IN THE MATTER of the Resource Management Act 1991 ("RMA" or "the Act")

AND

IN THE MATTER of a submission in respect of the **PROPOSED WAIKATO DISTRICT PLAN** by **KIRRIEMUIR TRUSTEE LIMITED** pursuant to Clause 6 of Schedule 1 of the Act

STATEMENT OF REBUTTAL EVIDENCE OF SIVA BALACHANDRAN

1. INTRODUCTION

Qualifications and experience

1.1 My name is Siva Balachandran. I am a traffic and transportation engineer at Bloxam Burnett & Olliver Ltd ('BBO'), a firm of consulting engineers, planners and surveyors based in Hamilton.

1.2 I am acting for Kirriemuir Trustee Limited ('KTL') in support of that company's submission seeking rezoning of land at Geraghty's Road, Tuakau.

1.3 I outlined my qualifications, experience and commitment to comply with the Environment Court Expert Witness Code of Conduct in my evidence in chief ('EIC').

1.4 I have read the s42A Report; Hearing 25: Zone Extents Tuakau, prepared by Ms Chloe Trenouth and dated 14 April 2021 ('s42A Report').

1.5 I have also read the Technical Specialist Review ('TSR') memorandum prepared by Mr Skip Fourie and dated 12 April 2021 that is relevant to my area of expertise. It is attached as Appendix 4 to the s42A Report.

Purpose and scope of rebuttal evidence

1.6 This statement of rebuttal evidence addresses the traffic and transportation related issues raised in the s42A Report and the TSR. It does not restate matters addressed in my EIC.

1.7 Specifically, I address the following:

(a) Mr Fourie's commentary in relation to the appropriateness of the existing form of Geraghty's Road to support the proposed Geraghty's Road Structure Plan (Section 2);

(b) Mr Fourie's concerns with the provision of pedestrian and cyclist connections to the surrounding network from the proposed Geraghty's Road Structure Plan site ('the Site') (Section 3);

(c) Mr Fourie's concerns with the anticipated access and parking demand on Geraghty's Road and the appropriateness of the existing form of Geraghty's Road to accommodate the demand (Section 4);

(d) Ms Trenouth's and Mr Fourie's commentary in relation to the staging of identified transport upgrades (Section 5);

(e) I then provide my conclusion (Section 6).

2. Transport corridor upgrades

2.1 Mr Fourie queries whether the existing form of Geraghty's Road is suitable for its future function, or if it will need to be upgraded to a more urban form considering a forecast daily traffic volume of 3,735 vehicles per day ('vpd').

2.2 I have assessed the existing forms of the adjoining transport corridors and considered the increase in traffic volumes (presented in Table No. 4 of my EIC) on these transport corridors due to the introduction of the proposed Geraghty's Road Structure Plan. I therefore recommend the following corridor upgrades:

(a) Geraghty's Road:

(i) With an estimated future traffic volume of 3,735 vpd and as a transport corridor that will primarily provide access to residential dwellings and connection to Buckland Road (identified as an Arterial Transport Corridor in the PWDP), Geraghty's Road would best align with the PWDP definition of a "Collector Road".

(ii) Geraghty's Road should be upgraded from RP / 0.230 to RP / 0.690 (i.e. from the intersection with St Johns Avenue to the southern boundary of the proposed Geraghty's Road Structure Plan) in general accordance with Table 14.12.5.14

of the Proposed Waikato District Plan ('PWDP') to an urban-residential environment.

(iii) Table 14.12.5.14 of the PWDP specifies the minimum requirement of 22 m wide road reserve for Collector Roads. This includes the provision of a 6 m wide trafficable carriageway, 2.5 m wide parking provision on each side of the road and 1.8 m wide footpaths on both sides of the road. Non-mountable kerb and channel is to be installed along this section of the road.

(iv) Geraghty's Road is currently an unmarked 6.5 m sealed carriageway with a 20 m wide road reserve. Therefore, this would mean that the road reserve will have to be widened by 1 m on each side (i.e. acquiring land from neighbouring properties) to achieve the standards outlined in Table 14.12.5.14 of the PWDP.

(v) The section of Geraghty's Road from St Johns Avenue to Buckland Road (i.e. RP / 0.000 to RP / 0.230) is currently 9.4 m wide with a 1.2 m wide footpath abutting the eastern kerb line. Due to the location of the existing footpath and considering the fact that this section of the road currently provides access to only 11 properties, I consider that the benefits of widening the sealed width to 11 m are minimal and hence not cost effective. However, I recommend introducing a 1.8 m wide footpath on the western side of the road.

