

4 March 2021

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Dear Ian

## TE KAUWHATA LANDS SUBMISSION ON THE PROPOSED WAIKATO DISTRICT PLAN: TRANSPORTATION ADVICE

You requested that Gray Matter Ltd provide traffic and transportation advice relating to the Te Kauwhata Land Ltd (TKL) submission on the Proposed Waikato District Plan (PWDP). Gray Matter Ltd previously provided traffic and transportation advice to support the application for subdivision consent for 163 lots at 24 Wayside Road, Te Kauwhata<sup>1</sup>. I understand that consent for 148 lots was granted in 2018.

### 1. Background and Request

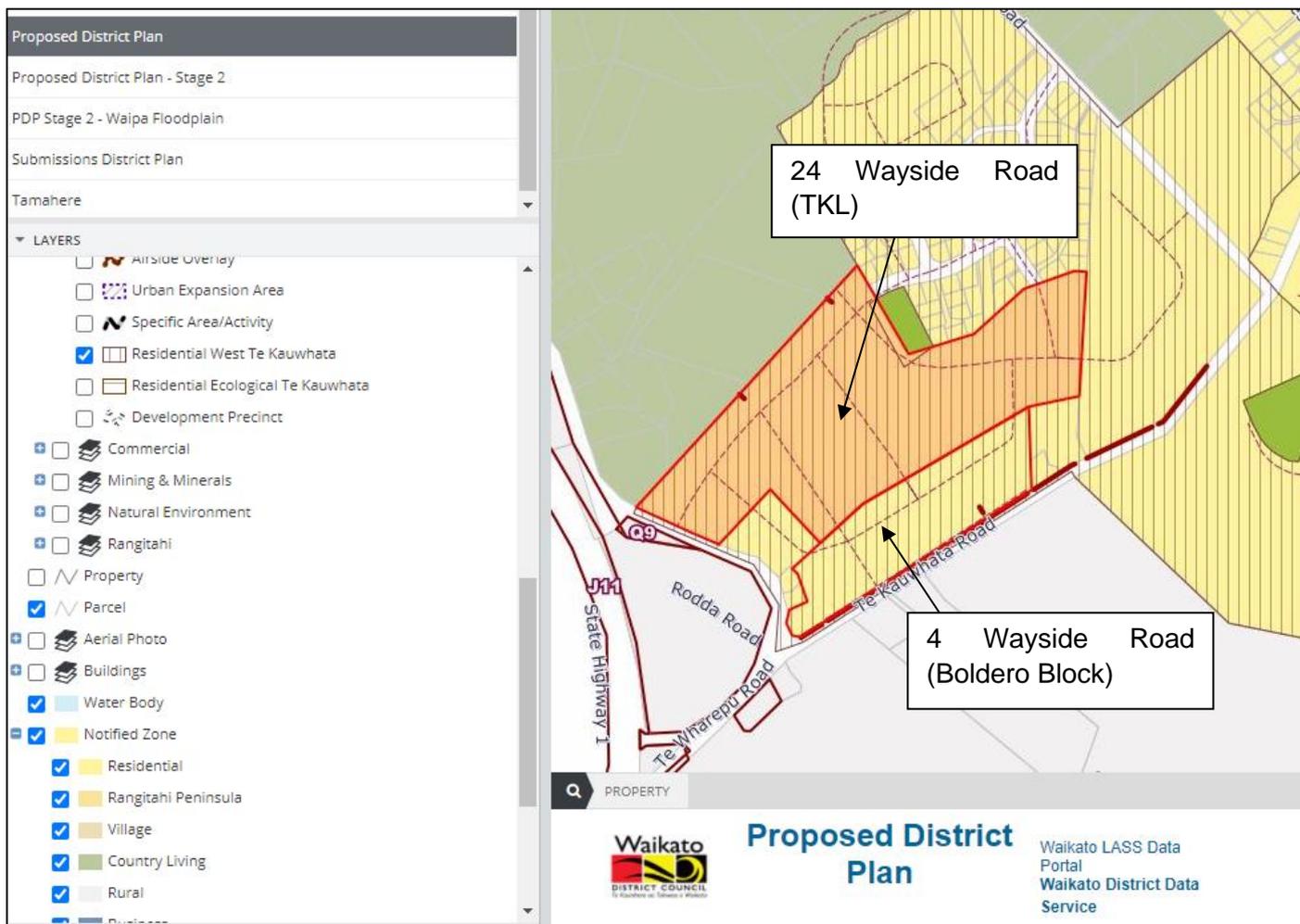
You have submitted on the PWDP opposing the application of the Te Kauwhata West overlay to the TKL property (24 Wayside Road). The removal of the overlay would mean the provisions of the Residential zone would apply. You advised that the adjoining property at 4 Wayside Road (5.686 ha), the Boldero Block, is also seeking the removal of the Te Kauwhata West overlay. You have asked us to comment on the traffic and transportation effects of both submission requests.

