provide a treatment that is better suited for the environment. Motorhomes and caravans will be parked more than 9m away from the property boundaries to the west being 4 Pirongia Road and 5/28 Pirongoa Road. The vehicles will also have a height and bulk which is less than a rural residential development or farming sheds. The activity itself is temporary and transitional is nature providing ever changing views with vehicles parked in different areas of the site.

Landscape planting along with fencing proposed at the western boundary of the park will also contribute to visual screening from the neighbouring properties. There are existing native trees located along the shared boundary between the site and 4 Pirongia Road. Additional trees will be planted along the NE boundary of 4 Pirongia Road shown on the site plan to address visual concerns raised by the property owners.

The parking bays provided within the loop road will remain grassed along with planted mounds for members to park around. There will be some grassed parking bays and landscaped areas located around the peripheral of the park as discussed above will contribute to improved landscape and increased amenity values for the site. Fencing is also proposed around the boundary of the park to create an additional layer of privacy and separation from the neighbours.

With the exception of a small registration kiosk and a dump station located within the ground, no permanent structures are proposed. The kiosk is of a size and scale that will not detract from the existing environment and will be of recessive colour and materials. The proposed activity will improve the landscape and amenity values of the site.

Vehicles park onsite will provide a changing view as the motorhomes and caravans will not be parked on the same spot. As noted earlier in the AEE, the site will only reach close to peak capacity during the busy summer periods and holidays seasons. The park is expected to operate at 50% or less capacity for the remaining year. The bulk of the site will not be visible from public viewpoints as it is hidden behind the residential rural properties and due to the distance from the main road, topography of the site and existing vegetation. Residential properties located at 4 and 5/28 Pirongia Road may have some views of the park. However, the distance and proposed landscape planting will ameliorate any potential visual effects of the activity on the site.

Permitted Baseline

Permitted activities within the rural zone include residential activities, passive recreational uses, accessory buildings, and poultry farming to name a few. It is useful to consider this baseline when determining the difference in visual effects between a permitted activity and the proposed campground activity, noting that this proposal only involves structures such as a small registration kiosk and a dump station used for waste disposal that will be located within the ground. The visual and dominance effects associated with residential activities and accessory buildings are more permanent as built structures can be located onsite without the need to provide landscape planting/screening, an effects assessment, and the need to apply for a resource consent. In comparison, having a motor caravan park located onsite will provide a changing outlook. The

occupancy of the site by members is temporary and transitionary in nature. The nearest residential property boundary is located approximately 8 – 10m from the park boundary. The motorhomes and caravans parked onsite will not create any bulk or dominant views to the surrounding properties.

The proposal to establish a NZMCA park will also improve the visual, landscape and amenity values of the site while making better use of the land that has otherwise been a in inactive closed landfill site.

Overall, the site will be separated from surrounding residential properties with existing and proposed landscape planting around the park boundaries. There will only be partial visibility of the park from Pirongia Road. The mitigation planting as well as measures to minimise development of structures onsite will assist in the visual integration of the development into its rural environment. The proposed activity will not be visually intrusive or prominent beyond the immediate area of the park and will not dominate or detract from views otherwise characterised by the natural environment.

5.3 Transportation Effects

The proposal to establish a motor caravan park on site has been assessed in the traffic impact assessment report included in Appendix D. The key elements of the TIA have been summarised below.

5.3.1 Access

The site will be accessed from Pirongia Road. The entrance to the park is located across the road from Pioneer Drive and approximately 360m north of Paterangi Road. The driveway to the site is metalled and some minor upgrades will be required for vehicles to safely access the park. The site access will be 7.5m wide with a gate setback 18m from the road boundary. The main entrance gate will be approximately 4.3m wide and allow for one vehicle movement at any one time from the gate. There will be waiting bays located near the entrance gate and within the park to allow for safe and efficient vehicle movement through the driveway.

Overall, the accessway will be designed to maximum sightlines and the safety of road users. With the above measures in place, the proposal will provide a safe and efficient access for the site.

5.3.2 Parking and on-site manoeuvring

In terms of parking on site, as discussed earlier in the report, adequate and safe parking areas will be available on site for members to stay overnight. The peripheral areas of the site will allow for people to park on gravelled areas (mostly used during winter months) with the rest of the site providing grassed parking.

The site will only reach maximum or near maximum capacity during peak periods with less than half of these numbers expected majority of the year.

5.3.3 Traffic Generation

Based on the Opus Report, the proposal is expected to generate a maximum of 150 vehicle trips per day during peak season with 8 trips in the AM peak hour and 10 trips in PM peak hour. This data is based on the park reaching full capacity. Outside these peak periods, the volumes are expected to drop less than 50% equating to a maximum of 75 vehicle movements per day.

Due to the nature of the activity on site, the surrounding zones and the anticipated scale of traffic generation, the proposal can be readily accommodated on the surrounding road network with minimal impact on traffic flow and delays. The increase in traffic volume from this activity will not cause noticeable delays or reduced safety.

As such, the overall transportation effects associated with this proposal is expected to be less than minor.

5.4 Noise effects

The proposal is for a passive recreational activity within the rural zone. The principal activity is quite in nature with noise primarily generated from vehicle movements, members conversing and interacting with each other

and the occasional use of gas-powered generators. NZMCA parks are characterised by their generally passive and quiet environment which reflects the attractiveness of these facilities for members wanting to camp in safe and peaceful locations.

Based on the Opus trip generation study, camping grounds are a recreational land use activity and their peak hours do not coincide with typical commuter peak hours. Vehicle movement will mainly occur during daylight hours (9am and 4pm) and will be moving at 10km/h or less. Majority of the site will remain in grass with the exception of gravel ring road and some peripheral parking bays. Noise emitted from the site is considered to be of a relatively low decibel and limited to the times of the day and evening when occupants are socialising or are required to use generators. Some members may use gas powered generator for small periods of time to provide power to their vehicle. To maintain the rural environment and limit nighttime disturbances, generators will only be used onsite between the hours 8.00am and 8.00pm for limited periods of time.

Under the District Plan, noise generated from activities in the rural zone has a threshold of 50dBA (Leq) during the Day time (7.00am to 10.00pm), and 40dBA (Leq) during the night-time hours (10.00pm to 7.00am), with nighttime single noise event being 70dBA (Lmax). The closest point of the property at 4 Pirongia Road is located at least 45m from the location of the park boundary and there is approximately a 10m distance between the driveway of 4 Pirongia Road and usable accessway of the park. Jeremy Trevathan from Acoustics Engineering Services provided evidence for a similar sized NZMCA park in Warrington (see Appendix K). The noise levels in the Dunedin 2nd Generation District Plan are the same as Waipa District Plan. Based on the conclusion reached by the Acoustics Engineer, noise associated with the camping ground would generally comply with the noise limits in the district plan.

Considering the above, the separation and proposed screening provided by fencing, existing trees and proposed landscape, noise generated from the activity on site are not expected to exceed the limits under the District Plan. It should be noted that NZMCA operates a number of parks around the country with several located with the rural zone of the various district plans. Compliance with noise standards have always been achieved.

Moreover, as noted earlier in the AEE, NZMCA members are obligated to comply with the membership code of conduct and environmental care code. These set out expectation that members treat others with respect, courtesy and avoid causing visual and noise pollution.

The noise generated from the proposal will not result in adverse effects on existing activities located within the vicinity of the site. It should also be noted that land parcel to the north forms part of the landfill site and to the south is a bush reserve with industrial zoned land located further south and east of site. The proposed activity will not create or cause any reverse sensitivity on other lawfully operating activities within the area.

Overall, the operation of the NZMCA site sits comfortably within the existing environment. Considering the separation distance of the properties and barriers between the park and the rural residential properties (eg. screening provided by fencing and landscape planting), and the line of sight to the noise being blocked, noise generated from the proposed activity on site are not expected to exceed the limits under the District Plan. Based on the acoustics engineering evidence in appendix K, minor non-compliance of noise limits from time to time is still expected to comply with guidance regarding the protection of amenity and sleep disturbance, or where higher levels are expected will occur infrequently. Overall, effects associated with noise from the site is expected to result in less than minor breach.

5.5 Flood Hazard

The site is located within the flood hazard overlay. The Mangapiko Stream is located along the northern boundary of the site. Consideration has been given to adverse effects associated with risk of the site flooding. The proposed activity will not include any habitable building for people occupancy. The registration shed will be located at the park entrance and potentially outside the flood hazard overlay. The increase in overall impervious area as a result of introducing the gravel ring road and metalled parking areas will not adversely impact on localised rainfall induced flood risk. NZMCA parks are transitory in nature and provide

for accommodation on a temporary basis. The effects are short lived, and members can be moved easily in the event of potential flood risk.

NZMCA members will be made aware of severe weather conditions or flood risks to the site via NZMCA social media platforms, NZMCA Website and the Travel App. The local park custodians who visit the site on a regular basis will also pass important information onto the members staying at the park and if need be, help with the evacuation.

Overall, the proposed activity will not increase or contribute to flooding of the site or the Mangapiko River and members visiting the park can be moved easily during severe weather events.

5.6 Effects on cultural values

The general area where the site sits is partially located within the cultural landscape alert area. This is understood to be an area of significance to the Iwi Ngā Iwi Tōpū O Waipā. NZMCA will be leasing a portion of the land parcel from Waipā District Council. The scale of the earthworks will only be to the extent of locating the gravel ring road and providing some hardstand parking bays around the peripheral of the park. Any cutting or filling of earthworks required will be less than 0.7m deep and will be undertaken with erosion and sediment controls in place to ensure the waterways and surrounding environment are protected. Additional planting will be undertaken within the park boundaries (trees planted around the park and within the parking bays of the ring road) to provide improved and enhanced landscaping of the site

The site will be developed in the manner that provides mitigation solution to address any potential adverse effects arising from this activity. Infrastructure which includes waste disposal dump station and potable water will be connected to Council's reticulated mains. The piping for these works will mainly occur outside the cultural landscape alert area, however the drinking water taps, and the wastewater treatment system (dump station) will be located within this area. Water supply will be provided to the site and wastewater will be discharged through the Waipā District Council's reticulated system. Fencing is proposed around the boundary of the park to prevent people from going and driving beyond the park boundaries. It will also prevent people from going beyond the site particularly towards the Mangapiko Stream. The kiosk and rubbish disposal facilities will be located outside the cultural landscape area. The site will be maintained to a high level particularly with the provision of additional landscape planting within the site and along a portion of the boundary at 4 Pirongia Road.

During the initial stages of preparing this resource consent application, the NZMCA obtained details of the local Iwi Ngā Iwi Tōpū O Waipā from WDC to obtain feedback and initial comments relating to the project. Gaylene Roberts who is one of the Iwi representatives advised of a hui that would take place on the 20 and 26th of July where our application would likely be discussed. Unfortunately, due to covid and other reasons beyond our control, conversations with the local Iwi have not progressed further. We understand the past few years has been a busy and difficult time for everyone and the NZMCA remains open to facilitating this discussion with the local Iwi as required.

5.7 Summary of Effects

The proposal to establish a motor caravan park in Te Awamutu will have positive effects that will be beneficial for the local community and the District as a whole. Any noise effects and effects on the transportation network are considered to be less than minor. The small increase in vehicle movement will have negligible impact on the safe and efficient operation of the roading network. Effects associated with visual landscape and amenity will be no more than minor prior to planting being undertaken onsite and less than minor once the plants are established. Taking into consideration the proposed methodologies and appropriate management of the activity onsite, adverse effects associated with this proposal will be less than minor.

6 Consultation

6.1 Pre-Application Meeting

On 19 May 2021, a pre-application meeting between the NZMCA and Waipā District Council was held to discuss the details of this project and consenting requirements. Initial discussions resulted in a favourable response from WDC's planning team. A copy of the pre-application meeting minutes as been included at Appendix H. It should be noted that prior to WDC agreeing to lease the land, they commissioned AECOM to undertake a preliminary planning assessment which identified the overall activity status to be non-complying activity. It also concluded that conditions of existing Waikato regional council resource consent can be met, and soil disturbance undertaken further than 23m from the Mangapiko Stream is managed in accordance with best practice erosion and sediment control measures. This preliminary planning assessment can be found in appendix H.

6.2 Neighbouring Properties

In June 2021, NZMCA consulted with the owners and occupiers of 4, 5/28 and 28 Pirongia Road (refer to Table 2 below) about the proposal, including the development and operational of the park on a day-to-day basis.

The neighbours were sent a consultation document detailing aspects of the proposal with an indicative site plan. Following further email and phone correspondence with the neighbouring property owners, a meeting was held on site on 12 August 2021 between the NZMCA representatives, neighbouring property owners, people from the wider community, John Miles (Manager for Property Services at Waipa District Council) and Te Awamutu Councillor Hazel Barnes.

The map below shows the location of the neighbours consulted prior to finalising the site plan.

Figure 9: shows the location of neighbours consulted before a site plan was finalised.

Table 2 below shows details of the neighbouring properties and any comments and feedback received from them.

Table 1: shows the details for the neighbouring properties.

Location and Legal Description	Owner/ occupier details	Feedback and Comments
4 Pirongia Road – Lot 1 DPS 62851	John D Bosson & Jean P Bosson	Concerned with visual effects and value of their property being reduced. They do not want to view motorhomes and caravans from their property and want to maintain their privacy.
5/28 Pirongia Road – Lot 2 DPS 92516	Colin and Rochelle Old	They wanted clear unobstructed views from their usable outdoor living space. A portion of their site is located at a height. The landowner mentioned they operate a Bed & Breakfast and did not want the privacy of customers to be affected. They also raised concerns regarding their property value.
28 Pirongia Road – Lot 1 DPS 92516	Dave and Karen Salmonesti	They were supportive of the proposal and did not have any major concerns. The landowners were happy to work with NZMCA to address any visual and privacy matters that were to arise. Since consultation, the location of the park has moved further to the east and the property owners at this site a no longer considered to be affected.

After a site visit with the various parties and in consultation with the Waipa District Council, the NZMCA made significant changes to the project and made concessions to address some of the feedback received from the various parties present at the meeting. Some of the changes included:

- The NZMCA providing additional landscape planting around the boundary of the park and along a portion of the boundary at 4 Pirongia Road to provide screening and address concerns relating to visual, privacy and noise effects. I note that some of the concerns raised by the property owner related to their perception of a motor caravan park. Concerns relating to the value of the property is not a planning matter and therefore has not been considered in this application.
- Footprint of the park was reduced and moved further east to provide unobstructed views from usable outdoor living space of 5/28 Pirongia Road. This was also discussed and agreed with WDC as the landowner of the site.
- The landowners located at 28 Pirongia Road are no longer considered to be affected as the park was moved further to the east and will not be in the viewpoint of this property. Additional landscape planting is proposed.

The NZMCA made significant changes to the proposal and development to accommodate the matters raised by the landowners and adequately address their concerns. The adverse effects associated with this proposal is considered to be less than minor and at an acceptable level. In my assessment, amenity effects (visual, landscape and noise) will not adversely affect the neighbours due to the nature of the proposal, restrictions on noise generating activities (e.g. generators), proposed landscaping of the park boundaries and a portion of the boundary of 4 Pirongia Road and the activity's proximity to the neighbours along the western boundary of the parent title.

6.3 Local Iwi Group

The NZMCA also approached Ngā Iwi Tōpū O Waipā to discuss this project and site plan prior to lodgement of this resource consent application. During the initial design stage, a consultation pack (including details of the proposed activity and draft site plan) was sent to Ngā Iwi Tōpū O Waipā for their review and feedback. Gaylene Roberts who is one of the Iwi representatives contacted us. Unfortunately, due to covid and other reasons beyond our control, conversations with the local Iwi have not progressed further. We understand the past few years has been a busy and difficult time for everyone and are still open to facilitating this discussion with the local Iwi as required.

7 Statutory Framework

The AEE has been undertaken within the statutory framework provided by the following legislation and plans:

- The Resource Management Act 1991;
- Waikato Regional Plan;
- Relevant Policy Statements and
- Waipā District Plan

The relevant matters of these statutory documents are discussed below.

7.1 Resource Management Act 1991

The Resource Management Act 1991 (RMA) outlines the functions, powers, and duties of consenting authorities to be exercised in order to give effect to the purpose and principles of the RMA. The RMA defines a hierarchy whereby priority is given to matters set out in Part 2 (purpose and Principles).

7.1.1 Section 5 – Purpose

The purpose of the RMA, set out in Section 5, is to promote the sustainable management of natural and physical resources, which includes enabling *"people and communities to provide for their social, economic and cultural wellbeing"*. This must be achieved in the context of Section 5(2), which includes:

(a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Comment

The proposal to establish and operate a motor caravan park will not compromise the natural and physical resources to meet the needs of the future generation. The activity will be undertaken in a manner that mitigates and appropriately manages any adverse effect on the environment. Site development will be undertaken in a manner that increases the amenity values of the area while providing additional improved landscaping for the environment. The proposal is considered to meet the purpose of the RMA and achieve good outcomes.

7.1.2 Section 6 – Matters of National Importance

Section 6 of the RMA sets out "matters of national importance" that are to be recognised and provided for in managing the use, development and protection of natural and physical resources.

No matters within section 6 are considered relevant to this application.

7.1.3 Section 7 – Other Matters

Section 7 of the RMA lists the matters to which particular regard must be given in making resource management decision. Matters considered relevant are:

a) The maintenance and enhancement of amenity values

b) The efficient use of natural and physical resources

c) Maintenance and enhancement of the quality of the environment

Comment

The proposed activity will not compromise the quality of the environment as NZMCA will only be leasing a portion of the land parcel. Majority of the parking areas will remain grassed with additional landscape

planting implemented within the site and site boundaries. The amenity values of the area have been taken into consideration with an assessment provided in section 5 of this report.

7.1.4 Section 8 – Treaty of Waitangi

Section 8 of the RMA requires the principles of the Treaty of Waitangi to be taken into account in resource management decisions.

Comment

The proposed activity will maintain the natural character and values of the site. No buildings will be erected within the park boundaries with the exception of a 10sqm kiosk and private dump station connected to Council's reticulated wastewater system. The proposal has been designed in a way to minimise the scale and significance of any potential effects on the environment. The natural and physical resources will be protected within the park.

7.1.5 Section 104 – Consideration of the application

Section 104(1) of the RMA sets out the matters to which a consent authority must, be subject to Part 2 of the RMA, have regard to when considering an application for resource consent. These are:

- Any actual and potential effects on the environment of allowing the activity;
- Any measure proposed or agreed by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and
- Any relevant provisions of national policy statements, regional policy statements and plans, other regulations and operative district plan; and
- Any other matter the consent authority considers relevant and reasonably necessary to determine the application.

The actual and potential effects on the environment allowing the activity is set out in Section 5 of this report. The overall adverse effects from the proposal will be less than minor and can be appropriately managed. This section has also identified positive effects resulting from the activity on site.

The subsequent sections address the other matters identified in Section 104(1).

7.2 Waikato Regional Policy Statement

The Waikato Regional Policy statement (WRPS) guides the development of the Waikato Regional Plan, Regional Coastal Plan, and provides an overview of resource management issues in the Waikato region.

In relation to land, the Regional Policy Statement seeks to address erosion, discharge of contaminants, and land uses that affect soil health, reduce versatility and productivity. The Regional Plan contains more detailed objective, policies and rules about the above matters.

The issues set out in the WRPS and the Regional Plan have been considered in the assessment of effects section of this report and for reasons outlined, it is considered that the proposal does not conflict with the Regional Policy Statement and would comply with the provisions of the Regional Plan.

7.3 National Environmental Standards

The NES: Soil provides national planning controls that direct the requirement for consent or otherwise, for activities on contaminated or potentially contaminated land.

Section 104(1)(b)(i) of the RMA requires consideration of any relevant provisions of "a national environmental standard". With respect to this application the relevant National Environmental Standards are:

- National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health 2011 (NES: Soil)

The NESCS permits soil disturbance of 25m^3 per 500m^2 of the piece of land, which equates to 1900m^3 for the area of the land parcel 38000m^2. The volume of soil that can be taken away from site per year is calculated at 5m^3 per 500m^2 of the piece of land, which equates to a maximum of 390m^3 for the site based on the land area. Given the above, consent under the NES is not deemed necessary.

7.3.1 Section 104D Assessment

Section 104D of the Act provides that a resource consent for a Non-Complying Activity may only be granted if either (a) the adverse effects of the activity on the environment will be minor or (b) the activity will not be contrary to the objectives and policies of the relevant plan. This is frequently referred to as the "gateway test".

Based on the assessment of section 7 of this report, the proposal passes the first limb of Section 104(D)(1)(a) in relation to adverse effects, in that they are less than minor and acceptable.

7.4 Waipā District Plan

The following objectives and policies are considered relevant to this proposal:

7.4.1 Statutory Assessment

Objectives	Policies	Proposal consistent Yes/No	Comment
Rural resources 4.3.1	4.3.1.1 – 4.3.1.6	Y	The proposal will maintain the health and well-being of the rural land, ecosystem, soil and water resources. it is also recognised that subject site was previously used as a landfill and is now a vacant paddock with some parts of the block used for low-scale grazing. The wastewater dump station proposed onsite will be connected to Council's wastewater main. Waste disposal will be undertaken in a manner that mitigates an adverse effect on the environment and will be screened adequately from neighbouring properties. Additional effects associated with this proposal have been discussed in section 5.3 of this report.
Rural character 4.3.7	4.3.7.1, 4.3.7.2 and 4.3.7.14	Y	The proposed activity will continue to maintain the rural character of the surrounding environment. In fact, additional landscape planting will contribute to increased amenity values of the site. The location of the motor caravan park will not be visible to the public's eye and cannot be seen from Pirongia Road. There are

			no large-scale buildings proposed for the site with the exception of a small 10sqm kiosk. Onsite parking and manoeuvring will be provided for members using the site. Assessment of transportation effects, noise and other matters have been addressed in section 5 of this AEE.
Rural Amenity: Setback 4.3.8	4.3.8.1 – 4.3.8.3	Y	The proposed activity is not considered to cause any reverse sensitivity issues and will continue to maintain the existing character of the area. As discussed in the AEE report, the park will not be located within the viewpoint of general public and cannot be seen directly from Pirongia Road. The park will be setback from the western boundary of the site which is shared with neighbouring land parcels. Adequate landscaping is further provided around the boundaries of the park to provide enhanced screening and privacy to neighbouring properties.
Rural Amenity: Signs 4.3.9	4.3.9.1 – 4.3.9.5	Y	Signage proposed for this site will directly relate to the activity onsite. Details of the location and examples of signage provided onsite have been included as part of Appendix F. The proposed signage near Pirongia road will not adversely affect the safe functioning of Pirongia Road and will only be for the purpose of members being able to locate the park site.
Non – farming Activities 4.3.12	4.3.12.1 – 4.3.12.3	Y	Waipa District Council selected and offered the site to the NZMCA as we have been investigating other sites around the district. The proposal to operate a motor caravan park on Waipā District Council's closed landfill site will provide an opportunity to make better use of an underutilised land. NZMCA will only be leasing a portion of the land parcel. Landscape planting and development will be undertaken to a point where it increases the amenity values of the area. The site is near the Te Awamutu township and other amenities the local area has to offer.

			In addition to this, the surrounding developments across the road from the park entrance are all residential zoned and industrial further to the left. The proposed activity will not result in loss of productive land and will further enhance the character of the area. Adverse effects associated with the proposal will mostly be internalised and will not cause constraints to other activities operating in the surrounding environment. Further to the pre-application meeting, Quentin Budd (Consents Team Leader), advised they require the traffic assessment report and detailed site investigation report in support of NZMCA's application.

The assessment of the relevant objectives and policies has focused on the provisions of the District Plan and the proposal will not be contrary to the objectives and policies of the Plan as a whole.

8 Notification

Sections 95A to 95F of the RMA (as amended by the Resource Legislation Amendment Act 2017) sets out a stepped process for determining whether an application for resource consent should be publicly or limited notified. The relevant elements of these steps are summarised below:

o Public Notification- Section 95A

Public notification is not considered necessary for the following reasons:

- The applicant has not requested public notification (section 95A(3)(a));
- The application does not include a proposal to exchange reserve land (section 95A(3)(c));
- Notification of the application is not required by a rule or national environmental standard (sections 95A(5)(a) and 95A(8)(a));
- The proposed activity will not have adverse effects on the environment that are more than minor (section 95A(8)(b)) as set out in the Assessment of Environmental Effects (AEE); and
- There are no special circumstances that would warrant public notification (section 95A(9)).

o Limited Notification- Section 95B

Limited notification is also not considered necessary for the following reasons:

- There are no affected protected customary rights groups (section 95B(2)(a);
- The site is located outside of a statutory acknowledgement area (section 95B(3)(a);
- Limited notification is not precluded by a rule or national environmental standard (section 95B(6(a)); and
- No persons are considered to be adversely affected (sections 95D and 95E) for the reasons set out in the AEE.

Having regard to the steps set out above, it is considered that the proposal does not require public or limited notification and that the application can be processed on a non-notified basis.

9 Conclusion

The NZMCA requires land-use consent for a non-complying activity to establish and operate a private motor caravan park on site. The site will accommodate up to 75 self-contained motorhomes and caravans (including tow vehicles) and provide for temporary overnight accommodation only.

The proposal is non-complying within the rural zone of the Waipā District Plan as camping grounds are undefined in the district plan. An assessment of environmental effects concludes any actual or potential effects on the environment will be less than minor once the plants have been established onsite. Any adverse effects will be managed and mitigated through site design and appropriate conditions of consent.

The proposal has been further assessed against the matters identified in the relevant statutory documents which concludes it is consistent with the objectives and policies of the District Plan and the purpose and principles of the Resource Management Act 1991.

The activity will provide positive benefits for NZMCA members and the Te Awamutu community.

10 Suggested Conditions of Consent

General Conditions

1. *The activity shall be undertaken in general accordance with:*
    (a) The application prepared by New Zealand Motor Caravan Association and received by Waipā District Council on …
    (b) The plans prepared by New Zealand Motor Caravan Association, dated xxx, referenced 'Site Plan for NZMCA Park at Pirongia Road and stamped 'Approved Plan for xxxx'

Landscaping

2. *The consent holder shall prepare a landscape plan and implement it within 12 months of first occupancy. The landscape plan shall include, but not limited to:*
    a) The tree species to be planted including indicative height, depth and location of planting;
    b) Ongoing maintenance, including replacements of dead, diseased plans; and
    c) Fencing
3. *Landscaping shall be retained for the duration of the motor caravan park operating from the property, including replacement of any plants which have perished, are removed or become damaged or diseased.*

Earthworks

4. *Erosion and sediment control measures shall be installed in accordance with Council's standards.*
5. *Prior to the commencement of any construction work, the consent holder shall prepare an Erosion and Sediment Control Plan (ESCP) covering all earthwork associated with the consented development. The ESCP shall be designed by a suitably qualified person.*
6. *Adequate dust control measures must be in place at all times so as to minimise any nuisance to nearby properties.*

Contaminated Land

7. *A contaminated site management plan (CSMP) shall be prepared by a suitably qualified professional and shall be implemented during of any soil disturbance on site.*

We would appreciate the opportunity to provide feedback on the draft decision and conditions of consent.

APPENDIX A: CERTIFICATE OF TITLE

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **SA15B/1092**
Land Registration District **South Auckland**
Date Issued 20 March 1973

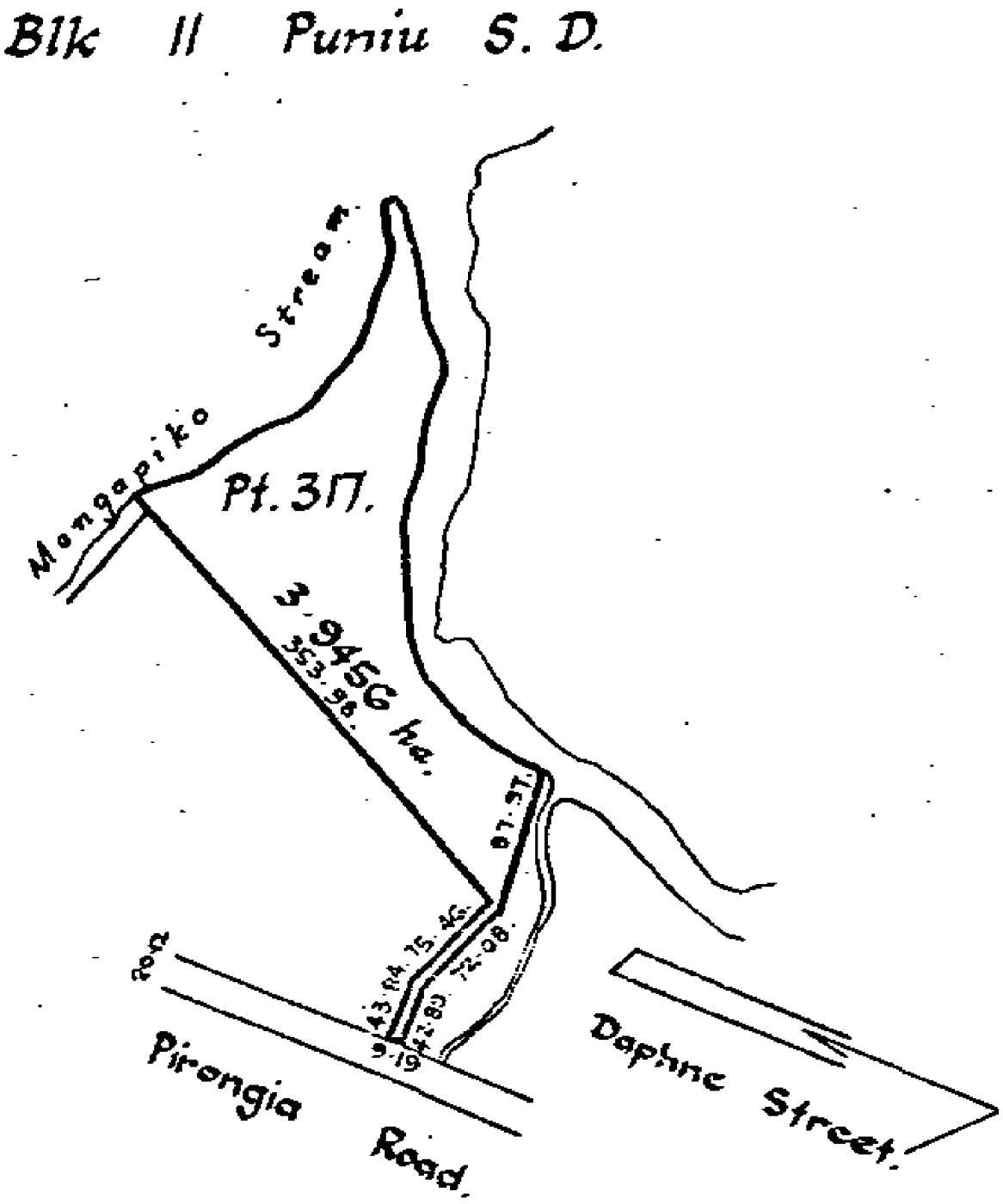
Prior References
SA204/44

Estate	Fee Simple
Area	3.9456 hectares more or less
Legal Description	Part Allotment 317 Parish of Mangapiko and Defined On Survey Office Plan 33912
Purpose	Borough sewerage system

Registered Owners
Waipa District Council

Interests

Identifier **SA15B/1092**



APPENDIX B: SITE PLAN

0mm 100mm 200mm

LOT 4 DPS 20551 LOT 2
DPS 23065 SEC 1 SO
60796 LOT 2 DPS 92145
641 PATERANGI ROAD

MANGAPIKO STREAM

LOT 1 DPS 62851
4 PIRONGIA ROAD

LOT 1 DPS 62851
4 PIRONGIA ROAD

SECTION 1 SO 420476
ESPLANADE RESERVE
(DAPHNE STREET GULLY)

PT ALOT 317 Parish of
Mangapiko
2096 ALEXANDRA STREET

PT ALOT 317
MANGAPIKO PSH
LOT 3 DPS 62851

INDICATIVE LANDFILL
BOUNDARY (EXTENT OF FILL)

PROPOSED ROADING EXTENTS

LOT 1 DPS 62851
4 PIRONGIA ROAD

LOT 4 DPS 62851 LOT 13
DPS 4514 OF ALLOT 317
MANGAPIKO PSH
6 PIRONGIA ROAD

LOT 12 D P S 4514 OF ALLOT
317 MANGAPIKO PARISH
8 PIRONGIA ROAD

LOT 11 D P S 4514 BLK II PUNIU S D
10 PIRONGIA ROAD

PIRONGIA ROAD

PIONEER
DRIVE

LOT 3 DP 547310
28 PIONEER DRIVE

LOT 2 DPS 925164
5/28 PIRONGIA ROAD

EXISTING LAYOUT KEY

- PROPOSED SITE BOUNDARY
- PROPERTY BOUNDARY
- MINOR CONTOUR (1m INTERVAL)
- MAJOR CONTOUR (5m INTERVAL)
- RESERVE
- APPROXIMATE EXTENT OF LANDFILL

NOTES

1. REFER TO DRAWING 240_01_100_P_04 FOR NOTES

EXISTING LAYOUT LAND OWNERSHIP & CONTOURS

REF	AMENDMENT	APP'D	DATE

	BY	CHECKED	DATE
DESIGN	JR	DM	NOV 21
DRAWN	JR	DM	NOV 21

RECOMMENDED: D Murphy — 21/01/22 DATE

APPROVED: K Hills — 21/01/22 DATE

OFFICE: gray matter

CLIENT: NZ Motor Caravan Association

PROJECT: NZMCA SITE CONCEPT
PIRONGIA ROAD TE AWAMUTU

SHEET TITLE: EXISTING LAYOUT
LAND OWNERSHIP & CONTOURS

STATUS	CONSENTING
GEODETIC & VERTICAL DATUM	MT EDEN 2000/ NZVD 16
PLAN NUMBER	240_01_100_P
SHEET	01
SCALE	1:750 (@ A3)
REVISION	R0

ORIGINAL SIZE A3

0mm 100mm 200mm

N

MANGAPIKO STREAM

PROPOSED NZMCA SITE EXTENTS

PROPOSED ROADING EXTENTS

NOTES

1. REFER TO DRAWING 240_01_100_P_04 FOR NOTES

EXISTING SERVICES KEY

PWR	UNDERGROUND POWER
OH	OVERHEAD POWER
TEL	CHORUS
	OVERHEAD CHORUS
FO	FIBRE OPTIC
GAS	GAS SUPPLY
WS	WATER MAIN
SW	STORM WATER
WW	WASTE WATER
RM	RISING MAIN
	SEWER MANHOLE
	STORMWATER MANHOLE
	POWER POLE
	LIGHTING COLUMN

EXISTING LAYOUT KEY

- PROPOSED SITE BOUNDARY
- PROPERTY BOUNDARY
- MINOR CONTOUR (1m INTERVAL)
- MAJOR CONTOUR (5m INTERVAL)
- APPROXIMATE EXTENT OF LANDFILL

PIRONGIA ROAD

TRANSMISSION GRADE

PIONEER DRIVE

SEE INSERT

LOT 3 DP 547310
28 PIONEER DRIVE

INSERT: ACCESS LOCATION
SCALE 1:200

EXISTING LAYOUT: UTILITIES

REF	AMENDMENT	APP'D	DATE

	BY	CHECKED	DATE
DESIGN	JR	DM	NOV 21
DRAWN	JR	DM	NOV 21

RECOMMENDED: D Murphy — 21/01/22 DATE

APPROVED: K Hills — 21/01/22 DATE

OFFICE: gray matter

CLIENT: NZ Motor Caravan Association

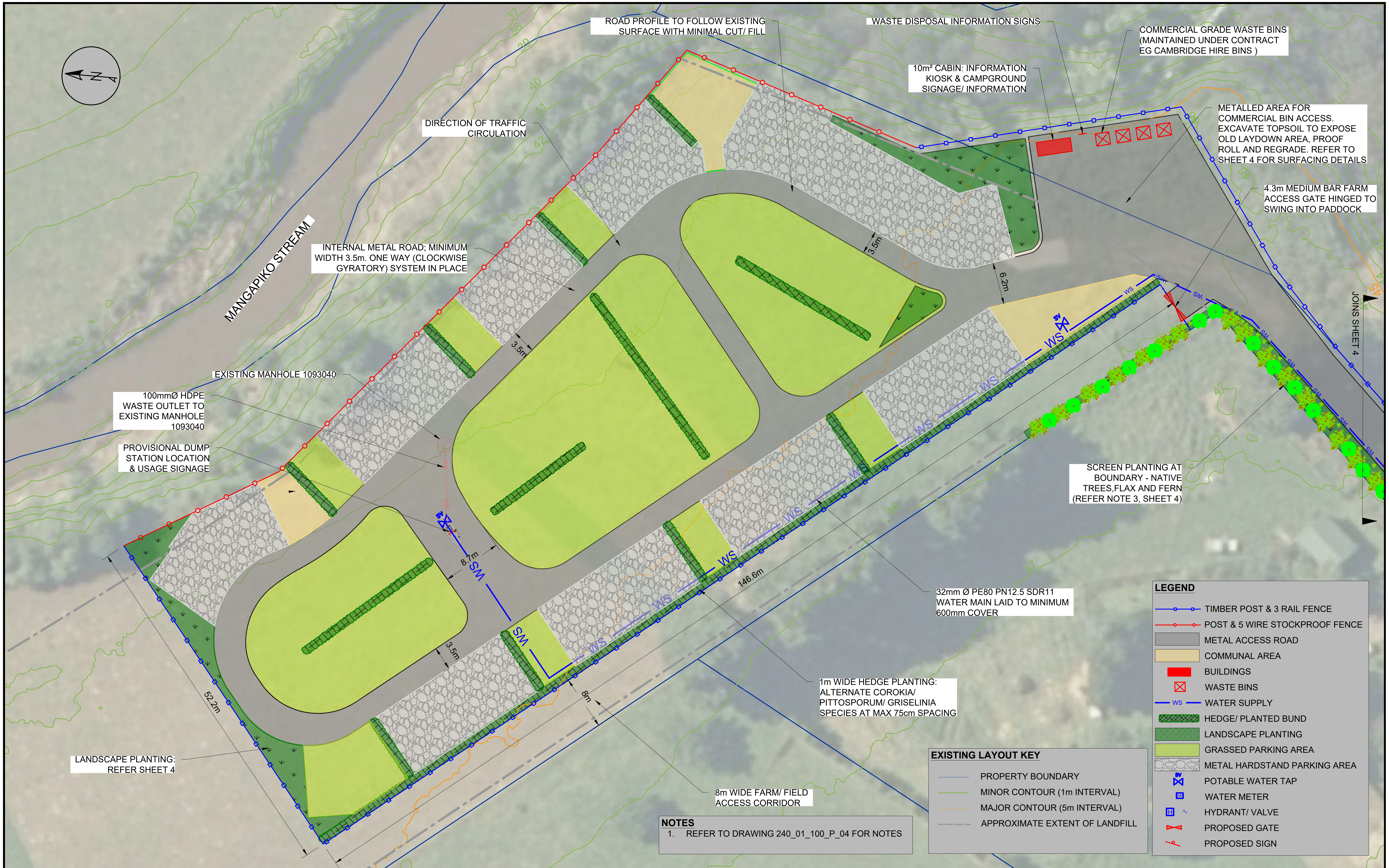
PROJECT: NZMCA SITE CONCEPT
PIRONGIA ROAD TE AWAMUTU

SHEET TITLE: EXISTING LAYOUT: UTILITIES

STATUS	CONSENTING
GEODETIC & VERTICAL DATUM	MT EDEN 2000/ NZVD 16
PLAN NUMBER	240_01_100_P
SHEET	02
SCALE	1:750 (@ A3)
REVISION	R0

C:\DRE_CONSENT_PLANS\3.dwg

ORIGINAL SIZE A3



ROAD PROFILE TO FOLLOW EXISTING SURFACE WITH MINIMAL CUT/ FILL
WASTE DISPOSAL INFORMATION SIGNS
COMMERCIAL GRADE WASTE BINS (MAINTAINED UNDER CONTRACT EG CAMBRIDGE HIRE BINS)
10m² CABIN: INFORMATION KIOSK & CAMPGROUND SIGNAGE/ INFORMATION
METALLED AREA FOR COMMERCIAL BIN ACCESS. EXCAVATE TOPSOIL TO EXPOSE OLD LAYDOWN AREA, PROOF ROLL AND REGRADE. REFER TO SHEET 4 FOR SURFACING DETAILS
4.3m MEDIUM BAR FARM ACCESS GATE HINGED TO SWING INTO PADDOCK
DIRECTION OF TRAFFIC CIRCULATION
MANGAPIKO STREAM
INTERNAL METAL ROAD; MINIMUM WIDTH 3.5m. ONE WAY (CLOCKWISE GYRATORY) SYSTEM IN PLACE
EXISTING MANHOLE 1093040
100mmØ HDPE WASTE OUTLET TO EXISTING MANHOLE 1093040
PROVISIONAL DUMP STATION LOCATION & USAGE SIGNAGE
JOINS SHEET 4
SCREEN PLANTING AT BOUNDARY - NATIVE TREES,FLAX AND FERN (REFER NOTE 3, SHEET 4)
32mm Ø PE80 PN12.5 SDR11 WATER MAIN LAID TO MINIMUM 600mm COVER
1m WIDE HEDGE PLANTING: ALTERNATE COROKIA/ PITTOSPORUM/ GRISELINIA SPECIES AT MAX 75cm SPACING
8m WIDE FARM/ FIELD ACCESS CORRIDOR
LANDSCAPE PLANTING: REFER SHEET 4
3.5m
6.2m
8.7m
146.6m
52.2m
8m
NOTES
1. REFER TO DRAWING 240_01_100_P_04 FOR NOTES
EXISTING LAYOUT KEY
PROPERTY BOUNDARY
MINOR CONTOUR (1m INTERVAL)
MAJOR CONTOUR (5m INTERVAL)
APPROXIMATE EXTENT OF LANDFILL
LEGEND
TIMBER POST & 3 RAIL FENCE
POST & 5 WIRE STOCKPROOF FENCE
METAL ACCESS ROAD
COMMUNAL AREA
BUILDINGS
WASTE BINS
WATER SUPPLY
HEDGE/ PLANTED BUND
LANDSCAPE PLANTING
GRASSED PARKING AREA
METAL HARDSTAND PARKING AREA
POTABLE WATER TAP
WATER METER
HYDRANT/ VALVE
PROPOSED GATE
PROPOSED SIGN

