

BEFORE THE HEARING COMMISSIONERS  
KAIPARA DISTRICT COUNCIL

IN THE MATTER OF                      the Resource Management Act 1991 (**the Act**)

AND

IN THE MATTER                      of an application for a Private Plan Change – Plan  
Change 84 (PC84)

BY    Mangawhai Hills Limited

Applicant

TO    Kaipara District Council

Territorial Authority

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**Evidence of Amitabh (Amit) Arthanari on behalf of Berggren Trustee Co. Limited  
C/- Maria Berggren**

**(Traffic Engineering)**

**Dated 06 May 2024**

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## **1. INTRODUCTION**

### **Qualifications and Experience**

- 1.1 My full name is Amitabh (Amit) Arthanari.
- 1.2 I am a Senior Associate at Traffic Engineering & Management Limited.
- 1.3 I have a B.E (Hons) in Civil from Auckland University. I am a Charter Member of Engineering NZ (CMEngNZ) and their Transportation Group. I am also a Chartered Professional Engineer (CPEng) and am on the International Register of Professional Engineers (IntPE(NZ) / APEC Engineer).
- 1.4 My academic background includes postgraduate courses in traffic and transport engineering at Auckland University, and I have also undertaken specialist training courses associated with traffic engineering, road safety and internationally recognised analytical software used in the transport profession.
- 1.5 I have been in the field of traffic engineering for 12 years with Traffic Engineering & Management Ltd (TEAM).
- 1.6 My experience includes the assessment of a numerous projects including retail, residential, commercial, industrial, cultural/religious and educational projects that cover a wide range of sizes, types and locations. This has included working with local authorities and private sector clients, in reviewing transport and access requirements for large residential, industrial, and commercial subdivisions. I therefore consider that my knowledge and experience provide an important and relevant foundation for my assessment and review of the proposed private plan change.

### **Expert Witness Code of Conduct**

- 1.7 I confirm that the evidence I present is within my area of expertise and I am not aware of any material facts which might alter or detract from the opinions I express. I have read and agree to comply with the Code of Conduct for expert witnesses as set out in the Environment Court Consolidated Practice Note January 2023. The opinions expressed in this evidence are based on my qualifications and experience and are within my

area of expertise. If I rely on the evidence or opinions of another, my evidence will acknowledge that position.

- 1.8 I understand and accept that it is my overriding duty to assist the Independent Commissioners in matters which are within my expertise as a Traffic Engineer.

### **Purpose and Scope of Evidence**

- 1.9 The purpose of my evidence is to summarise the findings of my review of the transport reporting prepared by the applicant, comment on the traffic-related points that have been raised in the submission by Berggren Trustee Co. Limited, and comment on the related matters raised in the Officer's report (s42A report).

- 1.10 In preparing this evidence I have:

- (a) Visited the site and the surrounding area of Mangawhai on the 29<sup>th</sup> April 2024.
- (b) Undertaken visibility assessments at various locations on Tara Road and Moir Street.
- (c) Reviewed, and where necessary relied on, planning documents, expert evidence and reporting as follows:
  - (i) Appendix 6a Transport Assessment REPLACED - March 2023 (Peter Kelly and Douglass Blankson, TPC)
  - (ii) PC84 Evidence Kelly Transport (Peter Kelly, TPC)
  - (iii) PC84 Kelly Transport Supplementary Transport Assessment (Peter Kelly, TPC)
  - (iv) PPC84 Transport Hearing Report Commute 10042024 (Rachel Gasson, Commute)
  - (v) PPC84 - Jonathan Clease - s42a Planning Report - Supplementary Report – Tracked (Jonathan Clease Consultant Planner)
  - (vi) PC84 Evidence Falconer Urban Design and Landscape Att 3 Recommended Revised Structure plan.

- 1.11 My evidence considers and provides commentary on:

- (a) The objectives of the plan change in relation to transport outcomes.
- (b) The suitability of the proposed roading network and accessibility.
- (c) The proposed structure plan.
- (d) Other traffic matters requiring consideration.