I understand that while the Te Kauwhata West Structure Plan has not been retained in the PWDP, some elements are included in the PWDP:

1. The Residential West Te Kauwhata overlay (Figure 1 below),
2. Indicative roads (Figure 1 below), and
3. Standards for the design of road corridors in the Structure Plan area.

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<sup>1</sup> Statement of Evidence of Alasdair Gray on behalf of Te Kauwhata Land Ltd, dated 1 February 2018



**Figure 1: Proposed District Plan map (source: Waikato District Council IntraMaps<sup>2</sup>)**

## 2. Rezoning Request

Rule 16.4.2 – Subdivision – Te Kauwhata West Residential Area allows a minimum lot size of 650 m<sup>2</sup> and average lot size of 875 m<sup>2</sup>. The rezoning request seeks to remove the Residential West overlay from 24 and 4 Wayside Road, essentially requesting the general residential zone rules and provision apply.

Rule 16.4.1 of the Residential Zone allows a minimum lot size of 450 m<sup>2</sup> and has no average lot size.

Typically, I would expect around 70-80% of the total undeveloped land to be available for subdivision, allowing 20-30% for roads and other infrastructure and servicing. I have adopted the methodology<sup>3</sup> used in both the Evidence of Mr Ian McAlley and of Mr Aidan Kirkby-McLeod for calculating the number of lots and the scenarios are presented in Tables 1 and 2 below.

24 Wayside Road: Scenario	No. lots	Daily trips <sup>4</sup>	Peak hour trips <sup>4</sup>
Consented	148 lots	1,495 trips/day	207 trips/peak hour
Overlay (total)	132 lots	1,333 trips/day	185 trips/peak hour
Proposed (no overlay) (total)	256 lots	2,586 trips/day	358 trips/peak hour
Additional compared to consent	108 lots	1,091 trips/day	151 trips/peak hour
Additional compared to overlay	124 lots	1,253 trips/day	173 trips/peak hour

**Table 1: Comparison for 24 Wayside Road**

<sup>2</sup><https://maps.waikatodistrict.govt.nz/IntraMaps97/?project=Waikato&configId=b2549ae1-f643-4ac6-9586-211ba985dd8f>

<sup>3</sup> 70% of the site area is available for subdivision after allowing 30% for roads and servicing. (refer paragraphs 16-18)

<sup>4</sup>Based on 10.1 trips/day and 1.4 trips/peak hour (85<sup>th</sup> percentile rates from NZTA Research Report 453 Appendix C)

The removal of the overlay would result in around 1,253 additional daily trips generated at 24 Wayside Road compared to the overlay rules and 1,091 additional daily trips compared to the consented.