PROPOSED LAYOUT SHEET 1 OF 2

REF	AMENDMENT	APP'D	DATE

	BY	CHECKED	DATE
DESIGN	JR	DM	NOV 21
DRAWN	JR	DM	NOV 21

RECOMMENDED: D Murphy — DATE 21/01/22

APPROVED: K Hills — DATE 21/01/22

OFFICE: gray matter

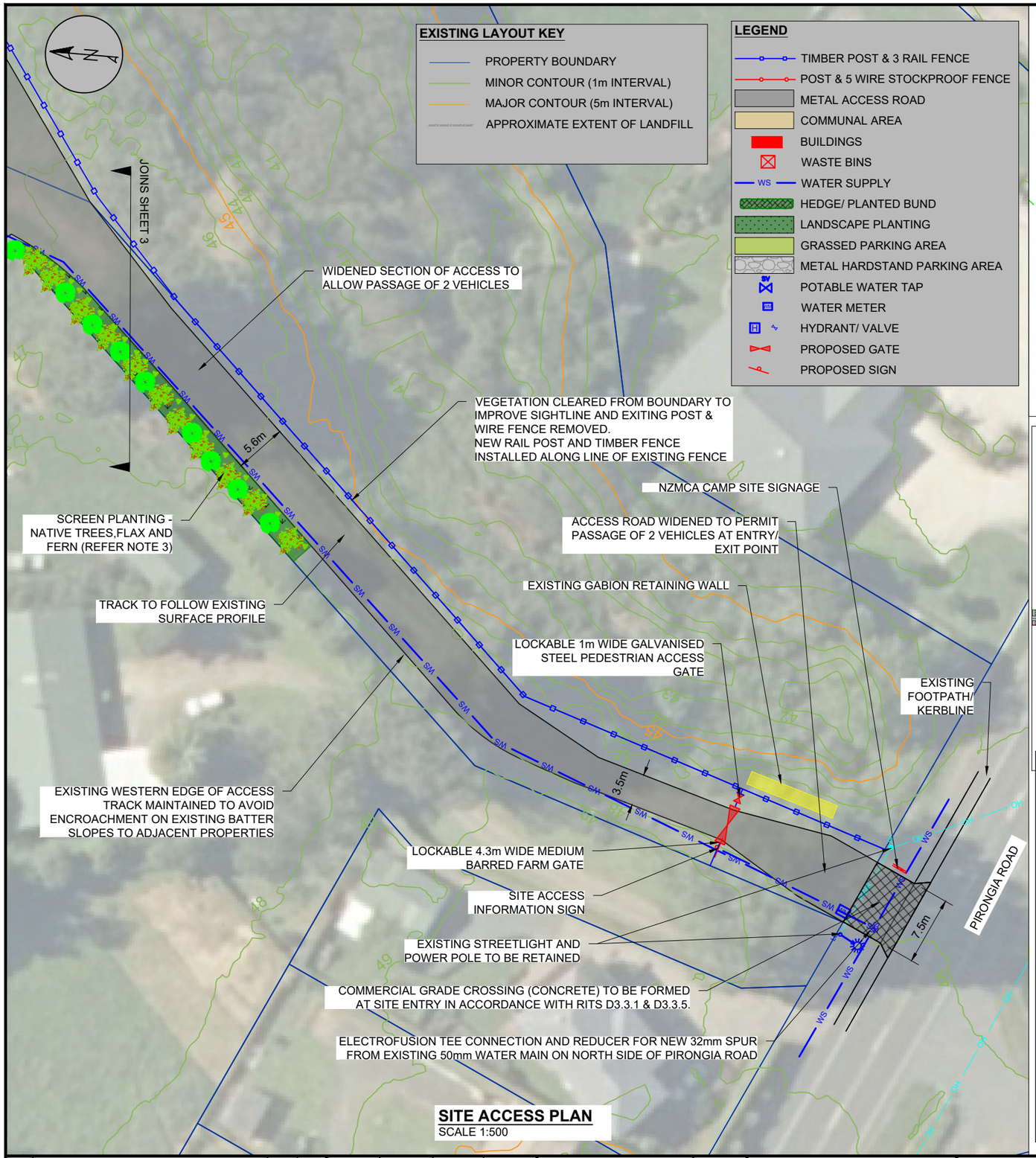
CLIENT: NZ Motor Caravan Association

PROJECT: NZMCA SITE CONCEPT PIRONGIA ROAD TE AWAMUTU

SHEET TITLE: PROPOSED LAYOUT SHEET 1 OF 2

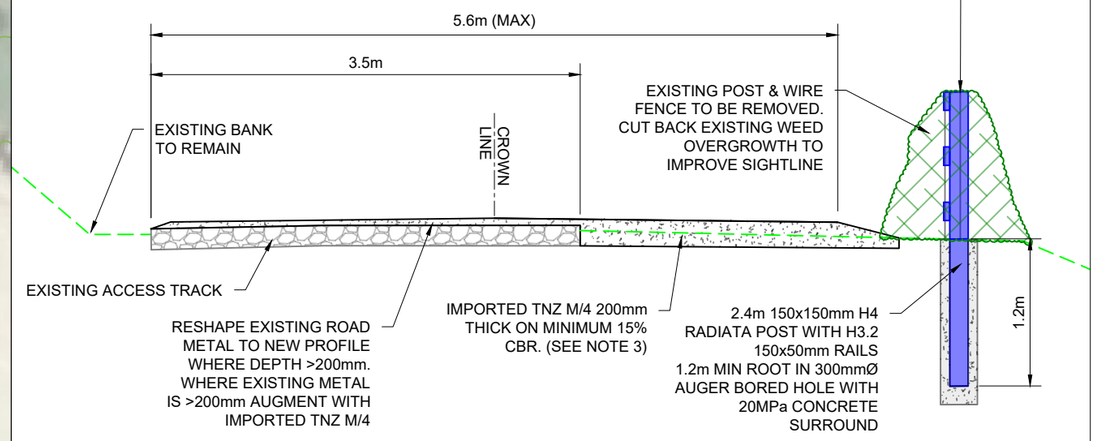
STATUS	CONSENTING
GEODETIC & VERTICAL DATUM	MT EDEN 2000/ NZVD 16
PLAN NUMBER	240_01_100_P
SHEET	03
SCALE	1:500 (@ A3)
REVISION	R0

ORIGINAL SIZE A3

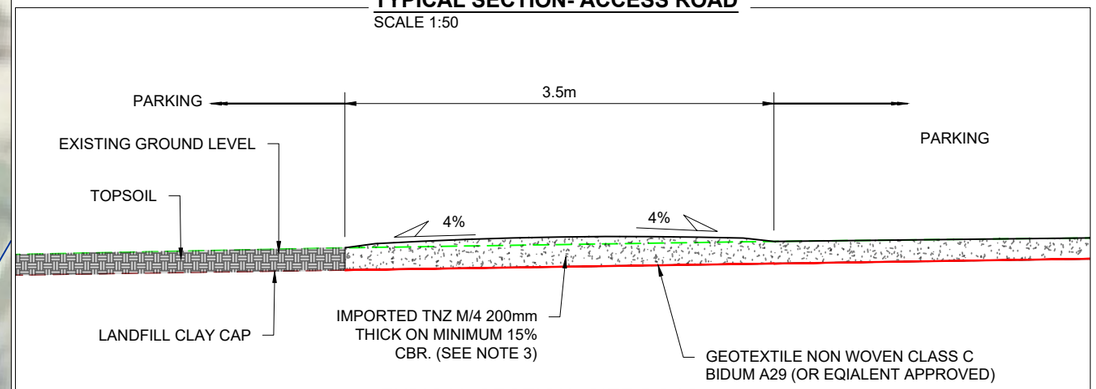


SITE ACCESS PLAN
SCALE 1:500

RETAINING FENCE DETAIL IS ONLY REQUIRED ALONGSIDE EXISTING GABION RETAINING WALL, WITH 1m POST CENTRES . IN ALL OTHER LOCATIONS A STANDARD POST AND 3 RAIL FENCE IS TO BE PROVIDED WITH 2m POST CENTRES



TYPICAL SECTION- ACCESS ROAD
SCALE 1:50



TYPICAL SECTION- SITE ROAD
SCALE 1:50

NOTES

1. UNLESS OTHERWISE STATED, ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO LASS REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS
2. ALL LANDSCAPE PLANTS TO BE LOCALLY SOURCED.
   PROVISIONAL PLANTING SCHEDULE: (PLANT TYPES AND SPACINGS TO BE CONFIRMED AT DETAILED DESIGN)

HEDGES
STAGGERED ALTERNATE PLANTING, RANDOM PATTERN:
PITTOSPORUM TENUIFOLIUM 4L 0.75m CENTRES (STAKED)
COROKIA X VIRGATA 2.5L 0.5m CENTRES (STAKED)
GRISELINA LITTORALIS 3.5L 0.75m CENTRES (STAKED)

LANDSCAPE AREAS:
RANDOM PLANTING IN 100mm MULCH RAISED BED:
CAREX BUCHANANII 0.6m CENTRES
COPROSMA KIRKII 1.0m CENTRES
OLEARIA X HAASTII 1.0m CENTRES
LIBERTIA GRANDIFLORA 0.6m CENTRES

SCREEN PLANTING:
TREES AND SHRUBS: STAGGERED RANDOM PLANTING NO LESS THAN 4m CENTRES OF JUVENILE SPECIMENS NO LESS THAN 1.8m HIGH:
KUNZEA ERICOIDES (KANUKA)
POMADERRIS APETALA (TAINUI)
UNDERSTORY INFILL PLANTING: RANDOM PATTERN AND SPACING TO SUIT SPECIES:
PHORMIUM TENAX (HARAKEKE/ COMMON FLAX)
BLECHNIUM DISCOLOR (PIUPIU/ CROWN FERN)

3. ACCESS ROAD, SITE ROAD AND METAL HARDSTAND PARKING TO BE CONSTRUCTED AS DETAILED ON TYPICAL SECTIONS PROVIDED ON THIS DRAWING. THE PROPOSED CARAVAN PARKING AREAS INDICATED ON SHEET 03 WILL BE ASSESSED FOR SUITABILITY AS GRASSED PARKING ON AN INDIVIDUAL BASIS DURING CONSTRUCTION. SOME OF THESE AREAS MAY BE REVISED FROM GRASS TO METAL HARDSTAND TO PROVIDE ALL WEATHER PARKING AND AVOID COMPROMISE OF LANDFILL CAP.
3. EXTENT OF LANDFILL ESTABLISHED FROM HISTORICAL AERIAL PHOTOGRAPHY AND WAIPA D.C. RECORDS AND IS INDICATIVE ONLY.
4. THIS DRAWING SET IS FOR CONSENTING PURPOSES ONLY AND IS NOT FOR CONSTRUCTION OR TENDER ISSUE. NO QUANTITIES TO BE ASSUMED FROM THE INFORMATION SHOWN.

REF	AMENDMENT	APP'D	DATE

	BY	CHECKED	DATE
DESIGN	JR	DM	JAN 22
DRAWN	JR	DM	JAN 22

RECOMMENDED D Murphy 21/01/22 DATE
APPROVED K Hills 21/01/22 DATE

OFFICE: gray matter
CLIENT: NZ Motor Caravan Association

PROJECT: NZMCA SITE CONCEPT
PIRONGIA ROAD TE AWAMUTU
SHEET TITLE: PROPOSED LAYOUT
SHEET 2 OF 2

STATUS: CONSENTING
GEODETIC & VERTICAL DATUM: MT EDEN 2000/ NZVD 16
PLAN NUMBER: 240_01_100_P
SHEET: 04
SCALE: AS STATED (@ A3)
REVISION: R0

ORIGINAL SIZE A3

PROPOSED LAYOUT SHEET 2 OF 2

APPENDIX C: DETAILED SITE INVESTIGATION

New Zealand Motor Caravan Association

TE AWAMUTU CLOSED LANDFILL

DETAILED SITE INVESTIGATION

28 JULY 2021

Question today
Imagine tomorrow
Create for the future

TE AWAMUTU CLOSED LANDFILL
DETAILED SITE INVESTIGATION

New Zealand Motor Caravan Association

WSP
Hamilton
Level 2, 160 Ward Street (Bryce Street Entrance), Hamilton 3204
Private Bag 3057, Waikato Mail Centre, Hamilton 3240

+64 7 838 9344
wsp.com/nz

REV	DATE	DETAILS

	NAME	DATE	SIGNATURE
Prepared by:	Ray Forrest	28/07/21	
Reviewed by:	James Gladwin	28/07/21	
Approved by:	Matt Stulen	28/07/21	

WSP
Hamilton
Level 2, 160 Ward Street (Bryce Street Entrance), Hamilton 3204
Private Bag 3057, Waikato Mail Centre, Hamilton 3240

+64 7 838 9344
wsp.com/nz

TABLE OF CONTENTS

EXECUTIVE SUMMARY

WSP New Zealand Limited (WSP) was commissioned by New Zealand Motor Caravan Association (NZMCA) to conduct a contaminated land investigation to assess the suitability of utilising the former Te Awamutu Municipal Landfill site as a motor caravan parking site.

The purpose of this investigation was to assess the suitability of the site for the proposed land use from a contamination perspective in terms of determining health, safety and environmental controls that may be required, assessing any consenting requirements under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES) and soil disposal requirements.

WSP undertook a desktop review of available information that identified that the site has historically been used for landfilling activities. This activity is identified on the HAIL as G5. The site is also currently used as grazing land for livestock.

WSP developed a CSM and SAP for the site based on these findings. A WSP ES visited site on 14 July 2021 to collect soil samples to inspect the site.

No evidence of landfill materials, slumping or seepage was noted during the site visit.

A total of 21 representative soil samples were collected from 11 test-pits / hand augurs excavated across the site. Samples were analysed by an IANZ accredited laboratory for a suite of metals/metalloids and asbestos.

Sample results were compared against adopted SCS of the NESCS for a recreational land use, and the expected naturally occurring background concentrations of the WRC.

Concentrations of metals/metalloids reported in the samples collected do not present a risk to recreational land users.

Asbestos was not identified in any of the samples and as such is not expected to pose a risk to future site users.

Many of the samples reported analytes elevated above the expected background values for the Waikato Region.

Any spoil excavated on site would be considered of a suitable quality to be re-used on site. Soils would not be considered suitable for removal from site as cleanfill.

The volume of soil able to be disturbed under the NESCS requirements as a permitted activity is calculated at 25 m^3 per 500 m^2 of the piece of land equal to 1,900 m^3 for the area of the site 38,000 m^2. The volume of soil that can be taken away from site per year is calculated at 5 m3 per 500 m^2 of the piece of land equal to a maximum of 390 m^3.

WSP notes that the volume of soil permitted to be taken away from site is confined by the 'per year' criteria. However, the 'year' in this context is not constrained to a calendar year but is taken as being any consecutive 12-month period preceding or succeeding the previous removal of soil from site.

RECOMMENDATIONS

Based on the findings of this Detailed Site Investigation, WSP recommends:

- Further ground gas analysis should be considered to better characterise the ground gas risk particularly considering the proposed reductions in the TWA and STEL to 1ppm and 5ppm respectively in 2022.
- No excavations into the landfill cap should be completed, material should be placed onto the site to construct the access road and parking locations to maintain the appropriate landfill capping depth.
- Planting of trees should not be completed within the landfill cap. These have the potential to be windblown and could damage the landfill cap exposing waste material. Planting of native shrubs or flax species in raised bunds is more suitable.
- Although the landfill material was not tested as part of the detailed site investigation the likelihood of asbestos contaminated material at depth means the installation of the proposed dump station and tap water facility should be overseen by a licenced asbestos removalist. A CSMP should be prepared to address such soil disturbance activities.
- This DSI report should be submitted to the consenting authority.
- A planner should be consulted with regards to any resource consent requirements.
- Should any other ground conditions be encountered that are not covered herein a Suitably Qualified and Experience Practitioner (SQEP) specialising in contaminated land assessment should be consulted in order to assess the risks to human health and sensitive receptors.

1 INTRODUCTION

1.1 BACKGROUND

WSP New Zealand Limited (WSP) was commissioned by New Zealand Motor Caravan Association (NZMCA) to conduct a contaminated land investigation to assess the suitability of utilising the former Te Awamutu Municipal Landfill site as a motor caravan parking site.

The purpose of this investigation was to assess the suitability of the site for the proposed land use from a contamination perspective in terms of determining health, safety and environmental controls that may be required, assessing any consenting requirements under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES) and soil disposal requirements.

1.2 OBJECTIVE

The purpose of this investigation was to:

- assess the capping materials for their suitability for the proposed land use from a contamination perspective in terms of determining health, safety and environmental controls;
- confirm the depth of the capping materials;
- assess the need for a consent under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES);
- characterise near surface material for off-site disposal (should this be required)

1.3 SCOPE OF WORKS

In order to meet the above objectives, the following was undertaken:

- A record search for information held by Waipa District Council (WDC) and Waikato Regional Council (WRC).
- Review of published geological maps and plans.
- Review of selected historical aerial photography.
- A site walkover completed by a contaminated land specialist including the observation of areas of potential concern (i.e. areas of distressed vegetation, subsidence or obvious signs of filling activities).
- Collection of 21 surface soil samples from 11 locations across the site.
- Observation of landfill gas production (methane, hydrogen sulphide using a GA5000 gas detector, and
- Preparation of this report.

The analytical results in this report pertain to near surface capping materials only and do not include the fill material which constitutes the landfill waste. The fieldwork was managed by a suitably qualified and experienced practitioner (SQEP) and the report has been reviewed by a SQEP, as required by the NES.

2 SITE IDENTIFICATION

The purpose of this investigation was to assess the suitability of the site for the proposed land use from a contamination perspective in terms of determining health, safety and environmental controls that may be required, assessing any consenting requirements under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES) and soil disposal requirements.

2.1 SITE AND SURROUNDING LAND USES

Situated northwest of Te Awamutu the site forms the southern portion of the closed Te Awamutu landfill, which ceased operation in the mid 1990's, and is currently used as grazing land for livestock.

The site identification details are provided in Table 2.1 and the site location is shown on Figure 1.

The proposed site development plan is shown on Figure 2.

Table 2.1: Site Identification

ITEM	DESCRIPTION
Site Address	Paterangi Road
Legal Description	LOT 3 DPS 62851 PT ALOT 317 MANGAPIKO PSH
Approximate total site area	38,000m2
Site use	Former landfill site - currently leased to farmer for grazing.
Territorial authority	Waipa District Council
Regional Authority	Waikato Regional Council

Figure 1 - Site location and surrounding environs

Figure 2 Proposed Site Development Plan

3 ENVIRONMENTAL SETTING

3.1 TOPOGRAPHY

The Land Information New Zealand (LINZ) topographical map BA33- Pirongia 1:50,000 indicates that the site is situated at an elevation of approximately 43 metres above mean sea level. The site is relatively flat with a gradual decline in elevation towards the north and north east (towards the Mangapiko Stream), refer to Figure 1.

3.2 SURFACE WATER

The nearest surface waterbody is the Mangapiko stream which borders the site on its north-eastern boundary. The Mangapiko Stream drains into the Waipa River, approximately 11km to the west.

3.3 GEOLOGY AND HYDROGEOLOGY

Published geological information for the site shows that it is underlain by swamp deposits consisting of soft, dark brown to black organic-rich mud, muddy peat and woody peat of the Piako subgroup.

Local borehole information was reviewed using the WRC groundwater GIS map. No existing boreholes were identified within a 100 m radius of the site. The nearest borehole recorded on the GIS map is approximately 600 m north-east of the site.

Based on regional topography and presence of surface water bodies, it is likely that groundwater at the site flows north/north east, towards the Mangapiko Stream.

4 INFORMATION REVIEW

4.1 WAIPA DISTRICT COUNCIL

A request for information was sent to Waipa District Council (WDC) and a response was received in July 2021. WDC confirmed that the site is listed on their land use information register (LUIR) for having activities which are on the Hazardous Activities and Industries List (HAIL) due to previous use of the site as a landfill. WDC recommend undertaking an on-site records review for more specific information.

A copy of the correspondence with WRC is presented in Appendix A.

4.2 WAIKATO REGIONAL COUNCIL

A request for information was sent to Waikato Regional Council (WRC) and a response was received in July 2019. WRC confirmed that the site is listed on their land use information register (LUIR) for having activities which are on the Hazardous Activities and Industries List (HAIL) due to previous use of the site as a landfill from 1970 to 1992. No other information pertaining to contaminated land associated with the site was given.

A copy of the correspondence with WRC is presented in Appendix B.

4.3 HISTORICAL AERIAL PHOTOGRAPHS

Historic aerial photography was sourced from Retrolens and Google Earth, online image resources. In total, seven historical images, taken between 1957 and 2013 were available to view and were compared to modern day imagery available from Google Earth (2020). A summary of the observations made during the review of available historical aerial imagery of the site is provided in Table 3.1. The aerial images are presented in Appendix C.

Table 4-1 Aerial Review

YEAR/SOURCE	SITE	SUROUNDING LAND
1957 Retrolens	Site appears to be pasture; an access track is visible on to the site in the same location as the present.	Surrounding land is mainly pasture, with residential housing to the south. Some evidence of scrub clearing or landfilling can be seen in the north end of the landfill. The Mangapiko Stream banks are well vegetated with trees.
1967 Retrolens	Site appears to be an active landfill in this image.	More houses are visible to the west of the site access track. Surrounding land appears

		much the same as in previous photo.
1979 Retrolens	Image quality is poor, however site appears to be bare ground.	Image quality is poor; however, it appears that more residential houses are present along Pirongia Road
1995 Retrolens	Site appears to be closed for use as a landfill.	Surrounding properties have well established hedges along the site border. To the north it appears much of the forested areas around the creek bed have been cleared
2008 Google Earth	Site appears to be a paddock.	Mangapiko stream has a thin border of trees. Commercial industrial properties are visible in the south.
2013 Google Earth	No change from previous.	No change from previous.
2019 Google Earth	No change from previous.	Roads for a new subdivision can be observed south west of the site across Pirongia Road.

5 CONCEPTUAL SITE MODEL

WSP developed a preliminary conceptual site model (CSM) based on the findings of the desktop study review and identified HAIL activities.

The conceptual site model (CSM) is used to support the decision-making process for contaminated land management.

The five basic activities associated with developing a CSM are:

- Identification of potential contaminants;
- Identification and characterisation of the source(s) of contaminants of concern (CoCs);
- Delineation of potential migration pathways through environmental media, such as groundwater, surface water, soils sediment, biota, air, service lines;
- Identification and characterisation of potential receptors (human, ecological or building infrastructure);
- Determination of the limits of the study area or system boundaries.

Data gaps and uncertainties can be identified during the preparation of the CSM, assisting in the design of the detailed investigation which may follow.

For there to be an effect on receptors there must be a contamination source and a mechanism (pathway) for contamination to affect human health or the environment (receptor).

A possible pollutant linkage between the contaminant source and receptor is defined as one that has the potential to represent unacceptable risks to human health or the environment but has not been identified through risk assessment. Where a possible pollutant linkage has been identified, investigation and risk assessment during a detailed site investigation (DSI) is necessary to establish whether a significant pollutant linkage exists.

Using the information presented in this report, a preliminary CSM has been developed as shown in Table 4-1.

Table 41: Source-Pathway-Receptor

SOURCE	PATHWAY	RECEPTORS
Heavy metals	Dust becoming airborne and being inhaled. Dermal contact with, or ingestion of, contaminated soils. Leaching of contaminants into groundwater or via sediment into surface water.	Site users and contractors during site works. Surface water ecosystems. Local drinking water supply bores.
Hydrocarbons	Dermal contact with or ingestion of hydrocarbon residues in soils. Inhalation from airborne dust from contaminated soils.	Site users and contractors during site works. Surface water ecosystems.

	Leaching of contaminants into groundwater or surface runoff into water bodies.	Local drinking water supply bores.
Landfill gas	Landfill gasses escaping into buildings, or confined spaces such as foundation and service trenches. Explosive and toxic risk risk.	Site users and contractors during site works.
Asbestos	Buried asbestos waste in landfill.	Site users and contractors during site works.

6 BASIS FOR GUIDELINE CRITERIA

6.1 HIERARCHY OF SELECTION

This section summarises the reference sources for guideline values that we have adopted for the current project and future use of the site. The selected guidelines have been based on the Ministry for the Environment (MfE) Contaminated Land Management Guidelines (CLMG) No. 2 (MfE, 2011c), Hierarchy and Application in New Zealand of Environmental Guideline Values, (Revised 2011)' as shown in Figure 3 below.

Figure 3 Hierarchy of Guideline Values

6.1.1 HANDLING AND FUTURE LAND USE

WSP have adopted the following guideline criteria to classify soil at the site during construction, handling and ongoing/future site use. Table 6-1 below outlines selected criteria for handling and land use.

Table 6-1 Selection Criteria for Handling and Land Use Assessment

MATRIX	SOURCE GUIDELINE	CRITERIA
Soil	Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS, 2011).	Recreational
	Workplace exposure standards and biological exposure indices (Worksafe)	Commercial/industrial
	New Zealand Guidelines for Assessing and Managing Asbestos in Soil (NZGAMAS, 2017)	Recreational
	National Environmental Protection Measure Health Investigation Level (HIL-D), (NEPM, 2011). Natural Background Concentrations in the Waikato Region.	Recreational Reuse and Disposal

7 SITE INVESTIGATION

7.1 GENERAL

WSP developed a sampling and analysis plan (SAP) to investigate potential CoC in soil identified during the development of the CSM. With reference to MfE CLMG No. 5, Site Investigation and Analysis of Soils (MfE, 2011a) a systematic sampling strategy was used for collecting samples of the capping layer.

A WSP Environmental Scientist (ES) visited the site on 14 July 2021. The ES conducted a site walkover to inspect surface features and collect site photographs. Following the site walkover, a hand augur was used to advance the test pits to a maximum target depth of 0.7 m bgl. This target depth was chosen based on information from Waikato Regional Council indicating that the capping depth was approximately 700mm bgl.

The site was fenced with a 5-wire farm fence with a gate at the north and south ends. The site was surfaces with grass from 5 to 10 cm in length. The site is grazed occasionally by cattle and goats.

The Mangopiko stream was separated from the site by a fence and a riparian strip of planted native trees.

7.2 SAMPLING AND ANALYSIS RATIONALE

Two soil samples were collected from each test pit except for test pit 2 where only one was collected, for a total of 21 samples. One duplicate sample was also collected. Soil samples were collected from the near surface soil (0.01mm bgl) and at the base of the test pit, either 0.7m bgl or less if there was hand-augur refusal.

All samples were analysed for a suite of metals (arsenic, cadmium, chromium, copper, lead, nickel, mercury and zinc) and asbestos.

Sample locations are presented in Figure 4 below.

Figure 4 Sample Location Plan

7.3 METHODOLOGY

The ES collected soil samples from using a hand auger and stainless-steel trowel at 0.7 m bgl or refusal and near surface. Following sampling, auger holes were backfilled with excavated material and compacted in place.

The ES recorded observed lithology per standard WSP procedures, which are based on the New Zealand Geotechnical Society Field Description of Soil and Rock (NZGS, 2005). Photographs taken during the time of inspection are presented in Appendix D.

7.4 LANDFILL GAS SCREENING

Field screening for landfill gas was undertaken at each sampling location. Gas readings were generally zero for the majority of the test pit locations. One location, TA06, had a reading of 1ppm for Hydrogen Sulphide. Air pressure was measured as 1019 hPa at the NIWA Waikeria station located 11 km away. This indicates a high-pressure system.

7.5 OBSERVED LITHOLOGY

The lithology observed in the test pits were consistent across the site as

- 0.0 – 0.3m below ground level (bgl) Dark brown silt with rootlets.

- 0.3 – 0.7 m bgl Brown SILTY clay, occasional mottles.

During the investigation there was no evidence observed of landfill materials or ACMs within the test pit/hand-augurs

7.6 FIELD QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

The QA/QC procedures that were undertaken by the ES comprised:

- A new pair of disposable nitrile gloves was used to collect each soil sample.
- Samples were placed in laboratory supplied plastic and/or glass jars as appropriate by selected analyte.
- Soil samples were placed directly into chilled storage.
- All samples were transported under standard chain of custody (COC), directly to Hill Laboratories (Hills). Hills are accredited by an Internationally Accreditation New Zealand (IANZ) for the analysis undertaken.
- The analytical certificates of analysis are included in Appendix E and the summary table of results in Appendix F.

8 ANALYTICAL RESULTS

8.1 HUMAN HEALTH RISKS

8.1.1 METALS/METALLOIDS

Across the 21 soil samples from the eleven test pits, no metals/metalloids concentrations were reported as exceeding the Soil Contaminant Standards (SCS) of the NESCS for recreational land use.

Results for metals are presented in Appendix F – Table of results.

8.1.2 ASBESTOS

Asbestos was not identified in any of the 22 samples analysed. Asbestos results are presented in Appendix E.

8.2 BACKGROUND RANGES

Twenty-one samples were reported as exceeding the WRC background ranges for one or more analytes in each sample. The background exceedances are summarised in Table 8-1 below.

Table 8-1 Background Exceedances

ANALYTE	NUMBER	SAMPLE LOCATIONS
Arsenic	12	TA01 - 0.01, TA01 - 0.5, TA03 – 0.01*, TA04 – 0.01, TA04 – 0.7, TA05 – 0.7, TA06 – 0.5, TA07 – 0.01, TA08 – 0.7, TA10 – 0.7, TA11 – 0.7,
Cadmium	13	TA01 - 0.01, TA02 - 0.1, TA03 – 0.01, TA04 – 0.01, TA05 – 0.01, TA06 – 0.001, TA06 – 0.5, TA07 – 0.01, TA08 – 0.01, TA08 – 0.7, TA09 – 0.01, TA10 – 0.01, TA11 – 0.01
Chromium	1	TA01 - 0.5
Copper	3	TA01 - 0.5, TA04 – 0.01, TA08 – 0.7
Lead	8	TA01 - 0.01, TA02 - 0.1, TA04 – 0.01, TA06 – 0.5, TA08 – 0.01, TA08 – 0.7, TA09 – 0.3, TA11 – 0.01
Mercury	0	N/A
Nickel	7	TA01 - 0.5, TA02 - 0.1, TA03 – 0.7, TA06 – 0.5, TA07 – 0.3, TA08 – 0.01, TA09 – 0.3.
Zinc	10	TA01 - 0.01, TA01 - 0.5, TA02 – 0.1, TA03 – 0.01, TA04 – 0.01, TA06 – 0.5, TA08 – 0.01, TA08 – 0.7, TA09 – 0.3, TA11 – 0.0.1,

*The duplicate for this sample, QA01 reported arsenic below the background range.

9 QUALITY ASSURANCE AND OBJECTIVES

9.1.1 FIELD DUPLICATES

One duplicate for metals/metalloids was analysed and the RPD between samples was calculated according to the following formula:

$$RPD = \frac{(Result\ No.1 - Result\ No.2)\ x\ 100}{(Mean\ of\ result\ No.1 + result\ No.2)}$$

9.1.2 DATA QUALITY OBJECTIVES

The typical data quality objective is for an RPD to be within 30 – 50% (MfE, 2011a). The RPD results are provided in Appendix F, Table E2 and the findings of the RPD analysis discussed below.

9.1.3 METALS/METALLOIDS

RPD values calculated for metals/metalloids were at or below 50% in seven of the eight analytes and WSP accepts this as fair variance.

10 CONCLUSIONS

10.1 SITE INVESTIGATION

WSP undertook a desktop review of available information that identified that the site has historically been used for landfilling activities. This activity is identified on the HAIL as G5. The site is also currently used as grazing land for livestock.

WSP developed a CSM and SAP for the site based on these findings. A WSP ES visited site on 14 July 2021 to collect soil samples to inspect the site.

No evidence of landfill materials, slumping or seepage was noted during the site visit.

A total of 21 representative soil samples were collected from 11 test-pits / hand augurs excavated across the site. Samples were analysed by an IANZ accredited laboratory for a suite of metals/metalloids and asbestos.

Sample results were compared against adopted SCS of the NESCS for a recreational land use, and the expected naturally occurring background concentrations of the WRC.

10.2 FINDINGS

10.2.1 HUMAN HEALTH RISK

Concentrations of metals/metalloids reported in the samples collected do not present a risk to recreational land users.

Asbestos was not identified in any of the samples and as such is not expected to pose a risk to future site users.

Landfill gas (1ppm hydrogen sulphide) was detected in one auger location. Although not monitored from a constructed well, the sample was taken from the drilled hand auger hole TA06 which is an enclosed space. The reading is below both the current time weighted average (TWA) of 5ppm and short-term exposure limit (STEL) of 10ppm specified by Worksafe (proposed change to TWA to 1ppm and STEL to 5ppm in the year 2022). As the site is outdoors and therefore well-ventilated further dilution of these levels will occur, but the site may benefit from further gas testing for further risk characterisation.

Field investigations and laboratory results indicate that landfill capping is 0.7m depth and is of material that is highly unlikely to pose a risk to human health for recreational use.

10.2.2 BACKGROUND CONCENTRATIONS

Many of the samples reported analytes elevated above the expected background values for the Waikato Region.

Any spoil excavated on site would be considered of a suitable quality to be re-used on site. Soils would not be considered suitable for removal from site as cleanfill.

10.3 PERMITTED ACTIVITY AND SOIL DISTURBANCE THRESHOLDS

The volume of soil able to be disturbed under the NESCS requirements as a permitted activity is calculated at 25 m^3 per 500 m^2 of the piece of land, which equates to 1,900 m^3 for the area of the site 38,000 m^2. The volume of soil that can be taken away from site per year is calculated at 5 m3 per 500 m^2 of the piece of land, which equates to a maximum of 390 m^3 for the site based on the land area.

WSP notes that the volume of soil permitted to be taken away from site is confined by the 'per year' criteria. However, the 'year' in this context is not constrained to a calendar year but is taken as being any consecutive 12-month period preceding or succeeding the previous removal of soil from site.

10.4 RECOMMENDATIONS

Based on the findings of this Detailed Site Investigation, WSP recommends:

- Further ground gas analysis should be considered to better characterise the ground gas risk particularly considering the proposed reductions in the TWA and STEL to 1ppm and 5ppm respectively in 2022.
- No excavations into the landfill cap should be completed, material should be placed onto the site to construct the access road and parking locations to maintain the appropriate landfill capping depth.
- Planting of trees should not be completed within the landfill cap. These have the potential to be windblown and could damage the landfill cap exposing waste material. Planting of native shrubs or flax species in raised bunds is more suitable.
- Although the landfill material was not tested as part of the detailed site investigation the likelihood of asbestos contaminated material at depth means the installation of the proposed dump station and tap water facility should be overseen by a licenced asbestos removalist. A CSMP should be prepared to address such soil disturbance activities.
- This DSI report should be submitted to the consenting authority.
- A planner should be consulted with regards to any resource consent requirements.
- Should any other ground conditions be encountered that are not covered herein a Suitably Qualified and Experience Practitioner (SQEP) specialising in contaminated land assessment should be consulted in order to assess the risks to human health and sensitive receptors.

11 LIMITATIONS

This report ('Report') has been prepared by WSP New Zealand Limited ('WSP') exclusively for New Zealand Motor Caravan Association ('Client') in accordance with the Short form Agreement with the Client dated 2 July 2021 ('Agreement').

Permitted Purpose

This Report has been prepared expressly for the purpose of a preliminary site assessment to determine the depth of the landfill capping layer and if there is any likelihood of a risk to human health in utilising this piece of land for recreational purposes, namely as a motor caravan park ('Permitted Purpose'). WSP accepts no liability whatsoever for the use of the Report, in whole or in part, for any purpose other than the Permitted Purpose. Unless expressly stated otherwise, this Report has been prepared without regard to any special interest of any party other than the Client.

WSP accepts no liability whatsoever for any use of this Report, in whole or in part, by any party other than the Client. Unless WSP agrees otherwise in writing, any use or any reliance on this Report by a third party is at its sole risk without recourse to WSP. Third parties must make their own enquiries and obtain independent advice in relation to any matter dealt with or any conclusion expressed in this Report.

Qualifications and Assumptions

The services undertaken by WSP in preparing this Report were limited to those specifically detailed in the Agreement and the Report and are subject to the scope, qualifications, assumptions and limitations set out in the Report and/or otherwise communicated to the Client. Except as otherwise stated in the Report and to the extent that statements, opinions, facts, conclusion and/or recommendations in the Report ('Conclusions') are based in whole or in part on information provided by the Client and other parties ('Information'). The Information has not been and have not been verified by WSP and WSP accepts no liability for the reliability, adequacy, accuracy and completeness of the Information.

The data reported and Conclusions drawn by WSP in this Report are based solely on information made available to WSP at the time of preparing the Report. The passage of time; unexpected variations in ground conditions; manifestations of latent conditions; or the impact of future events (including (without limitation) changes in policy, legislation, guidelines, scientific knowledge; and changes in interpretation of policy by statutory authorities); may require further investigation or subsequent re-evaluation of the Conclusions.

Use and Reliance

This Report should be read in its entirety and must not be copied, distributed or referred to in part only. The Report must not be reproduced without WSP's prior approval in writing. WSP will not be responsible for interpretations or conclusions drawn by the reader of the Report. This Report (or sections of the Report) must not be used as part of a specification for a project or for incorporation into any other document without WSP's agreement in writing.

Disclaimer

No warranty, undertaking or guarantee whether expressed or implied, is made with respect to the data reported or the Conclusions drawn. To the fullest extent permitted at law, WSP, its related bodies corporate and its officers, employees and agents assumes no liability and will not be liable to any third party for, or in relation to any losses, damages or expenses (including any indirect, consequential or punitive losses or damages or any amounts for loss of profit, loss of revenue, loss of opportunity to earn profit, loss of production, loss of contract, increased operational costs, loss of business opportunity, site depredation costs, business interruption or economic loss) of any kind whatsoever, suffered on incurred by a third party.

REFERENCES

Edbrooke, S. W. (2005). Geology of the Waikato Area. Institue of Geological and Nuclear Sciences 1:250000 geological map 4. sheet + 68p.

MfE. (2011a). Contaminated Land Management Guidelines No.5: Site Investigation and Analysis of Soils (2011 Revised). Wellington: Ministry for the Environment.

MfE. (2011b). Contaminated Land Mangement Guidelines No.1: Reporting on Contaminated Sites in New Zealand (Revised 2011). Wellington: Ministry for the Environment.

MfE. (2011c). Contaminated Land Management Guidelines No. 2: Hierarchy and Application in New Zealand of Environmental Guideline Values.

NESCS. (2011). Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil To Protect Human Health) Regulations. Wellington: Ministry for the Environment.

NZGS (2005) Field Description of Soil and Rock. Guideline For the Field Classification and Description of Soil and Rock for Engineering Purposes. NZ Geotechnical Society Inc, December 2005.

Worksafe (2021) https://www.worksafe.govt.nz/dmsdocument/20238-workplace-exposure-standards-and-biological-indices/latest

WRC. (2021). Retrieved from https://waikatomaps.waikatoregion.govt.nz/Groundwater

WRC (2021) Retreived from https://www.waikatoregion.govt.nz/services/regional-services/waste-hazardous-substances-and-contaminated-sites/contaminated-sites/natural-background-concentrations/

Appendix A

Waipa District Council

Forrest, Rachael

From: Karl Tutty <Karl.Tutty@waipadc.govt.nz>
Sent: Monday, 26 July 2021 10:09 AM
To: Forrest, Rachael
Subject: Pirongia Road,Te Awamutu

Hi Ray,

No surprise that this site is on the HAIL register. Currently recorded as “Managed”.

########	Waipa District	LUI02771	2771	WPA_10	Current Record	Former Borough Tip	0 Paterangi Road, Te Awamutu	Managed	########

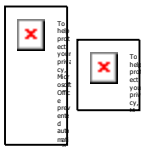
There are a number of monitoring reports, aftercare plan, compliance reports, leachate testing etc on the file.

Rather than us trying to select what might be relevant, it may be worth considered an actual file viewing.

Regards

.....