## 2. PLAN CHANGE OBJECTIVES AND POLICIES

2.1 As noted in the officer's report "The purpose of the plan change is to deliver viable and sustainable residential housing".

2.2 The development area objectives DEV1-03 Transportation<sup>1</sup> outlines the objective to "Provide a connected, legible and safe multi-modal transport network in the Mangawhai Hills Development Area".

2.3 The development area policy DEV1-P2 Transportation and Connectivity states "Require subdivision and development to achieve a connected, legible and safe multi-modal transport network in the Mangawhai Hills Development Area by:

1. *Implementing the primary and secondary road network consistent with the Mangawhai Hills Structure Plan.*
2. *Providing attractive, safe and efficient vehicle access, parking and manoeuvring.*
3. *Maximising walking and cycling networks along streets, waterways, natural wetlands and open spaces.*
4. *Coordinating required transport infrastructure upgrades of the surrounding road network, to minimise potential adverse safety and efficiency effects".*

2.4 As noted above, the policy requirements are reliant on the proposed structure plan to achieve appropriate connectivity and access provisions.

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<sup>1</sup> DEV1 Mangawhai Hills Development Area Provisions & Structure Plan

- 2.5 The southern part of the proposed structure plan area<sup>2</sup>, is understood to be able to be connected to the council-reticulated wastewater supply and could therefore be well suited to support early stages of development., From a transportation perspective, due to the proximity of this land to the village centre, it is likely to be suitable for smaller lot sizes and clustered development to create an efficient use of urban land within the walking catchment to Mangawhai village.
- 2.6 In order to achieve the objectives and policies of the development area, it is crucial that the structure plan provides better certainty around transport access to the southern sites in the Plan Change area.
- 2.7 Improved pedestrian and cycle integration with Moir Street is essential. This integration not only enhances accessibility but also promotes sustainable modes of transportation, reducing dependency on vehicular traffic and creating an efficient urban form consistent with the National Policy Statement Urban Development.
- 2.8 Addressing these constraints is vital to ensure the area is well-connected, accessible, and sustainable, while mitigating potential traffic issues in the future.

### 3. PROPOSED ROADING CONNECTIONS

- 3.1 Consideration has been given to the assessment of key intersections undertaken by Mr Kelly, his reported findings, and recommendations. Consideration has also been given to the review and recommendations provided by MS Gasson.
- 3.2 In general, I agree with the assessments and recommended upgrading proposed by Mr Kelly in *section 5.0* of his supplementary transport assessment<sup>4</sup>.

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<sup>2</sup> Figure 4. PPC84 site location, (v)  
Supplementary Report – Tracked

- 3.3 It is critical that any safety improvements, footpath, and cycleway upgrading recommended are implemented prior to, or in conjunction with lots being created, or housing being consented, to ensure an appropriate transport network for future residents.
- 3.4 Other capacity related upgrading recommendations can be staged in line with development triggers.
- 3.5 The proposed structure plan should incorporate the recommended upgrades comprehensively to ensure that the necessary connections and enhancements are implemented in accordance with the development area's requirements in line with appropriate timing and staging.
- 3.6 Furthermore, I have also considered potential constraints associated with the recommended upgrading and realignment of the Tara Road/Moir Street intersection as discussed below.

#### Tara Road/ Moir Street/ Kaiwaka Mangawhai Road Intersection

- 3.7 From my site visit and assessment, visibility is limited at this intersection to the west as a result of road geometry (both vertical and horizontal alignment) and potential roadside obstructions.
- 3.8 The existing intersection features a convex mirror provided to try and mitigate the limited visibility in the western direction. See figure below:



*Figure 1: looking west along Moir Street at the intersection of Moir Street and Tara Road*

- 3.9 An assessment of Safe Intersection Sight Distance (SISD) was undertaken for a 60 km/h operating speed<sup>3</sup> in accordance with AUSTROADS guidelines.
- 3.10 The following figure shows the extent of sight lines required to achieve SISD to the west at this intersection:



*Figure 2: SISD Measurement West – Tara Road/ Kaiwaka Mangawhai Road Intersection*

- 3.11 As can be seen in figure 1 above, in order to achieve the requisite sight distance discussed above sight lines (light blue line) would need to cross existing property boundaries.
- 3.12 As detailed in the supplementary transport assessment<sup>4</sup> provided by Mr Kelly up to 70% of the development traffic could be expected to travel via Tara Road/ Moir Street/ Kaiwaka Mangawhai Road Intersection. With most of this traffic expected to turn right into Tara Road or left out of Tara Road.
- 3.13 In this case, the critical movements identified rely on visibility to the west.

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<sup>3</sup> This operating speed has been conservatively assumed given that the intersection is in close proximity to a posted speed limit change from 80km/h to 50Km/h

<sup>4</sup> PC84 Kelly Transport Supplementary Transport Assessment, April 2024

3.14 Amongst other things, Mr Kelly recommends that mitigation at this intersection should be provided in the form of:

- (a) Installation of a right turn bay / localised widening.
- (b) Vegetation removal and cut back of the berm west of tara road to increase visibility.
- (c) Potential intersection realignment or implementation of roundabout if no other connections from the Plan Change Area are made beyond Tara Road.

3.15 Although I am supportive of these treatments, it is not clear if vegetation removal within the road reserve would be sufficient to achieve the required SISD requirements, without the need for land take. The ability for the developer, or future developers to undertake works on private land are unlikely to be realised.

3.16 Furthermore, should realignment of the road be required, it is noted that the bridge to the east and proposed road widening required to achieve a right turn bay (or potentially a roundabout) would further constrain the scope of any proposed realignment and therefore the extent to which visibility improvements could be achieved.

3.17 Considering that Tara Road may carry a significant proportion of future traffic demand and that key traffic movements to/from the village centre are reliant on the safe and efficient operation of this intersection, it is recommended that certainty is required that an appropriate intersection upgrade can be achieved. Without this certainty it is unclear that the transportation effects of the Proposal can be appropriately avoided, remedied or mitigated.

#### **4. PROPOSED STRUCTURE PLAN**

4.1 Overall, I agree with the general intent of the transportation rules and standards established in the Mangawhai Hills Development Area provisions, however, there are a number of potential limitations or constraints that may result in unintended adverse outcomes.



- 4.2 I have reviewed the draft structure plan<sup>5</sup> from a traffic engineering perspective and have considered the potential risks to achieving pedestrian and vehicular connectivity/integration outcomes.

#### **Transport Connectivity**

- 4.3 DEV1-R19 Subdivision Rules and DEV1-S14 Standards specify that:
- (a) *“All primary and secondary roads are established in accordance with the indicative roads shown on the Mangawhai Hills Structure Plan.”*
  - (b) *“Roads shall be located in accordance with the indicative roads shown on the Mangawhai Hills Structure Plan.”*
- 4.4 Therefore, the rules and standards set forward establish a dependence and need for conformity with the general layout of the connections shown on the Mangawhai Hills Structure Plan.
- 4.5 As discussed further in my evidence, a number of key roading linkages I identified in the draft Structure Plan<sup>5</sup> may not be realised due to land ownership issues and / or topographical / landform constraints.
- 4.6 I therefore recommend that the structure plan includes flexibility to ensure connectivity as the Plan Change area is developed.

#### **North-South Connection to Moir Street**

- 4.7 I am in general agreement with the proposed north - south connections shown in the draft structure plan<sup>5</sup> and consider these to be appropriate given the various engineering constraints that have to be balanced.
- 4.8 As noted in the officer’s report and further reiterated by comments made by Ms Gasson – set out below, the ability to achieve transport connectivity is reliant on good vehicular and pedestrian connections to Moir Street.