4 Wayside Road: Scenario	No. lots	Daily trips <sup>5</sup>	Peak hour trips <sup>5</sup>
Overlay (total)	43 lots	434 trips/day	60 trips/peak hour
Proposed (no overlay) (total)	88 lots	889 trips/day	123 trips/peak hour
Additional compared to overlay	45 lots	455 trips/day	63 trips/peak hour

**Table 2: Comparison for 4 Wayside Road**

The removal of the overlay would result in around 455 additional daily trips generated at 4 Wayside Road compared to the overlay rules.

In total, compared to the existing, development of 4 and 24 Wayside Road under the residential zone rules (without the overlay) could result in additional traffic on the network of around 3,500 daily trips and 480 peak hour trips.

### 3. Surrounding Network

I have checked the latest traffic data for Wayside Road and Te Kauwhata Road.

Road	Hierarchy	Traffic Volume <sup>6</sup>
Wayside Road	Local road	590 vpd (4% HV)
Te Kauwhata Road	Arterial road	3,876 vpd (12% HV)

**Table 3: Traffic volumes (updated)**

Traffic volumes have increased by 11% on Wayside Road and 34% on Te Kauwhata Road since 2018. The traffic growth is expected to be as a result of development occurring in the Te Kauwhata area. The traffic growth on Te Kauwhata Road (of around 1,000vpd) indicates around 100 new households since 2018. This is less than the growth implied in the Future Proof residential allocation growth (RPS Table 6D) which shows 2,410 new residents from 2006 to 2021, suggesting around 180 dwellings over a three-year period based on linear growth and household occupancy of 2.67 people/dwelling<sup>7</sup>.

I have searched the Waka Kotahi NZTA Crash Analysis System (CAS) database and there have been no reported crashes within the vicinity of the site in the recent five-year period (2016-2020).

### 4. Discussion

The land has already been identified as residential and if approved the submission would essentially allow for an increased density. The request will mean more trips generated but the trips will be of a similar nature since the zoning remains residential. The increased density means more people living in closer proximity which supports opportunities for public transport and walking/cycling connections. The location of the proposal has frontage to existing Wayside and Te Kauwhata Roads that both have spare capacity. The Wayside-Te Kauwhata Road intersection form, a roundabout, is the most appropriate intersection form particularly in terms of safety for vehicles. Both roads have sufficient capacity with no existing safety issues and adding traffic to them means better use of the existing asset. There is access to the wider regional network, SH1, the Waikato Expressway around 2km along Te Kauwhata Road.

There will be additional trips generated by the subject sites as a result removal of the overlay and therefore increased residential development density. Space for 541 lots<sup>8</sup> was anticipated in the Te Kauwhata West Structure Plan Overlay and Country Living land west of the railway. 175 of these are likely to have been anticipated at 4 and 24 Wayside Road. The proposal almost doubles the number of lots to 344 lots. There are benefits from the increased density including better use of assets/infrastructure, supporting the UPS-UD

<sup>5</sup> Based on 10.1 trips/day and 1.4 trips/peak hour (85<sup>th</sup> percentile rates from NZTA Research Report 453 Appendix C)

<sup>6</sup> Mobileroad.org accessed on 24/2/21. ADT date 23/01/2020

<sup>7</sup> Based on 2018 census population and dwelling counts (Te Kauwhata).

<sup>8</sup> Refer to paragraph 9c. of the Statement of Evidence of Alasdair Gray on behalf of Te Kauwhata Land Ltd, dated 1 February 2018

targets and better return on public transport investment. As long as any adverse transport effects can be addressed through engineering design, the submission supports wider policy, is appropriately located consistent with the type of development expected (residential, but denser), allows more efficient use of land and existing infrastructure and is environmentally and economically advantageous (lower ratio of consumption/materials per property leads to lower cost per property). Subdivision would be subject to the Residential Zone provisions and Transportation provisions of the District Plan.

#### **4.1. Potential effects -internal subdivision**

The future internal road network within the 24 Wayside Road is indicated as a “notified overlay” on the PWDP intramaps. The submission seeks to remove the internal road overlay. There is no internal road network overlay in the neighbouring property at 4 Wayside Road. Removing the overlay will allow more flexibility for subdivision to be integrated and connected to neighbouring subdivision. Internal layouts within subdivision areas are subject to consent conditions and design standards (Austroads, NZS 4404).