Karl Tutty Manager Compliance WAIPA DISTRICT COUNCIL
karl.tutty@waipadc.govt.nz | www.waipadc.govt.nz
PH: 07 872 0030 | MOB: 027 584 7072| FAX: 07 872 0033



Stay Connected with the Antenno App from the App Store or Google Play

Appendix B

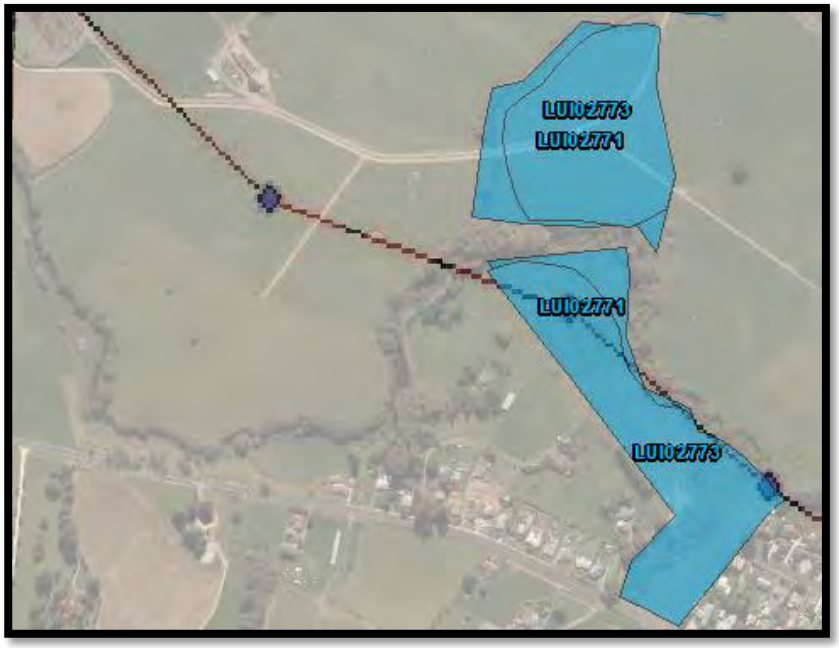
Waikato Regional Council

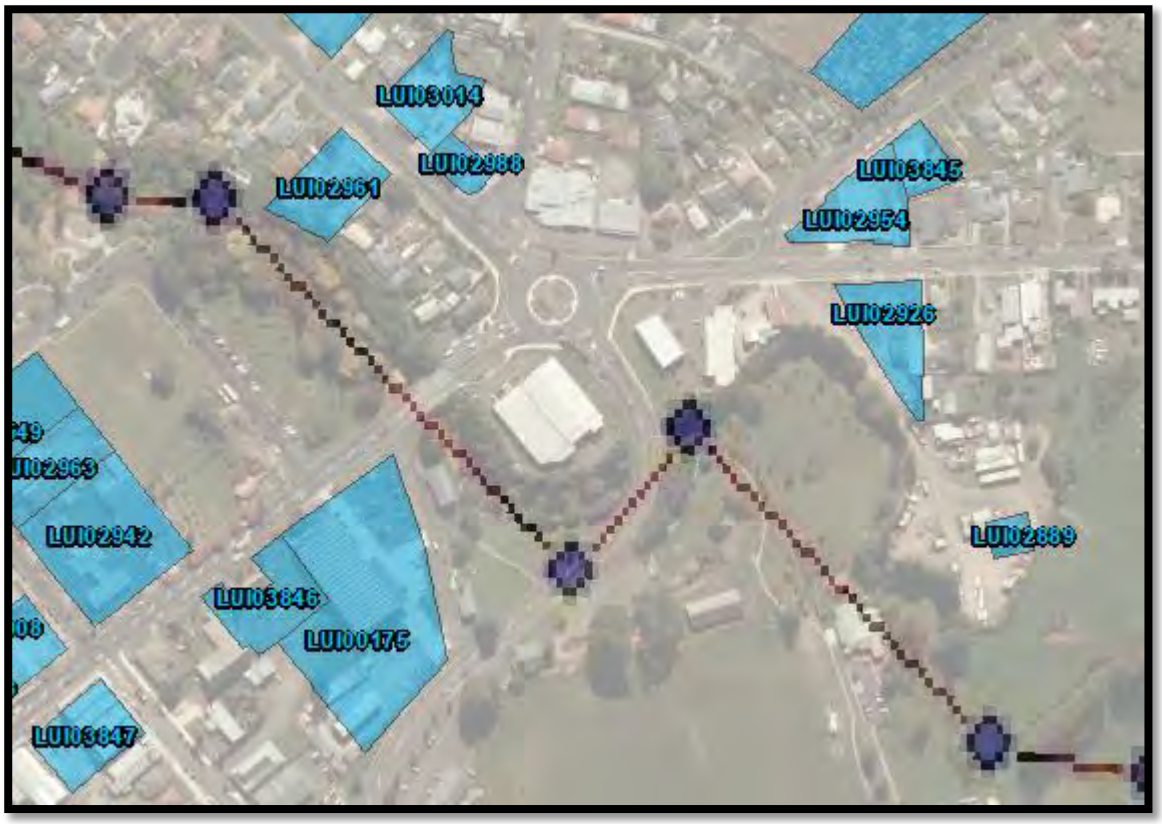
Dear Rachael,

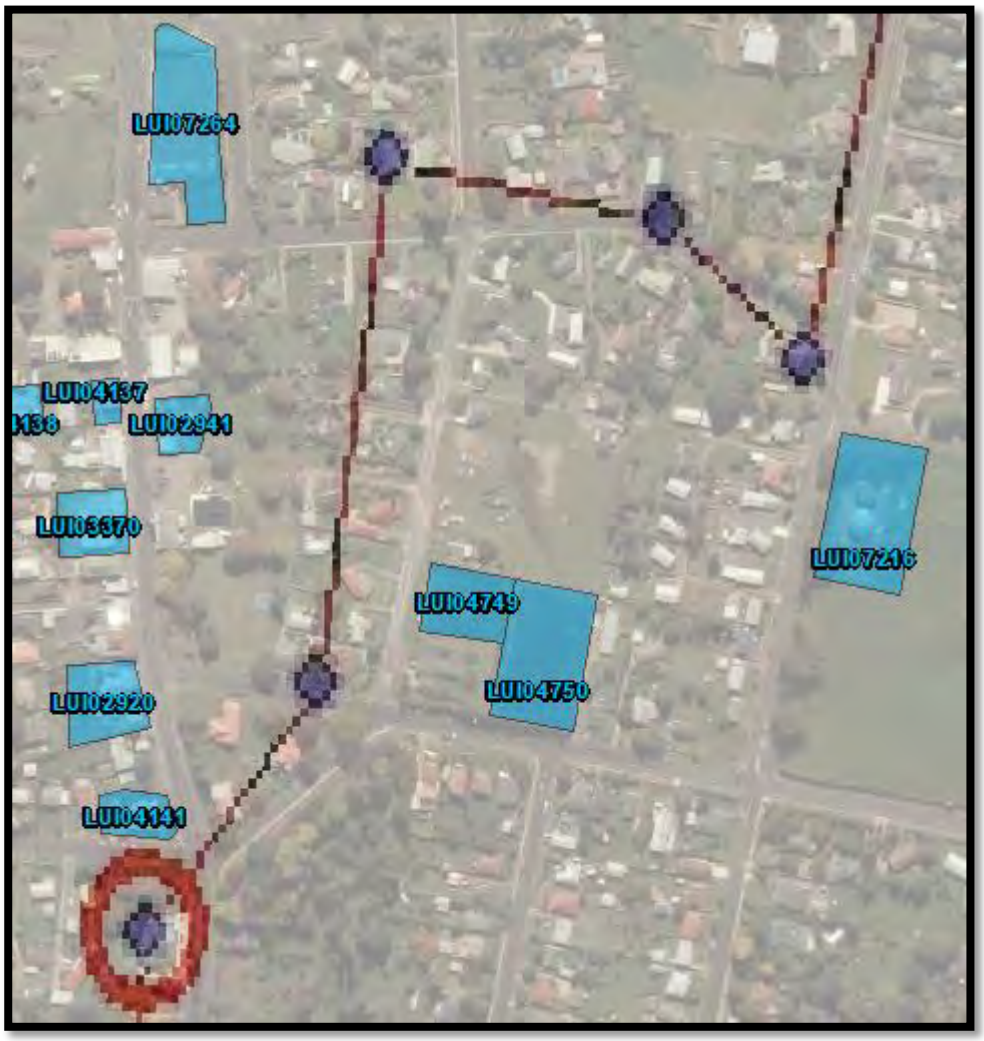
Thank you for your enquiry regarding information the Waikato Regional Council may hold relating to potential contamination along the pipeline as you have provided spatially below:

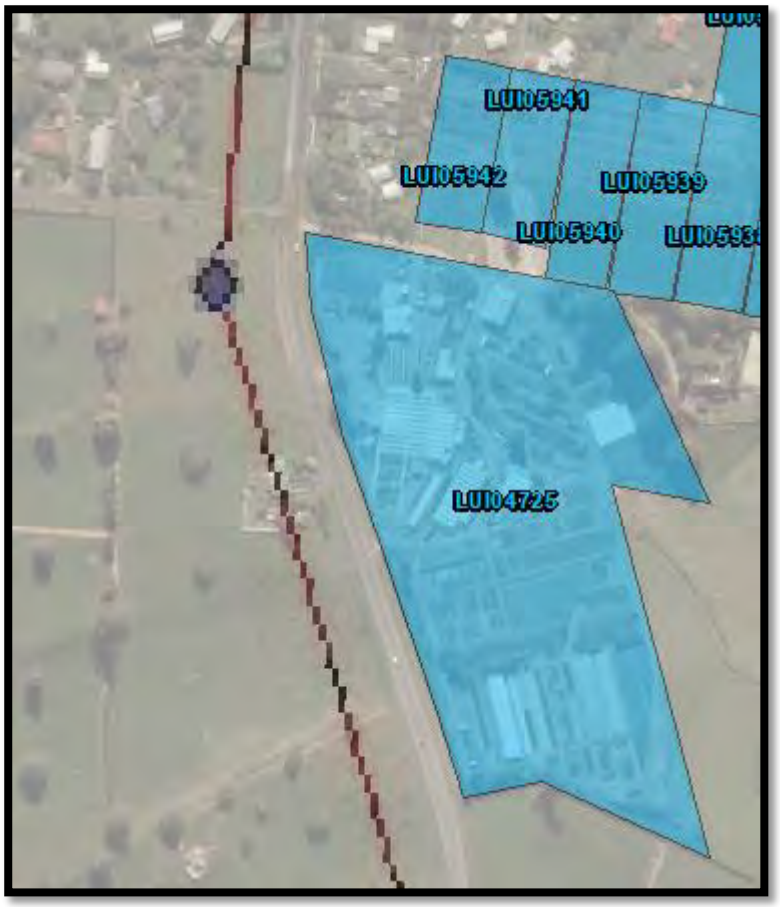
Background: The Waikato Regional Council maintains a register of properties known to be contaminated on the basis of chemical measurements, or potentially contaminated on the basis of past land use. This register (called the Land Use Information Register) is still under development and should not be regarded as comprehensive. The 'potentially contaminated' category is gradually being compiled with reference to past or present land uses that have a greater than average chance of causing contamination, as outlined in the Ministry for the Environment's Hazardous Activities and Industries List (HAIL): http://www.mfe.govt.nz/sites/default/files/hazards/contaminated-land/is-land-contaminated/hazardous-activities-industries-list.pdf

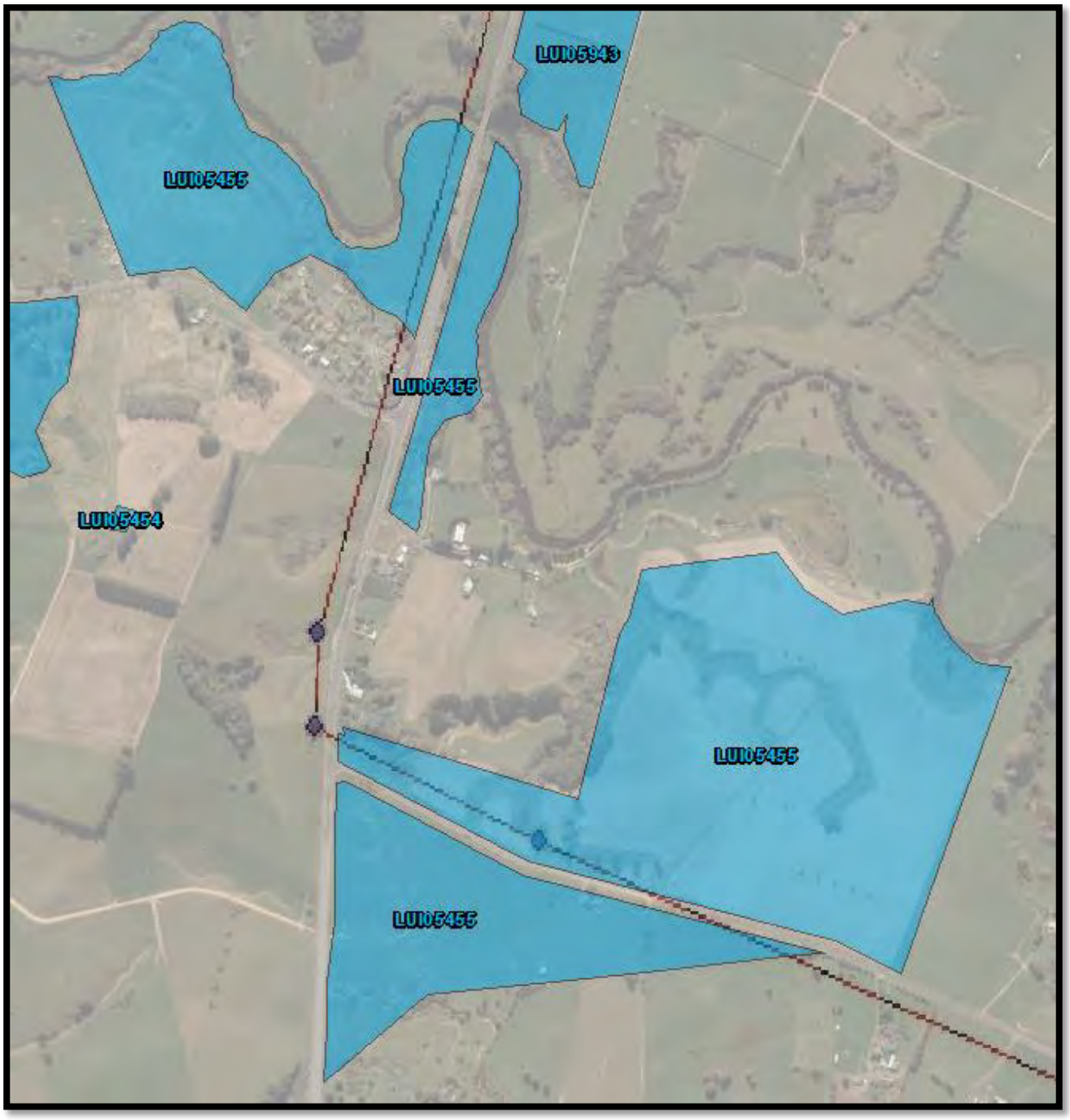
The Pipeline: I can confirm that several properties within your area of interest do appear on the Land Use Information Register, as indicated by the areas shaded blue on the maps (8) below. The map snips below are taken in order, starting from the northwest corner to the southeast corner of the drawn line.











The areas shaded blue in the map snips (8) above appear on the Land Use Information Register with the details provided in the table below.

WRC REF	Site name	Classification	HAIL Activity	Period	Comments / Records held
LUI00175	Bunnings / Benchmark / Smyth Bros and Boryer Ltd / Timber Treatments Ltd	Verified HAIL - Limited Sampling	A18. Wood treatment or preservation or bulk storage of treated timber A17. Storage tanks or drums for fuel, chemicals or liquid waste	Ongoing Past	Tank removal validation report
LUI02771	Former Borough Tip	Managed	G3. Landfill sites	Past	File no. 60 66 68A
LUI02773	Te Awamutu closed landfill	Managed	G3. Landfill sites	Past	
LUI02799	Fonterra Cooperative Group (Dairy Processing)	Verified HAIL - No Sampling	A17. Storage tanks or drums for fuel, chemicals or liquid waste	Ongoing	
LUI02961	Hodgson (Lewis) Motor Services	Managed	A17. Storage tanks or drums for fuel, chemicals or liquid waste F4. Motor vehicle workshops	Ongoing Ongoing	Site Management Plan etc
LUI03412	Osborne's Transport	Verified HAIL - Limited Sampling	F8. Transport depots or yards A17. Storage tanks or drums for fuel, chemicals or liquid waste	Ongoing Past	Tank pull report
LUI03856	Waste Management Transfer and Recycling Station	Verified HAIL - No Sampling	G6. Waste recycling or waste or wastewater treatment D5. Engineering workshops with metal fabrication F5. Port activities including dry docks or vessel maintenance	Ongoing Ongoing Past	
LUI03857	Tony Cook Groundspreaders	Verified HAIL - No Sampling	A6. Fertiliser manufacture or bulk storage	Ongoing	
LUI03888	Te Awamutu Smallbore Pistol Club	Verified HAIL - No Sampling	C2. Gun clubs or rifle ranges	Ongoing	
LUI04141	Blackwood Tractors	Verified HAIL - No Sampling	F4. Motor vehicle workshops	Ongoing	
LUI04143	Ravensdown Te Awamutu Store	Verified HAIL - No Sampling	A6. Fertiliser manufacture or bulk storage	Ongoing	
LUI04725	Kihikihi Nursery	Verified HAIL - No Sampling	A10. Persistent pesticide bulk storage or use	Ongoing	
LUI04749	8 Whitmore Street	Unverified HAIL	A10. Persistent pesticide bulk storage or use	Ongoing	
LUI05455	Agresearch Tokanui Research farm	Verified HAIL - No Sampling	A8. Livestock dip or spray race operations A17. Storage tanks or drums for fuel, chemicals or liquid waste	Ongoing Ongoing	
LUI05943	Growing Spectrum Tree Nursery	Verified HAIL - No Sampling	A10. Persistent pesticide bulk storage or use	Ongoing	
LUI07759	Rosetown Bobcats Limited	Unverified HAIL	F4. Motor vehicle workshops	Ongoing	
LUI10101	Te Awamutu Railway Yards and Railway Corridor/Transrail/NZ Rail	Verified HAIL - Limited Sampling	F6. Railway yards incl. workshops, refuelling or maintenance areas	Ongoing	Contaminated Land Assessment

You are welcome to request to review the files and/or documents noted in the table above. Please note that some are older records which may require a visit which would need to be organised in advance.

Any sites listed in the table without any comments are included on the register for land use information only; we do not hold soil investigation reports regarding the presence or otherwise of hazardous substances in the soil.

District Councils: Our records are not integrated with those of territorial authorities, so it would also be worth contacting the Waipa and Otorohanga District Councils to complete your audit of Council records if

you have not already done so. In general, information about known contaminated land will be included on a property LIM produced by the territorial authority.

Rural Land Considerations: Examples of sites that are "more likely than not" to have soil contamination (HAIL sites) include timber treatment activities, service stations and/or petroleum storage, panel beaters, spray painters, etc. Whilst pastoral farming is not included on this list, typical farming activities of horticulture, sheep dipping, chemical storage, petroleum storage and workshops are; but are more difficult to identify and may not be as well represented on the Land Use Information Register. Therefore, individuals interested in pastoral land may be interested in completing further investigations in accordance with Ministry for the Environment Guidelines prior to land purchase and/or development.

Additional Information: Please note that:

- Significant use of lead-based paint on buildings can, in some cases, pose a contamination risk; the use of lead-based paint is not recorded on the Land Use Information Register.
- Buildings in deteriorated or derelict condition which contain asbestos can result in asbestos fibres in soil; the use of asbestos in building materials is not recorded on the Land Use Information Register.
- The long term, frequent use of superphosphate fertilisers can potentially result in elevated levels of cadmium in soil; the use of superphosphate fertiliser is not recorded on the Land Use Information Register.
- We are not currently resourced to fully incorporate historic aerial photographs in our region-wide assessment of HAIL activities. A significant proportion of the Crown historical aerial image archive for the Waikato region is available to view free of charge at http://retrolens.nz/. We recommend this resource is consulted for any HAIL assessment.
- Due to the large volume of enquiries being received, we may not be able to respond to your enquiry as quickly as previously. We are resourced to meet 20 day response times as per LGOIMA, but endeavour to respond more quickly when workload permits. If your enquiry is urgent, please mark it as such and we will do our best to assist.

Please feel free to contact me if you have any further queries on this matter. For any new enquiries or requests for information please continue to use the Request for Service form for 'Contaminated Land/HAIL.'

Regards,

Louisa Icke | Contaminated Lands Advisor | Science and Strategy

Waikato Regional Council
P: 07 859 0510
Private Bag 3038, Waikato Mail Centre, Hamilton 3240
Please consider the environment before printing this email

Appendix C

Historical Aerial Photographs

Approximate Site Location

Approximate Site Location

Approximate Site Location

Approximate Site Location

Approximate Site Location

Approximate Site Location

Approximate Site Location

Appendix D

Site Photos

		PHOTOGRAPHIC LOG
Client Name New Zealand Motor Caravan Association	Site Location Te Awamutu Closed Landfill	Project No. 4-52921.24

Photo No. 1	Date: 14/7/21
Description. Site – Photo taken from Northern end looking toward Te Awamutu in the south.	

Photo No. 2	Date: 14/07/21
Description: Mangapiko Stream bordering the site on the east side	

Photo No. 3	Date: 14/07/21	
Description: Sewer manhole on southern end of site.		

Photo No. 4	Date: 14/07/21	
Description: Typical soils – dark brown silty topsoils, lighter brown silty clay capping materials		

Appendix E

Laboratory Certificates

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

T 0508 HILL LAB (44 555 22)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	2656950 SPv1
Contact:	Rachael Forrest	**Date Received:**	14-Jul-2021
	C/- WSP New Zealand Limited	**Date Reported:**	19-Jul-2021
	Private Bag 3057	**Quote No:**	82748
	Hamilton 3240	**Order No:**	
		Client Reference:	NZMCA Te Awamutu
		Submitted By:	Rachael Forrest

Sample Type: Soil

		Sample Name:	TA01 - 0.01 14-Jul-2021	TA01 - 0.5 14-Jul-2021	TA02 - 0.1 14-Jul-2021	TA03 - 0.01 14-Jul-2021	TA03 - 0.7 14-Jul-2021
		Lab Number:	2656950.1	2656950.2	2656950.3	2656950.4	2656950.5
Heavy Metals with Mercury, Screen Level							
Total Recoverable Arsenic	mg/kg dry wt		38	13	5	26	6
Total Recoverable Cadmium	mg/kg dry wt		0.48	0.19	0.27	0.46	< 0.10
Total Recoverable Chromium	mg/kg dry wt		13	38	12	10	8
Total Recoverable Copper	mg/kg dry wt		15	37	21	15	24
Total Recoverable Lead	mg/kg dry wt		29	18.7	29	15.1	15.4
Total Recoverable Mercury	mg/kg dry wt		0.15	< 0.10	< 0.10	0.14	< 0.10
Total Recoverable Nickel	mg/kg dry wt		6	63	11	6	8
Total Recoverable Zinc	mg/kg dry wt		74	89	64	58	33

		Sample Name:	TA04 - 0.01 14-Jul-2021	TA04 - 0.7 14-Jul-2021	TA05 - 0.01 14-Jul-2021	TA05 - 0.7 14-Jul-2021	TA06 - 0.01 14-Jul-2021
		Lab Number:	2656950.6	2656950.7	2656950.8	2656950.9	2656950.10
Heavy Metals with Mercury, Screen Level							
Total Recoverable Arsenic	mg/kg dry wt		7	8	4	8	5
Total Recoverable Cadmium	mg/kg dry wt		0.28	0.15	0.39	< 0.10	0.36
Total Recoverable Chromium	mg/kg dry wt		10	10	8	10	9
Total Recoverable Copper	mg/kg dry wt		19	19	12	14	12
Total Recoverable Lead	mg/kg dry wt		22	18.9	11.0	9.9	10.0
Total Recoverable Mercury	mg/kg dry wt		0.11	< 0.10	< 0.10	0.17	0.11
Total Recoverable Nickel	mg/kg dry wt		6	7	6	4	5
Total Recoverable Zinc	mg/kg dry wt		68	52	49	39	49

		Sample Name:	TA06 - 0.5 14-Jul-2021	TA07 - 0.01 14-Jul-2021	TA07 - 0.3 14-Jul-2021	TA08 - 0.01 14-Jul-2021	TA08 - 0.7 14-Jul-2021
		Lab Number:	2656950.11	2656950.12	2656950.13	2656950.14	2656950.15
Heavy Metals with Mercury, Screen Level							
Total Recoverable Arsenic	mg/kg dry wt		7	5	8	7	9
Total Recoverable Cadmium	mg/kg dry wt		0.24	0.47	0.16	0.44	0.26
Total Recoverable Chromium	mg/kg dry wt		23	8	10	10	10
Total Recoverable Copper	mg/kg dry wt		27	17	20	23	29
Total Recoverable Lead	mg/kg dry wt		95	8.8	20	64	78
Total Recoverable Mercury	mg/kg dry wt		< 0.10	0.16	< 0.10	0.13	0.17
Total Recoverable Nickel	mg/kg dry wt		32	4	8	9	7
Total Recoverable Zinc	mg/kg dry wt		87	49	52	104	104

Sample Type: Soil						
Sample Name:		TA09 - 0.01 14-Jul-2021	TA09 - 0.3 14-Jul-2021	TA10 - 0.01 14-Jul-2021	TA10 - 0.7 14-Jul-2021	TA11 - 0.01 14-Jul-2021
Lab Number:		2656950.16	2656950.17	2656950.18	2656950.19	2656950.20
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	6	4	7	6
Total Recoverable Cadmium	mg/kg dry wt	0.32	0.21	0.37	< 0.10	0.54
Total Recoverable Chromium	mg/kg dry wt	7	12	7	7	10
Total Recoverable Copper	mg/kg dry wt	12	22	11	10	19
Total Recoverable Lead	mg/kg dry wt	9.7	47	9.9	17.1	240
Total Recoverable Mercury	mg/kg dry wt	0.14	0.13	0.12	< 0.10	0.19
Total Recoverable Nickel	mg/kg dry wt	4	10	3	4	6
Total Recoverable Zinc	mg/kg dry wt	44	93	51	21	121

Sample Name:		TA11 - 0.7 14-Jul-2021	QA01 14-Jul-2021			
Lab Number:		2656950.21	2656950.22			
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	8	5	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.36	-	-	-
Total Recoverable Chromium	mg/kg dry wt	9	9	-	-	-
Total Recoverable Copper	mg/kg dry wt	10	11	-	-	-
Total Recoverable Lead	mg/kg dry wt	10.5	9.9	-	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	-	-	-
Total Recoverable Nickel	mg/kg dry wt	4	6	-	-	-
Total Recoverable Zinc	mg/kg dry wt	35	46	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-22
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-22

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed on 19-Jul-2021. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

Document Set ID: 10830540
Version: 1, Version Date: 09/06/2022

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
101C Waterloo Road
Hornby
Christchurch 8042 New Zealand

T 0508 HILL LAB (44 555 22)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Certificate of Analysis

Client:	WSP New Zealand Limited	**Lab No:**	2657366	A2Pv1
Contact:	Rachael Forrest	**Date Received:**	15-Jul-2021	
	C/- WSP New Zealand Limited	**Date Reported:**	20-Jul-2021	
	Private Bag 3057	**Quote No:**	82748	
	Hamilton 3240	**Order No:**		
		Client Reference:	NZMCA Te Awamutu	
		Submitted By:	Rachael Forrest	

Sample Type: Soil

Sample Name:		TA01 - 0.01 14-Jul-2021	TA01 - 0.5 14-Jul-2021	TA02 - 0.1 14-Jul-2021	TA03 - 0.01 14-Jul-2021	TA03 - 0.7 14-Jul-2021
Lab Number:		2657366.1	2657366.2	2657366.3	2657366.4	2657366.5
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	575.2	670.2	901.9	536.7	583.0
Dry Weight	g	393.2	584.3	797.4	387.8	436.6
Moisture	%	32	13	12	28	25
Sample Fraction >10mm	g dry wt	< 0.1	79.9	255.3	4.8	48.8
Sample Fraction <10mm to >2mm	g dry wt	35.7	309.4	309.5	82.3	108.0
Sample Fraction <2mm	g dry wt	356.9	194.6	232.4	300.4	279.3
<2mm Subsample Weight	g dry wt	56.3	57.3	56.1	53.9	54.0
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		TA04 - 0.01 14-Jul-2021	TA04 - 0.7 14-Jul-2021	TA05 - 0.01 14-Jul-2021	TA05 - 0.7 14-Jul-2021	TA06 - 0.01 14-Jul-2021
Lab Number:		2657366.6	2657366.7	2657366.8	2657366.9	2657366.10
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	621.7	600.7	609.0	613.5	600.0
Dry Weight	g	460.6	451.0	452.7	434.7	449.6
Moisture	%	26	25	26	29	25

This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Soil						
Sample Name:		TA04 - 0.01 14-Jul-2021	TA04 - 0.7 14-Jul-2021	TA05 - 0.01 14-Jul-2021	TA05 - 0.7 14-Jul-2021	TA06 - 0.01 14-Jul-2021
Lab Number:		2657366.6	2657366.7	2657366.8	2657366.9	2657366.10
Sample Fraction >10mm	g dry wt	8.1	15.5	8.4	5.3	9.7
Sample Fraction <10mm to >2mm	g dry wt	109.4	88.2	67.0	88.6	87.8
Sample Fraction <2mm	g dry wt	342.9	346.6	376.8	340.4	351.7
<2mm Subsample Weight	g dry wt	57.6	54.2	54.8	56.8	55.0
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		TA06 - 0.5 14-Jul-2021	TA07 - 0.01 14-Jul-2021	TA07 - 0.3 14-Jul-2021	TA08 - 0.01 14-Jul-2021	TA08 - 0.7 14-Jul-2021
Lab Number:		2657366.11	2657366.12	2657366.13	2657366.14	2657366.15
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	748.4	638.4	572.7	683.5	670.2
Dry Weight	g	694.0	445.5	482.0	494.2	502.6
Moisture	%	7	30	16	28	25
Sample Fraction >10mm	g dry wt	248.7	3.5	44.8	49.6	18.1
Sample Fraction <10mm to >2mm	g dry wt	285.7	63.7	196.4	91.5	128.6
Sample Fraction <2mm	g dry wt	159.1	377.1	239.9	352.4	355.2
<2mm Subsample Weight	g dry wt	56.4	54.9	58.0	50.9	56.6
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		TA09 - 0.01 14-Jul-2021	TA09 - 0.3 14-Jul-2021	TA10 - 0.01 14-Jul-2021	TA10 - 0.7 14-Jul-2021	TA11 - 0.01 14-Jul-2021
Lab Number:		2657366.16	2657366.17	2657366.18	2657366.19	2657366.20
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	637.6	643.1	596.5	593.8	566.6
Dry Weight	g	465.6	552.1	421.9	423.2	377.6
Moisture	%	27	14	29	29	33
Sample Fraction >10mm	g dry wt	10.7	178.9	12.0	< 0.1	1.6
Sample Fraction <10mm to >2mm	g dry wt	81.0	143.0	99.3	26.3	55.5
Sample Fraction <2mm	g dry wt	372.8	229.7	309.3	395.7	319.7
<2mm Subsample Weight	g dry wt	50.7	57.2	56.3	53.7	50.5

Sample Type: Soil						
Sample Name:		TA09 - 0.01 14-Jul-2021	TA09 - 0.3 14-Jul-2021	TA10 - 0.01 14-Jul-2021	TA10 - 0.7 14-Jul-2021	TA11 - 0.01 14-Jul-2021
Lab Number:		2657366.16	2657366.17	2657366.18	2657366.19	2657366.20
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		TA11 - 0.7 14-Jul-2021				
Lab Number:		2657366.21				
Asbestos Presence / Absence		Asbestos NOT detected.	-	-	-	-
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	-	-	-	-
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	-	-	-	-
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	-	-	-	-
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	-	-	-	-
As Received Weight	g	576.1	-	-	-	-
Dry Weight	g	415.6	-	-	-	-
Moisture	%	28	-	-	-	-
Sample Fraction >10mm	g dry wt	< 0.1	-	-	-	-
Sample Fraction <10mm to >2mm	g dry wt	53.7	-	-	-	-
Sample Fraction <2mm	g dry wt	361.0	-	-	-	-
<2mm Subsample Weight	g dry wt	54.5	-	-	-	-
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	-	-	-	-
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	-	-	-	-
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	-	-	-	-

Glossary of Terms
• Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
https://www.branz.co.nz/asbestos

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

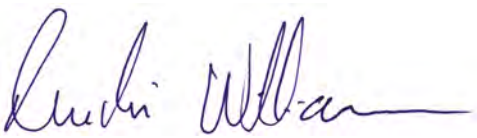
Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Wgt of Asbestos as Asbestos Fines in <10mm >2mm Fraction*	Measurement on analytical balance, from the <10mm >2mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-21
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-21
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-21
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-21
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-21
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-21
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-21
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-21
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-21
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-21
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-21
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-21
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-21
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-21
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-21
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-21

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 19-Jul-2021 and 20-Jul-2021. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.



Rhodri Williams BSc (Hons)
Technical Manager - Asbestos

Appendix F

Table of results

Table F1
2-9Z696.00 NZMCA Te Awamutu Closed Landfill Pirongia Road Te Awamutu
Analytical Soil Results - Heavy Metals

Location			TA01		TA02	TA03			TA04		TA 05		TA06	
WSP Sample Name		HH Assessment Criteria[2] Recreational	TA01 - 0.01	TA01 - 0.5	TA02 - 0.1	TA03 - 0.01	QA01	TA03 - 0.7	TA04 - 0.01	TA04 - 0.7	TA05 - 0.01	TA05 - 0.7	TA06 - 0.01	TA06 - 0.5
Laboratory Sample Number	Background Concentrations[1]		2656950.1	2656950.2	2656950.3	2656950.4	2656950.22	2656950.5	2656950.6	2656950.7	2656950.8	2656950.9	2656950.10	2656950.11
Sample Depth			0.01	0.5	0.1	0.0	0.01	0.7	0.01	0.7	0.01	0.7	0.01	0.5
Geological Unit			Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt
Sampling Date			14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Heavy Metals (mg/kg)														
Arsenic	6.8	80	**<u>38</u>**	**<u>13</u>**	5	**<u>28</u>**	5	6	**<u>7</u>**	**<u>8</u>**	4	**<u>8</u>**	5	**<u>7</u>**
Cadmium	0.22	400	**<u>0.48</u>**	0.19	**<u>0.27</u>**	**<u>0.46</u>**	**<u>0.36</u>**	< 0.10	**<u>0.26</u>**	0.15	**<u>0.39</u>**	< 0.10	**<u>0.36</u>**	**<u>0.24</u>**
Chromium (III+VI)	30	>10,000	13	**<u>36</u>**	12	10	9	8	10	10	8	10	9	23
Copper	25	>10,000	15	**<u>97</u>**	21	15	11	24	19	19	12	14	12	**<u>27</u>**
Lead	20	880	**<u>29</u>**	18.7	**<u>29</u>**	15.1	9.9	15.4	**<u>22</u>**	18.9	11	9.9	10	**<u>96</u>**
Mercury	0.23	1,800	0.15	< 0.10	< 0.10	0.14	< 0.10	< 0.10	0.11	< 0.10	< 0.10	0.17	0.11	< 0.10
Nickel	7.6	1200[3]	6	**<u>69</u>**	**<u>11</u>**	6	6	**<u>8</u>**	6	7	6	4	5	**<u>32</u>**
Zinc	53	30,000[3]	**<u>74</u>**	**<u>89</u>**	**<u>64</u>**	**<u>58</u>**	46	33	**<u>68</u>**	52	49	39	49	**<u>87</u>**

Location			TA07 - 0.01		TA08		TA09		TA10		TA11	
WSP Sample Name		HH Assessment Criteria[2] Recreational	TA07 - 0.01	TA07 - 0.3	TA08 - 0.01	TA08 - 0.7	TA09 - 0.01	TA09 - 0.3	TA10 - 0.01	TA10 - 0.7	TA11 - 0.01	TA11 - 0.7
Laboratory Sample Number	Background Concentrations[1]		2656950.12	2656950.13	2656950.14	2656950.15	2656950.16	2656950.17	2656950.18	2656950.19	2656950.20	2656950.21
Sample Depth			0.0	0.3	0.0	0.7	0.0	0.3	0.0	0.7	0.0	0.7
Geological Unit			Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt	Sandy silt
Sampling Date			14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Heavy Metals (mg/kg)												
Arsenic	6.8	80	5	**<u>8</u>**	**<u>7</u>**	**<u>9</u>**	5	6	4	**<u>7</u>**	6	**<u>8</u>**
Cadmium	0.22	400	**<u>0.47</u>**	0.16	**<u>0.44</u>**	**<u>0.26</u>**	**<u>0.32</u>**	0.21	**<u>0.37</u>**	< 0.10	**<u>0.54</u>**	< 0.10
Chromium (III+VI)	30	>10,000	8	10	10	10	7	12	7	7	10	9
Copper	25	>10,000	17	20	23	**<u>29</u>**	12	22	11	10	19	10
Lead	20	880	8.8	20	**<u>64</u>**	**<u>78</u>**	9.7	**<u>47</u>**	9.9	17.1	**<u>240</u>**	10.5
Mercury	0.23	1,800	0.16	< 0.10	0.13	0.17	0.14	0.13	0.12	< 0.10	0.19	< 0.10
Nickel	7.6	1200[3]	4	**<u>8</u>**	**<u>9</u>**	7	4	**<u>10</u>**	3	4	6	4
Zinc	53	30000[3]	49	52	**<u>104</u>**	**<u>104</u>**	44	**<u>93</u>**	51	21	**<u>121</u>**	35

Key:

<u>Bold + Underlined</u> Exceeds Background Concentrations

Exceeds the Human Health Criteria for a recreational land use

Notes:

1. Waikato Regional Council https://www.waikatoregion.govt.nz/Services/Regional-services/Waste-hazardous-substances-and-contaminated-sites/Contaminated-sites/Natural-background-concentrations/
2. MfE (2011) Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health
3. NEPC (2011) Schedule B1: Guideline on Investigation Levels for Soil and Groundwater, Table 1A(1)

Table G2

2-9Z695.00 - NZMCA Closed Landfill Te Awamutu - Paterangi Road, Te Awamutu

Rekative Percentage Difference

TA03 - 0.01	QA01	RPD%
26	5	135.48
0.46	**0.36**	24.39
10	9	10.53
15	11	30.77
15.1	9.9	41.60
0.14	0.1	33.33
6	6	0.00
58	46	23.08

APPENDIX D: MEMBERSHIP CODE OF CONDUCT

ENVIRONMENTAL CARE CODE

Driving towards a sustainable future

- Empty toilet and waste tanks in approved dump stations. *Holes must not be dug in the ground*
- Take care with plants and animals
- Keep your vehicle to formed tracks
- Keep your campsite tidy. Remove all rubbish and take it with you when you leave
- Leave no extra equipment around outside your vehicle, although you may use your awning and generator
- Generators may be used from 8am to 8pm only (consider your neighbours by limiting the use thereof)
- Observe fire restrictions. Use only built fireplaces and portable BBQs if you wish to cook outside
- Be aware, respect and value any spiritual, historical or scenic value in areas you visit
- You are requested to report environment abuse and/or improper use to the landowner or local DOC office.

sustainable BUSINESS NETWORK MEMBER

MEMBERSHIP CODE OF CONDUCT

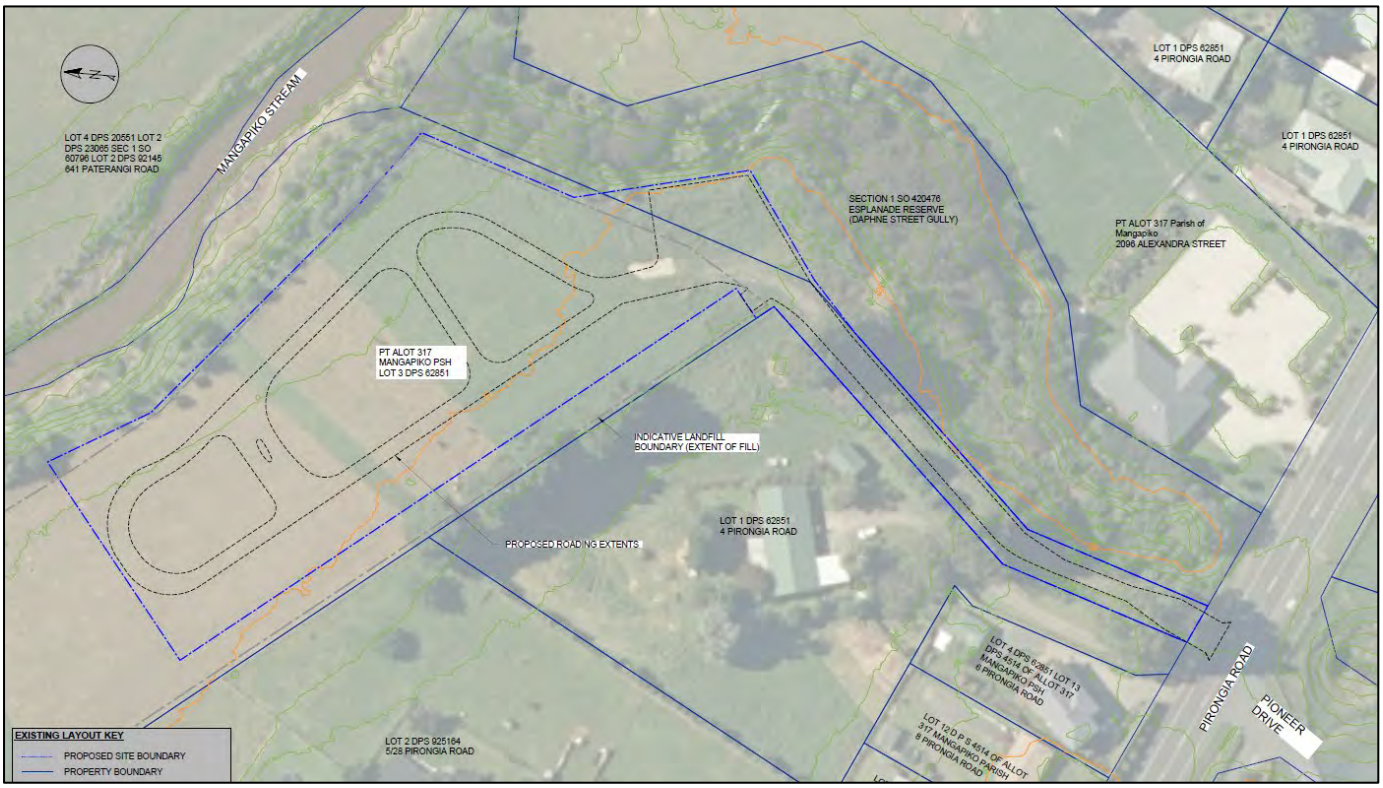
- Treat others with respect and courtesy wherever you are
- Be a considerate and safe driver. Obey NZ road safety rules, and pull over to let others pass
- Avoid causing visual or noise pollution, e.g. only use generators, stereos etc at appropriate times during the day, and do not hang washing out in places that may offend others
- Park your vehicle with safety in mind, in case of fire or flooding. At least 3m from other vehicles or inhabited buildings is recommended
- Comply with local animal control bylaws. Keep your pets under control and pick up after them
- Be discreet when choosing an overnight parking spot – consider how the surrounding neighbours may react
- Respect restrictions - do not overstay your welcome. If asked to move on, do so gracefully
- Offer to pay for facilities used. Water, power, waste disposal, road and ground maintenance all cost money
- Do not demand discounts or special treatment using the Association name
- Abide by NZMCA regulations.

APPENDIX E: TRAFFIC IMPACT ASSESSMENT

New Zealand Motor Caravan Association

Proposed Motor Caravan Park
Te Awamutu

Simple Integrated Transport Assessment



Prepared by: Ray Talbot

Date: March 2021

Contents

This report has been exclusively prepared for the use of New Zealand Motor Caravan Association in relation to Transportation Assessment for the proposed activity at Pirongia Road in Te Awamutu. The findings in this report are based on and subject to information available at the time and site visit observations. Information pertaining to Ray Talbot and his qualifications as a subject matter expert advisor and experience working in the industry can be found on https://www.linkedin.com/in/raytalbot-24b83320/ .

Ray Tablot is a qualified engineer with over 45 years of experience working in the construction industry. He graduated from Liverpool John Moores University with a Master of Science in Water Energy and Environment. He was issued with IENG AMICE from the institution of Civil Engineers in 1985. He then obtained a Diploma in Pollution Control from Open University Business School (OUBS) in 1999 and Diploma is Coastal Engineering, Urban Wastewater, River Engineering and Pipeline Services from Chartered Institution of Environmental Management in 2002. Ray obtained his Master of Science in 2004 and was part of New Zealand Transport Agency's Cost Estimate Peer Review Panel. He achieved Geometry design for roads from NZ institute of Highway Technology in 2008, CP ENG MIPENZ from Engineering NZ in 2015, STMS Level 2 - Level 3 Temporary Traffic Management at Road Works Sites Crash Reduction and Road Safety Audits from NZTA. He has been employed by Jacobs working on a number of Roading and Construction projects for the past 4 years.

1. Introduction

The of this report is to provide a simple Integrated Traffic Assessment (TIA) in support of New Zealand Motor Caravan Association Inc. (NZMCA) resource consent application to operate a motor caravan park ("the park") in Te Awamutu.

The NZMCA have entered a lease agreement with Waipā District Council (WDC) and the development of this park is required to meet comply with the requirements of the Resource Management Act 1991 and the Waipā District Plan.

2. Background Information

The Park will have capacity to accommodate a maximum of 75 motor homes and caravans (including tow vehicles). Members can stay for a maximum of 10 days in a 30-day period. Similar NZMCA parks located in the rural zone around the country typically experience an average occupancy rate of 20 – 30% most of the year.

3. Site Location

3.1. Locality

The site is located at Pirongia Road in Te Awamutu and owned by Waipā District as shown in Figure 1 below. The legal description of the land parcel is Part Allot 317 Mangapiko PSH Lot 3 DPS 62851. It is a landfill site which have been closed for several years now. NZMCA will be leasing approximately 0.83ha of the site with an additional 5.5m driveway access from Pirongia Road which has an area of approximately 700m^2. This total area of approximately 8,900 m^2 represents 23% of the 3.945ha of land parcel Part Allot 317 Mangapiko PSH Lot 3 DPS 62851.