(vi) The existing road reserve of this section of Geraghty's Road is 20 m wide. The existing road reserve cannot be widened as allotments on either side of the carriage have already been developed.

(b) St Johns Avenue:

(i) As a transport corridor whose primary function is to provide property access, St Johns Avenue would best align with the PWDP definition of a "Local Road".

(ii) However, the average daily traffic on St Johns Avenue is expected to increase as presented in Table No. 4 of my EIC.

(iii) Table 14.12.5.14 of the PWDP indicates that any road servicing more than 100 allotments will have to be considered as a "Collector Road" and hence be widened to a 22 m wide road reserve. However, in this case, the existing road reserve of St Johns Avenue cannot be widened as allotments on either side of the carriage have already been developed.

(iv) Therefore, I recommend that the existing 20 m wide road reserve is maintained. However, the existing sealed width of 7.5 m is to be widened to 11 m so as to accommodate 2.5 m parking provision on either side of the road. The 2.5 m wide parking provision ensures that a 6 m wide trafficable carriageway is always available and not obstructed by on-street parking.

(v) A 1.8 m wide footpath is to be introduced on the southern side of St Johns Avenue (i.e. A 1.2 m wide footpath already exists on the northern side of St Johns Avenue).

2.3 The above upgrades would also be required as a result of the development of the Dromgools Road growth cell on the other side of Geraghty's Road and would be implemented at the time of subdivision.

3. **Pedestrian and cyclist connections to adjoining road network**

3.1 With the proposed corridor upgrade works to urbanise Geraghty's Road, Mr Fourie's concerns with the provision of pedestrian and cyclist connections to the surrounding network from the Site will also be addressed.

3.2 New footpaths have been proposed on either side of Geraghty's Road as indicated in Paragraph 2.2(a) above. Based on the typical cross-section presented in Table 14.12.5.14 of the PWDP, off-street cycling facilities need not be provided and therefore cycling will be accommodated within the proposed 11 m widened sealed carriageway.

3.3 As clarified in Paragraph 8.16 of my EIC, the internal spine road will be designed to comply with the standards in Table 14.12.5.14 of the PWDP with a 20 m wide road reserve and 1.8 m wide footpaths on either side of the new spine road. Therefore, I conclude that safe pedestrian connections between the site and Geraghty's Road will be provided and designed for during subdivision and the detailed design.

4. **Access and parking demand**

4.1 Lot arrangements and vehicle access to individual allotments have not been specified in the proposed Geraghty's Road Structure Plan at this stage. This will be addressed during the subdivision design stage.

4.2 Similar to access arrangement observed throughout Tuakau, allotments fronting Geraghty's Road within the Site could have vehicle crossings directly to Geraghty's Road.

4.3 This arrangement is considered acceptable as the Site is expected to comply with the PWDP Rule 14.12.1.1(1)(b) with regards to separation distance from an intersection or between accesses.

4.4 It is anticipated that there will be low to moderate demand for on-street parking on Geraghty's Road as observed on other local residential roads within Tuakau. This demand can be safely accommodated within the proposed corridor upgrade mentioned in Paragraph 2.2(a).

5. Staging of identified transport upgrades

5.1 This section provides a summary of the staging, and associated triggers (if any), for the recommended infrastructure upgrades.

5.2 The triggers were devised according to capacity and safety improvements associated with the advancement of the development stages of the proposed Geraghty's Road Structure Plan. Although the change in effects that trigger mitigation is never 'black and white', I have endeavoured to practically relate the staging of improvements to the associated number of trips expected to be generated and distributed on the local road network increases as the Site successfully develops.

5.3 Table No. 1 below provides the staging of the proposed transportation infrastructure upgrades associated with this rezoning submission and taking into account the Residential zoning of the neighbouring Dromgools Road growth cell to the east of Geraghty's Road.

5.4 The proposed Geraghty's Road Structure Plan area complements the Dromgools Road rezoning area. They share a common road frontage to Geraghty's Road, so it is appropriate that they share the cost of upgrading that road to an urban standard.