Rule 14.12.1.6F) refers to roads located within the Te Kauwhata Structure Plan area and includes cross sections for the road types (Table 14.12.5.14 and Figures 14.12.5.18- 14.12.5.21). The cross sections are specific to the Te Kauwhata Structure Plan area and include wider than the rest of the district road corridors with grass swales to deal with stormwater. In our experience, tensions for space in subdivisions mean that grass swales are not properly allowed for and are difficult to accommodate. In residential subdivisions, given the demand for space, swale grades end up being too steep for vehicles to traverse and swales end up being piped for short sections to accommodate vehicle crossings. Denser residential development leads to more frequent vehicle crossings and the grass swales are impractical. I recommend that the overlay cross-sections be removed, and the district wide typical cross sections based on road hierarchy are applied. This is consistent with current district standards and NZS 4404.

#### **4.2. Potential effects on the wider network**

As traffic volumes increase there will be an impact on the level of service. Reduced level of service such as delays at intersections can lead to inappropriate queuing affecting safety. The potential for queues backing and adversely affecting SH1 needs to be considered, however both Wayside and Te Kauwhata Roads currently have spare capacity to readily accommodate the traffic that would be generated by development of 4 and 24 Wayside Road under the Residential Zone density rules. A typical two-lane road has capacity for around 1,200 - 1,400 vph. Four laning would normally be considered around 25,000 - 30,000 vpd. There is currently a low risk of adversely affecting SH1 from the development of 2 and 24 Wayside Road. Use of existing infrastructure would be optimised since there is spare capacity and no known safety issues. Given the expected residential development in the wider area, additional capacity will be required in the future, and could be accommodated through engineering design, adding lanes within the road corridor, providing public transport services and walking/cycling links to reduce demand.

Design considerations for public transport on arterial and/or collector roads would need specific consideration as development occurs and population increases.

Traffic patterns are expected to adjust as development and surrounding land use changes as drivers are likely to avoid peak periods if delays start to increase. In the case of Te Kauwhata the main delays would be for commuters seeking to avoid congestion in Hamilton or approaching Auckland which reduces the relative peak demand because people will need to leave earlier and at different times to avoid the destination peak traffic periods for each.

Speeds on the network are expected to reduce as traffic volumes increase and the surrounding environment changes from rural to residential. Speeds can and should be managed through engineering design as encouraged in the WDC design standards for Austroads and NZS 4404. Specific consideration at intersections may be required as traffic volumes increase and would be triggered by trip generation (Rule 14.12.1.4) at subdivision consent. New intersections would be needed to connect the development to the surrounding network, and these would be dealt with at subdivision stage, through the provisions of the residential zone and subdivision consent conditions requiring detailed design and road safety audit of new intersections.

### 4.3. Provisions of the PWDP

Chapter 14.12 Transportation of the Proposed District Plan sets out the provisions for transportation in the district to achieve the objectives and policies (Chapter 6.5 Transport). These include:

- Standards for vehicle crossings;
- Standards for on-site parking and loading;
- Standards for on-site manoeuvring and queueing;
- Traffic generation limits triggering additional assessment considerations;
- Standards for minor works in the road corridor; and
- Standards for new roads and off-road pedestrian and cycle facilities.

These are sufficient to manage potential adverse effects that could arise as a result of the increase in traffic resulting from denser residential development.

### 5. Comment on Paragraph 34a) of Mr Kirkby-McLeod’s evidence

Paragraph 34 a) of Mr Kirkby-McLeod’s evidence references Alasdair Gray’s evidence relating to the subdivision consent application for 24 Wayside Road dated 1 February 2018.