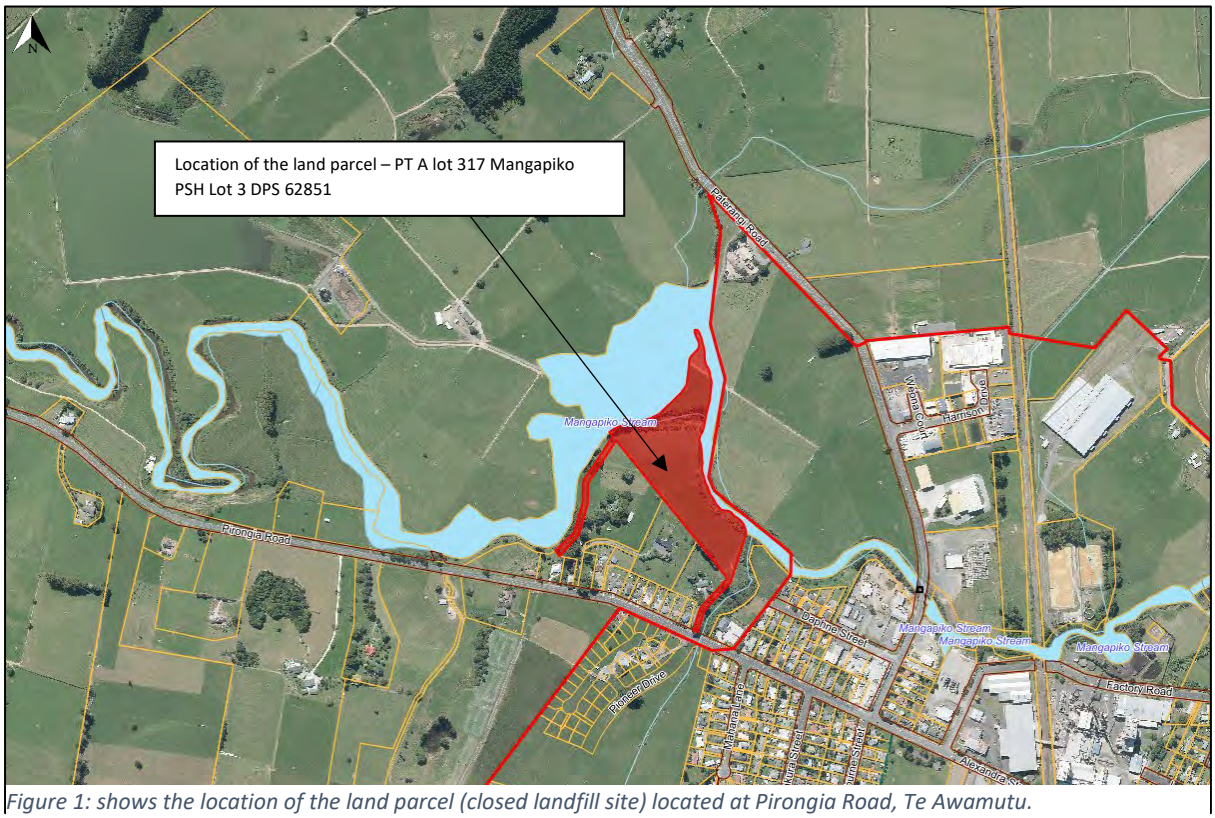


Figure 1: shows the location of the land parcel (closed landfill site) located at Pirongia Road, Te Awamutu.

Figure 2: shows the extent of the leased area for the NZMCA park within the land parcel.

The park will be located on a site zoned rural under the WDP with sites located to the south of the park consists of rural dwellings with a new subdivision development progressing further south of Pirongia Road. To the north of the site is the Mangapiko stream and the north landfill. A bush reserve is located immediately east of the site beyond which is the industrial zone.

The existing driveway to the site will be used to access the park. This access will be upgraded to WDC current standards.

4. Existing Transportation Environment

4.1. Existing Road Network

Pirongia Road is classified as a Primary Collector Road in accordance with NZTA RTS-06 (2001) Guidelines for Visibility at Driveways. This is a 11m wide, two-way chip sealed carriageway consisting of two 3.5m traffic lanes with a two 2m wide shoulders.

The new subdivision development located opposite the park driveway (and off Pirongia Road) will be accessed via Pioneer Drive.

4.2. Traffic Volumes

The estimated traffic volume for the surrounding road networks is listed in table 1 below. Pirongia Road coverts to Alexandra Street 60m to east of the park access.

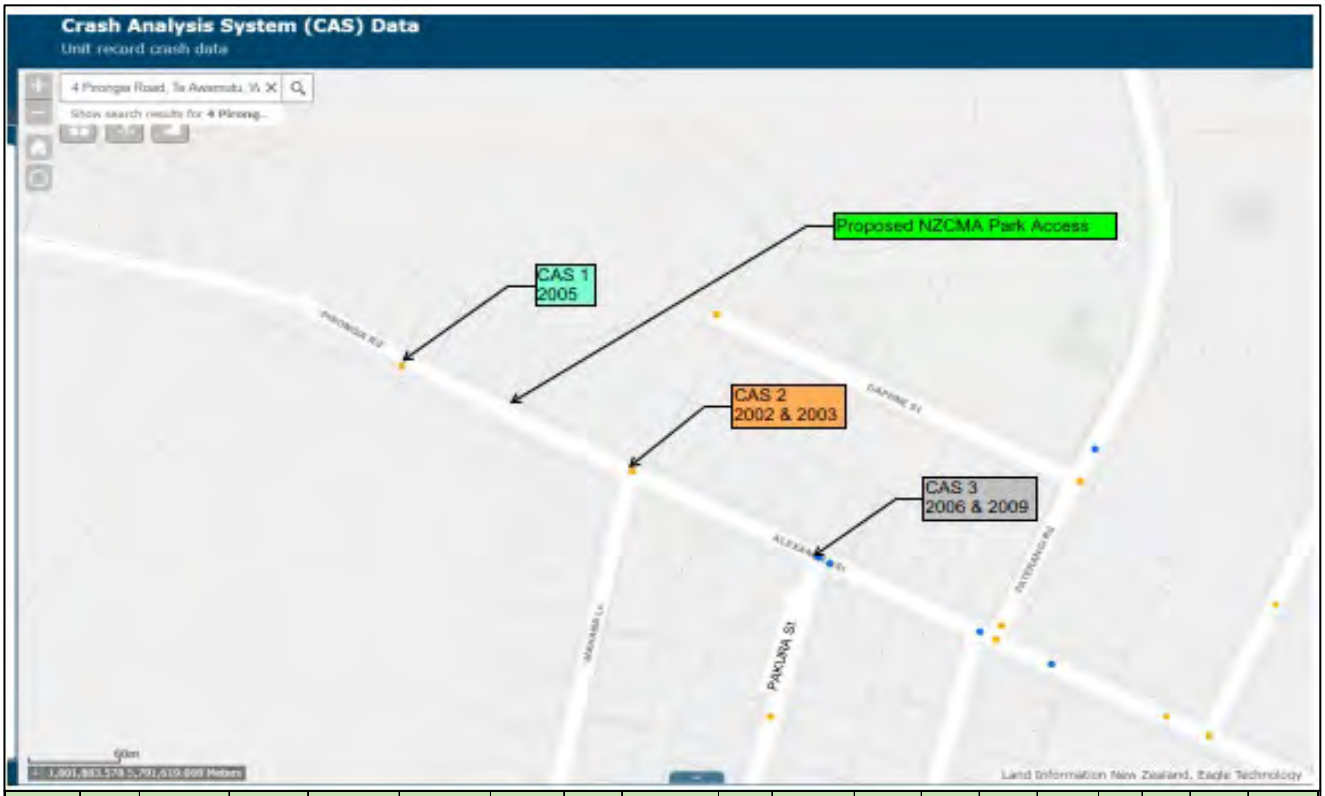
Table 1: Road Traffic Volumes

Road Name	Classification	ADT	HCV %
Pirongia Road	Primary Collector	2,165 vpd (estimate) 15/06/2020	*10.2%*
Alexandra Street	Primary Collector	2,800 vpd (estimate) 15/06/2020	5.5%

(data source: mobile roads)

4.3. Crash Data

Crash data has been sourced from the NZTA CAS system for the last 20 years (refer to Figure 3 below). Analysis of the data shows there have been 5 crashes in total from 2002 to 2021, all non-injury crashes. The crash data does not show any clusters of crashes. This report does not include an analysis of the crashes.



CAS Location	Car Station Wagon	Crash Direction Description	Crash Financial Year	Crash Location 1	Crash Location 2	Crash Severity	Crash Year	Direction Role Description	Fence	Flat Hill	Light	Minor Injury Count	Street Light	Traffic Control	Tree	Truck	Van Or Utility	Weather
1	0	West	2004/2005	PIRONGIA ROAD	MAHANA LANE	Non-Injury Crash	2005	West	0	Flat	Bright sun	0	Null	Unknown	0	0	1	Fine
2	1	Null	2002/2003	ALEXANDRA STREET	MAHANA LANE	Non-Injury Crash	2002	East	0	Flat	Overcast	0	Off	Give way	0	1	0	Light rain
	2	Null	2003/2004	ALEXANDRA STREET	MAHANA LANE	Non-Injury Crash	2003	West	0	Flat	Dark	0	On	Nil	0	0	0	Fine
3	1	Null	2006/2007	PAKURA STREET	ALEXANDRA STREET	Non-Injury Crash	2006	East	1	Flat	Dark	0	On	Nil	1	0	0	Light rain
	1	Null	2008/2009	PAKURA STREET	ALEXANDRA STREET	Non-Injury Crash	2009	West	1	Hill Road	Dark	0	On	Nil	1	0	0	Fine

Figure 3: NZTA CAS Data

5. Proposed Development

5.1. Site Layout

Site plan for the park can be found in Appendix A. Access to the site will have sufficient widening to cater for passage of two vehicles at the entry point. The site access also has provision for vehicles to line up in a queue should a need arise.

5.2. Access

The existing accessway to the site is located off Pirongia Road and to the east of 4 Pirongia Road. The park will be accessed utilising the existing Commercial/Industrial Vehicle Crossing with concrete and mountable kerb and channel (see Figure 4). This crossing was utilised by the Pioneer Drive

Subdivision Developer for the installation of the Wastewater Pipe and Culvert works in 2020 and can accommodate commercial vehicle axle loading. Overall, safe and efficient access can be provided to the site.

Figure 4: Concrete Driveway Access to the Site.

An existing granular driveway extends approximately 21m from the concrete footway crossing to existing farm gate that will be removed and replaced with a new gate. This granular driveway extends from Pirongia Road up to the site and will require some minor regrading and improvement with some additional granular basecourse material. The access to the site will be 7.5m wide with a gate setback 18m from the road boundary. The main entrance gate will be approximately 4.3m wide and allow for one vehicle movement at any one time.

Figure 5: Existing driveway going into the site.

5.3. Pedestrians

The park is unlikely to generate a significant increase in pedestrian numbers. The existing footpath network located on either side of Pirongia Road provides adequate pedestrian link to the surrounding network.

5.4. Parking

There is no specific provision for a motor caravan park in the rural zone specified in the WDP. The most relevant parking specification for the proposed land-use at the site is 1 car park per every three persons to be accommodated with a minimum of two spaces per dwelling and without any loading requirements. However, as the proposal is catering for motor caravan vehicles such as self-contained motorhomes and caravans, no formal parking spaces will be required to cater for members parking. The site will also provide sufficient grassed areas for parking and communal purposes. The provision of formal car parking bays is therefore not required to support this land-use activity. The WDP bicycle parking requirements do not apply to rural zone. However, it is noted that visitors with bicycle will have their own bike racks fitted to their vehicles.

In addition to the above, the proposed development is not expected to affect roadside parking. Motorhomes and caravans will have parking available onsite and within the site boundaries. A passing bay will be provided at the entrance and exit point of the driveway for vehicles waiting to enter and exit the site.

5.5. Internal circulation and operation

The site will contain a metalled ring road for vehicles to easily access parking bays and use the dump station onsite (see Appendix A for details). The parking bays around the peripheral of the park will be gravelled with some open space landscaped areas in between. The parking area located in the middle of the site will remain grassed with landscape plating around it. No road parking is proposed within the site, but it is expected to have efficient internal operations given the activity.

The ring road is expected to be 3.5m wide with areas between 3.5m to 8.7m wide within the loops. Traffic will move in a clockwise direction within the ring road and signage will be available to inform members.

In general, the site traffic operations are expected to be efficient and appropriate for the activity.

5.6. Driveway Visibility Sight Lines

The sightline visibility has been assessed in accordance with Austroads RTS 6, as required by Waikato Regional Infrastructure Technical Specification. RTS 6 has 3 frontage road classifications: local, collector and arterial roads. The classification of arterial roads has been used ensure that an adequate factor of safety has been included in the visibility assessment. Pirongia Road is a primary collector road with a mandatory speed limit of 50km/h and a 60 km/h operating speed has been used in the assessment.

The NZMCA Park driveway has good visibility sight lines of 115m in both directions from the driveway access (see Appendix B).

6. Assessment of Transport Effects

The site can accommodate a maximum of 75 self-contained motorhomes and caravans, it is only expected to reach full capacity over short periods during peak summer season such as the Christmas and New Year Holiday period and during large regional events such as field days.

Generally, peak occupancy rates at the site are likely to be 80 – 90% over the summer months with much lower rates expected over the winter period.

6.1. Trip Generation

Opus International Consultants (now WSP) undertook a study to assess the trip generation of four NZMCA motorcaravan parks. Two of the sites surveyed were smaller and located in rural areas. The sites surveyed were selected to represent a range of sizes, facilities, and locations, in order to reflect the variability across NZMCA sites. Surveys were carried out at the known busiest time of year to understand the upper bound of traffic generation, though it should be noted that this reflects roughly 15% of the year. Off-peak surveys were also carried out to determine the lower bound of traffic generation at the sites, which represents the majority of the year.

For this traffic assessment, the peak season trip rates described below have been applied to the number of vehicles present at the site assuming the site is 100% occupied i.e., 75 vehicles.

Table 2: Resultant Peak Season Trip Generation at 100% Site Occupancy

Scenario	Total Trips	Inbound Trips	Outbound Trips
AM Commuter Peak	8	2	6
PM Commuter Peak	10	7	3
Daily (Weekday)	152	76	76
Daily (Weekend)	145	72.5	72.5
Note: Maximum site occupancy based on up to 75 motorhomes.			

According to the Opus study, it was found that site peak hour will not coincide with the typical AM and PM commuter peak hours. Therefore, trips generated by the site during the commuter peaks are much lower than that generated during site peak hour. As indicated in Table 2, only 8 to 10 vehicle trips will be generated by the site in the weekday commuter AM and PM peak hours, respectively.

As noted earlier, the site will be less than half peak capacity during the remaining period of the year. This equates to a maximum of 30 – 37 vehicles using the park during the winter months and off-peak season.

The table below shows the results of vehicle movement during off peak season.

Table 3: Resultant Off Peak Season Trip Generation at 50% Site Occupancy

Scenario	Total Trips
AM Commuter Peak	4
PM Commuter Peak	5
Daily (Weekday)	76
Daily (Weekend)	73
Note: Maximum site occupancy based on 30 – 37 motorhomes.	

6.2. Timing of vehicle movements

Surveys of the operation of existing NZMCA Parks show that vehicle movements are relatively evenly spread between the time 10am and 4pm. Consequently, vehicle movements at these parks are primarily outside peak traffic times.

6.3. Intersections

The potential increase to traffic within the surrounding intersections of the park will not create adverse effects as the peak operating times from the NZMCA park do not occur at peak commute times.

6.4. Access formation

Access to the site will be via the existing accessway located off Pirongia Road. The existing access is 6m wide at the boundary and is unsealed gravel as shown in Figure 5 above.

Considering the type and size of development and the range of recreational vehicles that may visit the site, a vehicle crossing with access width of 7.5m will be provided for this activity.

Summary

Based on the assessment above, the proposal will not have any significant effect on the transport network. The site will only generate 8 – 10 vehicle trips in a weekday commuter AM and PM peak hours respectively. In general, the site traffic operations are expected to be efficient and appropriate for the activity.

7. District Plan Provisions

7.1. Access

Section 16.4.2.4 of the WDP states that "Every site shall be provided with vehicle access to a formed road that is constructed to a permanent standard. The vehicle access shall be designed to accommodate the demands of traffic from the activity on that site, considering the form and function of the road".

Section 15.4.2.4 of WDP describes 6m as the minimum width requirement for vehicle access to rear lots in case of the rural zone with up to 3 rear lots. The location of the existing site access will be used for the proposed activity as it is 6m wide with some upgrades. Pirongia Road has no overtaking centre line road marking to alert west bound drivers of unforeseen hazard of approaching traffic over crest. This crest is located approximately 150m from the accessway of the site and will not be a hazard to members using the driveway to access the park. Furthermore, the crest is located beyond the 115m visibility sight lines (see Figure 6 below).

Figure 6: shows the location of the NZMCA Park in relation to the surrounding road network.

7.2. Separation

The accessway to the site is located approximately 360m from the nearest access at Paterangi Road (see Figure 6 above).

Conclusion and Recommendations

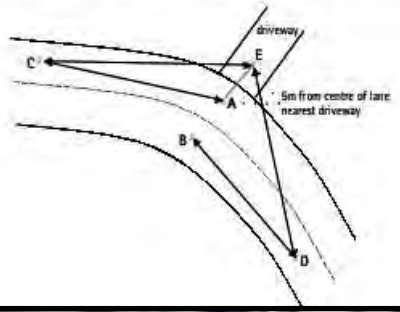
The motor caravan park will be accessed from Pirongia Road via a long driveway. Overall, the proposal is will not create any significant effect on the transport network within the area. It is noted that some 8 – 10 vehicle trips will be generated by the site in the weekday commuter AM and PM peak hours, respectively.

With Waipā DC approval the existing mountable kerb crossing, and concrete driveway can be retained. The existing granular driveway has been substantially trafficked by construction activity taking place at Pioneer Drive (across the road from the site) and installation of both the culvert and wastewater main. It is recommended that:

- the granular accessway to the site is retained and upgraded with a new vehicle crossing established onsite.
- Sign boards shall be placed at the site access (visible from both approaches along Pirongia Road) to assist visitors that are not familiar with the area and the site locality. Care should be given such that signboards do not restrict the visibility to/from the site access.

Figure 2: Lines of clear sight

Points A, B, C and D are as shown in Figure 1, with points C and D established by measuring the sight distance from Table 1 along the centre of the appropriate lane from points A and B.



Austroads RTS 6 (reprinted 2001) Guidelines for Visibility at Driveways
Pirongia Road Classification = Arterial Road
Mandatory Speed Limit = 50 km/h
Operational Speed = 60 km/h

From Table 1 : Minimum Sight distance = 115m
From Figure 2: Lines of clear sight Sight line Origin 5m from Centre of Lane

Table 1: Sight distances

These sight distances are the distances to be measured along the centre of the appropriate lane to establish points C and D in Figures 1 and 2, Section 2.2.

Driveway classifications	Operating speed (km/h)*	Minimum sight distance (metres)** Frontage road classification Local	Collector	Arterial
Low volume	40	30	35	70
Up to 200 vehicle manoeuvres per day	50	40	45	90
	60	55	65	115
	70	85	85	140
	80	105	105	175
	90	130	130	210
	100	160	160	250
	110	190	190	290
	120	230	230	330
High volume	40	30	70	70
More than 200 vehicle manoeuvres per day	50	40	90	90
	60	55	115	115
	70	85	140	140
	80	105	175	175
	90	130	210	210
	100	160	250	250
	110	190	290	290
	120	230	330	330

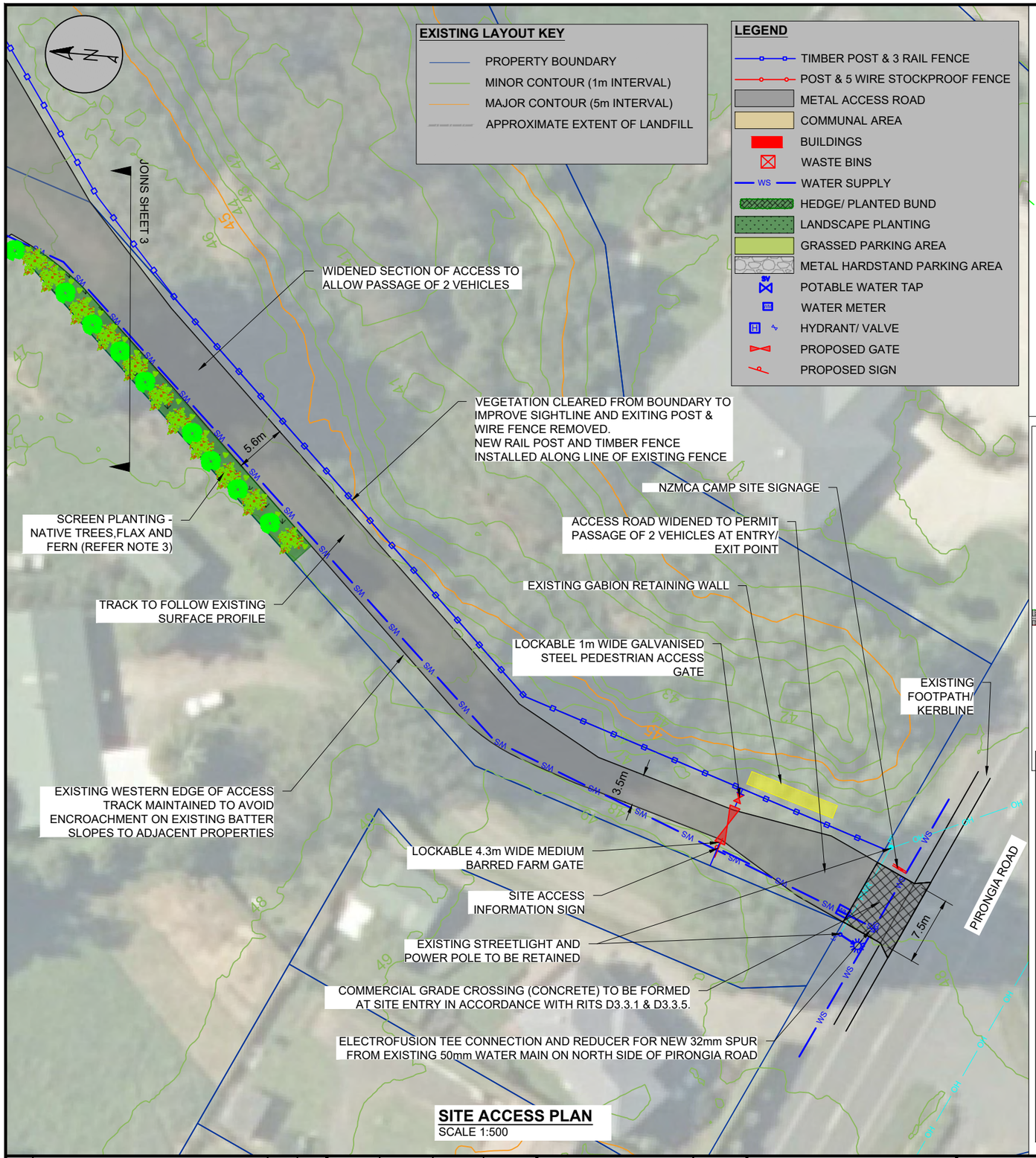
* Operating speed = 85th percentile speed on frontage road. This can be taken as the speed limit plus 15 km/h unless otherwise determined.

Proposed NZCMA Park Te Awamutu

Driveway Visibility Sight Lines

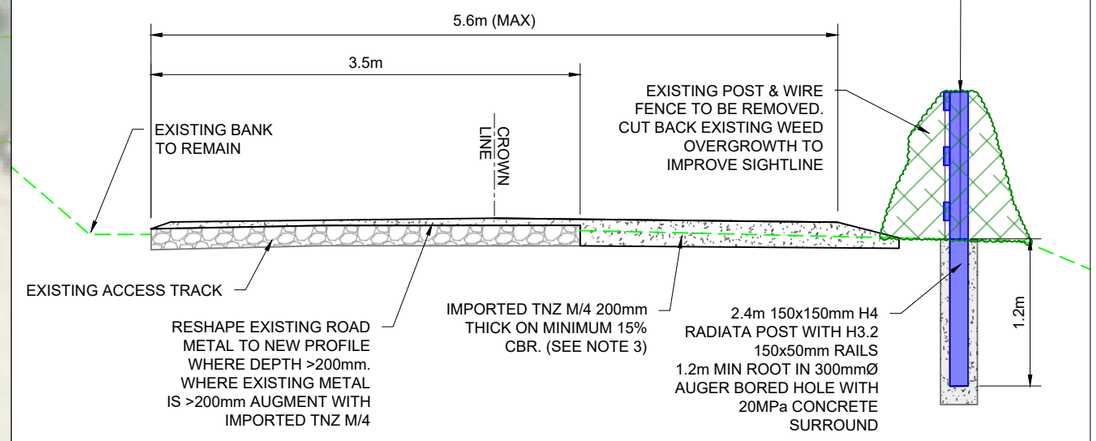
Drawing No **RT/003** Rev 0 27/06/21

Appendix B. RT/002 Proposed Driveway

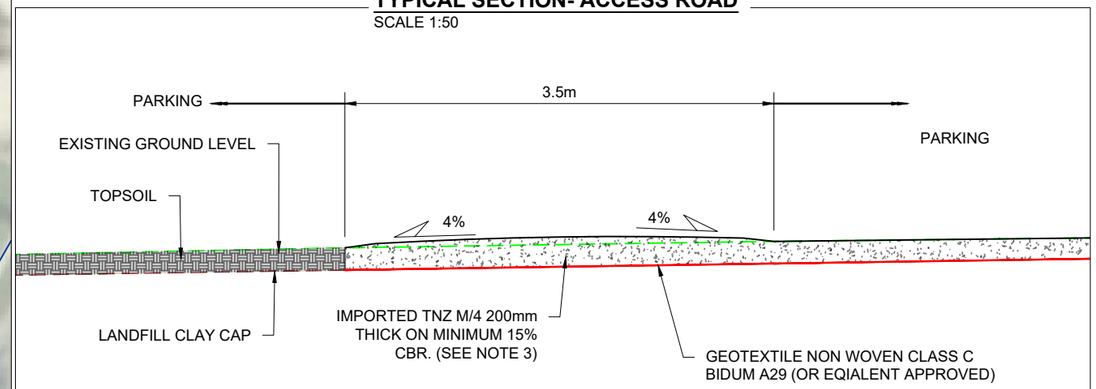


SITE ACCESS PLAN
SCALE 1:500

RETAINING FENCE DETAIL IS ONLY REQUIRED ALONGSIDE EXISTING GABION RETAINING WALL, WITH 1m POST CENTRES . IN ALL OTHER LOCATIONS A STANDARD POST AND 3 RAIL FENCE IS TO BE PROVIDED WITH 2m POST CENTRES



TYPICAL SECTION- ACCESS ROAD
SCALE 1:50



TYPICAL SECTION- SITE ROAD
SCALE 1:50

NOTES

1. UNLESS OTHERWISE STATED, ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO LASS REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS
2. ALL LANDSCAPE PLANTS TO BE LOCALLY SOURCED.
   PROVISIONAL PLANTING SCHEDULE: (PLANT TYPES AND SPACINGS TO BE CONFIRMED AT DETAILED DESIGN)

HEDGES
STAGGERED ALTERNATE PLANTING, RANDOM PATTERN:
PITTOSPORUM TENUIFOLIUM 4L 0.75m CENTRES (STAKED)
COROKIA X VIRGATA 2.5L 0.5m CENTRES (STAKED)
GRISELINA LITTORALIS 3.5L 0.75m CENTRES (STAKED)

LANDSCAPE AREAS:
RANDOM PLANTING IN 100mm MULCH RAISED BED:
CAREX BUCHANANII 0.6m CENTRES
COPROSMA KIRKII 1.0m CENTRES
OLEARIA X HAASTII 1.0m CENTRES
LIBERTIA GRANDIFLORA 0.6m CENTRES

SCREEN PLANTING:
TREES AND SHRUBS: STAGGERED RANDOM PLANTING NO LESS THAN 4m CENTRES OF JUVENILE SPECIMENS NO LESS THAN 1.8m HIGH:
KUNZEA ERICOIDES (KANUKA)
POMADERRIS APETALA (TAINUI)
UNDERSTORY INFILL PLANTING: RANDOM PATTERN AND SPACING TO SUIT SPECIES:
PHORMIUM TENAX (HARAKEKE/ COMMON FLAX)
BLECHNIUM DISCOLOR (PIUPIU/ CROWN FERN)

3. ACCESS ROAD, SITE ROAD AND METAL HARDSTAND PARKING TO BE CONSTRUCTED AS DETAILED ON TYPICAL SECTIONS PROVIDED ON THIS DRAWING. THE PROPOSED CARAVAN PARKING AREAS INDICATED ON SHEET 03 WILL BE ASSESSED FOR SUITABILITY AS GRASSED PARKING ON AN INDIVIDUAL BASIS DURING CONSTRUCTION. SOME OF THESE AREAS MAY BE REVISED FROM GRASS TO METAL HARDSTAND TO PROVIDE ALL WEATHER PARKING AND AVOID COMPROMISE OF LANDFILL CAP.
3. EXTENT OF LANDFILL ESTABLISHED FROM HISTORICAL AERIAL PHOTOGRAPHY AND WAIPA D.C. RECORDS AND IS INDICATIVE ONLY.
4. THIS DRAWING SET IS FOR CONSENTING PURPOSES ONLY AND IS NOT FOR CONSTRUCTION OR TENDER ISSUE. NO QUANTITIES TO BE ASSUMED FROM THE INFORMATION SHOWN.

REF	AMENDMENT	APP'D	DATE

	BY	CHECKED	DATE
DESIGN	JR	DM	JAN 22
DRAWN	JR	DM	JAN 22

RECOMMENDED D Murphy 21/01/22 DATE
APPROVED K Hills 21/01/22 DATE

OFFICE: gray matter
CLIENT: NZ Motor Caravan Association

PROJECT: NZMCA SITE CONCEPT
PIRONGIA ROAD TE AWAMUTU
SHEET TITLE: PROPOSED LAYOUT
SHEET 2 OF 2

STATUS: CONSENTING
GEODETIC & VERTICAL DATUM: MT EDEN 2000/ NZVD 16
PLAN NUMBER: 240_01_100_P
SHEET: 04
SCALE: AS STATED (@ A3)
REVISION: R0

ORIGINAL SIZE A3

PROPOSED LAYOUT SHEET 2 OF 2

APPENDIX F: VEHICLE MOVEMENT SURVEY

New Zealand Motor Caravan Association

Vehicle Movement Surveys

New Zealand Motor Caravan Association

Vehicle Movement Surveys

Prepared By

Chris Baker
Graduate Transportation Engineer

Reviewed By

Nerissa Harrison
Senior Transportation Engineer

Approved for Release By

Kristoffer Hansson
Team Leader Transportation Planning

Opus International Consultants Ltd
Auckland Civil
The Westhaven, 100 Beaumont St
PO Box 5848, Auckland 1141
New Zealand

Telephone: +64 9 355 9500
Facsimile: +64 9 355 9585

Date: 22 December 2016
Reference: 1-C1455.01
Status: Issue 1

Use of This Document

This document is designed to provide vehicle movement information for use in the preparation and evaluation of traffic assessments and resource consent applications regarding New Zealand Motor Caravan Association (NZMCA) sites.

To quantify the traffic impacts arising from these sites, vehicle movement data was collected at the entrance four typical sites. The number of movements generated at a given site depends on the number of vehicles on site and the number of trips those vehicles make, which is influenced by the site's facilities, size and proximity to other destinations.

Where existing traffic counts are unavailable, such as at a new site, vehicle movements are usually estimated from generic published figures (discussed in Section 1.3). This study provides data in a New Zealand context, specifically for NZMCA sites, that can be used to calculate vehicle demands at future and existing sites.

This document assists in calculating vehicle movements based on:

- The number of vehicles registered on site
    - Vehicle movements calculated by this method are generally more accurate as they account for daily variation in campsite occupancy. Care should be taken when using this method as using site capacity rather than actual site occupancy will lead to overestimation of vehicle movements.

- Site size
    - Where vehicle occupancy data is unavailable, such as at a new site, estimates can be made for average vehicle movements based on the size of the site. These figures are based on average figures recorded over the duration of the survey and therefore do not reflect daily variations in campsite occupancy.

Traffic data was collected at four existing NZMCA sites (details are provided in Appendix A). The sites surveyed were selected to represent a range of sizes, facilities and locations, in order to reflect the variability across NZMCA sites. Surveys were carried out at the known busiest time of year to understand the upper bound of traffic generation, though it should be noted that this reflects roughly 15% of the year. Off-peak surveys were also carried out to determine the lower bound of traffic generation at the sites, which represents the majority of the year.

The accuracy of the data collected was determined through the industry standard A/B ratio, which compares the number of detections between the pair of sensors at the site. There were four occurrences in the off peak surveys where the required accuracy measure was not satisfied and the surveys had to be repeated. The ratios are provided in Section 3 along with site results.

As campsites are a recreational land use, their peak hours do not coincide with typical commuter peak hours. As such, impact assessments should be based on the largest combination of site and background traffic flows. Traffic generated by the sites during commuter peak hours is generally smaller, but is more likely to have adverse effects on an already-congested commuter network. More traffic is generated by the site during the site's peak hour, but this generally coincides with commuter inter-peak hours and is therefore less critical to assessing traffic impact.

The following flow chart indicates how this document should be used to calculate vehicle movement data such as site peak hour flow, commuter peak hour flows, daily volumes, weekly volumes and heavy vehicle proportions. The outputs can be used to assess the impact of traffic generated by the site in question. Tables accompanying the flow chart are also provided below.

Using site capacity instead of actual site occupancy will produce inflated values that represent ultimate peak trip generation; at the sites surveyed, peak occupancy lasted for 1-2 days only. Results provided by this document assume similar site occupancy rates to those surveyed (discussed in Section 4), which equates to an average of 0.25veh/100m^2.

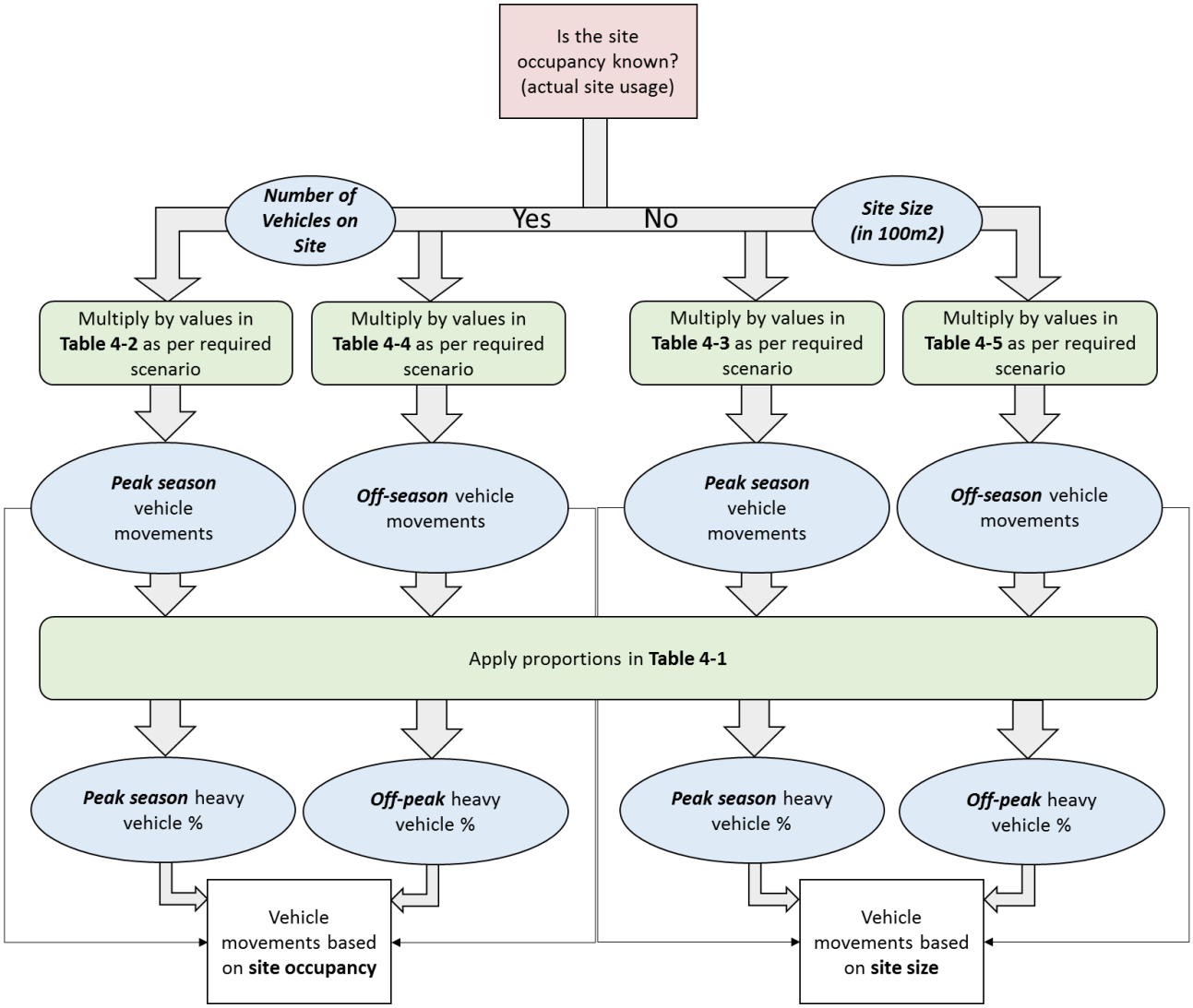


Table 4-1 Summary of Heavy and Light Vehicles at NZMCA Sites

	Peak Season	Off Peak Season
Heavy Vehicles	27%	19%
Light Vehicles	73%	81%

Table 4-2 Peak Season Trip Rates per Registered Vehicle on Site

Scenario	**Trips per Registered Vehicle on Site** (standard deviation)	Inbound/Outbound %
AM Commuter Peak	**0.10** (0.06)	30/70
PM Commuter Peak	**0.13** (0.07)	66/34
Site Peak Hour (Weekday)	**0.35** (0.10)	50/50
Site Peak Hour (Weekend)	**0.33** (0.11)	50/50
Daily (Weekday)	**2.03** (0.62)	50/50
Daily (Weekend)	**1.94** (0.55)	50/50
Weekly	**14.03***	50/50

* Calculated as sum of 5 x weekday and 2 x weekend daily trip rates

Table 4-3 Peak Season Trip Rates per Site Size

Scenario	**Trips per 100m^2** (standard deviation)	Inbound/Outbound %
AM Commuter Peak	**0.02** (0.02)	30/70
PM Commuter Peak	**0.03** (0.03)	66/34
Site Peak Hour (Weekday)	**0.08** (0.02)	50/50
Site Peak Hour (Weekend)	**0.08** (0.03)	50/50
Daily (Weekday)	**0.44** (0.14)	50/50
Daily (Weekend)	**0.44** (0.12)	50/50
Weekly	**3.08***	50/50

* Calculated as sum of 5 x weekday and 2 x weekend daily trip rates

Table 4-4 Off Season Trip Rates per Registered Vehicle on Site

Scenario	Trips per Registered Vehicle on Site (standard deviation)	Inbound/Outbound %
AM Commuter Peak	**0.08** (0.14)	22/78
PM Commuter Peak	**0.11** (0.07)	60/40
Site Peak Hour (Weekday)	**0.50** (0.37)	50/50
Site Peak Hour (Weekend)	**0.51** (0.43)	50/50
Daily (Weekday)	**2.02** (1.42)	50/50
Daily (Weekend)	**1.94** (0.55)	50/50
Weekly	**13.98***	50/50

* Calculated as sum of 5 x weekday and 2 x weekend daily trip rates

Table 4-5 Off Season Trip Rates per Site Size

Scenario	Trips per Registered Vehicle on Site (standard deviation)	Inbound/Outbound %
AM Commuter Peak	**0.01** (0.01)	22/78
PM Commuter Peak	**0.01** (0.01)	60/40
Site Peak Hour (Weekday)	**0.01** (0.01)	50/50
Site Peak Hour (Weekend)	**0.02** (0.01)	50/50
Daily (Weekday)	**0.16** (0.06)	50/50
Daily (Weekend)	**0.16** (0.09)	50/50
Weekly	**1.12***	50/50

* Calculated as sum of 5 x weekday and 2 x weekend daily trip rates

Contents

1 Background

1.1 Introduction

Opus was approached by the New Zealand Motor Caravan Association (NZMCA) to assess traffic movements at typical sites across New Zealand.

The four sites selected for analysis were identified as representative of a range of typical sites with different sizes, facilities and locations to assess whether results could be applied to all NZMCA sites. Two of the sites surveyed were smaller and in rural areas (Manganese Point and Te Anau) and the other two were larger and closer to urban centres (Taupo Airport and Rolleston). Full site descriptions are provided in Appendix A.

This report combines the data collected during peak and off-peak surveys to provide an understanding of year-round vehicle movements. The data provides insight into peak-hourly and daily traffic flows, as well as traffic composition and temporal patterns at NZMCA sites.

From the measured traffic flows, trip generation rates have been calculated and are presented in Section 4. These rates enable traffic flow forecasts at future sites based on relevant and accurate data. Previously vehicle movements were estimated from generic published figures with no New Zealand context.

1.2 Purpose

The purpose of this study is to provide easily accessible and accurate vehicle movement data that is representative of all NZMCA sites for use in traffic assessments and resource consent applications. Additionally, the information will enable the NZMCA to make informed strategic decisions based on their members' use of sites.

1.3 Trip Generation

In transportation planning, trip generation is used to estimate the number of vehicles produced by a specific land use. Typically, trip generation rates are calculated from empirical data based on floor area of the activity or number of dwellings. Land uses can produce substantially different trip generations depending on the intensity and location of the activity, and the local infrastructure.

Variability between camping grounds and their facilities makes it difficult to apply a common trip generation rate. This study removes the assumptions of previous trip generation studies and provides data specifically for NZMCA sites.

Table 1-1 shows historical records of trip generation from campgrounds in the New Zealand Trips and Parking Database and the Institute of Transport Engineers handbook. There is large variability in the data currently available, which prevents accurate projections for traffic volumes generated by new sites.

Table 1-1 Typical Campground Trip Generation

	Trip Rate			
Study	**AM Peak**	**PM Peak**	**Daily**	**Peak Hour of Site**
New Zealand Trips and Parking Database				
Baird Camping Ground (40,000 m^2)	0.11 vph per 100m^2 Site Peak	0.05 vph per 100m^2 Site Peak	0.58 per 100m^2	N/A
Meadow Holiday Park (15,000 m^2)	0.25 vph per 100m^2 Site Peak	0.56 vph per 100m^2 Site Peak	4.14 per 100m^2	N/A
Institute of Transport Engineers				
'Camping or Campervan Site'	0.20 vph per occupied lot	0.37 vph per occupied lot	N/A	0.41

*vph: vehicles per hour

2 Methodology

2.1 Site Descriptions

Site visits were carried out to record available facilities, access arrangements and site layout. Full site descriptions are provided in Appendix A.

2.2 Tube Counts

Pneumatic tubes were laid across the entrance of each of the four sites between Friday 15th January 2016 and Monday 1st February 2016 for the Peak Season wave and between Friday 29th July 2016 and Monday 15th August 2016 for the Off-Peak Season wave.

The tube count at Weedons Park failed in the first week and was repeated over the following 2 weeks. Counts at Manganese Point were unsuccessful twice due to equipment failure caused by the gravel surface and once due to a relocated count capturing external traffic. The survey was successfully carried out between 17th November and 5th December 2016 when equipment was checked for faults regularly during the survey.

The recounted surveys did not capture the absolute off-peak period and as a result, larger traffic volumes were likely captured. However, this results in a conservative lower bound for the data as traffic assessments will primarily use peak flow data.

Where possible, the tubes were laid over sealed roads at locations where vehicles would not be turning to ensure they were detected. The location was selected to avoid collecting traffic external to the sites. The logger collected data regarding the number and type of vehicles accessing the site, based on axle spacing and headway (time between vehicle detections).

2.3 Analysis

The data was collated into hourly intervals with 14 vehicle classifications as defined by the NZTA 2011 Vehicle Classification Scheme (a summarised version is shown in Table 2-1). Different vehicle types are identified by the tube counters by logging the space between and grouping of vehicle axles passing over the tubes.