Table No. 1

Proposed Staging of Transportation Infrastructure Improvements		
Upgrade Required	**Development Stage Trigger / Indicative Timing**	**Estimated Cost Share**
Road Upgrade Sections		
1. Geraghty's Road (section of road fronting the Site: RP/0.370 to RP/0.690): Reconstruction of approximately 320 m of the road to urbanised residential cross-section: • Widen and sealing of road. • Kerb & channel on both side of the road. • Footpaths on both sides of the road.	Before any allotments are developed	50% = KTL (Northbound lane) 50% = Dromgools Road Growth Cell (Southbound lane)
2. Geraghty's Road (RP/0.230 to RP/0.370): Reconstruction of approximately 140 m of the road to urbanised residential cross-section: • Widen and sealing of road. • Kerb & channel on both side of the road. • Footpaths on both sides of the road.	Before any allotments are developed	42% = KTL (Northbound Lane) 8% = Residential Zone to the north of the Site (Northbound Lane) 50% = Dromgools Road Growth Cell (Southbound Lane)
3. Geraghty's Road (RP/0.000 to RP/0.230): • Construction of 1.8 m footpath on western side	Before any allotments are developed	42% = KTL (Northbound Lane) 8% = Residential Zone to the north of the Site (Northbound Lane) 50% = Dromgools Road Growth Cell (Southbound Lane)
4. St Johns Avenue: • Widen and sealing of road. • Footpaths on southern side of the road.	After 30 allotments have been developed (refer to Paragraph 5.6 to 5.8)	70% = KTL 30% = Dromgools Road Growth Cell

5.5 **Attachment A** of this rebuttal evidence contains an illustration of the recommended corridor upgrades described in Table No. 1.

5.6 St Johns Avenue does not require immediate upgrading as it will remain as a Local Road whose primary function is property access. Its current form

with a 7.5 m sealed carriageway and kerb and channel on both sides of the road indicates that the road is already built to an urban standard and can accommodate additional traffic until the number of allotments that the road services increases to more than 100, which raises the hierarchy of the road to 'Collector'.

5.7 Based on my assessment, approximately 55 new undeveloped residential lots from the Dromgools Road growth cell will distribute additional traffic on St Johns Avenue because they either adjoin Geraghty's Road and are likely to utilize St Johns Avenue or they have access to St Johns Avenue. Adding these additional trips (i.e. 8.5 x 55 = 470 daily trips) to the existing AADT of 370 vpd will equate to 840 vpd. An average daily trip rate of 8.5 vehicle trips per dwelling specific to Tuakau is used as per Paragraph 7.2 of my EIC.

5.8 Therefore, based on the Local Road / Collector Road threshold of 100 allotments which equates to approximately 1000 vpd (i.e. an all-day average trip rate of 10 vehicle trips per dwelling is used in this case as the trigger of 100 allotments is generic to the entire district), the proposed Geraghty's Road Structure Plan could develop approximately 30 allotments before upgrade is required, considering around only 60% of trips generated will utilize St Johns Avenue (Paragraph 7.9 of my EIC).

5.9 As described in Paragraphs 8.17 to 8.21 of my EIC, no capacity related upgrades are required at the Geraghty's Road / St Johns Avenue intersection, Buckland Road / Geraghty's Road intersection and the Buckland Road / George Street intersection when trips generated by the Site are added to the existing traffic.

5.10 The intersection upgrades recommended in Paragraphs 8.24 to 8.27 of my EIC are based on the Safe System risk assessment framework which includes assessing the exposure, likelihood and severity of major crash types occurring.

5.11 The site forms a small proportion of the traffic generated by other large rezoning proposed in the location. The cumulative effect of all the rezoning is likely to require safety upgrades to the intersections and I would expect all the subject development areas to contribute a fair share of the costs of upgrades through future development contributions or developer agreements. However, given the lack of information available for all other zoned developments within Tuakau, all intersection upgrades identified in my EIC will have to be considered in greater detail at the time of resource consent. Mr Olliver's rebuttal evidence outlines the rules that provide for this assessment and the imposition of conditions.

6. CONCLUSIONS

6.1 I have reviewed the s42A Report by Ms Trenouth and the TSR memorandum by Mr Fourie. I consider that the issues raised in these reports are relevant and have been appropriately addressed in my rebuttal evidence.