I have reviewed the Statement of Alasdair Gray on behalf of Te Kauwhata Land Ltd, dated 1 February 2018. Table 4 below shows my comments on the transportation paragraphs (Mr Gray’s evidence) in the context of this submission that are referenced by Mr Kirkby-McLeod (paragraph 34a).

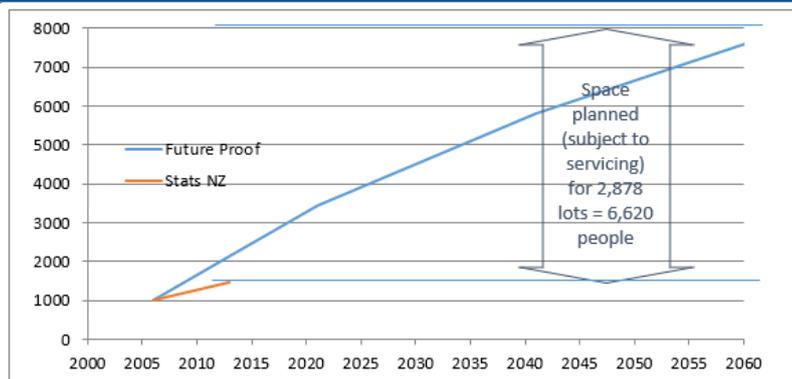
Statement of Alasdair Gray on behalf of Te Kauwhata Land Ltd, dated 1 February 2018	Comments
<p>Paragraph 6: Wayside Road is a local road carrying 530 vpd. Te Kauwhata Road is an arterial carrying 2,875 vpd east of Wayside Road and 2,670 vpd west of Wayside Road. For comparison, four laning would normally be considered around 20,000 to 30,000 vehicles per day, so the network has reserve capacity. I arranged for SIDRA traffic modelling of the 4-leg roundabout at the Wayside Road/Te Kauwhata Road intersection as part of assisting Waikato DC with the Lakeside Plan Change, Plan Change 20. I concluded that average delays would get close to minimum desirable levels of service (typically 35 seconds for an arterial) at around 1200 vehicles/hour. Current flows are around 300-400 vehicles/hour so there is significant reserve capacity.</p>	<p>Traffic volumes have increased. Wayside Road currently carries 590 vpd and Te Kauwhata Road carries 3,876 vpd. Current peak hour flows are around 400-500 vehicles per hour<sup>9</sup>. Although the traffic volumes have increased since 2018, there is still significant reserve capacity and additional lanes are not likely to be needed for some years yet. The conclusion in this statement is valid.</p>
<p>Paragraph 7: Crash data suggests that there are no significant safety issues in the area. There have been no reported crashes in the vicinity of the site along Wayside Road or Te Kauwhata Road. The network has low to medium-low collective road safety risk and a low to medium personal road safety risk.</p>	<p>Traffic volumes have increased but there have not been any reported crashes. The network has a low collective road safety risk and a low personal road safety risk<sup>10</sup>. There are no significant safety issues in the area.</p>
<p>Paragraph 9: The space planned for development in Te Kauwhata is broadly consistent with high growth population projections, as shown in Figure 1. If these areas can be accessed and serviced, they could provide around 2,900 lots. Development areas include:</p> <ol style="list-style-type: none"> <li>389 lots within the existing village.</li> <li>348 lots in terms of the zoned land north of the existing village.</li> <li>541 lots west of the railway line (Country Living and Te Kauwhata West zoned land) (E.g. Jetco and Wayside).</li> <li>1,600 lots planned in the Lakeside Plan Change 20 area.</li> </ol>	<p>Some of the anticipated lots will have been developed since 2018. Traffic volumes indicate development of up to around 100 lots since 2018. The NPS-UD requires tier 1 local authorities to meet the expected housing demand plus 20% in the short to medium term and plus 15% in the long term.  If allowed, the submission would allow 169 additional houses.</p>

<sup>9</sup> Peak hour trips around 12% of daily (ADT)