Table 2-1 NZTA 2011 Vehicle Classification Scheme

Axle Class	Axle Type	NZTA Class	Vehicle Type
1	Very short 2 axle vehicle	Private Car	Motorcycles
2	Short 2 axle vehicle	Private Car or Light Commercial Vehicle	Cars or small campervans
3	Car towing trailer or car	Private Car or Light Commercial Vehicle	Cars towing caravans
4	Truck, bus or truck towing trailer	Bus or Medium Commercial Vehicle	Larger vehicles or vehicles towing caravans
5 and Above	Truck, bus, coach or heavier	Bus or Heavy Commercial Vehicle	Recreational Vehicles and larger

Peak hourly, daily, weekly and weekend volumes were averaged across the full survey period. Peak hourly flows refer to the average of the maximum hourly flows on each day during the survey.

To help further describe traffic at the sites, heavy vehicle proportions over the survey period and charts plotting vehicle movements throughout the day are provided for each site.

3 Results

This section provides results of measured traffic movements at the four surveyed sites. Data presented includes vehicle classification (proportion of heavy and light vehicles), time of movements and peak-hourly, daily and weekly average flows for each site.

Peak hour volumes refer to the average of all survey days' maximum peak hour flow. This does not reflect a particular time of day, as the observed peak hour varied throughout the survey period between 10am and 4pm (as shown in Figure 3-2).

3.1 General Trends

Figure 3-1 below shows the proportion of each vehicle classification recorded at the four sites in January and August. Similar proportions of vehicle classification were recorded at each site, with cars or small campervans making up between 64% and 82% of total vehicles counted. A larger proportion of heavy vehicles, such as larger recreational vehicles, were recorded in the January survey. This could be a result of a larger proportion of families travelling in larger vehicles during the peak season. Vehicles of classification 3 and 5+ were only observed at the larger sites, Taupo and Weedons Park.

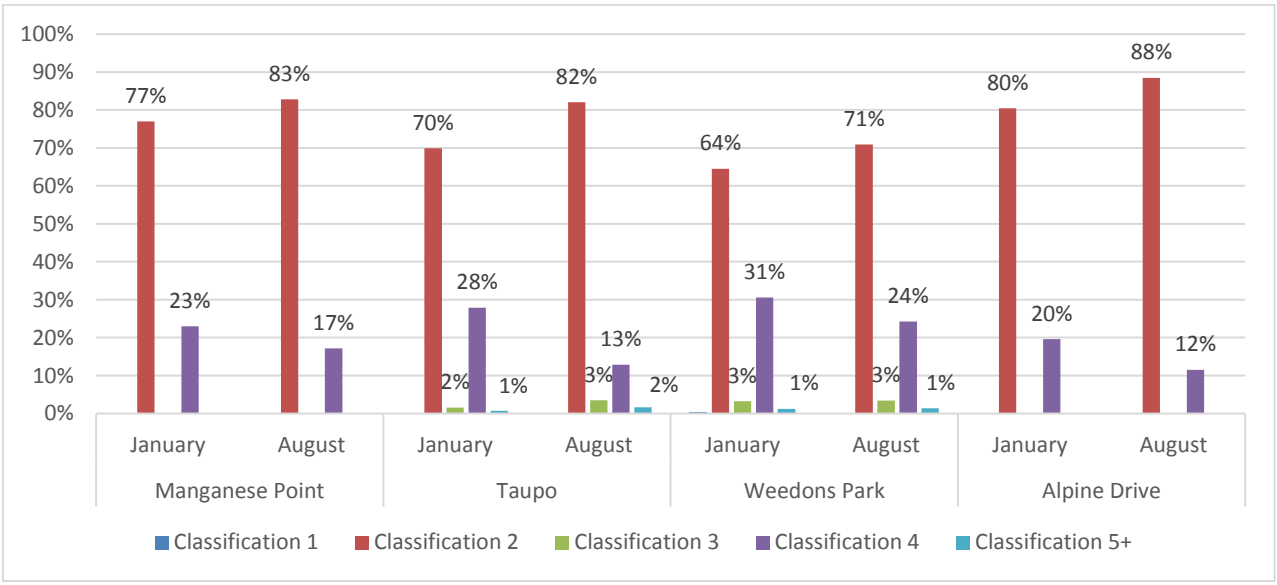


Figure 3-1 Proportion of Vehicle Types Recorded at each Site

Figure 3-2 shows the pattern of vehicle movements across all survey sites. The chart shows that movements are relatively evenly spread between 10:00 and 16:00, with a quiet period around midday. It can be concluded that vehicle movements associated with NZMCA sites are primarily outside of commuter peaks.

The accompanying charts in Figure 3-3 and Figure 3-4 indicate that the majority of morning vehicle movements are inbound while the majority of afternoon movements are outbound during both peak and off peak seasons.

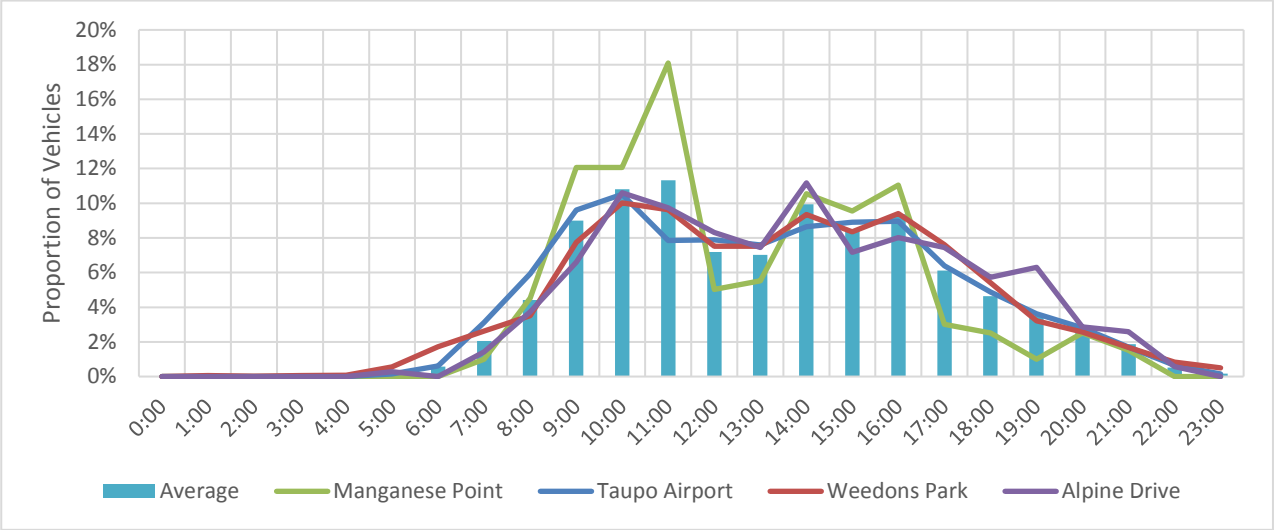


Figure 3-2 Vehicle Movement Time Proportions

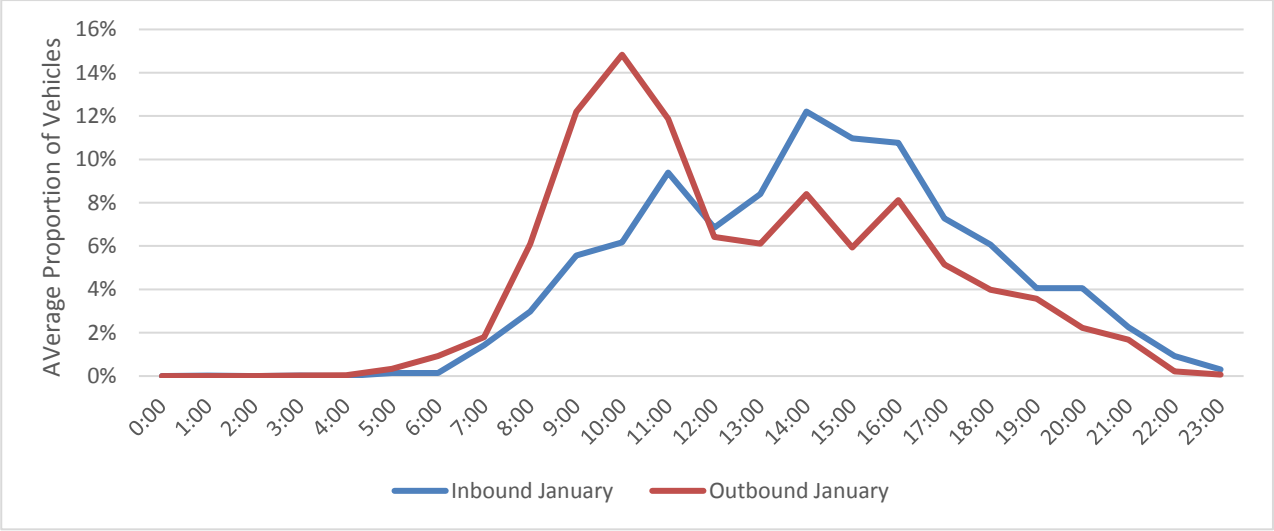


Figure 3-3 Directional Vehicle Movement Time Proportions (January Count)

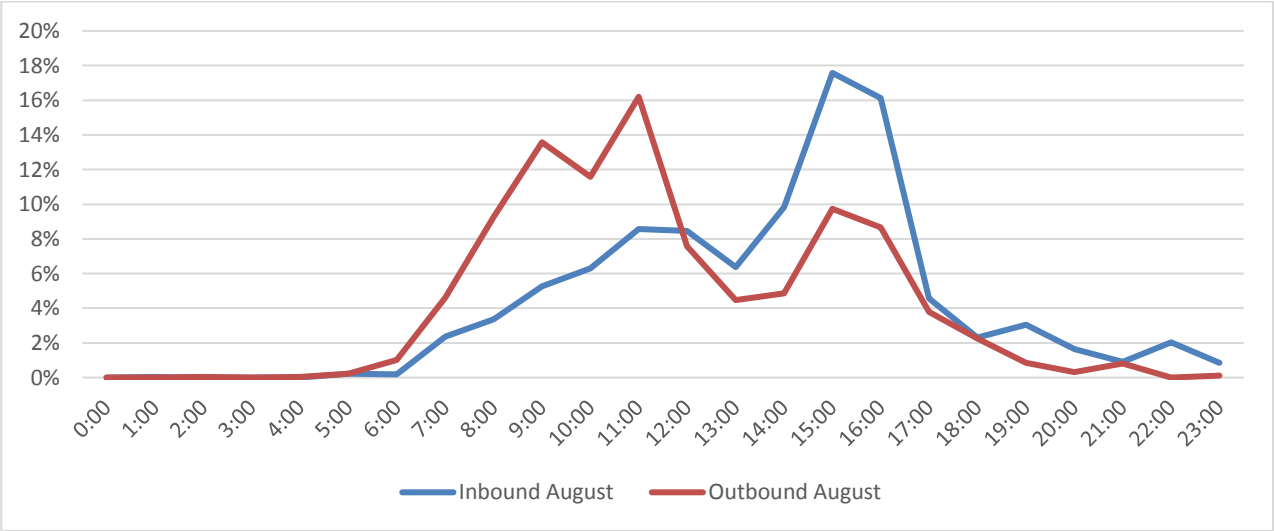


Figure 3-4 Directional Vehicle Movement Time Proportions (August Count)

3.2 Site 639 - Manganese Point, Whangarei

The A/B ratios shown below provide a measure of accuracy for each survey. They refer to the number of signals received by the logger from each tube. Typically accepted A/B ratios are within 5% of 100%; larger or smaller values are considered failure. Note that the total sensor hits include vehicles counted outside of the survey period, where tubes were laid out early or picked up late.

Due to failure in the tube counting equipment on three occasions, the final survey at this site was completed between Friday 18th November and Saturday 3rd December. On two of the failed surveys, the data logger received only 2 days' worth of data and the third failed survey was a result of the tube counting traffic external to the site.

Peak Season Survey
Total Sensor Hits = 676
A Hits = 338 (50%)
B Hits = 337 (50%)
A/B Ratio = 100%

Off-Peak Season Survey
Total Sensor Hits = 574
A Hits = 294 (51.2%)
B Hits = 280 (48.8%)
A/B Ratio = 105%

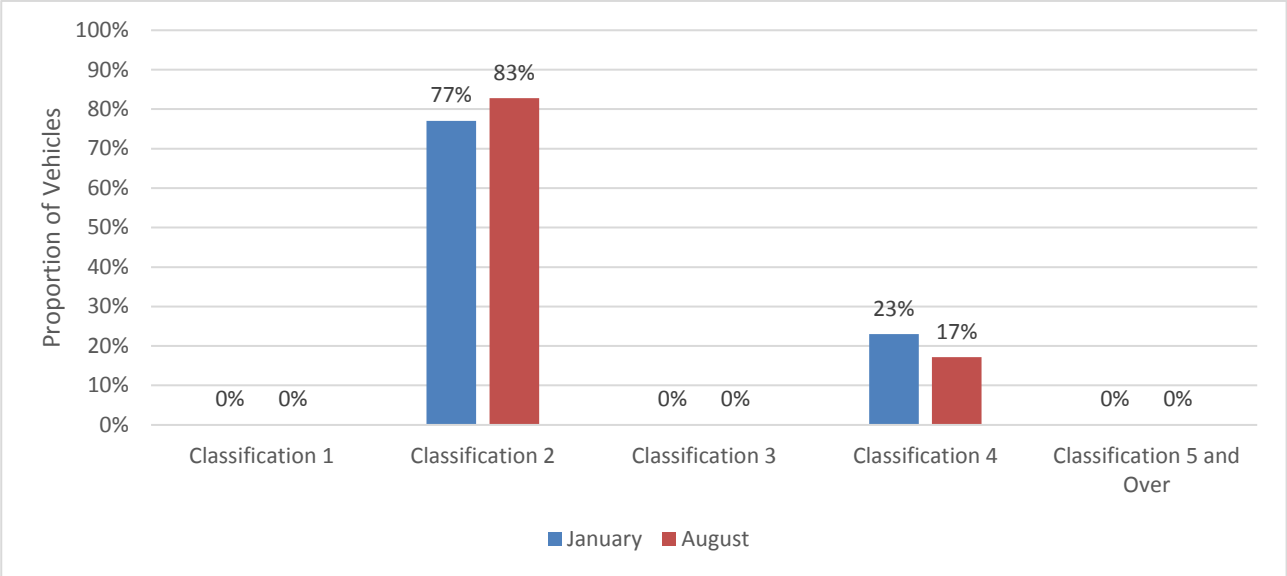
3.2.1 Weekday Traffic Count

	Peak			Off-Peak		
	Peak-Hourly	Daily	Weekly (5 days)	Peak-Hourly	Daily	Weekly (5 days)
Average Volume	3	8	32	1.5	4	20
Variability	45%	70%	4%	51%	52%	11%

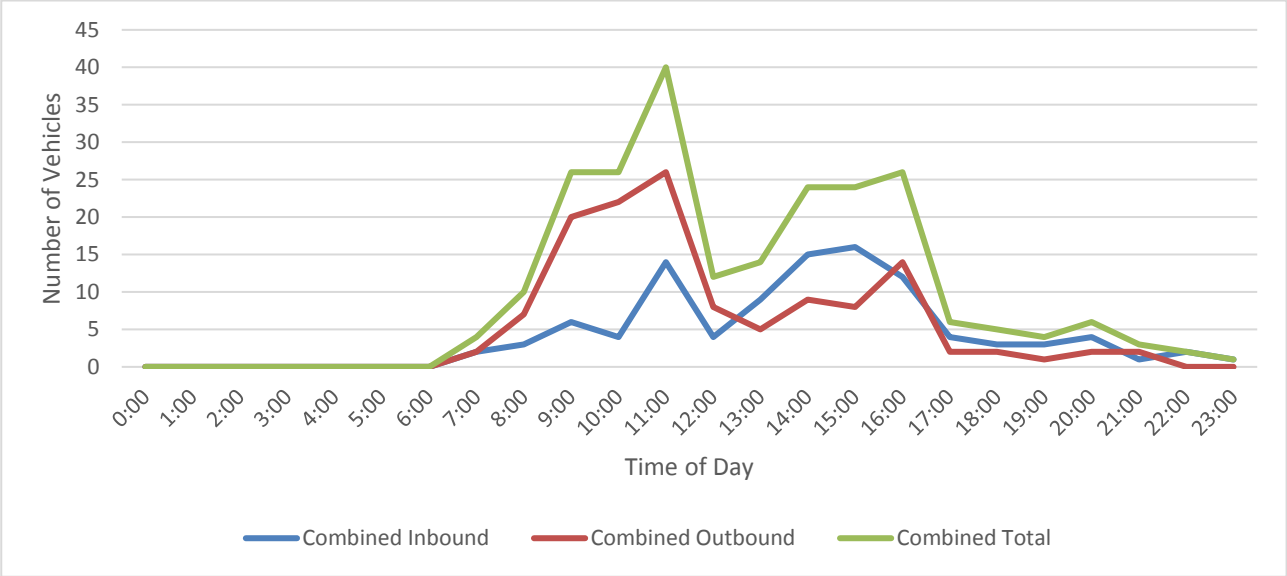
3.2.2 Weekend Traffic Count

	Peak			Off-Peak		
	Peak-Hourly	Daily	Weekend	Peak-Hourly	Daily	Weekend
Average Volume	3	12	23	2	5	11
Variability	31%	30%	4%	41%	48%	34%

3.2.3 Vehicle Classification (Survey Period Combined)



3.2.4 Time of Movements (Peak and Off-Peak Survey Periods Combined)



3.3 Site 3365 – Taupo Airport, Taupo

The A/B ratios shown below provide a measure of accuracy for each survey. They refer to the number of signals received by the logger from each tube. Typically accepted A/B ratios are within 5% of 100%; larger or smaller values are considered failure. Note that the total sensor hits include vehicles counted outside of the survey period, where tubes were laid out early or picked up late.

Peak Season Survey
Total Sensor Hits = 23146
A Hits = 11656 (50.4%)
B Hits = 11490 (49.6%)
A/B Ratio = 101%

Off-Peak Season Survey
Total Sensor Hits = 2509
A Hits = 1274 (50.8%)
B Hits = 1235 (49.2%)
A/B Ratio = 103%

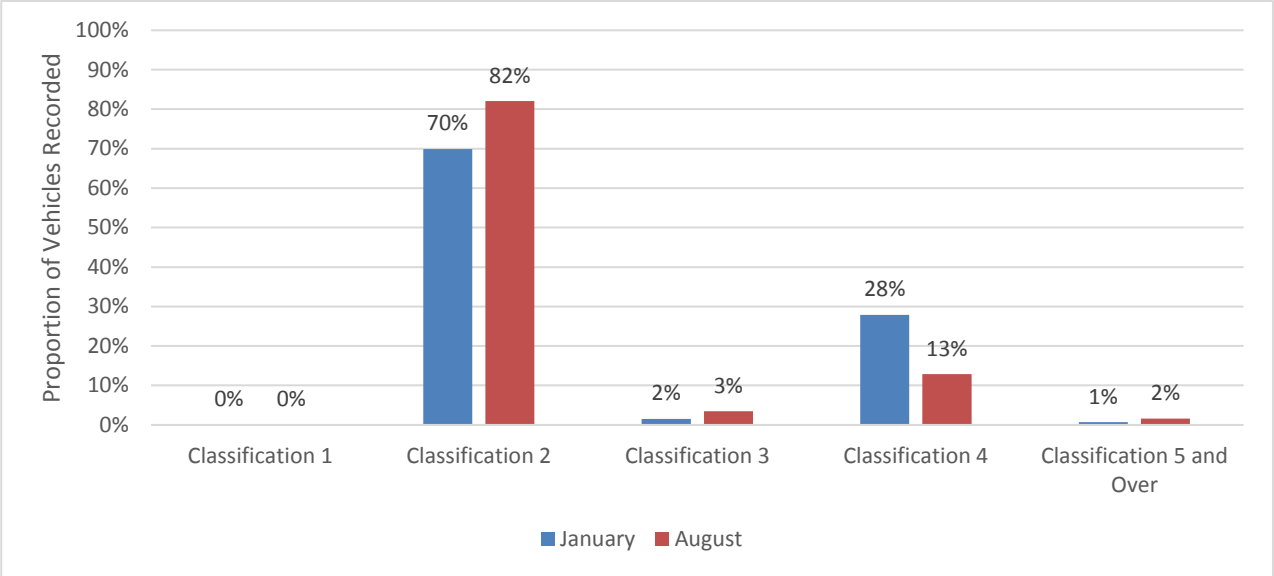
3.3.1 Weekday Traffic Count

	Peak			Off-Peak		
	Peak-Hourly	Daily	Weekly (5 days)	Peak-Hourly	Daily	Weekly (5 days)
Average Volume	13	89	456	5	23	120
Variability	11%	21%	20%	47%	39%	29%

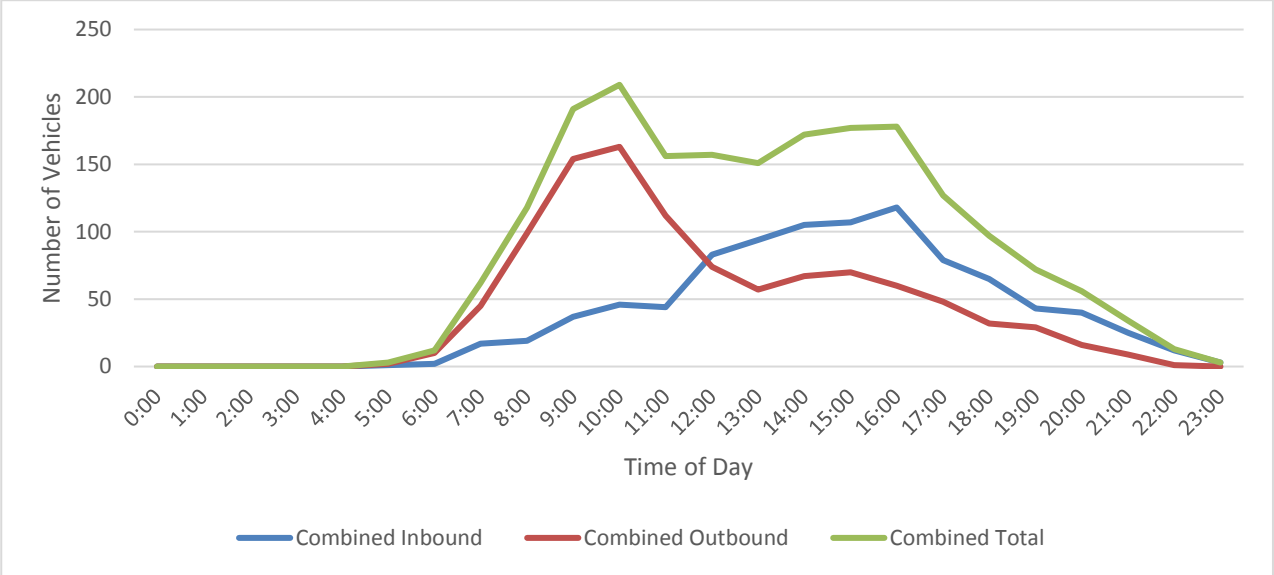
3.3.2 Weekend Traffic Count

	Peak			Off-Peak		
	Peak-Hourly	Daily	Weekend	Peak-Hourly	Daily	Weekend
Average Volume	13	91	182	4	17	34
Variability	28%	21%	17%	33%	54%	57%

3.3.3 Vehicle Classification (Survey Period Combined)



3.3.4 Time of Movements (Peak and Off-Peak Survey Periods Combined)



3.4 Site 7561 – Weedons Park, Rolleston

The A/B ratios shown below provide a measure of accuracy for each survey. They refer to the number of signals received by the logger from each tube. Typically accepted A/B ratios are within 5% of 100%; larger or smaller values are considered failure. Note that the total sensor hits include vehicles counted outside of the survey period, where tubes were laid out early or picked up late.

Peak Season Survey
Total Sensor Hits = 11776
A Hits = 5887 (50%)
B Hits = 5889 (50%)
A/B Ratio = 100%

Off-Peak Season Survey
Total Sensor Hits = 6338
A Hits = 3170 (50%)
B Hits = 3168 (50%)
A/B Ratio = 100%

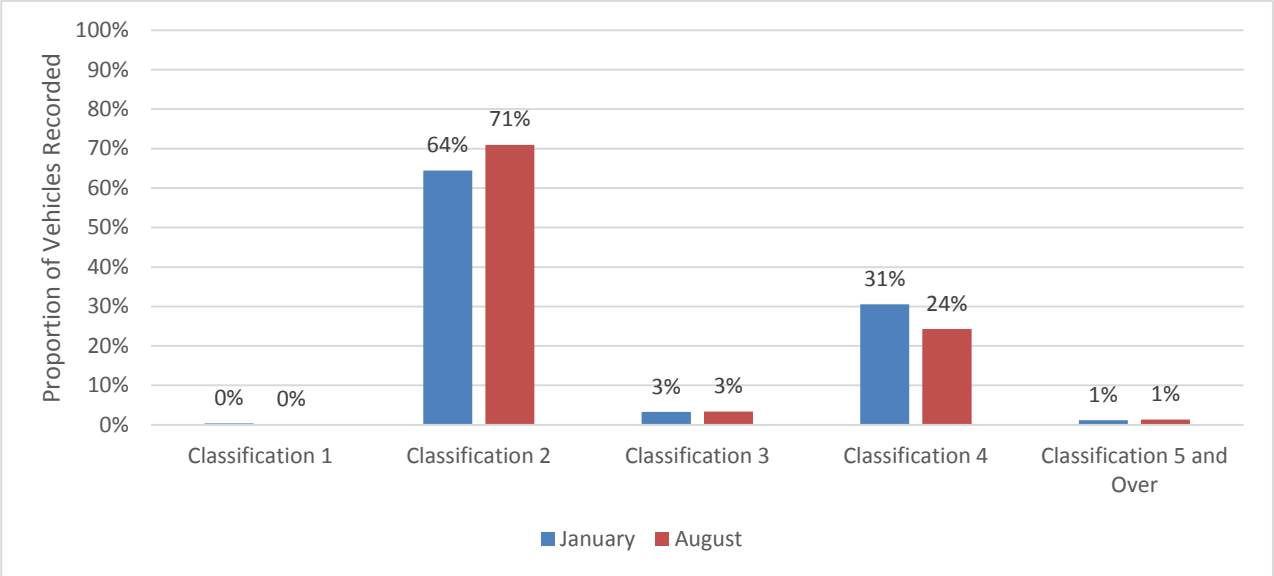
3.4.1 Weekday Traffic Count

	Peak			Off-Peak		
	Peak-Hourly	Daily	Weekly (5 days)	Peak-Hourly	Daily	Weekly (5 days)
Average Volume	17	136	674	11	73	350
Variability	23%	16%	20%	12%	20%	14%

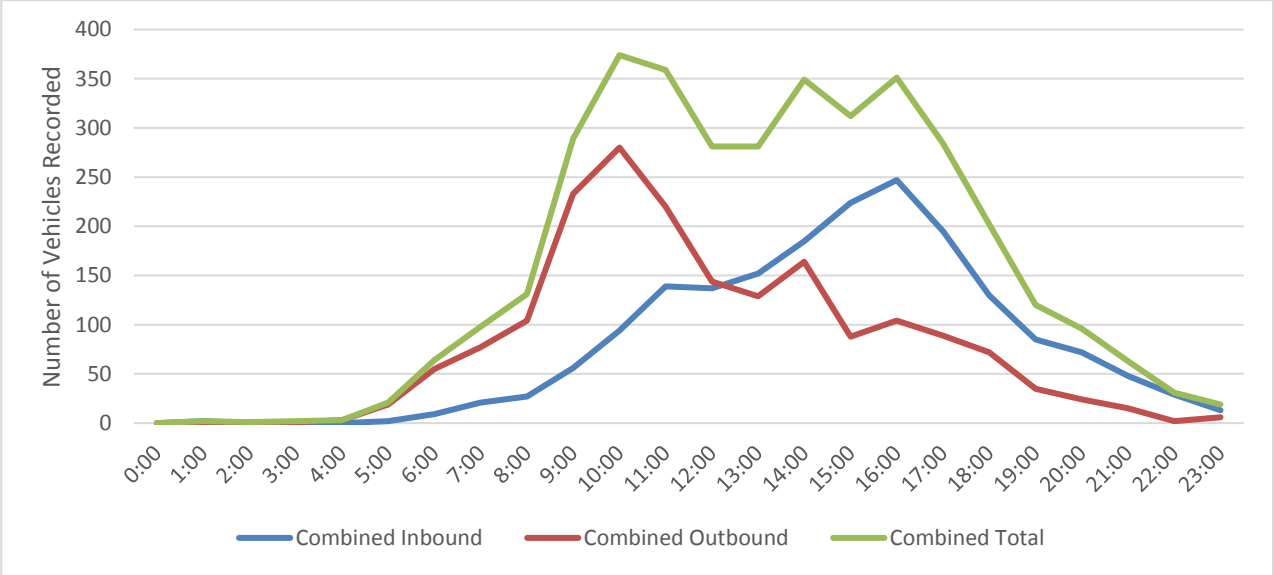
3.4.2 Weekend Traffic Count

	Peak			Off-Peak		
	Peak-Hourly	Daily	Weekend	Peak-Hourly	Daily	Weekend
Average Volume	17	134	268	12	71	141
Variability	20%	22%	19%	40%	35%	37%

3.4.3 Vehicle Classification (Survey Period Combined)



3.4.4 Time of Movements (Peak and Off-Peak Survey Periods Combined)



3.5 Site 9101 – Alpine Park, Te Anau

The Alpine Park site was quiet during the off-peak survey, with no vehicle movements recorded on some days. This resulted in large variability in the number of vehicles recorded across the 2 week period and an average peak hour flow below 1.

The A/B ratios shown below provide a measure of accuracy for each survey. They refer to the number of signals received by the logger from each tube. Typically accepted A/B ratios are within 5% of 100%; larger or smaller values are considered failure. Note that the total sensor hits include vehicles counted outside of the survey period, where tubes were laid out early or picked up late.

Peak Season Survey
Total Sensor Hits = 4211
A Hits = 2135 (50.7%)
B Hits = 2076 (49.3%)
A/B Ratio = 103%

Off-Peak Season Survey
Total Sensor Hits = 542
A Hits = 275 (50.7%)
B Hits = 267 (49.3%)
A/B Ratio = 103%

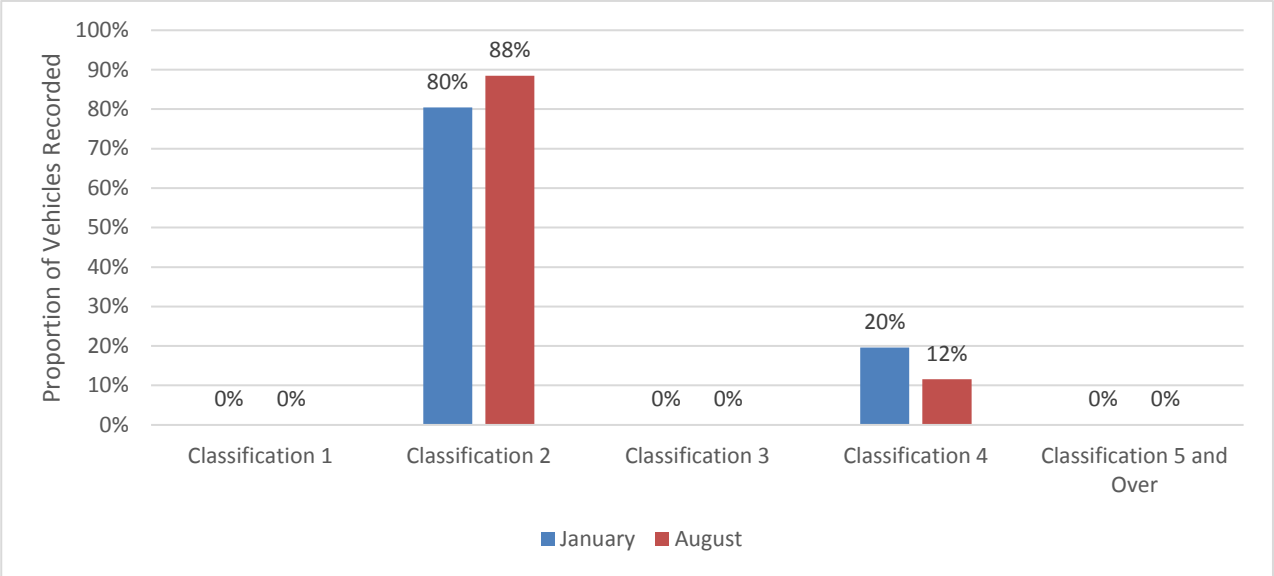
3.5.1 Weekday Traffic Count

	Peak			Off-Peak		
	Peak-Hourly	Daily	Weekly (5 days)	Peak-Hourly	Daily	Weekly (5 days)
Average Volume	5	21	101	0.6	1.3	2.5
Variability	25%	32%	25%	148%	158%	28%

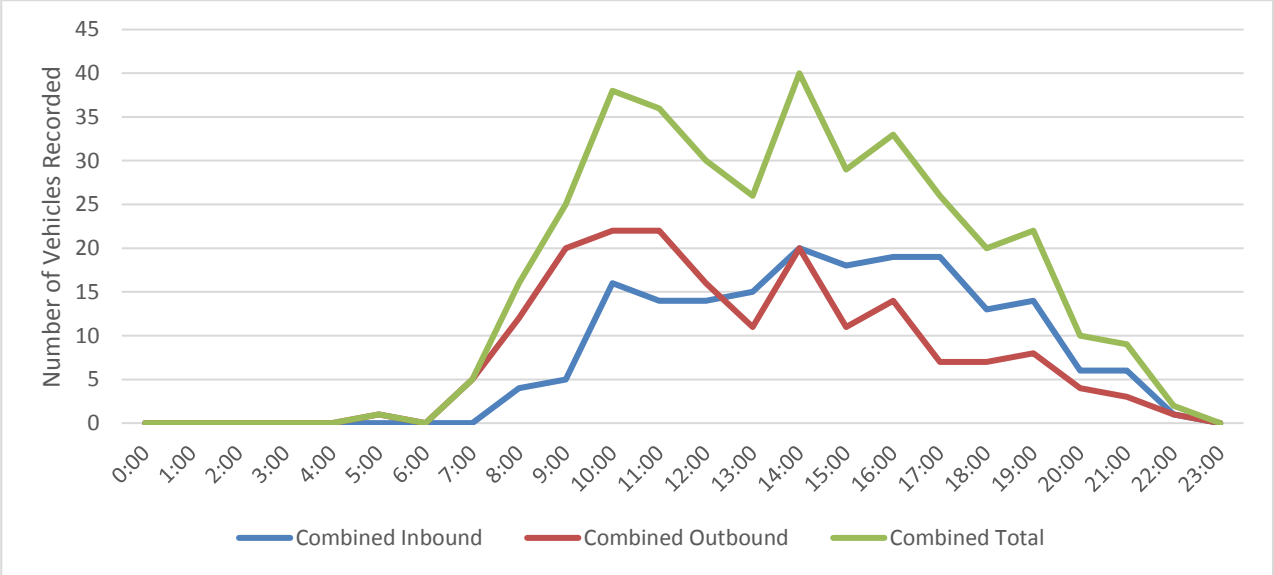
3.5.2 Weekend Traffic Count

	Peak			Off-Peak		
	Peak-Hourly	Daily	Weekend	Peak-Hourly	Daily	Weekend
Average Volume	4	15	29	1	1.7	3.3
Variability	43%	50%	51%	110%	112%	92%

3.5.3 Vehicle Classification (Survey Period Combined)



3.5.4 Time of Movements (Peak and Off-Peak Survey Periods Combined)



4 Trip Generation

This section of the report should be used to produce estimates for vehicle movements at new or existing NZMCA sites. Where the number of registered vehicles or site size is known, the tables in this section enable the following estimates:

- Proportion of heavy vehicles;
- Number of vehicle movements during the site peak hour (varies between 10am and 4pm);
- Number of vehicle movements during commuter peak hours (8-9am and 5-6pm);
- Number of daily vehicle movements; and
- Number of weekly vehicle movements.

Trip generation rates given here have been developed based on the method used by the Institute of Transport Engineers, giving the number of trips per registered vehicle on the site and per 100m^2 site area. Measured vehicle movements from each surveyed site were compared with respective site sizes and site logbooks to produce the rates.

Hourly trip rates were calculated as the average of vehicle movements recorded during peak hours (commuter AM and PM, and site) each day of the survey, divided by site size and number of vehicles registered at the sites. Figures from all sites were averaged without weightings for site size to capture variation in trip rates for the range of sites. As the peak hour varies from day to day, so too does the proportion of inbound and outbound movements during the peak hour. Therefore a 50% split between inbound and outbound vehicles should be assumed during the site peak hour.

Rates for the peak and off-peak periods have been provided to give upper and lower limits on the average vehicle movements expected. Trip rates derived from site size are lower in the off-peak as a result of lower demand at the campsites outside of summer holidays. Trip rates per registered vehicle were observed to increase in the off-peak, indicating a higher turnover of vehicles. This may be explained by vehicles staying longer at individual sites during warmer summer months. It should be noted that while the trip rate may be higher during the off-peak, the overall number of vehicles on site, and therefore number of vehicle movements, is lower.

The effect of campsite traffic on the road network depends on the characteristics of local traffic. Peak hours for campsite vehicle movements generally fall outside typical commuter peak periods and as a result, cause minor traffic effects during 'rush hour'. In these circumstances, which generally occur when the site is in an urban area, AM and PM peak hours should be used to assess the traffic effects of the site. These rates are for vehicle movements from the site during typical commuter peak hours.

In areas where there are no clear commuter peaks, such as rural areas and holiday towns, the largest traffic volumes are typically observed through the middle of the day. The road network is therefore likely to experience the biggest effects during the site's peak hour, for which site peak hours should be used. These tend to be different on weekdays and weekends.

Trip rates shown here are based on the assumption that the site being assessed has a similar occupancy rate to the sites surveyed. Figure 4-1 shows that the relationship between the average number of vehicles registered on site during the survey and site size was relatively constant across the locations. Using the 'site size' method for calculating trip generation will underestimate vehicle movements at sites with higher intensity than the survey sites but the 'registered vehicles' method will produce similar results.

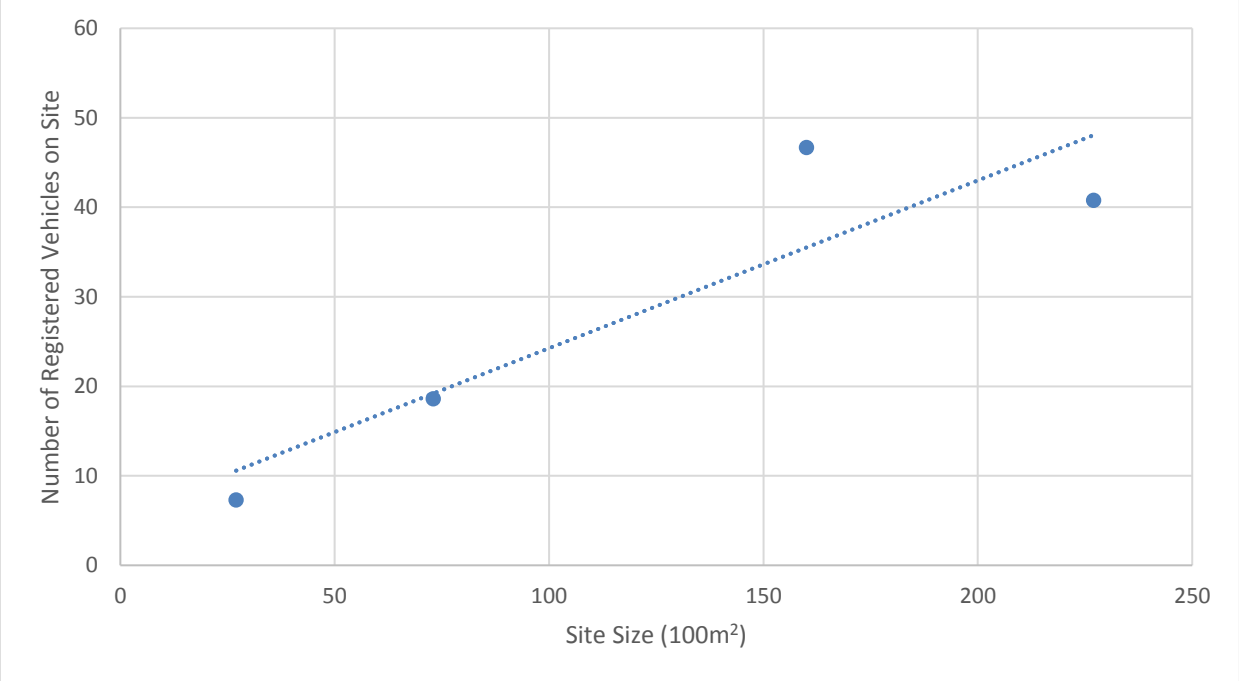


Figure 4-1 Registered Vehicles on Site vs Site Size

Table 4-1 provides a summary of the size of vehicles recorded across all surveyed sites in the peak and off-peak surveys. These values can be used to provide estimates for heavy vehicle proportions at other NZMCA sites.

Table 4-1 Summary of Heavy and Light Vehicles at NZMCA Sites

	Peak Season	Off Peak Season
Heavy Vehicles	27%	19%
Light Vehicles	73%	81%

4.1 Peak Season Trip Rates

Table 4-2 provides peak season trip rates for a range of scenarios based on the number of vehicles on site during the scenario in question.

Table 4-2 Peak Season Trip Rates per Registered Vehicle on Site

Scenario	**Trips per Registered Vehicle on Site** (standard deviation)	**Inbound/Outbound %**
AM Commuter Peak	**0.10** (0.06)	30/70
PM Commuter Peak	**0.13** (0.07)	66/34
Site Peak Hour (Weekday)	**0.35** (0.10)	50/50
Site Peak Hour (Weekend)	**0.33** (0.11)	50/50
Daily (Weekday)	**2.03** (0.62)	50/50
Daily (Weekend)	**1.94** (0.55)	50/50
Weekly	**14.03***	50/50

* Calculated as sum of 5 x weekday and 2 x weekend daily trip rates

Table 4-3 provides peak season trip rates for a range of scenarios based on the size of the site in question.

Table 4-3 Peak Season Trip Rates per Site Size

Scenario	**Trips per 100m²** (standard deviation)	**Inbound/Outbound %**
AM Commuter Peak	**0.02** (0.02)	30/70
PM Commuter Peak	**0.03** (0.03)	66/34
Site Peak Hour (Weekday)	**0.08** (0.02)	50/50
Site Peak Hour (Weekend)	**0.08** (0.03)	50/50
Daily (Weekday)	**0.44** (0.14)	50/50
Daily (Weekend)	**0.44** (0.12)	50/50
Weekly	**3.08***	50/50

* Calculated as sum of 5 x weekday and 2 x weekend daily trip rates

4.2 Off Peak Trip Rates

Off peak trip rates are provided to quantify the drop in demand at NZMCA sites outside of peak holiday season. These figures reflect trip generation for around 80% of the year.

The sample size of vehicles at the Alpine Park site (26) was substantially smaller than the other sites. Some days produced no vehicle movements and some had no registered vehicles, which resulted in peak-hourly trip rates of zero for some days. The site is likely to have been quieter than others due to its relatively remote location but is included to account for variability between NZMCA sites.

Table 4-4 provides off-peak trip rates for a range of scenarios based on the number of vehicles on site during the scenario in question.