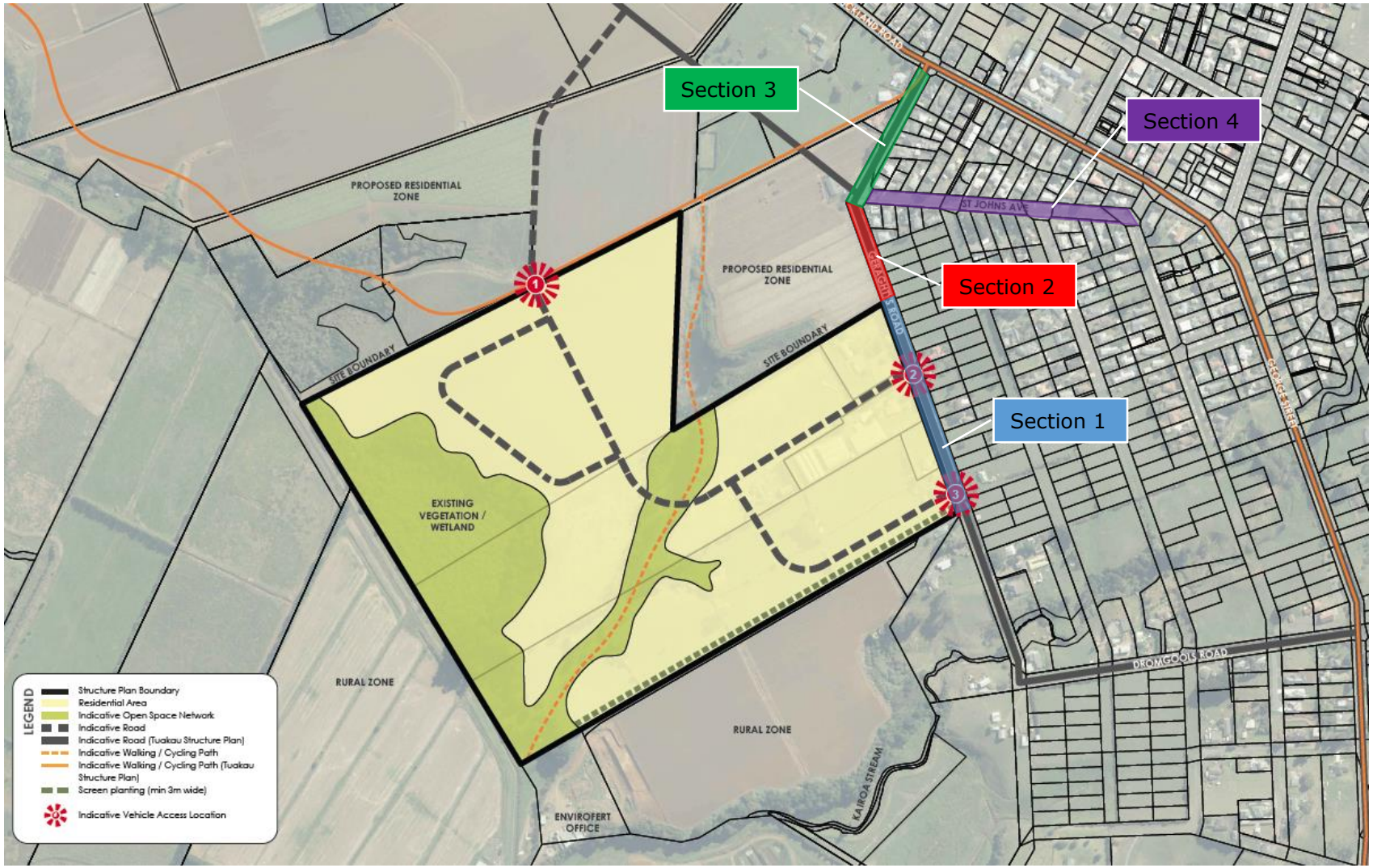
6.2 In my opinion, the corridor upgrades recommended in this rebuttal evidence and the intersection upgrades recommended in my EIC will deliver high levels of safety and improved efficiency for future users and the community.

6.3 My opinion remains that the proposed Geraghty's Road Structure Plan can be supported from a traffic and transportation perspective provided that the recommended transportation infrastructure upgrades and the identified mitigation measures are implemented.

Siva Balachandran
30 April 2021

ATTACHMENT A

ILLUSTRATION SUMMARISING PROPOSED CORRIDOR UPGRADES


Section 3
Section 4
Section 2
Section 1
PROPOSED RESIDENTIAL ZONE
PROPOSED RESIDENTIAL ZONE
SITE BOUNDARY
SITE BOUNDARY
EXISTING VEGETATION / WETLAND
RURAL ZONE
RURAL ZONE
ENVIROFERT OFFICE
KAROA STREAM
ST JOHNS AVE
DROMGOOLE ROAD
LEGEND
Structure Plan Boundary
Residential Area
Indicative Open Space Network
Indicative Road
Indicative Road (Tuakau Structure Plan)
Indicative Walking / Cycling Path
Indicative Walking / Cycling Path (Tuakau Structure Plan)
Screen planting (min 3m wide)
Indicative Vehicle Access Location