<sup>10</sup> <https://megamaps.abley.com/Maps/>

**Statement of Alasdair Gray on behalf of Te Kauwhata Land Ltd, dated 1 February 2018**

**Comments**



**Figure 1: Population Projections in relation to development capacity (based on 2.3 people/household)**

**Paragraph 10:**

Using the Future Proof projections over a 10 year planning period there would be around 580 additional households. Based on an 80:20 peak period directional split and 1.4 trips/household during peak periods, that would result in around 650 additional trips/hour westbound on Te Kauwhata Road, and a total flow of around 950 vehicles/hour. This remains within the capacity of a single lane which can carry 1,400 vehicles/hour uninterrupted and the Wayside Road/Te Kauwhata Road roundabout, which the majority of this proposal's traffic would use.

My assessment of implied dwellings over 10 years of the RPS Table 6D Future Proof 2021-2041 population projections is 450 additional households over a 10 year planning period<sup>11</sup>. The future projections are superseded by the NPS-UD requirements. Adding the additional households that would be allowed by the submission (169) to my assessment of 450 households over a 10-year planning period is around 620 households. That would result in 870 additional trips/hour, and a total flow of around 1,350 vph (two way) on Te Kauwhata Road. Based on the conservative 80:20 directional split for peak periods, this would result in 1,080 trips/hour in the busy direction. This is within the capacity of a single lane, and depending on travel habits and demand in the wider Te Kauwhata area, allows for a further 10-15 years growth at 1-2% /year after the Te Kauwhata Lands and Boldero Block developments are fully occupied. Subdivision planning processes adequately provide for the effects of additional traffic to be assessed and dealt with.

**Table 4: Comments on transportation paragraphs<sup>12</sup> referred to by Mr Kirkby-McLeod in his evidence<sup>13</sup>**

Mr Kirkby-McLeod concludes paragraph 34:

*“Based on the evidence of Mr Gray, the existing network has the capacity to accommodate the increase in traffic volumes generated by anticipated development areas in Te Kauwhata, with surplus capacity remaining. It is therefore reasonable to expect that the increase in movements that may result from the additional +/- 120 lots provided for by the Submitter’s relief will be able to be accommodated by the existing network. I note that Chapter 14.12 Transportation of the PWDP includes rules that require restricted discretionary*

<sup>11</sup> 1200 people at 2.67 people/ household (based on 2018 census) = 450 dwellings

<sup>12</sup> Statement of Evidence of Mr Alasdair Gray for Te Kauwhata Lands Ltd, 1 February 2018

<sup>13</sup> Statement of Planning Evidence of Mr Aidan Vaughan Kirkby-McLeod for Submitter (368): Ian McAlley, 17 February 2021

*activity resource consent for developments that will result in a traffic generation of more than 100 vehicle movements per day, which allows for the transportation effects of any future subdivision on the Site to be fully considered.”*

I agree, the existing network has capacity to accommodate the additional traffic generated by the additional lots. Depending on travel habits and demand in the wider Te Kauwhata area, planning for additional capacity may be needed in 10-15 years' time. Provision of public transport services and walking and cycling paths to reduce demand should be planned as development occurs. The traffic generation limits triggering additional assessment are expected to capture transport effects and enable appropriate mitigation measures.

## **6. Conclusions**

The removal of the overlay from 24 and 4 Wayside Road will allow an additional 169 lots. The denser residential development supports the NPS-UD and has wider benefits including environmental and better use of existing assets/infrastructure. There is existing capacity in the network to accommodate the additional trips from the removal of the overlay. The provisions of the Proposed District Plan are sufficient to manage potential adverse effects that could arise as a result of the increase traffic resulting from denser residential development.

I also support removal of the indicative road layout overlay and the Te Kauwhata Structure Plan road cross-sections to allow for better connectivity, urban design and inclusive access.

Yours sincerely



Naomi McMinn  
**Transportation Engineer**

Approved by:



Alasdair Gray  
**Transportation Engineer**