Table 4-4 Off Season Trip Rates per Registered Vehicle on Site

Scenario	**Trips per Registered Vehicle on Site** (standard deviation)	Inbound/Outbound %
AM Commuter Peak	**0.08** (0.14)	22/78
PM Commuter Peak	**0.11** (0.07)	60/40
Site Peak Hour (Weekday)	**0.50** (0.37)	50/50
Site Peak Hour (Weekend)	**0.51** (0.43)	50/50
Daily (Weekday)	**2.02** (1.42)	50/50
Daily (Weekend)	**1.94** (0.55)	50/50
Weekly	**13.98***	50/50

* Calculated as sum of 5 x weekday and 2 x weekend daily trip rates

Table 4-5 provides off-peak trip rates for a range of scenarios based on the size of the site in question.

Table 4-5 Off Season Trip Rates per Site Size

Scenario	**Trips per Registered Vehicle on Site** (standard deviation)	Inbound/Outbound %
AM Commuter Peak	**0.01** (0.01)	22/78
PM Commuter Peak	**0.01** (0.01)	60/40
Site Peak Hour (Weekday)	**0.01** (0.01)	50/50
Site Peak Hour (Weekend)	**0.02** (0.01)	50/50
Daily (Weekday)	**0.16** (0.06)	50/50
Daily (Weekend)	**0.16** (0.09)	50/50
Weekly	**1.12***	50/50

* Calculated as sum of 5 x weekday and 2 x weekend daily trip rates

4.3 Trip Rate Correlation

Figure 4-2 visually represents the relationship and variability between the number of registered vehicles and the peak hour flow for all days of the survey at the four surveyed NZMCA sites (peak and off peak data combined).

A statistical correlation exists between the number of registered vehicles and the average peak hour traffic produced. Typically an r^2 value (shown on the chart) of 0.7 is sufficient to confidently indicate a statistical relationship exists. This correlation shows that trip rates based on registered vehicles can be used to estimate the number of vehicle movements in the peak hour regardless of time of year and site size.

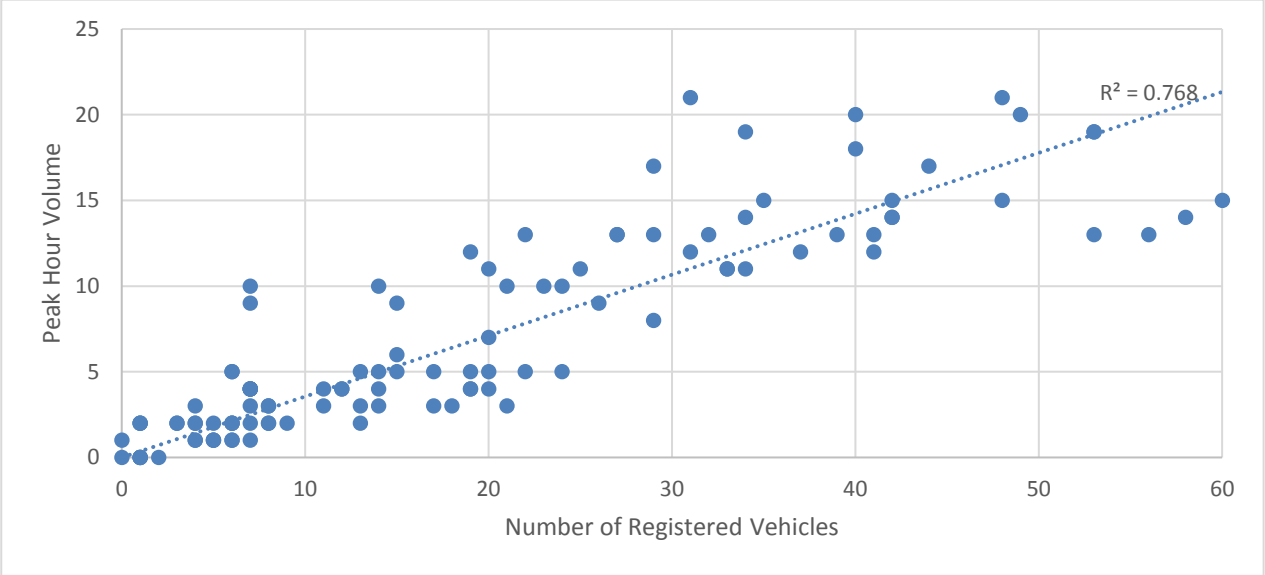


Figure 4-2 Hourly Trips Generated by Registered Vehicles (Site Peak Hour)

Figure 4-3 shows the relationship between site size and the average peak hour flow over the duration of the survey at the four surveyed sites. The chart clearly shows the lower demand present during the off-season at all sites.

A statistical correlation exists between site size and the average peak hour traffic produced. Typically an r^2 value (shown on the chart) of 0.7 is sufficient to confidently indicate a statistical relationship exists. This correlation shows that trip rates based on site size can be used to estimate vehicle movements, though different rates should be used for peak and off peak seasons.

Trip rates for the Alpine Park site were below the trendline for both peak and off-peak surveys, though not by a significant amount. This is likely to be a result of the site's relatively remote location.

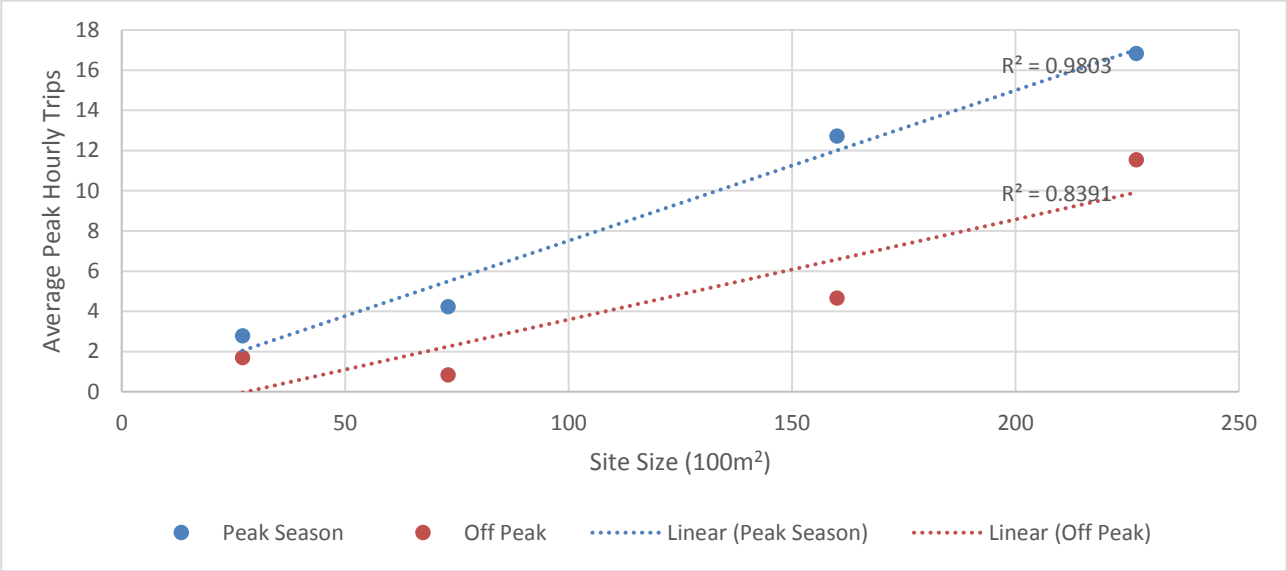


Figure 4-3 Hourly Trips Generated by Site Size (Site Peak Hour)

Figure 4-5 shows the correlation between registered vehicles and daily trips produced at the four surveyed NZMCA sites (peak and off-peak data combined).

A statistical correlation between the number of registered vehicles and the number of daily trips produced exists. Typically an r^2 value of 0.7 is sufficient to confidently indicate a statistical relationship exists. This correlation shows that trip rates based on the number of registered vehicles can be used to estimate daily vehicle movements regardless of time of year and site size.

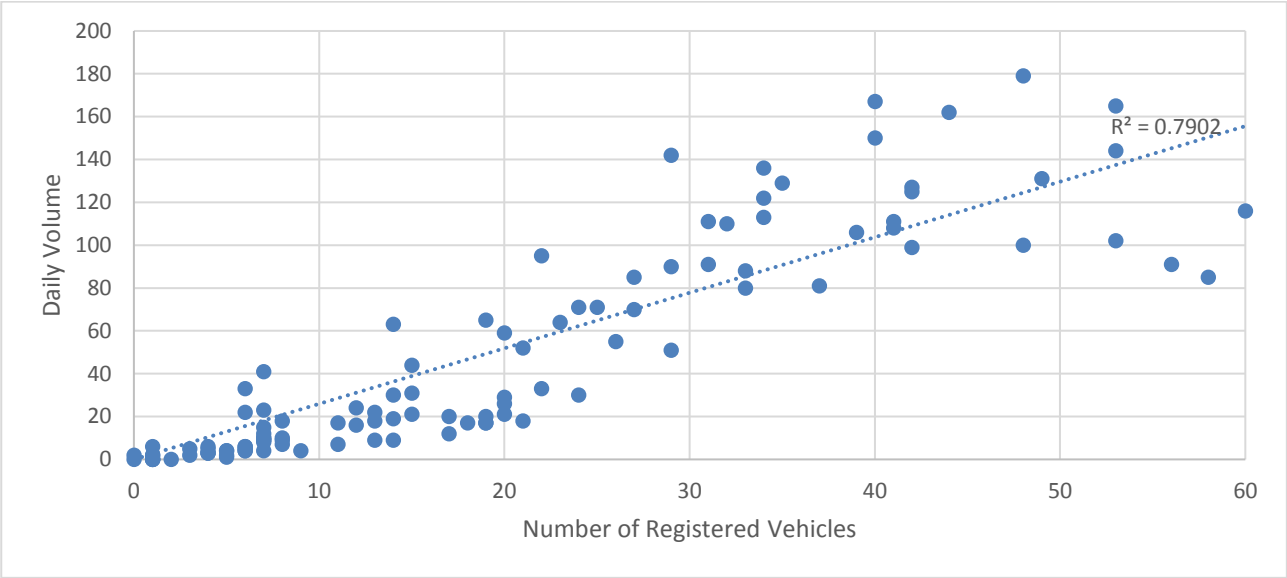


Figure 4-4 Daily Trips Generated by Registered Vehicles

Figure 4-5 shows the relationship between site size and the average daily flow over the duration of the survey at the four surveyed sites. The chart clearly shows the lower demand present during the off-season at all sites.

A statistical correlation exists between site size and the average daily traffic produced. Typically an r^2 value (shown on the chart) of 0.7 is sufficient to confidently indicate a statistical relationship exists. This correlation shows that trip rates based on site size can be used to estimate vehicle movements, though different rates should be used for peak and off peak seasons.

Trip rates for the Alpine Park site were significantly below the trendline for both peak and off-peak surveys, which is expected to be a result of the site's relatively remote location. The site was selected for the study to reflect the range of site locations and the effect on average trip rates.

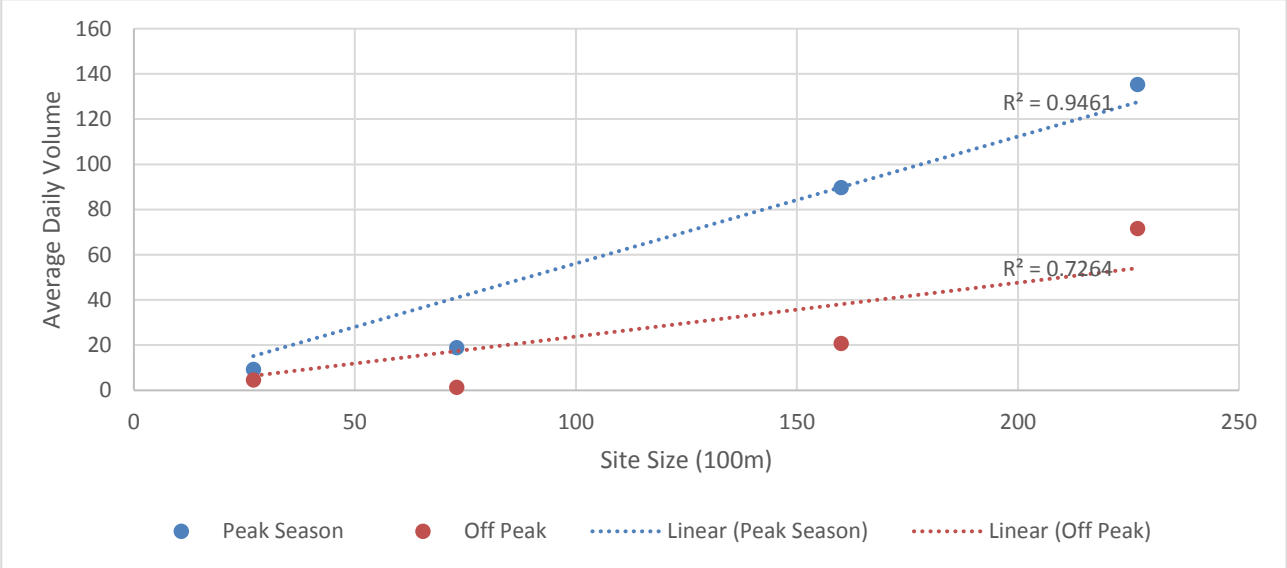


Figure 4-5 Daily Trips Generated by Site Size

Appendix A – Site Descriptions

Taupo Airport

Address	Site ID
Anzac Memorial Drive, Taupo	3365

Site Description

The site is roughly 7,000 m² in size with an advertised capacity of 130 vehicles. The site consists of a metalled central strip with lots for vehicles on either side. Roughly 8km from Taupo CBD, access is provided via a 100m paved road from Anzac Memorial Drive, which is in good condition with no sign of deterioration.
The site is likely to have comparatively large vehicle demands due to its location, size and accessibility.
Existing Restrictions: Max 21 days in 60 day period.

Facilities

☐	Dump Station	☑	Dog Friendly
☐	Septic Tank	☐	Member Discount
☐	Residents Only	☑	Large Vehicle Access
☐	Internet	☐	Wheel Chair Access
☐	Bar	☑	Water
☐	Laundry	☐	Toilets
☐	Restaurant	☐	Showers
☑	Certified Self Contained Vehicles Only	☐	Power
☐	Off-Season Discount Deal		

Location

Manganese Point

Address	Site ID
232 Manganese Point Road, Whangarei	639

Site Description

The site available for camping is roughly 3,500 m² in size. The site consists of a steep gravel road and gravelled area, with some grassed camping spots. Access to the site is at the end of Manganese Point Road, a narrow road (roughly 5m wide) with steep sections and sharp bends. The site is likely to experience low volumes in comparison to other NZMCA sites due to its size, stay restriction and difficulty for larger vehicles to access. **Existing Restrictions**: Max 3 consecutive days in 30 day period.

Facilities

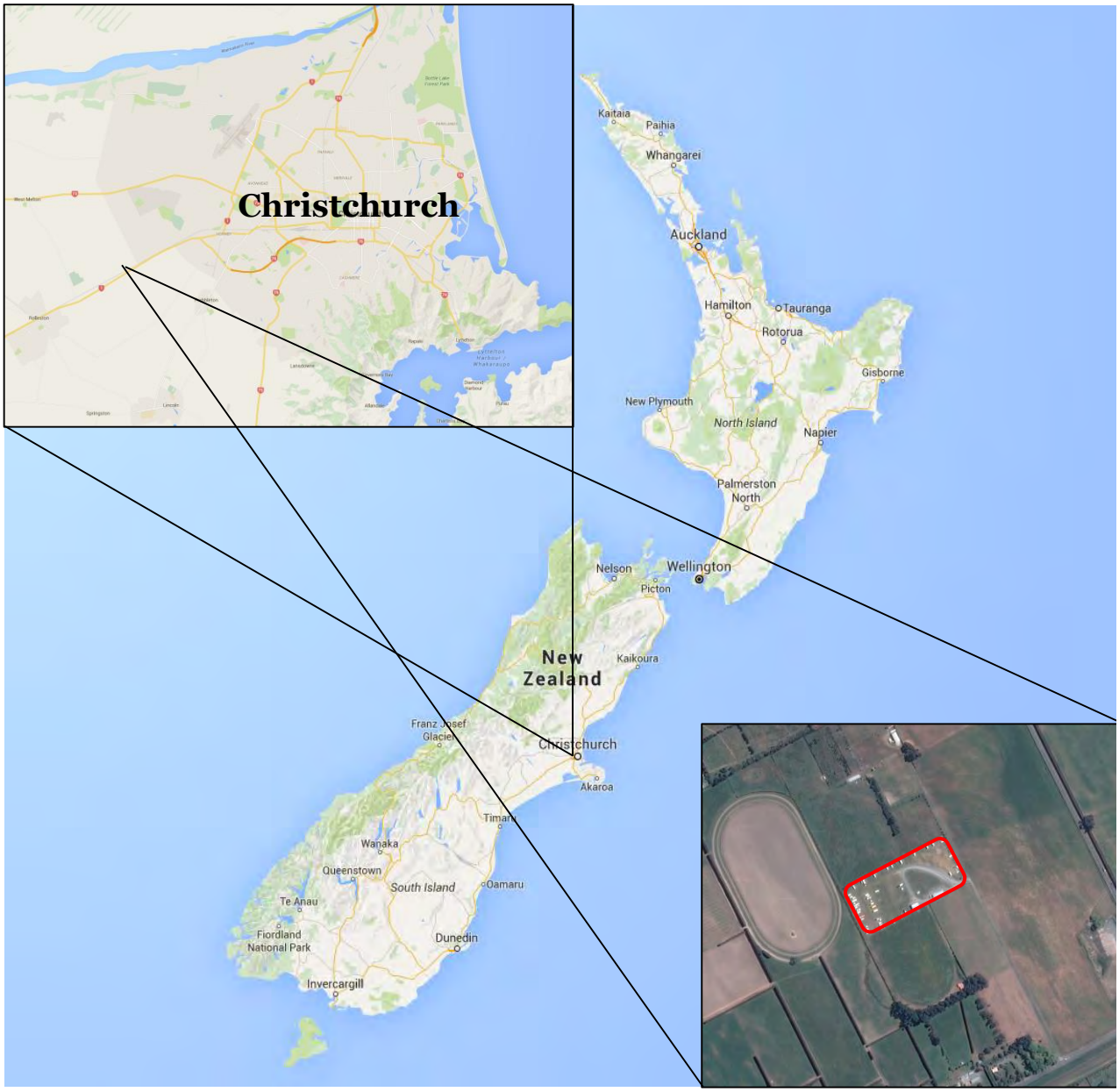
- [ ] Dump Station
- [ ] Septic Tank
- [ ] Residents Only
- [ ] Internet
- [ ] Bar
- [ ] Laundry
- [ ] Restaurant
- [x] Certified Self Contained Vehicles Only
- [ ] Off-Season Discount Deal
- [x] Dog Friendly
- [ ] Member Discount
- [x] Large Vehicle Access
- [ ] Wheel Chair Access
- [ ] Water
- [ ] Toilets
- [ ] Showers
- [ ] Power

Location

Weedons Park

Address	Site ID
286 Jones Road, Rolleston	7561
Site Description	**Facilities**
The site is roughly 25,000 m² in size (20% storage). The site consists of a metalled central loop with grassed lots for vehicles on the outside. Access is provided via a 400m paved road from Jones Road. Some evidence of potholes and edge deterioration were observed, though the road is easily drivable. Sewerage, toilet and laundry facilities were scheduled for upgrades over the course of 2016. The site is likely to have comparatively large vehicle demands due to its location, size and accessibility. **Existing Restrictions**: Max 21 days in 60 day period.	☐ Dump Station ☐ Septic Tank ☐ Residents Only ☐ Internet ☐ Bar ☑ Laundry ☐ Restaurant ☑ Certified Self Contained Vehicles Only ☐ Off-Season Discount Deal ☑ Dog Friendly ☐ Member Discount ☑ Large Vehicle Access ☐ Wheel Chair Access ☑ Water ☐ Toilets ☐ Showers ☐ Power

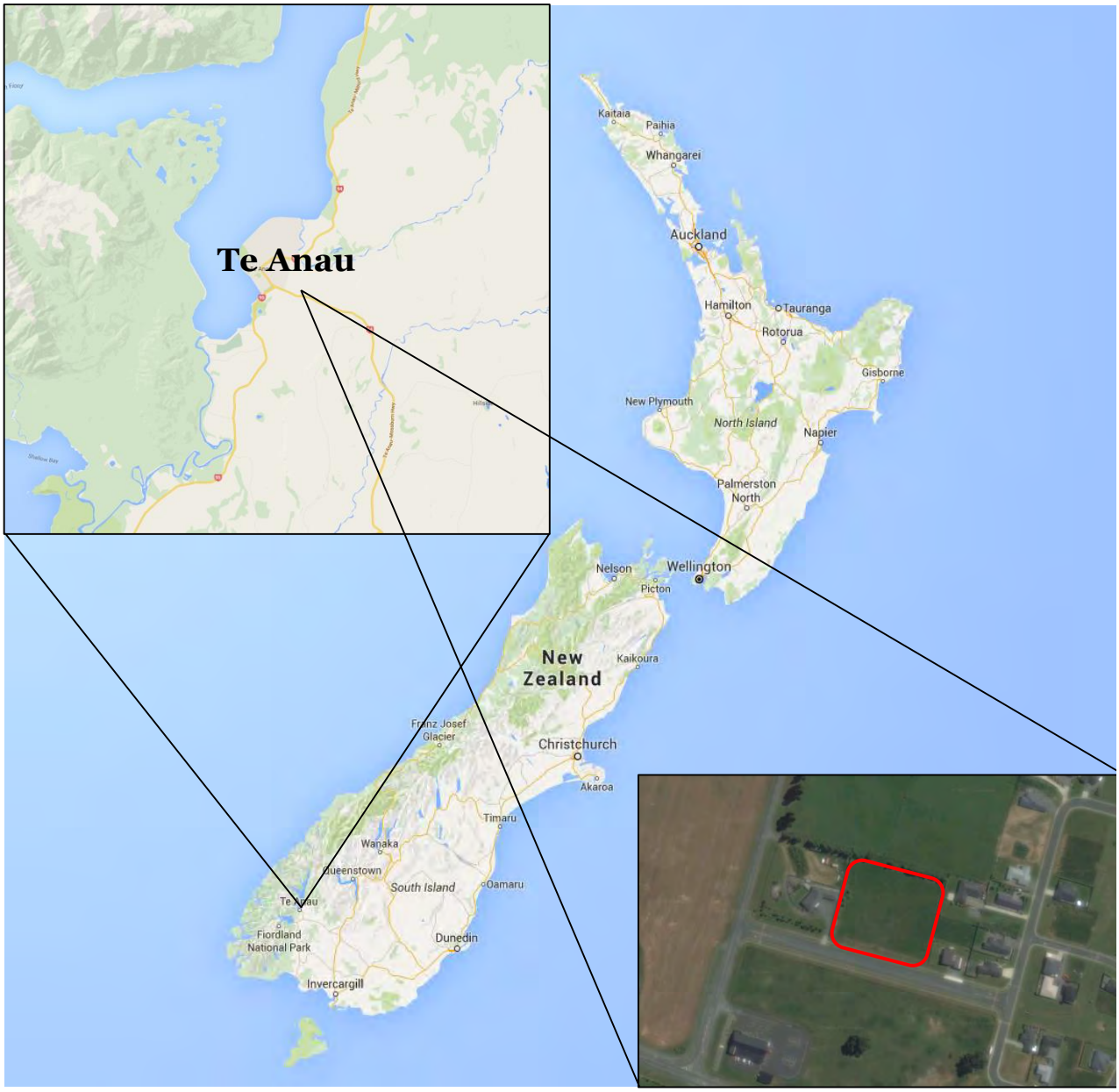
Location



Alpine Park

Address	Site ID
15 Alpine Drive, Te Anau	9101
Site Description	**Facilities**
The site available for camping is roughly 7,300 m² in size. This site consists of a metalled area surrounded by grass lots for parking. Access is provided directly off Alpine Drive, roughly 1.5km south east of Te Anau. The site is likely to have moderate vehicle demand due to its accessibility and facilities. Its relative rurality means the site will have lower demands than sites closer to cities. **Existing Restrictions:** 21 days in 60 day period.	☐ Dump Station ☐ Septic Tank ☐ Residents Only ☐ Internet ☐ Bar ☐ Laundry ☐ Restaurant ☑ Certified Self Contained Vehicles Only ☐ Off-Season Discount Deal ☑ Dog Friendly ☐ Member Discount ☑ Large Vehicle Access ☐ Wheel Chair Access ☑ Water ☐ Toilets ☐ Showers ☐ Power

Location



APPENDIX G: SIGNAGE

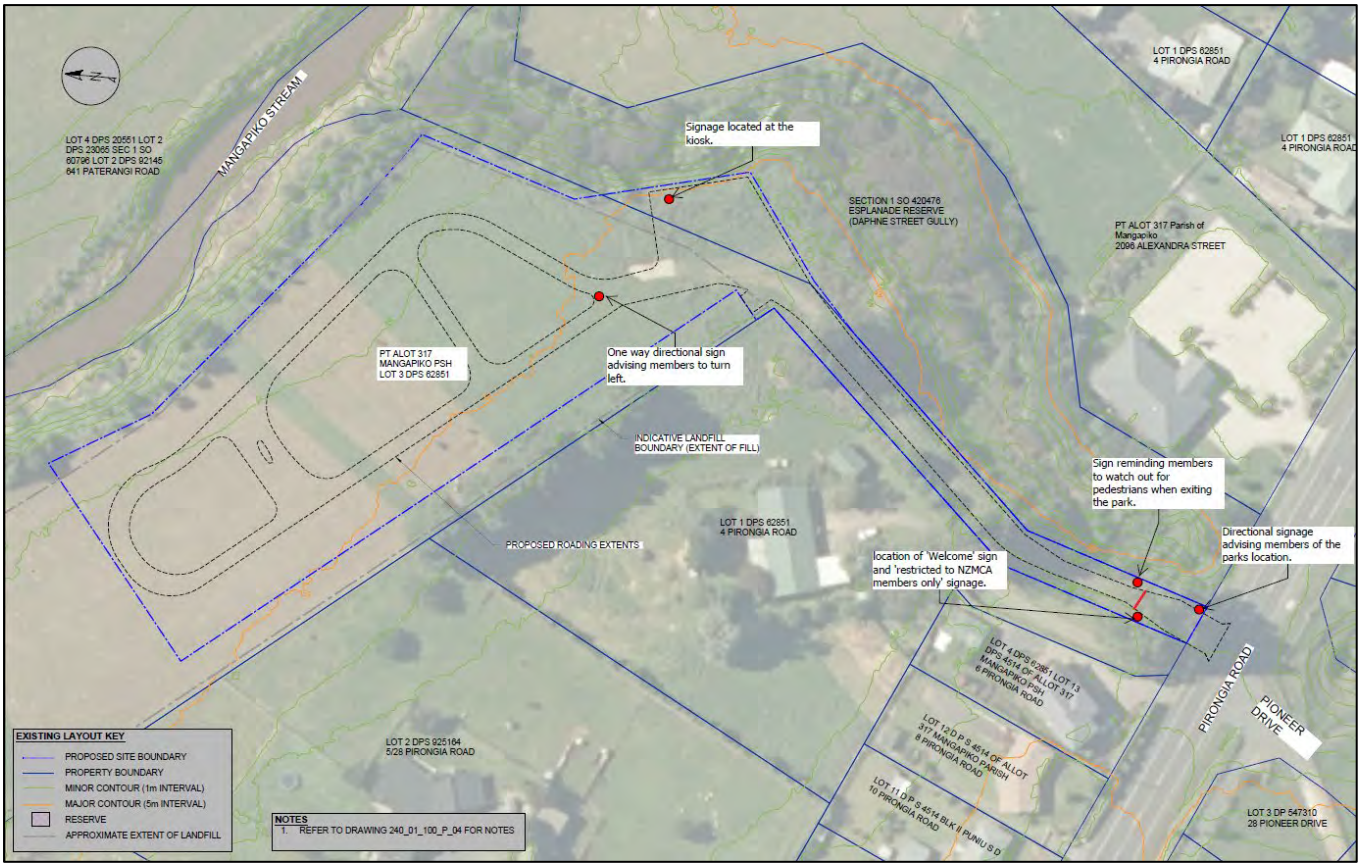


Figure 10: shows the approximate location of various signage onsite.

Figure 11: Example of Welcome Signage at NZMCA Parks. The welcome sign at Te Awamutu site will be of a similar design.

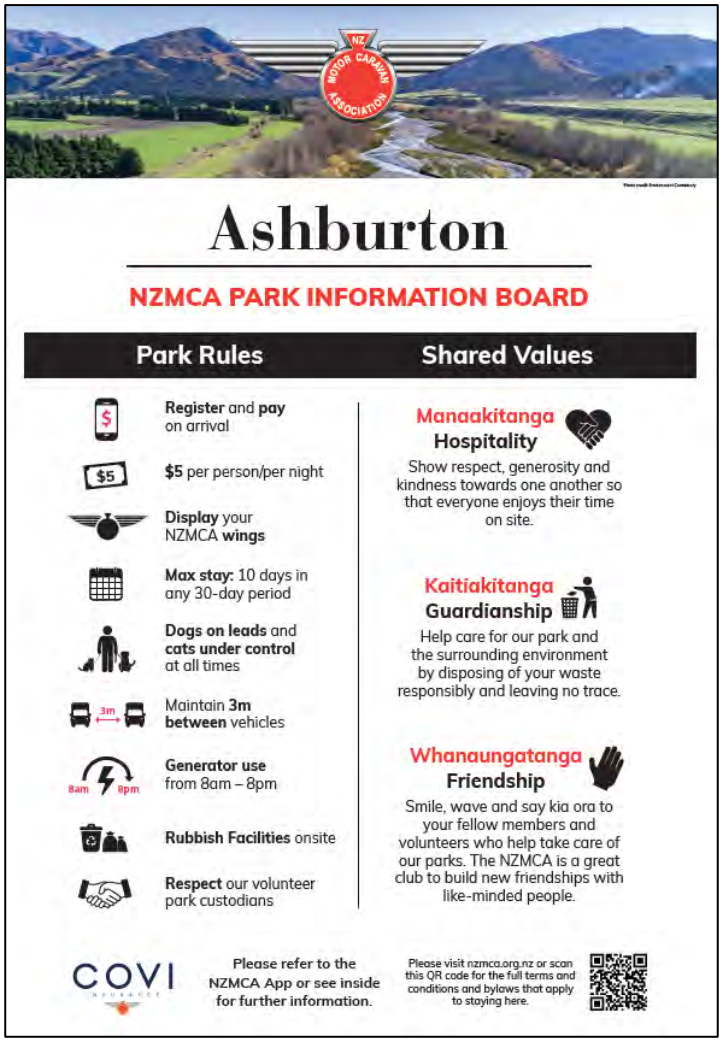


Figure 12: Example of Information Signage that will go on the kiosk relating to park rules.

Figure 13: One-way directional signage positions at the intersection of the ring road advising members to turn left.

Figure 15: shows an example of directional signage located on a 2m high pole at the corner of Pirongia Road and the park entrance.

Figure 14: Example of Hazard Sign that will be located next to the main entrance gate.

APPENDIX H: PRE-APPLICATION MEETING NOTES

Pre-application Meeting

Te Awamutu Closed Landfill Site

Date: 19 May 2021

Participants:

NZMCA – James, Rayya and Michael Cullen

Waipa District Council – Quentin Bud (Team Leader), Kimberley (Planner) and Sharlene (Engineer).

The meeting started off with introductions. The following questions were sent to Waipa District Council to be discussed at the meeting. Responses to each are noted below.

1. Who the Council considers might be an affected party?
   The neighbours located along the western boundary are likely to be affected and therefore written approval from them would be required. These include 4 Pirongia Road, 28/5 Pirongia Road and potentially 28 Pirongia Road.

2. Iwi approval – what is Council's process and expectation? Who is the local Iwi contact person? Council recommends engaging with the local Iwi prior to the lodgement of this resource consent application. WDC will also send copies of the application to the local Iwi for comments once lodged as required. Quentin confirmed that he will provide contact details of the local Iwi contact to NZMCA.

3. We will be doing some earthworks around the entrance and dump station. WDC want information relating to the area and volume of earthworks undertaken on site. They also want example and dimensions of the dump station that will be installed on site. NZMCA will provide this information in their response to Council.

4. Driveway access to the site. Sharlene confirmed that there is a kerbing channel located near the entranceway. The vehicle access to the site will need to be an "urban concrete vehicle entrance" having a minimum width of 5.5m. Further information relating to the standard of vehicle crossing and accessway will be provided by WDC. The entranceway to the site is located in close proximity to the P1 intersection. Sharlene will seek comments from the WDC transportation team on this matter.

5. What reports might the Council expect to assess this application? The two key reports required for this application are the Traffic Assessment Report and the Contamination Report. Quentin recommends providing a detailed site investigation report in support of this application.

6. Do we need approval from Regional Council? Is there a change required to the existing conditions of consent? WDC will check and provide confirmation at a later stage.

7. Does Council have any major concerns related to this proposal that we need to be aware of?

   - Transportation matters to be addressed.
   - Land use capability report likely not required in this case as it is a landfill site.

- WDC Flooding Maps show 1:100 year event. Modelling does not show what flooding would do to the property.
- Fonterra take water from the stream and stormwater circulated into the stream. There is a culvert underneath Pirongia road.
- The property is in the bore protection area.
- Urban concrete vehicle entrance to be constructed on site with a minimum width of 5.5m. WDC's Transportation – roading team to provide further comments as its close to P1.
- Dump station with reticulated wastewater is proposed on site. Sharlene mentioned there may be a requirement to have water tanks for storage. However, this will need to be confirmed.
- Connection to wastewater and portable water. Water meter to be located at the accessway.

8. The site does not currently have access to water supply. We are investigating the potential for this; however, our members do not need water supply. Sharlene alluded to us that the water services team will have a keen interest in this property and this application.

.

Pre Application Meeting Notes

Application ref:	PG/0093/21
Applicant:	New Zealand Motor Caravan Association Inc
Agent:	New Zealand Motor Caravan Association Inc
Council Staff:	Quentin Budd – Consents Team Leader Sharlene McGaughran – Team Leader Development Engineering Kimberley Richards - Planner
Meeting time and date:	11:00am, Wednesday 19 May 2021
Site address:	Pirongia Road, Te Awamutu
Legal Description:	Part Allot 317 Mangapiko PSH (RT SA15B/1092)
Zone:	Rural Zone
Policy Overlays:	D80: Processing and disposal of waste materials - Te Awamutu Landfill & Effluent Disposal Site (Closed) – Pirongia Rd, Alexandra St; Cultural Landscape Area Alert – Mangapiko Stream; Cultural Landscape Area Battle Site – Hingakaka; Flood Hazard Area

The Site

The subject site is a rear site located on the northern side of Pirongia Road, Te Awamutu.

The site has previously been used for a landfill site, this has since ceased with the site being capped. Waikato District Council have a number of Consents with Waikato Regional Council that require ongoing monitoring of the site is undertaken.

There is currently no built development on the subject site.

The subject site is located within the Rural Zone and is subject to the following policy overlay areas in the Waipa District Plan:

- Designation D80: Processing and disposal of waste materials - Te Awamutu Landfill & Effluent Disposal Site (Closed) – Pirongia Rd, Alexandra St;
- Cultural Landscape Area Alert – Mangapiko Stream;
- Cultural Landscape Area Battle Site – Hingakaka;
- Flood Hazard Area.

Council's Special Features Map show the site as being subject to Flooding and a Landfill. Also, the site contains a HAIL Site area - Te Awamutu closed landfill.

Figure 1: Aerial photograph of site

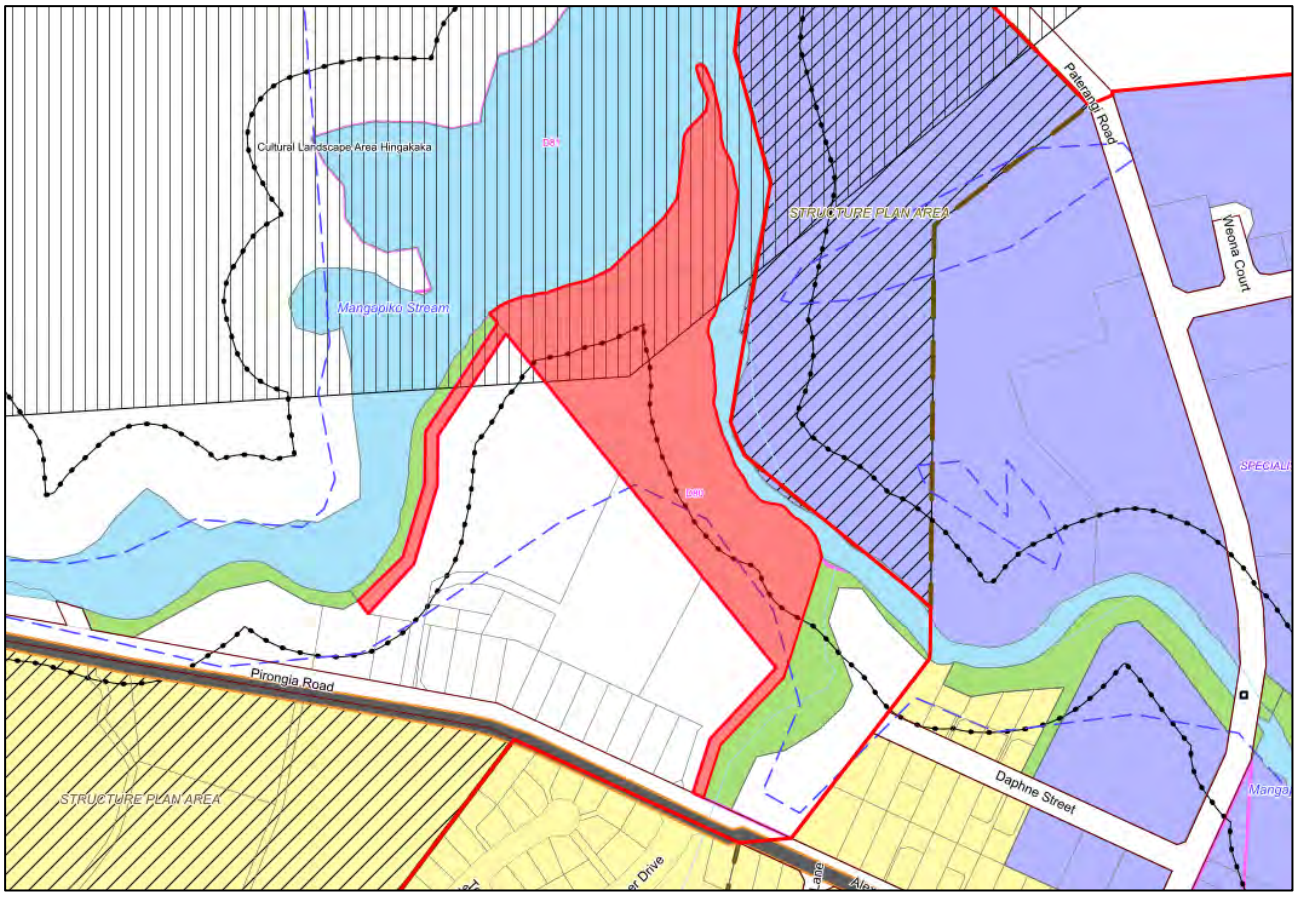


Figure 2: District Zone and Policy Overlays Map

Proposal

The Applicant's, New Zealand Motor Caravan Association Inc (NZMCA), are seeking to establish a members only certified self-contained motor home and caravan park at the subject site.

The site will accommodate approximately 63 vehicles at full capacity and will include a dump station for the purpose of wastewater disposal.

NZMCA Parks usually contain a 3 x 3m registration kiosk, gravel or hardstand area for parking and driveway for access.

The applicant has advised that approximately 300m^3 of earthworks is required to form the parking areas.

Figure 3: Proposed scheme plan

Planning Comments

Planning staff provided comments in relation to the planning matters of the proposal with these being summarised below:

- The proposed activities do not fall under 'Residential Based Visitor Accommodation' or 'Visitor Accommodation" as the definition of both in the District Plan explicitly exclude camping or caravan sites. Thus, the activity will fall under a 'Non-Farming Activity' within the Rural Zone, which would result in the activity being a non-complying activity (Refer Rule 4.4.1.5(b)).
- As the site is located within the Rural zone a robust assessment of the proposal against the Rural zone objectives and policies is expected should an application be submitted. It would need to be demonstrated that there is a functional and compelling reason for the motorhome park to be located within the Rural zone, including an explanation as to why this site has been selected.
- As the site is a rear site within the Rural zone it will be tucked away from view from public spaces, such as the road, thus maintaining rural character along the street frontage as there will be no discernible change.
- With regards to the adjoining properties the proposal could impact on their ability to enjoy the rural character and amenity of their sites and surrounding area. It is therefore recommended that written approval be sought from the owners and occupiers of the following properties:
    - 5/28 Pirongia Road;
    - 4 Pirongia Road; and

- 28 Pirongia Road.

- The location of the subject site in the wider area is located on the western fringes of the Te Awamutu township providing easy access to commercial areas for those using the motorhome park.
- As the site is a designated site with Waipa District Council as the requiring authority approval from the property team to utilise this land for the proposed purpose would be required to be obtained.
- As the site contains a confirmed HAIL site it would be expected that a DSI Report is provided upfront with any application.
- Our records show that two consents have been approved by Waikato Regional Council in relation to the landfill site with these consents having the following WRC references: 940123 and 940126. For a copy of these consents it is suggested you contact Waikato Regional Council directly.

Infrastructure Development Comments

Engineering staff provided comments in relation to the engineering aspect of the proposal with these being summarised below:

- The information provided in relation to vehicle movements looks to assess the vmpd over 100, which will trigger DCs to be payable at the time of consent application. A development contributions assessment form will be required to be completed and submitted with the application.
- As the vmpd will be greater than 100, an ITA will be required as part of the application to assess the conflict and effects with the entrance and traffic entering and exiting Frontier Estate, opposite the proposed entrance.
- A site plan showing vehicle movements and parking would be required in the application also.
- A wastewater connection and trade waste permit will be required as part of the development of the project. And will possibly form part of a building consent for the waste dump station. The waste dump station shall be constructed on a concrete pad, so that no spillage can occur direct to the ground. The connection will require the approval of Council's Waters Team.

Summary

Provided that traffic effects can be adequately managed and neighbours written approvals are provided, the proposal appears to be able to obtain resource consent.

Communication

In order to establish clear lines of communication, all correspondence shall be directed through Council's Planner, Kimberley Richards (Kimberley.richards@waipadc.govt.nz).

Notes:

1. **Please note that all the information provided in this form is available to the public.**
2. **Pre-application meetings are intended to provide initial advice on specific issues identified for discussion by the applicant and any major issues. It cannot replace the in-depth investigation associated with the formal assessment of an application (and where relevant, consideration of public submissions). Advice provided by Council Staff is given in good faith and in no way binds a decision by the Council.**

AECOM Imagine it. Delivered.

AECOM New Zealand Limited
Level 2, 2 Hazeldean Road
Addington, Christchurch 8024
P O Box 710, Christchurch MC
Christchurch 8140
New Zealand
www.aecom.com

+64 3 966 6000 tel
+64 3 966 6001 fax

5 August 2020

Manager - Property Services
Waipa District Council
Private Bag 2402

Attention: John Miles
via email: john.miles@waipadc.govt.nz

Dear John,

Te Awamutu Closed Landfill, New Zealand Motor Caravan Association - Planning Assessment

1.0 Introduction

Waipa District Council (WDC) own land formerly used for the Te Awamutu Landfill (South). This portion of the landfill closed in the 1970's and a clay cap was constructed in 2002. The site is currently used for cattle grazing, as pasture is well established.

The New Zealand Motor Caravan Association (NZMCA) has approached WDC about developing a portion of this site into an overnight parking area. It is understood the proposed development would include:

- Approximately 8,000m^2 of gravel hardstand for overnight parking of self-contained motor caravans (exclusive members only use);
- A waste effluent disposal station that would connect into the existing wastewater network and be accessible to the public.

The site is located off an existing access way from Pirongia Road, at the north western edge of the Te Awamutu urban area. Attachment A identifies the site location and an aerial image of the proposed layout of the site. The site is bordered by the Mangapiko Stream to the north and east. Adjacent to the site are additional areas of closed landfill/pasture (north and east) and rural residential properties (south and west).

This letter provides a review assessment of the planning requirements associated with the proposed development.

2.0 Review of Waipa District Council requirements

2.1 Zoning

The site area has the following zoning and overlays in the Waipa District Plan (WDP), as shown in **Figure 1** and **Figure 2**:

- Rural Zone, with adjacent properties also in the Rural Zone (south and west), Reserve Zone (east) and River, Lake or Stream Zone (north);
- Designation D80 – Waipa District Council, for the processing and disposal of waste materials – Te Awamutu landfill and effluent disposal site (closed);
- Flood Hazard Area – part of the site closest to Mangapiko Stream; and
- Cultural Landscape Area Alert - half of the site closest to Mangapiko Stream.

2.2 Rules Assessment

The WDP does not include a definition that specifically includes camping grounds or caravan sites; however it is noted that the definition of 'visitor accommodation' explicitly excludes camping or caravan sites and 'residential based visitor accommodation relates to the use of a dwelling or directly associated sleepout for short stay accommodation for a tariff. The use of land for camping or motor caravans would most closely fall within the definition of 'tourism facilities', i.e.:

'Tourism facilities'

means land and/or BUILDINGS used for the commercial organisation and operation of activities that cater to tourists including those relating to features and attractions (e.g. scenic lookouts, reserves, waterfalls, national parks), and tourist establishments (e.g. information centres and visitor centres), but excludes VISITOR ACCOMMODATION.

However, following a telephone conversation with the Duty Planner at Waipa District Council, it was their view that the use of land motor caravan parking is undefined under the WDP.[1]

The relevant rules in the WDP for the use of land, earthworks and vegetation clearance, are addressed in **Table 1**. There are no rules relating to flood hazards, hazardous substances/ contaminated land or utilities applicable to the proposed activity.

As the site is designated, were NZMCA to apply for resource consent to use the land for a motor caravan park, they would need to get prior written consent from WDC (as requiring authority) under section 176 (1) (b) of the Resource Management Act 1991 for the works proposed within the designated site.

Figure 1 Waipa District Plan Zoning

[1] Pers comm, Duty Planner, Waipa District Council, 3 August 2020

Figure 2 Waipa District Plan Policy Area Map

AECOM Imagine it. Delivered.

AECOM New Zealand Limited
Level 2, 2 Hazeldean Road
Addington, Christchurch 8024
P O Box 710, Christchurch MC
Christchurch 8140
New Zealand
www.aecom.com

+64 3 966 6000 tel
+64 3 966 6001 fax

Table 1 Waipa District Plan rules assessment

Rule	Compliance	Comment
Permitted Activities		
Rural Chapter – Rule 4.4.1.1 (use of land)	No	The use of land for a motor caravan park is not included in the list of permitted activities (as a tourism facility, or even if it is an undefined activity).
Rural Chapter – Rule 4.4.1.1 (m) **Performance standards Rule 4.4.2.75 Earthworks** Earthworks (excluding mineral extraction activities), shall not exceed a total volume of 1000m^3 in a single activity or in cumulative activities in any calendar year, provided that this rule shall not apply to earthworks incidental to an approved resource consent or building consent, tillage of land associated with the growing of crops, construction, maintenance and upgrading of farm tracks, farm silage pits or existing drains.	Yes	Where earthworks are proposed to strip the topsoil to develop the hardstand parking area it is expected the volume limit of 1,000m^3 can be met. If the 1,000m^3 threshold is to be exceeded this would be a discretionary activity (see below).
Lakes and Water Bodies Chapter – Rule 26.4.1 (e) Within 23m of the edge of any lake or water body as measured at its maximum annual water level, removal of vegetation: (i) On or within 2m of existing tracks, fences or water intake structures for maintenance purposes; or (ii) To undertake tillage of land associated with the growing of crops over 5m from a lake or water body; or (iii) Undertaken in accordance with the terms of a QEII National Trust covenant, or other relevant covenant, consent notice or encumbrance; or (iv) Carried out, by, or under the direction/control of the Department of Conservation or Waipa District Council on Crown Reserve; or (v) To control and remove invasive weeds; or (vi) Undertaken pursuant to conservation activities	TBC	Stripping of topsoil to develop the hardstand parking area would require the removal of vegetation and as currently proposed the hardstand area would be within 23m of Mangapiko Stream. Where the hardstand area can avoid the 23m setback from Mangapiko Stream resource consent for earthworks/vegetation clearance would not be required.
Restricted Discretionary Activities		
Lakes and Water Bodies Chapter – Rule 26.4.2.1 – 23m setback from lakes and water bodies No building, wastewater treatment system, earthworks, vegetation clearance or feed pads shall be erected or undertaken within 23m of the edge of any lake or water body as measured at its maximum annual water level, provided that this rule shall not apply to: (a) The Karāpiro and Arapuni Hydro Power Zone. (b) Maimai not exceeding 6m² in floor area; or (c) Earthworks and vegetation removal associated with conservation planting of river banks and lakes; or (d) St Kilda Residential Structure Plan Area; or (e) Clearance of vegetation undertaken in accordance with Rule 26.4.1.1(e) or (f); or (f) Harvesting of forestry over 5m from a water body.	TBC	Where stripping of topsoil to develop the hardstand parking area is proposed within 23m of Mangapiko Stream resource consent would be required as a restricted discretionary activity under this rule.

Rule	Compliance	Comment
Discretionary Activities		
Rural Chapter – Rule 4.4.1.4 (xxvii) – Earthworks Any permitted, controlled or restricted discretionary activity that fails to comply with relevant performance standards	TBC	Applicable if the 1,000m^3 earthworks volume is exceeded.
Non-complying Activities		
Rule chapter – Rule 4.4.1.5 (b) All other activities not listed in activity status table Rules 4.4.1.1 to 4.4.1.4 and not listed as a prohibited activity	Yes	The use of land for a motor caravan park is not listed in any of the rural chapter rule tables and therefore is caught under this catch all rule.

3.0 National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011

The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES (Soil)) is applicable to this proposal.

NES (Soil) requirements apply to a piece of land where an activity or industry described in the Hazardous Activities and Industries List (HAIL) is taking place, has taken place or is considered more likely than not to have taken place. Regulation 5 sets out the activities to which the NES (Soil) applies. Given the site is a closed landfill, the site is on HAIL list and therefore considered a piece of land under the NES (Soil).

Soil disturbance (including stripping grass and topsoil) is provided for as a permitted activity under the NES (Soil) where the requirements of Regulation 8(3) are met. Where soil disturbance is proposed to place hardstand within the site it is expected all the requirements can be met and the main restrictions are in relation to the volume of soil disturbance over the site and the volume of soil which may be removed from the site. Across the site area of 8,000m^2, a permitted volume of soil disturbance is 400m^3 and the permitted volume of soil removal is 80m^3 which if all topsoil is stripped would provide for a depth of 0.01m or where topsoil is retained on site (e.g. bund/stockpile) a depth of 0.05m across the site.

Where soil disturbance is not required or the above volume thresholds will not be exceeded, resource consent under the NES (Soil) is not required. However, if the soil volume thresholds (disturbance or removal) are to be exceeded this would be a discretionary activity under Regulation 11 of the NES (Soil) as a Detailed Site Investigation has not been completed for the site. Resource consent for a discretionary activity would be required from WDC.

Changing the use, or subdivision, of a piece of land is also controlled by the NES (Soil) where that is reasonably likely to harm human health. In this instance the use of the piece of land will be limited to overnight parking, which given the existing capping layer above the landfill material is not expected to be reasonably likely to harm human health. No information has been provided as to whether a long-term lease of more than 35 years is proposed, since this would be assessed as a subdivision of the land. Based on the assumptions relating the capping layer and that a lease term greater than 35 years is not proposed, resource consent for subdividing or changing the use of a piece of land under the NES (Soil) is not required.

4.0 Summary of District Council Consents

In summary, resource consent will be required for a **non-complying activity** under Rule 4.4.1.5 (b) of the WDP as an undefined land use. Under Section 104D the Resource Management Act 1991 a resource consent application for a non-complying activity can be granted only if the consent authority is satisfied that either the adverse effects of the activity on the environment will be minor or that the activity will not be contrary to the objectives and policies of the relevant planning documents. With appropriate mitigation in place (e.g. landscaping, maximum number of motor caravans per night, duration of stay) the potential adverse effects are likely to be able to be managed such that effects are no more than minor.

Dependent on the need for, location and volumes of earthworks, vegetation clearance, soil disturbance and removal, resource consent may also be required from WDC other requirements would also be relevant:

- **Discretionary activity** under Regulation 11 of the NES (Soil);
- **Restricted discretionary** for earthworks or vegetation clearance within 23m of a water body under rule 26.4.2.1 of the WDP; and
- **Discretionary activity** for earthworks of more than 1,000m3 in a Rural Zone under rule 4.4.1.4 (xxvii) of the WDP.

An application would be assessed on its overall status as a non-complying activity.

5.0 Review of Waikato Regional Council requirements

5.1 Existing Regional Consents

WDC hold two resource consents related to the closed landfill at the site:

- 940123 – to discharge leachate into the ground from the closed Te Awamutu landfill in circumstances where contaminants may enter groundwater, the Paterangi Drain and Mangapiko Stream
- 940126 – to discharge contaminants into the air (i.e. landfill gas) from the closed Te Awamutu landfill

Both consents require ongoing environmental monitoring activities to be completed. Consent 940123 has conditions which set out the requirements for the development and implementation of an Aftercare Plan for the ongoing management of the landfill; including monitoring requirements, contingency planning and a description of the final use of the site. The contingency planning section of the Aftercare Plan sets out the instances when the capping layer should be inspected and damage repaired. Continuation of these measures (and the ongoing monitoring required by consent conditions) would be required where the site is developed for a motor caravan park.

In section 5.2 of the Aftercare Plan, and in relation to final use of the site, it is noted that WDCs Parks and Reserves Department have in the past used part of the site to carry out mulching. Section 5.2 further notes that if they were to continue that activity they would "*need to construct a hard stand area with drainage system to collect leachate"* and to prevent the collection of additional stormwater, with the system agreed upon with Regional Council staff prior to construction.

Condition 6(vi) of consent 940123 requires the Aftercare Plan to address the ongoing use of the landfill such that the integrity of the cap and the vegetative layer will not be compromised. It is recommended that, if the development were to proceed, the Aftercare Plan is updated and the amendments approved by WRC as set out in Condition 6 of consent 940123.

5.2 Review of Waikato Regional Plan

The relevant provisions of the Waikato Regional Plan (WRP) are in relation to stormwater discharge, earthworks/soil disturbance and contaminated land. Due to the limited scale of the proposed activities and the existing consents held for the site the proposed activities are considered to be permitted, as set out below. Provisions proposed to be amended or included in the WRP as a result of Plan Change 1 to the WRP are not relevant to the proposed activities at the site.

5.2.1 Discharges to land and water

Stormwater is defined in WRP as "*artificially chanellised rainwater prior to its point of discharge to land or water."* During both construction of the proposed hardstand and operation of the motor caravan park, rainwater is not proposed to be collected or chanellised and would disperse onto the surrounding pasture. Therefore the activity is not expected to generate stormwater discharges that need to be considered against the WRP stormwater rules.

As the proposed waste effluent dumping station will discharge to the existing reticulated wastewater network, no regional resource consents are required for the installation or use of the dump station.

5.2.2 Soil disturbance and vegetation clearance

Rule 5.1.4.11 of the WRP relates to soil disturbance, roading and tracking and vegetation clearance and is a permitted activity where all the conditions in Section 5.1.5 are met, these conditions are:

a. *Organic material shall not be placed in fill where its subsequent decomposition will lead to land instability.*

b. *Erosion/sediment controls shall be installed and maintained on all earthworks during and on completion of the works to avoid the adverse effects of sediment on water bodies.*

c. *Cut-offs or culverts shall be designed and installed to prevent scour, gullying or other erosion.*

d. *Any erosion or instability of the coastal environment, or the beds of rivers and lakes or wetlands shall be avoided or remedied if it does occur.*

e. *The activity shall not result in neighbouring land becoming subject to flooding.*

f. *All disturbed vegetation, soil or debris shall be deposited or contained to prevent the movement of disturbed matter so that it does not result in:*

    i. *the diversion, damming or blockage of any river or stream, or*

    ii. *the passage of fish being impeded, or*

    iii. *the destruction of any habitat in a water body or coastal water, or*

    iv. *flooding or erosion.*

g. *The activity shall not disturb any archaeological site or waahi tapu as identified at the date of notification of this Plan, in any district plan, in the New Zealand Archaeological Association's Site Recording Scheme, or by the Historic Places Trust except where Historic Places Trust approval has been obtained.*

h. *The concentration of suspended solids in any point source discharge arising from the activity shall comply with the suspended solids standards as set out in Method 3.2.4.6. This condition applies only to permitted activity rules and excludes any non-point source discharges from roading, tracking and vegetation clearance activities (refer condition o) below).*

i. *Any discharge of contaminants into air arising from the activity shall comply with the permitted activity conditions in Section 6.1.8 except where the matters addressed in Section 6.1.8 are already addressed by conditions on resource consents for the site.*

j. *In the event of any waahi tapu that is not subject to g) above being identified by the Waikato Regional Council to the person undertaking the activity, the activity shall cease insofar as it may affect the waahi tapu. The activity shall not be recommenced without the approval of the Waikato Regional Council.*

k. *No storage or mixing of fuels, oils, or agrichemicals shall be undertaken in areas where deliberate or inadvertent discharge is likely to enter any permanent natural surface water body.*

l. *All vegetation that is being felled within five metres of a perennial water body shall be felled away from the water body, except edge vegetation, or vegetation leaning over a water body, which if necessary may be felled in accordance with safety practices.*

m. *All exposed areas of soil resulting from the activity shall be stabilised against erosion by vegetative cover or other methods as soon as practical following completion of the activity and no later than six to twelve months from the date of disturbance to avoid the adverse effects of sediment on water bodies.*

n. *The activity shall not be located within 20 metres of a Significant Geothermal Feature.*

o. *The concentration of suspended solids in any non-point discharges from roading, tracking and vegetation clearance activities shall meet the following standards;*

    i. *The activity or discharge shall not result in any of the following receiving water standards being breached:*

i. *in Waikato Region Surface class waters - 100 grams per cubic metre suspended solids concentration*

ii. *in Indigenous Fisheries and Fish Habitat class waters - 80 grams per cubic metre suspended solids concentration*

iii. *in Trout Fisheries and Trout Spawning Habitat class waters - 25 grams per cubic metre suspended solids concentration*

iv. *in Contact Recreation class waters - black disc horizontal visibility greater than 1.6 metres*

v. *in Natural State class waters - the activity or discharge shall not increase the concentration of suspended solids in the receiving water by more than 10 percent*

Standard a) shall apply, except where the suspended solids concentration or black disc horizontal visibility in the receiving water is greater than the standards specified, at the time and location of discharge or of undertaking the activity. Then there shall not be any increase (i.e. further deterioration) in the receiving water suspended solids concentration or black disc horizontal visibility of more than 20% as a result of the activity or discharge.

The point at which compliance with this standard shall be measured is after reasonable mixing has occurred which in any instance does not exceed 200 metres from the point of discharge.

p. *Soil disturbance associated with the construction of a road or track within 20 metres of a culvert or bridge provided for in Rules 4.2.8.1, 4.2.8.2, 4.2.9.1, 4.2.9.2 and 4.2.9.3;*

i. *Shall not occur adjacent to Significant Indigenous Fisheries and Fish Habitat Class waters during August to December inclusive and Significant Trout Fisheries and Trout Habitat class waters during May to September inclusive; and,*

ii. *Shall be stabilised against erosion by vegetative cover or other methods as soon as practical following completion of the activity and no later than two months from the date of disturbance to avoid the adverse effects of sediment on water bodies; and*

iii. *The location of the proposed soil disturbance shall be notified to the Waikato Regional Council in writing at least 10 working days prior to commencing construction.*

It is expected that where soil disturbance is required to develop the gravel hardstand area for parking that the disturbance could be managed to ensure the above conditions can be met. Therefore soil disturbance would be a **permitted activity** under rule 5.1.4.11 of the WRP.

5.2.3 Contaminated land and landfills

Section 5.2.7 of the WRP relates to landfills, including closed municipal waste landfills, however the existing discharge permit authorises this existing discharge. Where conditions of that discharge permit can continue to be complied with no changes to conditions or additional resource consents would be required.

Rules in relation to contaminated land in Section 5.3.4 of the WRP relate to discharges from the remediation of contaminated land and are not applicable to the proposed activities at the site.

5.3 Summary of Regional Council resource consents

Given the above assessment of activities against the Waikato Regional Plan, resource consent from WRC is not required for the proposed site development or operation. This assumes that ongoing compliance with the WDC resource consents for discharges from the landfill can continue to be achieved.

6.0 Resource consent application assessment requirements

As a non-complying activity resource consent application for the use of the land for a motor caravan park from WDC, council's discretion is not limited to any particular matters. Given the location of the site. an assessment of effects on the environment may include the following:

- Positive effects;
- Effects on visual amenity, local character and landscape– adjacent properties in particular;
- Effects on amenity values (odour, noise, traffic generation, and light/glare);
- Contaminated soil;
- Public safety (e.g. landfill gas);
- Access and traffic safety;
- Services (water supply and sewage disposal);
- Signs;
- On-site supervision/security;
- Reverse sensitivity;
- Water quality;
- Stormwater;
- Dust and air quality;
- Ecological effects;
- Flood hazards;
- Effects on tangata whenua values – as identified above the site is within the Cultural Landscape Area Alert.

Some of the effects identified above may require only a brief discussion. The extent of discussion and requirements of technical assessments to support a resource consent application would need to be confirmed with the WDC consent planning team (pre-application meeting). Landscaping and solid fencing to mitigate direct views of the site, noise and lighting from the motor caravans parked overnight are examples of the type of mitigation that may be required. A description of the likely density and maximum number of motor caravans using the site at any one time would be required to support the resource consent application.

7.0 Consultation

The Aftercare Plan for the landfill states that *"should a public use for this land be identified at some stage in the future Council [WDC] will consider in consultation with the Regional Council the suitability of the area for that use."* It is recommended that consultation with WRC be undertaken to confirm agreement for the proposed use.

In initial discussion with the WDC duty planner, they raised that written approval from the adjacent landowners may be required. As part of the site is within the WDC Cultural Landscape Area Alert, consultation with the local iwi (Ngā Iwi Tōpū O Waipā) would also be required.

In summary, discussion with the following parties is recommended to inform and support a resource consent application for the use of land for a motor caravan park:

- Waikato Regional Council
- Adjacent landowners at 4 Pirongia Road and 28 Pirongia Road
- Ngā Iwi Tōpū O Waipā

8.0 Conclusion

A land use consent from WDC will be required. No further resource consents will be required if:

- Conditions of the existing WRC resource consents, associated with discharges from the closed landfill, can continue to be met;

- Any soil disturbance or vegetation clearance is undertaken further than 23 metres from the Mangapiko Stream is managed in accordance with best practice erosion and sediment control measures; and
- Any soil disturbance on site is less than 400m^3 and no more than 80m^3 of soil is removed from site.

It is recommended that confirmation of the land use consent requirements for a motor caravan park is confirmed with Waipa District Council prior to lodgement. Consultation is recommended with adjacent landowners at 4 Pirongia Road and 28 Pirongia Road, and Ngā Iwi Tōpū O Waipā. It is also recommended that there is direct consultation with Waikato Regional Council in relation to the proposed use of the site, to confirm that compliance with the existing regional resource consents can be achieved, and to discuss any amendments to the closed landfill Aftercare Plan that may be required.

Yours sincerely

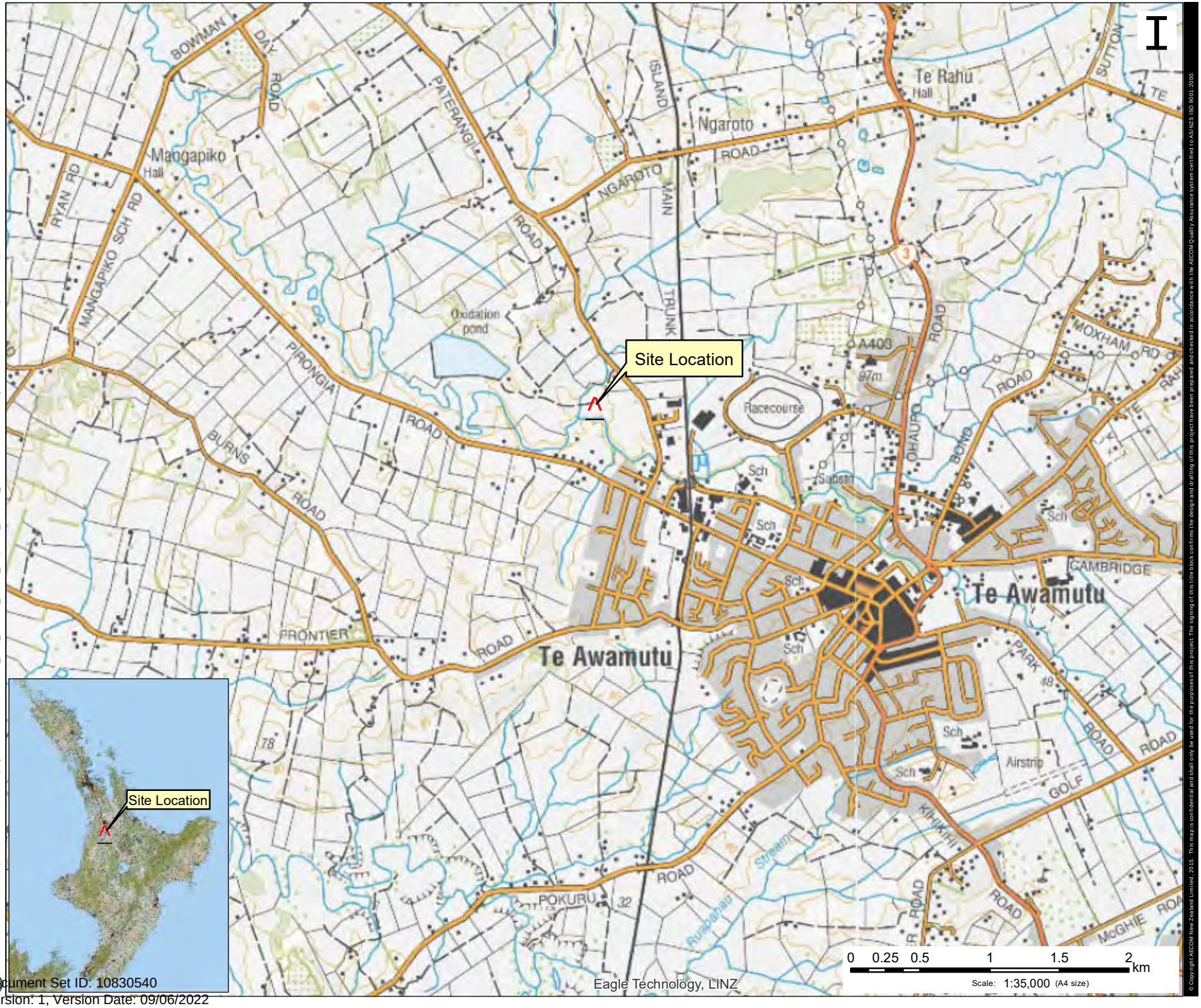
Helen Lawrence
Senior Environmental Planner
helen.lawrence@aecom.com

Mobile: +64 27 605 2170
Direct Dial: +03 374 8519

Kerryn Mclellan
Principal Civil Engineer
kerryn.mclellan@aecom.com

Mobile: +64 21 246 5662
Direct Dial: +64 7 857 1823

encl: Attachment A - Site Location and Layout



AECOM

PROJECT

TE AWAMUTU CLOSED LANDFILL

CLIENT

Waipa DISTRICT COUNCIL

CONSULTANT

AECOM New Zealand Limited
www.aecom.com

PROJECT MANAGEMENT INITIALS

Approved	KM	Date	21/10/2019
Checked	KM	Date	21/10/2019
Designed	SS	Date	21/10/2019
Drawn	SS	Date	21/10/2019

ISSUE/REVISION

Rev	Date	Description
A	21/10/2019	DRAFT

PROJECT NUMBER

60613937

SHEET TITLE

SITE LOCATION PLAN

MAP NUMBER

FIGURE 1

ISO A3 297mm x 420mm

Last saved by: SERGEY.SOKOLOV (2020-08-05) Last Plotted: 2019-10-21
Filename: \\nzham1fp001.au.aecomnet.com\projects\606X\60613937\900_CAD_GIS\920_GIS\02_Maps\NZ_Motor_Caravan_Association_Park.mxd

AECOM

PROJECT

TE AWAMUTU CLOSED LANDFILL

CLIENT

Waipa DISTRICT COUNCIL

CONSULTANT

AECOM New Zealand Limited
www.aecom.com

SPATIAL REFERENCE

Scale: 1:1,500 (A3 size)

10 5 0 10 20 30 40 m

Map features depicted in terms of NZTM 2000 projection.

Data Sources:
Cadastral Boundaries – LINZ NZ Cadastral Dataset

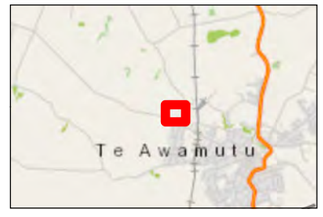
PROJECT MANAGEMENT

Approved	KM	Date	5/08/2020
Checked	KM	Date	5/08/2020
Designed	SS	Date	5/08/2020
Drawn	SS	Date	5/08/2020

ISSUE/REVISION

Rev	Date	Description
A	5/08/2020	DRAFT

KEY PLAN



PROJECT NUMBER

60613937

SHEET TITLE

PROPOSED NZ MOTOR CARAVAN ASSOCIATION PARK

MAP NUMBER

FIGURE 2

APPENDIX K: ACOUSTICS EVIDENCE

BEFORE THE COMMISSIONERS APPOINTED BY THE DUNEDIN CITY COUNCIL

LUC-2020-293

IN THE MATTER of 20 Bay Road, Warrington

BETWEEN **NEW ZEALAND MOTOR CARAVAN ASSOCIATION**

Applicant

BRIEF OF EVIDENCE OF JEREMY TREVATHAN (NOISE) FOR NEW ZEALAND MOTOR CARAVAN ASSOCIATION

GALLAWAY COOK ALLAN
LAWYERS
DUNEDIN

Solicitor on record:Phil Page
Solicitor to contact: Phil Page
P O Box 143, Dunedin 9054
Ph: (03) 477 7312
Fax: (03) 477 5564
Email: phil.page@gallawaycookallan.co.nz

BRIEF OF EVIDENCE OF JEREMY TREVATHAN

QUALIFICATIONS AND EXPERIENCE

1. My name is Jeremy William Trevathan. I am an Acoustic Engineer and Director of Acoustic Engineering Services Limited, an acoustic engineering consultancy based in Christchurch. I hold the degrees of Bachelor of Engineering with Honours and Doctor of Philosophy in Mechanical Engineering (Acoustics) from the University of Canterbury. I am an Associate of the New Zealand Planning Institute, and a Member of the Acoustical Society of New Zealand.

2. I have more than fifteen years' experience in the field of acoustic engineering consultancy and have been involved with a large number of environmental noise assessment projects throughout New Zealand. I have previously presented evidence at Council and Environment Court Hearings, and before Boards of Inquiry. I have acted on behalf of applicants, submitters and as a peer reviewer for Councils.

3. While this matter is not before the Environment Court, I have read and agree to comply with the Code of Conduct for Expert Witnesses (Environment Court Practice Note 2014). I confirm this evidence is within my area of expertise, except where I state I am relying on facts or information provided by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

BACKGROUND

4. In July 2021, my company was engaged by NZMCA (the Applicant) to provide acoustic engineering advice in relation to a proposal for a campsite for up to 60 self-contained vehicles or caravans at 20 Bay Road, in Warrington.

5. I have reviewed the application and have analysed the noise levels expected from the activity based on previous measurements and experience.

6. I have also reviewed the Submissions and Council Officers reports in relation to the noise effects. I have attached to this evidence a document titled *NZMCA Weedons Park Noise Emissions*, produced by WSP, and dated the 30th of October 2019, which I refer to in the following sections.

SITE AND PROPOSED ACTIVITY

Site and locality

7. The site is located at 20 Bay Road, in Warrington. Access to the site is down a long accessway from Bay Road between 10 and 16 Bay Road to the west and 22 and 24 Bay Road to the east. This accessway is approximately 17 metres wide and 135 metres long.

8. The applicant site has split zoning under the 2GP Dunedin District Plan. The accessway and the majority of the site is zoned Township and Settlement, with a portion to the southwest zoned Coastal Rural. The surrounding sites adjoining the accessway are also within the Township and Settlement zone, with those to the east and south of the main site zoned Coastal Rural.

9. The adjoining Coastal Rural zoned site is the Warrington Recreation Domain. While this site directly adjoins the applicant site, the area between the applicant site and the Esplanade (road) is largely vegetation. The area on the opposite site of the Esplanade is a designated freedom camping area, approximately 30 metres from the applicant site boundary.

Proposed activity

10. The proposal is for a camping site for provision for 60 self-contained motorhomes and caravans on the site. This will be limited in use to NZMCA members and will be on a temporary basis only.

11. The existing accessway from Bays Road will be upgraded as part of the development, and this will be the main access point to the site. As a noise mitigation measure, NZMCA are proposing to fully seal the driveway down its length. This is expected to reduce the noise levels

from the vehicles when received at the neighbouring properties by up to 5 dB, compared to a gravel driveway.

12. The main parking area will be located to the southeast of the site. The proposed layout will initially comprise of 36 spaces for larger vehicles, and 20 spaces for smaller vehicles. The size of the members vehicles varies from relatively small campervans through to large fifth wheelers (e.g. a camper trailer connected in the bed or a truck or large towing ute). I understand that the current registered NZMCA vehicles are split as follows:

    - Motorhomes / campervans 52 %
    - Caravans 38 %
    - Converted buses 8.5 %
    - 5th wheel (large caravans) 1.5 %

13. Based on the evidence of Mr Rossiter I understand peak expected vehicle movement numbers are 80 vehicles per day, 15 in a peak hour and 3 during the night time period. For the majority of the year, movement numbers will be much lower.

ACOUSTIC CRITERIA

14. In this section I have considered what noise levels may be appropriate for the proposal. There are a number of sources of guidance available with regard to what appropriate noise levels for the activity may be.

Dunedin City Council 2nd Generation District Plan (2GP)

15. As described above, the majority of the site and those to the north, and east and west of the accessway are zoned Township and Settlement. Therefore, the noise standards that apply at these sites are those described in the 2GP, Chapter C: City-wide Provisions, 9 Public Health and Safety, 9.3 Performance Standards, 9.3.6 Noise, and are as follows:

Noise level measured at the boundary of the receiving property:

7.00am to 7.00pm	*50 dB LAeq (15 min)*
7.00pm to 10.00pm	*45 dB LAeq (15 min)*
10.00pm to 7.00am	*40 dB LAeq (15 min) & 70 dB LAFmax*

I note that Rule 9.3.6(7)(e) exempts noise generated as part of normal residential activities from these limits.

16. The sites to the east and south of the main portion of the site are zoned Coastal Rural. The 2GP noise limits which apply at these sites are those described in the 2GP, Chapter C: City-wide Provisions, 9 Public Health and Safety, 9.3 Performance Standards, 9.3.6 Noise, and are as follows:

Noise level measured at property boundaries of rural zones where there are no noise sensitive activities within 20 metres of boundary:

7.00am to 7.00pm	*60 dB LAeq (15 min)*
7.00pm to 10.00pm	*60 dB LAeq (15 min)*
10.00pm to 7.00am	*60 dB LAeq (15 min) & 85 dB LAFmax*

17. The 2GP states that noise must be measured and assessed in accordance with the provisions of NZS 6801:2008 Acoustics – Measurement of Environmental Sound, and NZS 6802:2008 Acoustics – Environmental Noise.

NZS 6802:2008 Acoustics – Environmental noise

18. NZS 6802:2008 outlines a guideline daytime limit of 55 dB LAeq (15 min), an evening limit of 50 dB LAeq (15 min), and a night-time noise limit of 45 dB LAeq (15 min) for “the reasonable protection of health and amenity associated with the use of land for residential purposes”.

World Health Organisation Guidelines for Community Noise (1999)

19. *Guidelines for Community Noise*, a document produced by the World Health Organisation (WHO) based on extensive international research recommends a guideline limit of 55 dB LAeq (16 hours) to ensure few people are seriously annoyed in residential situations during the daytime and evening. A guideline limit of 50 dB LAeq (16 hours) is recommended to prevent moderate annoyance. A guideline night time noise limit of 45 dB LAeq (8 hours) outside dwellings is recommended to avoid sleep disturbance.

Conclusions regarding appropriate noise levels

20. Based on the above, I consider that compliance with the noise limits outlined in the 2GP would be conservative and ensure noise effects are minimal. In addition, I consider that provided they did not occur regularly, brief periods of higher noise would only have a minor effect – noting that the 2GP limits are lower than the other amenity and sleep disturbance guidance discussed above, which are also typically applied to on-going noise emissions. As noted above the 2GP limits exclude noise generated as part of normal residential activities from these limits

EXPECTED NOISE LEVELS

Proposed mitigation

21. Expected noise levels associated with the proposed campsite have been calculated taking into account the following mitigation:

    - The accessway from Bay Road will be sealed.

    - On-site generators will be limited to be used only between 8.00am and 8.00pm.

    - Noise management measures will put in place via the members' Travel Directory (publication, website and app versions) and a sign inside the kiosk. The Travel Directory will advise members to *"Please arrive and depart the site between 7 am and 7 pm only".* The kiosk sign will remind members that *"Warrington is a small settlement community, and its residents enjoy living a peaceful*

lifestyle. Please keep this in mind while enjoying your stay here, including planning your arrival and departure times within daytime hours only (7 am to 7 pm).”

Noise generated by typical activity on the site

22. Potential noise sources associated with the operation of the campsite are expected to be:

    - Noise associated with people,
    - Noise from vehicles on the site and;
    - Noise from onsite temporary generators.

    I have considered noise from each of these sources in the following sections.

Noise from people

23. The WSP report describes the type of activity that is typically observed on a NZMCA site, as follows: *“When on site, members spent most of their time inside their vehicles (the weather was fine, but cold). Quiet conversations took place between members walking around the site during the day time, but these were limited to 2 or 3 people at a time.”* I consider that the proposed managerial controls are appropriate to ensure that this level of activity remains representative of what will occur on site. I understand that NZMCA sites have a long history of operating successfully in residential areas.

24. While there may be sound generated by small groups of members talking on the site, I expect that this will largely be self-regulated by the other campers on the site (caravans and campervans offer a lower level of sound insulation than a dwelling – so campers will readily heard by, and aware of, the other campers around them). By contrast, the nearest proposed parking space is more than 70 metres from the nearest residential zoned properties. I expect that noise from people talking on the site in the vicinity of their campers to fully comply with the 2GP residential noise limits at all times, and have a minimal effect.

25. I also expect that the boundary noise limit of 60 dB LAeq for the Coastal Rural zones to the east and south will be achieved provided there are not sustained periods of noise emission very close to the boundary.

Noise from vehicles

26. I have also assessed noise from vehicles travelling on the accessway between Bay Road and the main site area.

27. Based on the traffic engineering report, during a peak hour during peak season, up to 15 vehicle movements could be expected. A peak hour during off season would be up to 5 vehicle movements.

28. As outlined above, a range of vehicles are expected on the site. Based on the measurements undertaken by WSP (as outlined in their memo) and my experience, my analysis has been based on the following sound powers of the NZMCA vehicles travelling at 10 km/hr on a sealed surface:

- Motorhomes / campervans (52 %) 95 dB LwA
- Vehicles towing caravans (38 %) 90 dB LwA
- Converted buses (8.5 %) 100 dB LwA
- 5th wheel vehicles (large caravans) (1.5 %) 100 dB LwA

29. My analysis indicates that during the daytime period, under the majority of scenarios when assessed in line with NZS6802:2008 compliance with the daytime noise limit of 50 dB LAeq would be expected at the neighbouring boundaries. However, if more than one bus or 5th wheel vehicle travelled on the access way during a single 15-minute period, or if one travelled on the accessway in conjunction with multiple other vehicles within a single 15-minute period, a small (1 - 2 dB) exceedance of the daytime noise limit would be expected. If this did occur, noise levels of 50 dB LAeq or less would be expected within the vicinity of any of the dwellings – including outdoor living areas. This remains in line with the NZS6802 and WHO guidance for residential

amenity. I also understand from the evidence of Mr Rossiter and Ms Bombay that a 'permitted baseline' residential development on the site may involve 120 vehicle movements per day. This level of activity would be expected to generate similar daytime noise levels to those I have described above.

30. As described by Mr Rossiter, the traffic count data from other NZMCA sites indicate that very low traffic volumes are expected during the night-time period, even during the peak season where there may be up to 3 'night time' movements.

31. During the night-time period, if a motorhome or caravan travelled on the accessway I expect noise levels of up to 46 dB LAeq at the nearest site boundary, which exceeds the 2GP limit. However, noise levels of less than 45 dB LAeq would be expected at the façade of all neighbouring dwellings – therefore based on the guidance discussed above sleep disturbance would not be expected. There is also a 70 dB LAFmax limit during the night time period, which would be exceeded at the site boundary, but complied with at dwelling facades.

32. Higher noise levels would be expected to occur if a converted bus or a 5th wheel vehicle travelled on the accessway during the night time period. However, as above, very few night time movements are expected of any vehicle type, and these vehicles only make up 10 % of the owner fleet. These occurrences are therefore expected to be very rare (1 – 2 per week, during peak season) and so any resulting noise effect will only be minor. Many dwellings are subjected to occasional night time higher noise events of this type, for example from cars with modified exhausts or an emergency vehicle driving by, or helicopter movements. The evidence of Mr Rossiter also confirms that more regular night-time vehicle movements would actually be associated with a 'permitted baseline' residential development on the site, with typically 6 vehicle movements per night.

33. As above, noise management measures are proposed to ensure night time vehicle movements remain low, with campers being encouraged

to arrive / depart the site within the daytime period via the members' Travel Directory and a sign inside the kiosk.

Noise from generators

34. The existing NZMCA policy for generator use for *"a maximum of two 2-hour stints between 8.00am and 8.00pm."* This policy will be in place for the Warrington site.

35. WSP carried out measurements of three generators at the NZMCA Weedons Park site. The maximum noise level from these three measurements outlined in the WSP memo was 88 dB LwA. Based on this sound power, these types of generators would comfortably comply with the 2GP daytime and evening noise limits at neighbouring residential properties.

36. Provided the generators were not within 10 metres and had direct line of sight of the neighbouring rural zoned boundary, compliance with the 60 dB LAeq noise limit would also be achieved.

Conclusions regarding effects

37. Based on the above, I expect that with the implementation of the recommended mitigation measures, noise associated with the proposed campsite will generally comply with the 2GP noise limits when measured and assessed in accordance with NZS 6801:2008 and NZS 6802:2008. Vehicles on the accessway may however generate non-compliances from time to time, however at these times noise is either still expected to comply with guidance regarding the protection of amenity and sleep disturbance, or where higher levels are expected, occur very infrequently. I therefore expect the effect of noise associated with the proposal to be minimal.

REVIEW OF SUBMISSIONS

38. Four opposing submissions have been received for this application, three of which mention noise as a concern. These three submissions are from the four properties directly adjoining the accessway to the site. Specific concerns raised are as follows:

- Noise from vehicles travelling on the accessway
- That they can already hear activity from the freedom camping site and this one will be closer
- Noise from generators
- Noise from vehicles stopping and idling outside their houses while they open the gate
- Noise from 120 people on the site

I have discussed a number of these concerns above. I have the following additional comments.

39. The submitters residing at 10, 16 & 24 Bay Road are concerned about the noise generated by the vehicles idling in the accessway while the access gate is opened and closed. Mr Imlach has advised me that based on the location of the site, and the proposed signage, it is expected that for the majority of the time the gate will remain open, with NZMCA members able to access/leave the site without unlocking and opening the gate. I understand that at certain times of the year the custodians may close the gate, such as if the park is full, or if there is a public event nearby. Therefore, the idling of vehicles while the gate is opened or closed is not expected to be part of the day-to-day activity.

40. The submitter residing at 22 Bay Road discusses the existing noise from the nearby freedom camping facility. I note that the 2GP noise limits do not reduce noise to an inaudible level. Therefore, while full compliance with the noise limits may be achieved, noise from the site is still likely to be audible. There are no restrictions imposed on a freedom camping site, where anyone can stay and there is no control. By contrast, as I have described above the NZMCA has multiple methods for managing those who stay at their sites. I therefore expect the noise levels associated the NZMCA site to be lower than the unrestricted noise from the adjoining freedom camping site.

41. The submitters residing at 10 & 16 Bay Road note concerns about the potential noise from up to 120 people on the site. As outlined above,

based on other NZMCA sites and the managerial controls proposed, the noise levels generated by people on the site are not expected to be elevated and full compliance with the 2GP noise limits are expected at both 10 & 16 Bay Road. In addition, I note that the proposed layout of the camping area, has the main camping area to the southeast of the larger property, ensuring that the camping activity occurs at the greatest distance from the residential neighbours. This layout results in the nearest camping area being approximately 80 metres from the 10 Bay Road site. Based on this distance, even if all 120 people were outside with half speaking in raised voices (which is not expected to occur) full compliance with the daytime noise limit would still be achieved at this property.

COUNCIL OFFICER'S REPORT

42. Robert Buxton, a Consultant Planner at the Dunedin City Council has prepared a Section 42a report which includes a discussion based on a Noise Report prepared by a Council Environmental Health Officer (EHO).

43. The EHO considers that "*increased traffic to the site and the potential from noise from vehicles is unlikely to cause noise issues such as disrupting sleep to any residential dwellings or cause additional impact on the current receiving environment*." As outlined above, with the proposed mitigation in place I agree with this statement.

44. However, a condition of consent is proposed which restricts vehicles coming and going within the 2GP night-time period, and a recommendation to campers to not arrive and depart within the evening period. As outlined in the traffic evidence, very few vehicle movements occur within the night-time period without any particular restrictions. Management measures are proposed to discourage vehicle movements during the night time period. I understand that a complete prohibition is not considered to be practicable. As described above, I expect the effect of some infrequent night time vehicle movements on the site accessway to only be minor.

CONCLUSIONS

45. I have considered noise likely to be associated with the propose NZMCA campsite development at 20 Bay Road, in Warrington.

46. Noise effects will be mitigated by the physical layout of the site, the sealing of the driveway, along with the implementation of noise management measures.

47. Based on the above, I expect that noise associated with the proposed campsite will generally comply with the 2GP noise limits when measured and assessed in accordance with NZS 6801:2008 and NZS 6802:2008. Vehicles on the accessway may however generate non-compliances from time to time, however at these times noise is either still expected to comply with guidance regarding the protection of amenity and sleep disturbance, or where higher levels are expected, occur very infrequently. I therefore expect the effect of noise associated with the proposal to be minimal.

Jeremy William Trevathan

24 August 2021

Attachment 1: *NZMCA Weedons Park Noise Emissions*, produced by WSP, and dated the 30th of October 2019

Memorandum

To	James Imlach
From	Richard Jackett
Office	Petone
Date	30/10/2019
File	3-C1629.00 00007 02
Subject	NZMCA Weedons Park Noise Emissions

Introduction

The New Zealand Motor Caravan Association Inc. (NZMCA) operates a member-only vehicle-based campground at 286 Jones Road, Rolleston (Figure 1) named Weedons Park. The site is consented to accommodate up to 130 motorhomes at any one time.

I was engaged by NZMCA to undertake 24-hour noise monitoring of the ambient noise level at Weedons Park in September 2019 to inform expert noise evidence in support of the NZMCA's submission on the nearby Roydon Quarry application. Whilst on site I also conducted additional noise measurements of campground activities with the intention of informing future noise assessments of NZMCA parks. This memo summarises my observations of campground activities and provides measurements of their noise emissions.

Methodology

All noise measurements were made between 10:30am on 10 September and 10:30am on 11 September 2019. The 24-hour sound level meter (SLM) was positioned in the northern-most corner of the NZMCA site (Figure 1). Other measurements were undertaken at various locations within the site.

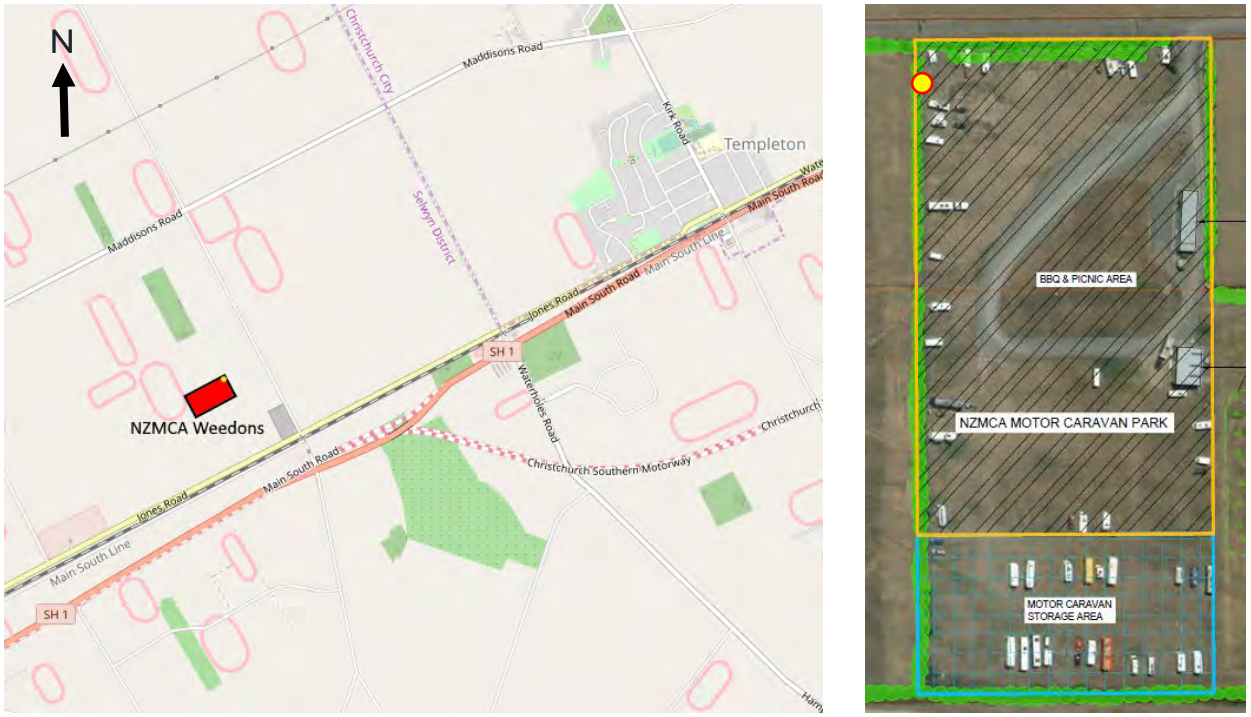


Figure 1: Location of the Weedons NZMCA Park (left) and the site plan (right) showing the 24-hour noise monitoring location as a yellow dot.

The instrumentation used was:

- Rion NL-32 Sound Level Meter, S/N: 00851394 (calibrated 11/7/19) [24-hour]
- Bruel & Kjaer 2250 Sound Level Meter, S/N: 3027649 (calibrated 10/1/19)
- Norsonic Nor1256 Sound Calibrator, S/N: 125626168 (calibrated 11/7/19)
- Davis Instruments TurboMeter wind speed indicator

The weather remained cold and fine throughout, and windspeeds were between 1 m/s to 4 m/s during my noise measurements of campground activities.

Observations

The noise environment at NZMCA Weedons Park was dominated by noise generated off-site, and could be summarized as "working-rural, with distant highway traffic, occasionally punctuated by passing trains and aircraft".

When on site, members spent most of their time inside their vehicles (the weather was fine, but cold). Quiet conversations took place between members walking around the park during the day time, but these were limited to 2 or 3 people at a time. Members mentioned that on nice days they might enjoy 'happy hour' on the benches outside the shed, but this did not happen when I was on site.

There were some dogs present but no barking was heard over the entire time I attended the site.

Vehicle traffic in and out of the site occasionally generated low levels of noise. This was a mix of cars and utes (going out for the day or for supplies) and towed or self-powered motorhomes arriving or leaving the park.

I observed a total of 28 motorhomes and caravans staying overnight on the site during the survey. Two generators were in operation between 5pm and 8pm on 10 September. Members appeared to prefer to operate their generators in the morning from about 9am onwards. A maximum of 3 generators were operating at any one time in the morning. Members noted that generator usage was sometimes necessary in winter, but they preferred to charge caravan batteries at powered sites, from solar panels (viable in summer), or from driving/idling their vehicles. Generator usage appeared to generally follow the NZMCA policy of 'a maximum of two 2-hour stints between 8am to 8pm'.

I observed no noise-generating activity on site after 8pm (I departed after 10pm), except for a few vehicles quietly arriving or leaving.

The 6 or 7 members I spoke with indicated that the peacefulness of the park was a key factor in their decision to visit the site. All members that were operating generators appeared to be knowledgeable about how loud their generator was compared with other generators on the market. The "Honda" was mentioned as being the quietest by two non-Honda owners.

Results

24-hour noise survey

The ambient noise level at NZMCA Weedons Park is not especially relevant to the noise emission of the park, because it is dominated by activities occurring off-site, particularly road traffic noise from SH1 and aircraft overflights to and from Christchurch airport. However, the results are included for completeness in Table 1 below. The L_{Aeq} noise level represents an 'energy average' of noise over the given time period, which is strongly influenced by the loudest noise events (e.g. aircraft), whereas the $L_{90(15min)}$ parameter represents the 'background' noise level (e.g. the hum of road traffic).

Table 1: Noise levels at NZMCA Weedons over different periods of a 24-hour survey

Time	Period	Duration, t (hours)	Noise Level (dB $L_{Aeq(t)}$)	Background (dB $L_{90(15min)}$)
6am – 7am	Early Morning	1	53.3	49.9
7am – 6pm	Day	11	51.2	46.6
6pm - 8pm	Early Evening	2	49.3	45.4
8pm – 10pm	Late Evening	2	49.6	41.5
10pm - 6am	Night	8	47.4	38.0

Generator noise

Noise measurements of three generators operating under load were obtained and are presented below for the standard separation distance of 7-metres:

Generator Make/Model	***Noise Level*** *dB $L_{Aeq(1\ min)}$ @ 7m*
Newman 1000W	61
Ryobi 1600W (full load)	63
Honda (on ute, model not available)	59

Each generator had a different tone. The Honda was noticeably deeper than the others, and was subjectively less obtrusive. It was mounted within the flatbed of a ute instead of on the grass like the other generators, so the actual emission level may be slightly lower (in the absence of reflections from the ute tray).

Vehicle drive-by noise

The typical vehicle drive-by sound level on gravel was 75 dB L_{Amax} at 7 metres from the nearside wheel path. Engine noise contributed at low frequencies, but the crunch of the gravel was the dominant source in determining the maximum drive-by level.

Conclusions

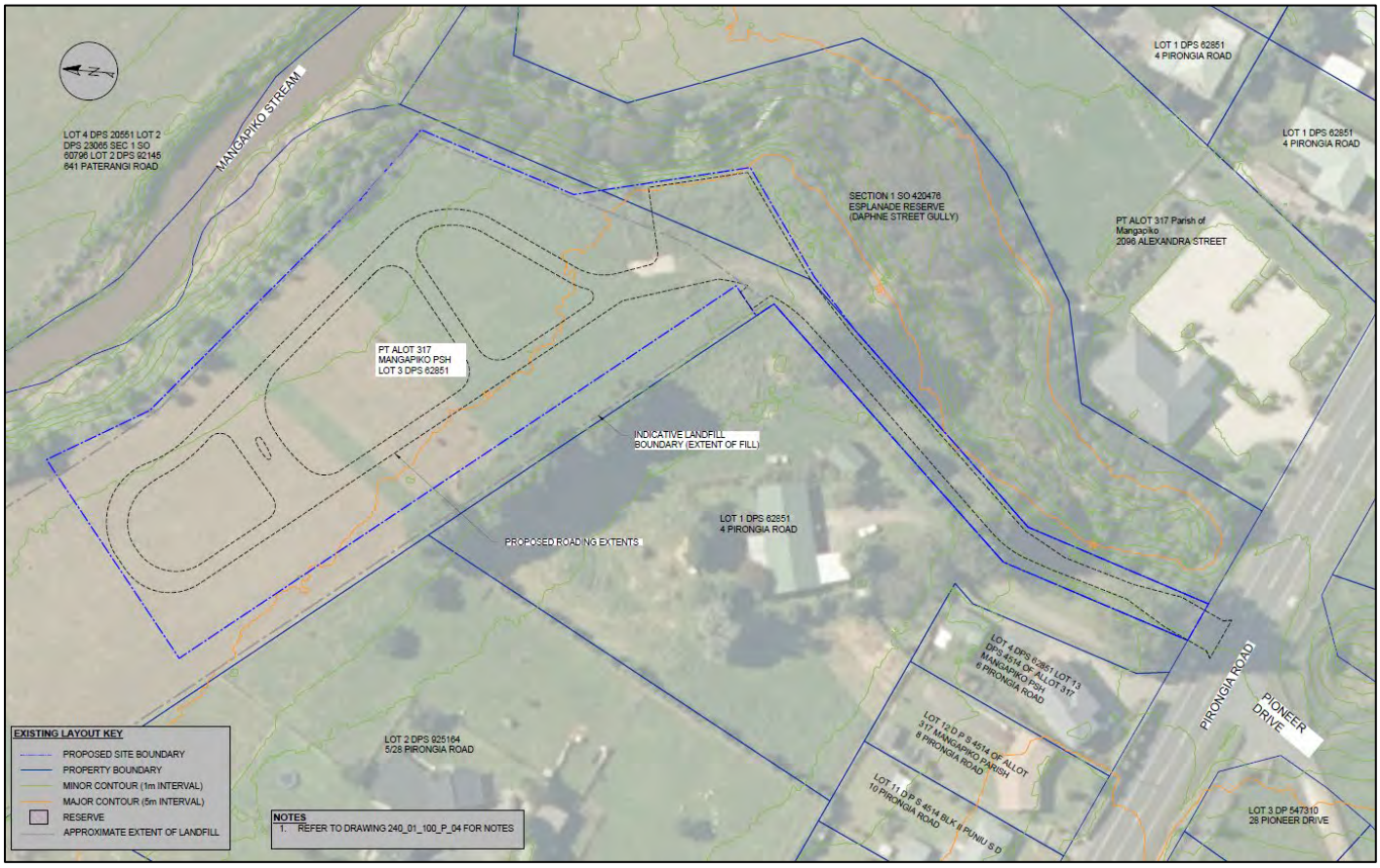
- There is some variation between noise emission levels of gas-powered generators. The noise emission of a single generator at full load may be conservatively estimated as 63 dB $L_{Aeq(15min)}$ at 7-metres.
- Members reported that they use powered sites and solar panels in preference to gas-powered generators, but that sometimes generator usage was necessary, particularly in winter. My observations from a 24-hour period in winter was that out of 28 over-nighting motorhomes and caravans:
  - Four members operated generators.
  - A maximum of three generators operated at one time (spread across the site).
  - No single generator operated for more than 2.5 hours at a time.
  - No generators operated outside of the allowed hours of 8am to 8pm.
- A conservative value for vehicle drive-by noise may be taken as 75 dB L_{Amax} at 7-metres from the nearside wheel path.
- While I was in attendance I observed some conversations occurring between members, but this was at a low level and would not have been audible from outside of the site. I did not hear any shouting or barking at any time over the 24-hour survey.

APPENDIX J: STORMWATER MANAGEMENT

New Zealand Motor Caravan Association

Stormwater Management Report

Pirongia Road, Te Awamutu



Prepared by: Ray Talbot

23 February 2022

Contents

This report has been exclusively prepared for the use of New Zealand Motor Caravan Association in relation to the Stormwater Management at the Te Awamutu Closed Landfill site. The findings in this report are based on and subject to information available at the time and site visit observations. Information pertaining to Ray Talbot and his qualifications as a subject matter expert advisor and experience working in the industry can be found on https://www.linkedin.com/in/ray-talbot-24b83320/ .

Ray Tablot is a qualified engineer with over 45 years of experience working in the construction industry. He graduated from Liverpool John Moores University with a Master of Science in Water Energy and Environment. He was issued with IENG AMICE from the institution of Civil Engineers in 1985. He then obtained a Diploma in Pollution Control from Open University Business School (OUBS) in 1999 and Diploma is Coastal Engineering, Urban Wastewater, River Engineering and Pipeline Services from Chartered Institution of Environmental Management in 2002. Ray obtained his Master of Science in 2004 and was part of New Zealand Transport Agency's Cost Estimate Peer Review Panel. He achieved Geometry design for roads from NZ institute of Highway Technology in 2008, CP ENG MIPENZ from Engineering NZ in 2015, STMS Level 2 - Level 3 Temporary Traffic Management at Road Works Sites Crash Reduction and Road Safety Audits from NZTA. He has been employed by Jacobs working on a number of projects for the past 4 years.

1. Introduction

This Report provides the Stormwater Management for the proposed New Zealand Motor Caravan Association (NZMCA) Park at Pirongia Road Te Awamutu. The purpose of this report is to support the resource consent application for the NZMCA Park.

2. Site Location

The proposed site is located at the rear of number 4 Pirongia Road, Te Awamutu as shown in the Figure below. The park forms part of the land parcel Part Allot 317 Mangapiko PSH Lot 3 DPS 62851, that is indicated below. The NZMCA will lease a portion of the land parcel from the Waipā District Council to operate this park onsite.

Figure 1: shows the location of the NZMCA park located in Pirongia.

3. Design Standards – Regional Infrastructure Technical Specifications

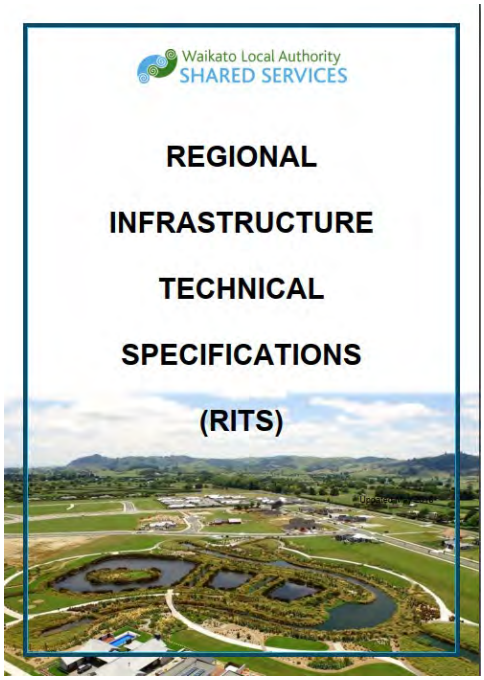


Figure 2 : Regional Infrastructure Technical Specification

The Regional Infrastructure Technical Specification (RITS) sets out the standards for design and construction of public infrastructure within the Waipa Council Boundary. Council infrastructure is required to be designed in accordance with the RITS, as stated in Section 1.1.2 Scope. The NZMCA Park is being constructed on land leased from Waipa Council consequently the RITS has been utilised to develop the NZMCA Park stormwater management.

RITS Level of Service Minimum Design Requirements

RITS Section 4.1.3 Level of Service requires that new stormwater systems shall achieve the minimum standards listed in the following Table 1. This table also provides the proposed stormwater design to achieve these requirements.

Table 1 : RITS Minimum Level of Service Standard

RITS 4.1.3 Item	RITS Minimum Standard Requirement	Proposed Stormwater Design Report
a)	The stormwater system shall operate by gravity. Pumped systems are not acceptable due to ongoing maintenance costs.	The System will operate by gravity
b)	The primary stormwater system shall be capable of conveying the design storm event without surcharge.	The System will convey without surcharge
c)	The secondary stormwater system shall be capable of conveying the 100-year ARI storm event within a defined path and without causing undue risk or damage to persons or property.	The System will be capable of conveying a 100-year storm

RITS 4.1.3 Item	RITS Minimum Standard Requirement	Proposed Stormwater Design Report
d)	The stormwater system shall not connect or be able to overflow to the wastewater system.	The stormwater system does not connect or is not able to overflow to the wastewater system.
e)	Development shall not increase peak discharge rates for design events to the receiving waters. However, an increase may be acceptable for large events where it is demonstrated that there are no: i) additional adverse effects, which are no more than minor, on the environment or downstream properties as a result of the increase, or (ii) where at source mitigation is not practicable but an offset mitigation is used.	Development does not increase peak discharge rates for design events to the receiving waters
f)	Development shall prevent, or minimize, any increase in discharge volumes to receiving waters to the extent reasonably practicable	Development does not increase in discharge volumes to receiving waters
g)	The stormwater system shall provide the required amount of treatment (RITS section 4.2.3).	The stormwater system does provide the required amount of treatment

4. Proposed Stormwater System

Design Principles

The existing site is a Waipa Council Landfill in After care status. The landfill has been clay capped and returned to grazing paddock utilisation. Consequently, reduction of the clay cap depth above the landfill is not permitted and any excavation of drainage trenches to install a positive drainage system is stringently controlled.

The existing densely grassed paddock is graded towards the north towards the Mangapiko Stream. It is intended that this surface water drainage path is retained for the proposed site that consists of a granular metaled circulation road with some granular hardstanding. The NZMCA Park proposed layout is indicated on the drawings included in Appendix A of this report.

Proposed Design

The proposed site layout is indicated on Figure 3 below. This drawing is included in Appendix A and indicates the location of the two sections provided in the following Figures 4 Section A-A and Figure 5 B-B. The proposed design will retain the existing surface water Soakage Technique, as detailed in the RITS section 4.2.3.1 Stormwater Disposal Hierarchy option (b).

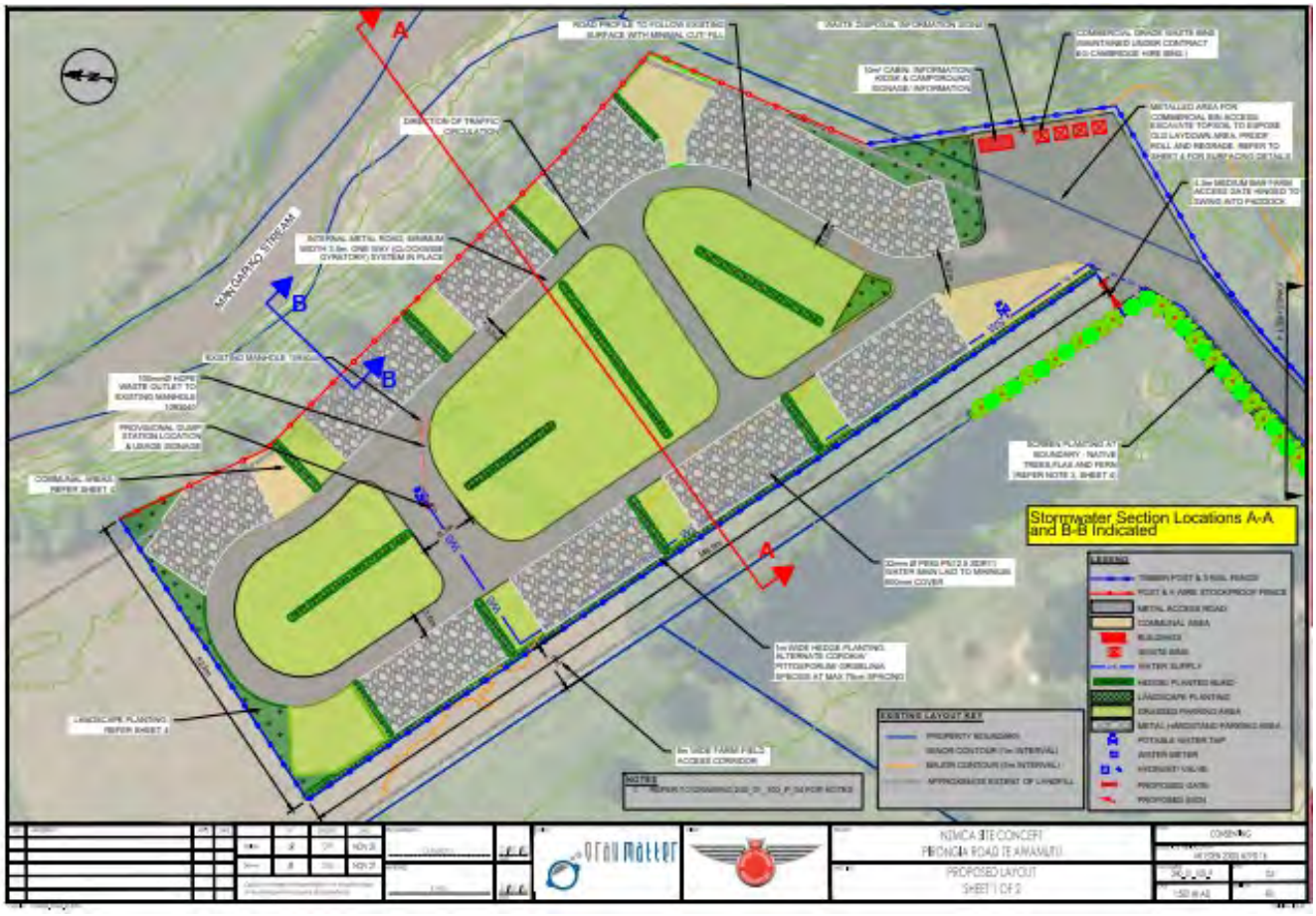


Figure 3: Proposed layout of the NZMCA Park located at Pirongia Road.

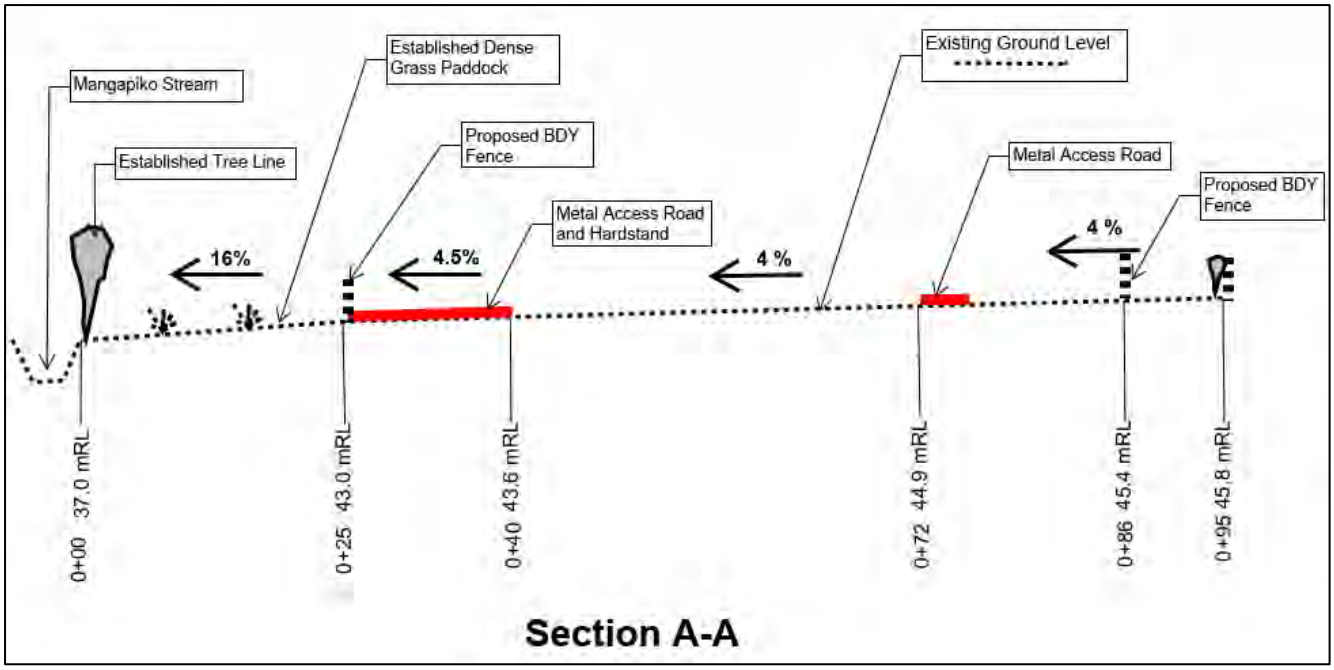


Figure 4: Section A-A shows discharge flow running across the site.

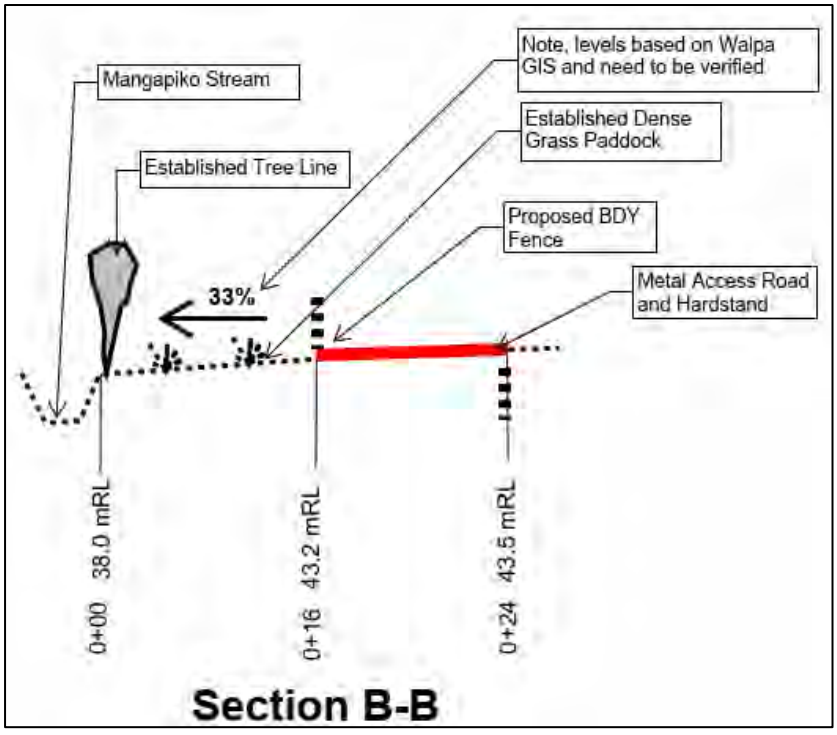


Figure 5: Section B-B

Both of the sections indicate that the existing dense grassed paddock will be retained between the proposed park and the existing within the park. The proposed Park granular road and hard standing area form approximately 50% of the park area, with the existing paddock being retained as a grass parking area for the remaining 50%. The grassed parking will continue to provide the existing surface water soakage, with the granular areas providing a reduced soakage capability.

Flow Attenuation

The proposed granular road and hard stand areas are raised above the level of the grass parking, as indicated on the Typical Section-Site Road provided in Fig 6 below, from Proposed Layout Drawing

Sheet 2 of 2 provided in Appendix A. This will provide some containment for surface water within the park during intense storms.

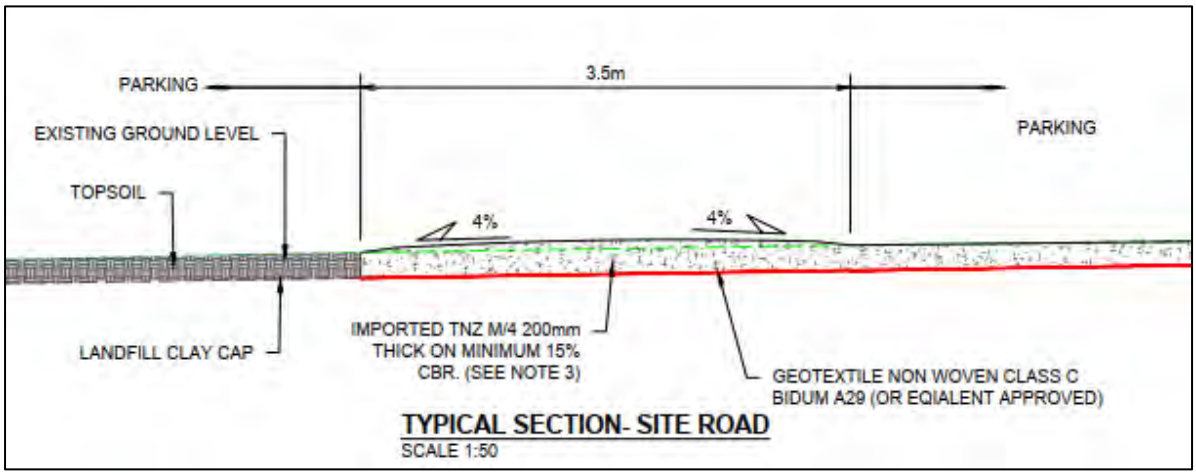


Figure 6: Typical Section-Site Road

Water Quality Treatment

The overland flow path from the park to the Mangapiko Stream has been assessed for location B-B. The 16m long overland flow path is over the existing grass paddock. In addition, the dense mature tree line alongside the top of the Stream bank provides a secondary water quality treatment.

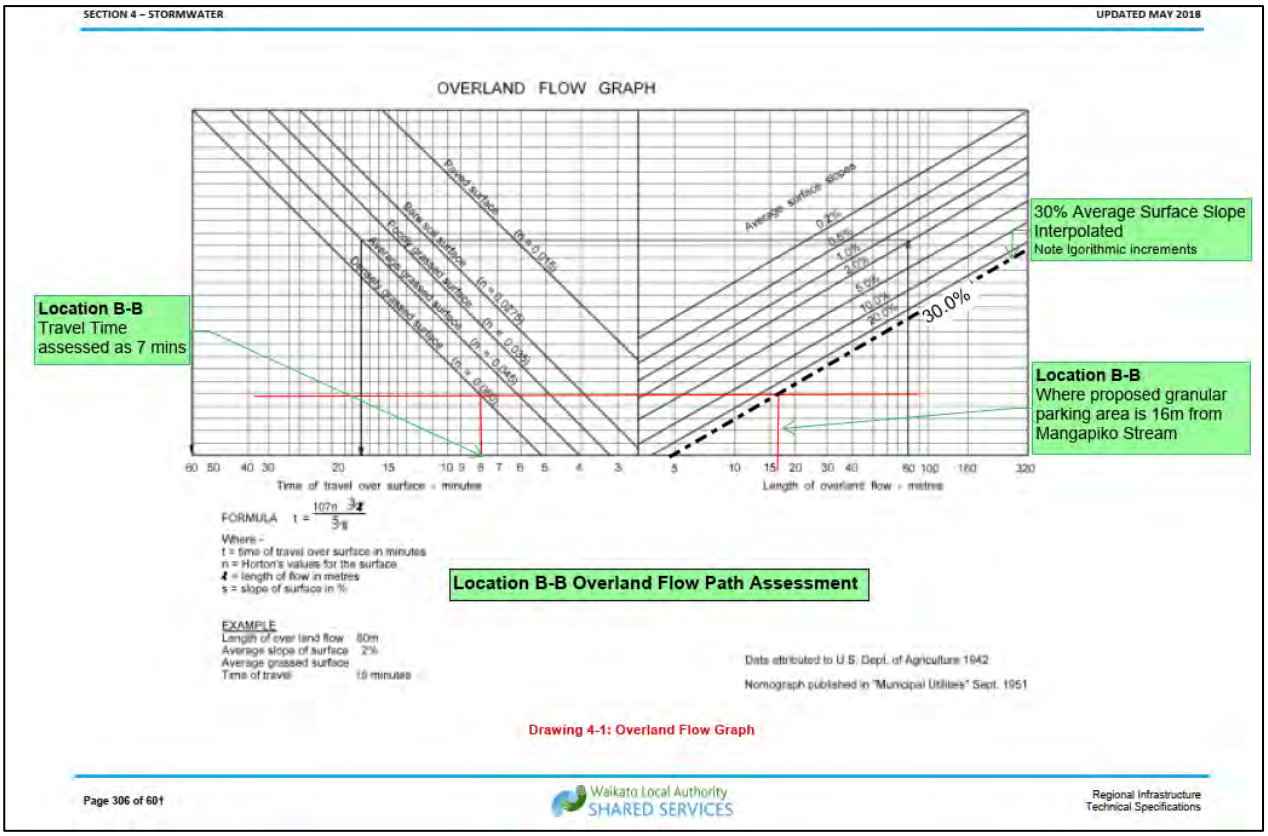


Figure 7: Location B-B Overland Flow Path Assessment

APPENDIX A: NZMCA SITE PLANS AND STORMWATER SECTIONS

0mm 100mm 200mm

N

LOT 4 DPS 20551 LOT 2
DPS 23065 SEC 1 SO
60796 LOT 2 DPS 92145
641 PATERANGI ROAD

MANGAPIKO STREAM

PT ALOT 317
MANGAPIKO PSH
LOT 3 DPS 62851

INDICATIVE LANDFILL
BOUNDARY (EXTENT OF FILL)

PROPOSED ROADING EXTENTS

LOT 1 DPS 62851
4 PIRONGIA ROAD

SECTION 1 SO 420476
ESPLANADE RESERVE
(DAPHNE STREET GULLY)

LOT 1 DPS 62851
4 PIRONGIA ROAD

PT ALOT 317 Parish of
Mangapiko
2096 ALEXANDRA STREET

LOT 2 DPS 925164
5/28 PIRONGIA ROAD

LOT 4 DPS 62851 LOT 13
DPS 4514 OF ALLOT 317
MANGAPIKO PSH
6 PIRONGIA ROAD

LOT 12 D P S 4514 OF ALLOT
317 MANGAPIKO PARISH
8 PIRONGIA ROAD

LOT 11 D P S 4514 BLK II PUNIU S D
10 PIRONGIA ROAD

PIRONGIA ROAD

PIONEER
DRIVE

LOT 3 DP 547310
28 PIONEER DRIVE

EXISTING LAYOUT KEY

- PROPOSED SITE BOUNDARY
- PROPERTY BOUNDARY
- MINOR CONTOUR (1m INTERVAL)
- MAJOR CONTOUR (5m INTERVAL)
- RESERVE
- APPROXIMATE EXTENT OF LANDFILL

NOTES

1. REFER TO DRAWING 240_01_100_P_04 FOR NOTES

EXISTING LAYOUT LAND OWNERSHIP & CONTOURS

REF	AMENDMENT	APP'D	DATE

	BY	CHECKED	DATE
DESIGN	JR	DM	NOV 21
DRAWN	JR	DM	NOV 21

RECOMMENDED: D Murphy — 21/01/22 DATE

APPROVED: K Hills — 21/01/22 DATE

OFFICE: gray matter

CLIENT: NZ Motor Caravan Association

PROJECT: NZMCA SITE CONCEPT
PIRONGIA ROAD TE AWAMUTU

SHEET TITLE: EXISTING LAYOUT
LAND OWNERSHIP & CONTOURS

STATUS	CONSENTING
GEODETIC & VERTICAL DATUM	MT EDEN 2000/ NZVD 16
PLAN NUMBER	240_01_100_P
SHEET	01
SCALE	1:750 (@ A3)
REVISION	R0

ORIGINAL SIZE A3

0mm 100mm 200mm

N

MANGAPIKO STREAM

PROPOSED NZMCA SITE EXTENTS

PROPOSED ROADING EXTENTS

NOTES

1. REFER TO DRAWING 240_01_100_P_04 FOR NOTES

EXISTING SERVICES KEY

PWR	UNDERGROUND POWER
OH	OVERHEAD POWER
TEL	CHORUS
	OVERHEAD CHORUS
FO	FIBRE OPTIC
GAS	GAS SUPPLY
WS	WATER MAIN
SW	STORM WATER
WW	WASTE WATER
RM	RISING MAIN
	SEWER MANHOLE
	STORMWATER MANHOLE
	POWER POLE
	LIGHTING COLUMN

EXISTING LAYOUT KEY

- PROPOSED SITE BOUNDARY
- PROPERTY BOUNDARY
- MINOR CONTOUR (1m INTERVAL)
- MAJOR CONTOUR (5m INTERVAL)
- APPROXIMATE EXTENT OF LANDFILL

PIRONGIA ROAD

TRANSMISSION GRADE

PIONEER DRIVE

SEE INSERT

LOT 3 DP 547310
28 PIONEER DRIVE

INSERT: ACCESS LOCATION
SCALE 1:200

EXISTING LAYOUT: UTILITIES

REF	AMENDMENT	APP'D	DATE

	BY	CHECKED	DATE
DESIGN	JR	DM	NOV 21
DRAWN	JR	DM	NOV 21

RECOMMENDED: D Murphy — 21/01/22 DATE

APPROVED: K Hills — 21/01/22 DATE

OFFICE: gray matter

CLIENT: NZ Motor Caravan Association

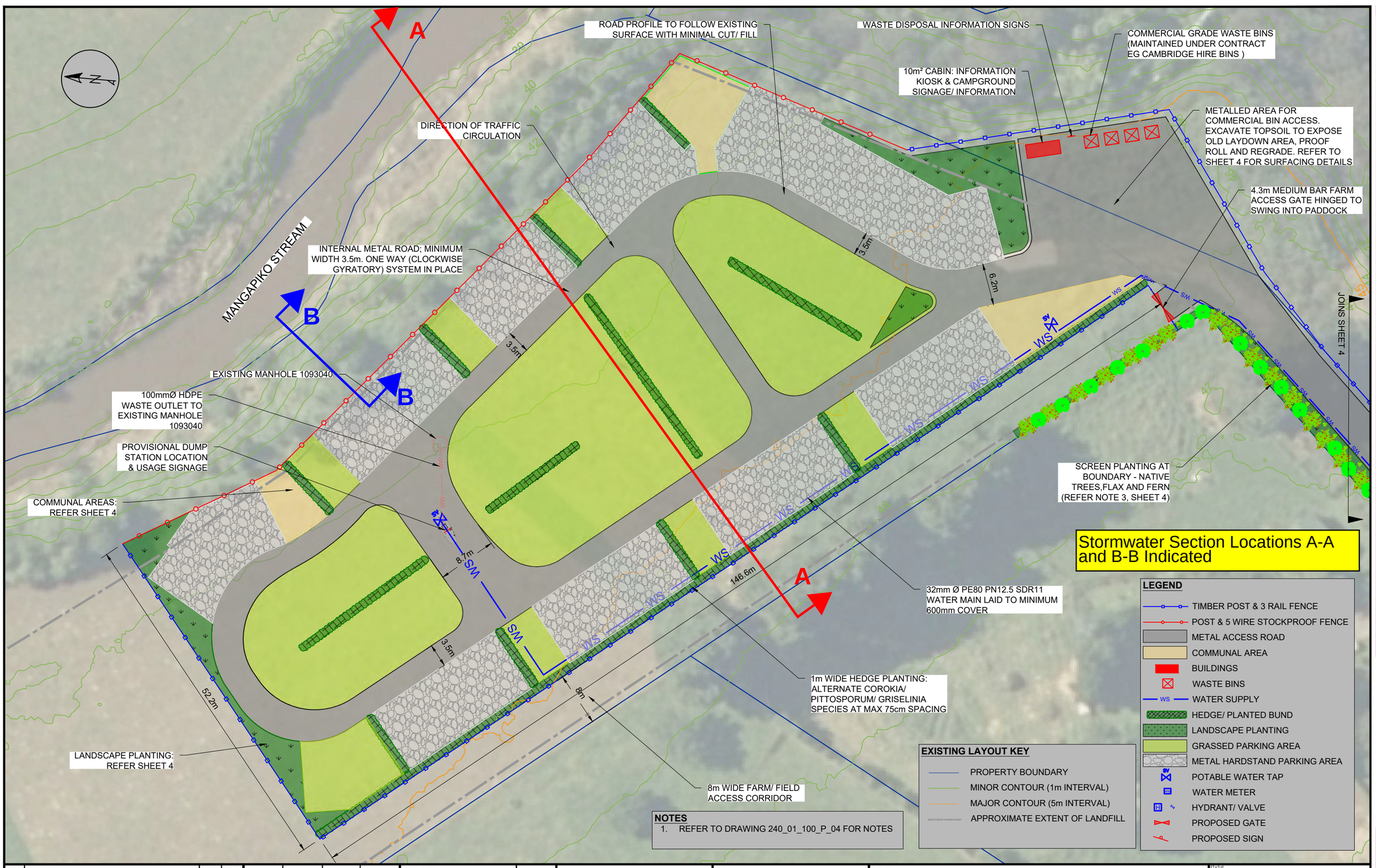
PROJECT: NZMCA SITE CONCEPT
PIRONGIA ROAD TE AWAMUTU

SHEET TITLE: EXISTING LAYOUT: UTILITIES

STATUS	CONSENTING
GEODETIC & VERTICAL DATUM	MT EDEN 2000/ NZVD 16
PLAN NUMBER	240_01_100_P
SHEET	02
SCALE	1:750 (@ A3)
REVISION	R0

C:\DRE_CONSENT_PLANS\3.dwg

ORIGINAL SIZE A3



REF	AMENDMENT	APP'D	DATE

	BY	CHECKED	DATE
DESIGN	JR	DM	NOV 21
DRAWN	JR	DM	NOV 21

RECOMMENDED: D Murphy — 21/01/22 DATE

APPROVED: K Hills — 21/01/22 DATE

OFFICE: gray matter

CLIENT: NZ Motor Caravan Association

PROJECT: NZMCA SITE CONCEPT
PIRONGIA ROAD TE AWAMUTU

SHEET TITLE: PROPOSED LAYOUT
SHEET 1 OF 2

STATUS: CONSENTING

GEODETIC & VERTICAL DATUM: MT EDEN 2000/ NZVD 16

PLAN NUMBER: 240_01_100_P

SHEET: 03

SCALE: 1:500 (@ A3)

REVISION: R0

ORIGINAL SIZE A3

PROPOSED LAYOUT SHEET 1 OF 2