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<sup>5</sup> PC84 Evidence Falconer Urban Design and Landscape Att 3 Recommended Revised Structure plan

- (a) *“As discussed above in the transport section, PPC84 is generally well-located relative to the existing urban areas. It potentially has a good level of connectivity to these adjacent urban areas, in the event that the key north-south and east-west connections can be formed”*  
– Mr Clease
- (b) *“I separately note that unless a southern connection to Moir Street can be delivered, that the locational benefits of the site being in close proximity to the village centre and school are significantly weakened. As such I consider that alternative access points from the site towards the southern end of Tara Road should be explored in order to reduce the extent of circuitous routing that would otherwise be necessary for future residents seeking to access the township.”*  
– Ms Gasson

4.9 As identified in these comments, the benefits of the site’s proximity to the village centre and school are largely realised through a road/walkway connecting the southern part of the site to Moir Street.

4.10 The draft structure plan proposes the following two southern links to Moir Street as shown in the following figure:

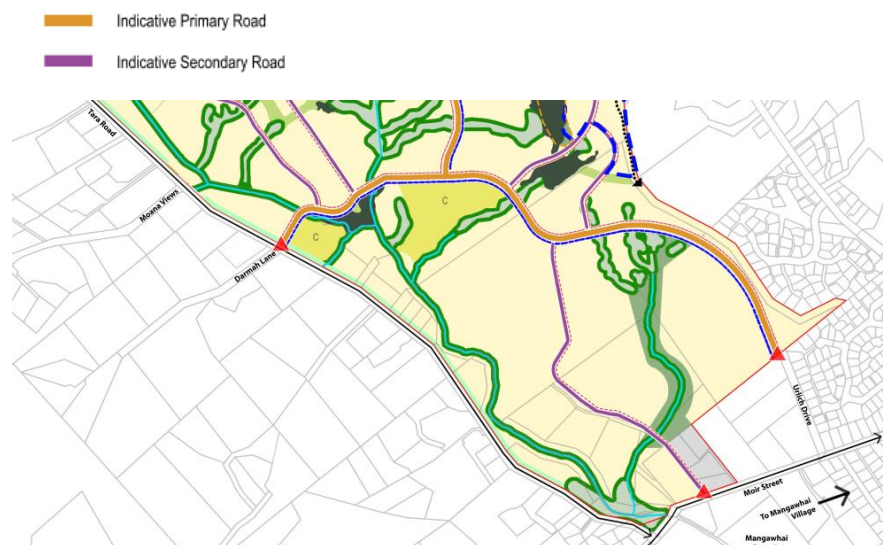


Figure 3: Draft Structure Plan PC84<sup>5</sup>

4.11 As shown in Figure 3 above, a primary road connection to Ulrich Drive and a secondary road connection through a JOAL that provides access to a number of properties in the southern end of the plan change area.

- 4.12 With regard to the 20-meter-wide primary road connection (orange line), it is understood that this road connection is proposed through the Mangawhai Church Trust Land and is opposed by the Trust. Therefore, there is a real possibility that the only proposed primary road connection to Moir Street may not be realised.
- 4.13 The 16 metres wide secondary (purple) road roughly follows the existing alignment of the JOAL for properties at 106 Moir Street. This accessway is currently single width for the majority of the way, is typically steep and narrow. The ability to form a suitably wide road reserve through this alignment, although possible is likely to require substantive retaining, civil and earthworks to achieve, including additional land acquisition as the current legal width of the JOAL seems to vary between 5.5 metres and 10-metres (measured off KDC Maps). For these reasons (cost, technical construction and land ownership) it is a real possibility that this secondary road connection may also not eventuate.
- 4.14 On this basis, there is a distinct possibility that a number of the southern sites would not be suitably connected to Moir Street and would not be able to be developed until potential connections over my client's land, through to Tara Road, could be provided. Again, such connections rely on crossing other people's land and may therefore not be able to be realised. Should an appropriate north-south primary road link not be provided; is possible that various disparate access roads and JOALS would be formed to service individual lots.
- 4.15 It is therefore recommended that an alternate southern primary road alignment is identified by the structure plan that would enable some degree of flexibility in achieving the intended outcomes of the structure plan transport policies and objectives.
- 4.16 The following indicative route is proposed:

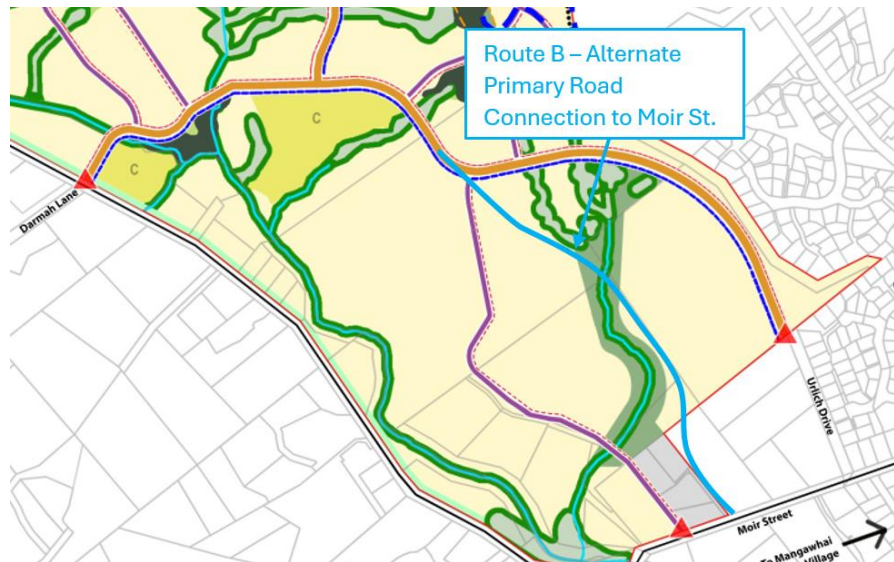


Figure 4: Route B – Alternative Primary Road Connection to Moir Street

4.17 The suggested alternate connection has been recommended on the following basis:

- (a) the suggested primary road would be formed through Council owned land, providing a level of control/flexibility in achieving crucial connectivity outcomes for the plan change area.
- (b) The proposed alternate access road would intersect with Moir Street at a location where there is a relatively flat and straight road alignment, with good visibility in both directions.
- (c) Based on a review of contour information and engineering information provided in the application material and communication with MS Farley from Hutchinson Consulting Engineers (Civil), Topography in this area is understood to be relatively better suited to achieving appropriate longitudinal gradients.
- (d) Based on Communication with Mr Klassen, the proposed alternate primary road would limit exposure to known wetland features.

### Western Connection to Tara Road

- 4.18 Should roading connection to Moir Street not eventuate, this would also mean that the sole connection for the southern lots to the primary road network would be via a connection approximately mid-way along the northern boundary to ALLOT 247 PSH OF MANGAWHAI (Allot 247).
- 4.19 Should this northern link not be extended to meet the boundary of my client's land, then there is a possibility that no viable primary road connection is formed to Allot 247 and subsequently other southern sites that would be reliant on this connection being made. See figure below:

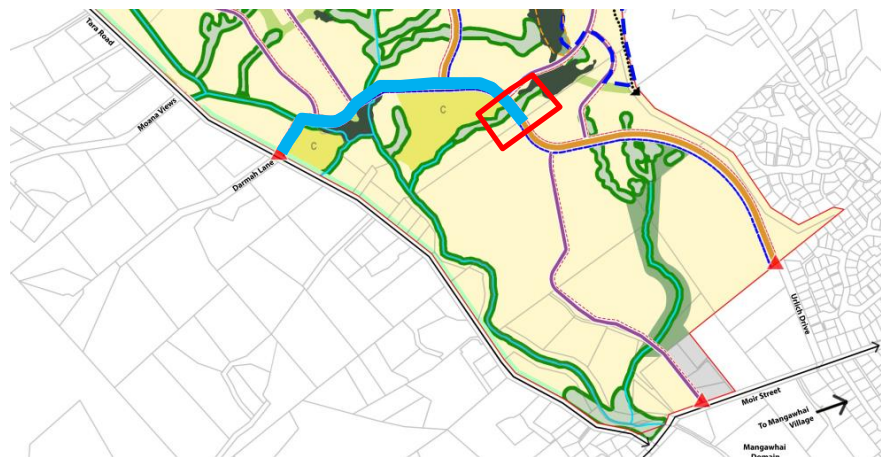


Figure 5: Northern Primary Road Connection for Allot 427

- 4.20 As explained above, such a connection has to be a stated prerequisite for any development. The ability to connect the southern sites in the Plan Change area and the ability to create a north south connection through to Moir Street are fundamental to appropriately managing the transportation effects.
- 4.21 The Development Area provisions need to be amended to create this certainty and at a minimum, require the connection to be provided from Moir Street to Tara Road (Primary Road 2) at the first stage of development for housing and / or subdivision to ensure network connectivity and resilience.

### **Old Waipu Road and Connection to Mangawhai Central**

- 4.22 It is understood that proposed connections to Old Waipu Road and Mangawhai Central as indicated in the structure plan are also uncertain.
- 4.23 Should these links not eventuate, the connectivity of the Development Area is further diminished and puts further pressure on Tara Road.
- 4.24 Mangawhai Central is a significant commercial hub for Mangawhai and the wider area. Connectivity to this area is important to achieving a safe and efficient transport network for Mangawhai.
- 4.25 This further reinforces the significance of creating a southern link to Moir Street as part of the first stage of any development, and therefore the need for 'Route B' (see Figure 4 above), or a similar alternate route to be included on the Structure Plan as an alternative primary road alignment.

### **Pedestrian and cycle integration**

- 4.26 Similarly, pedestrian and cycle connectivity are dependent on the proposed links to Moir Street.
- 4.27 Should these links not eventuate for reasons discussed above, the proposed transport network scenarios require residents to take a circuitous route through future internal roads and Tara Road to gain access to Moir Street and Mangawhai Village. This would be an inefficient outcome that would generate a suite of effects of the Proposal that have not been assessed.
- 4.28 Given that the draft Structure Plan<sup>5</sup> does not include any proposed connections to Tara Road between Darmah Lane and Moir Street (1.2km) the potential detour for residents if the Ulrich Drive connection is not provided could be in the order of 1.7 to 2.6 kilometres depending on how close or far a resident's house was located from the Darmah Lane connection (to the south).

- 4.29 This has the effect of significantly diminishing the Proposal in regard to active mode connectivity and integration and is likely to increase car dependency.
- 4.30 For this reason, it is further recommended that suitable alternate pedestrian/cyclist connections are shown on the Structure Plan (such as the connections shown in Figure 4 above or similar).

#### **Accessibility and mobility impaired road users**

- 4.31 Although I appreciate that these matters would require further design investigations, there has not been any commentary provided by transport experts regarding accessibility for mobility impaired users or feasibility of achieving the maximum 12.5% longitudinal road gradients set out in Table DEV1.1<sup>1</sup> and subsequent footpath gradients. It is fundamental at this stage to demonstrate that it is feasible to construct the roads shown.
- 4.32 Based on the topography of the land and likely alignments of roads shown in the Structure Plan, achieving compliant gradients for roads and footpaths is likely to be challenging and involve significant earthworks in proximity to wetlands and other natural features.

### **5. CONCLUSIONS AND RECOMMENDATIONS**

- 5.1 The proposed plan change aims to facilitate the development of viable and sustainable residential housing. To achieve this, it is crucial to establish a connected, legible, and safe multi-modal transport network within the Mangawhai Hills Development Area.
- 5.2 The successful implementation of the Development Area policy, particularly regarding transportation and connectivity, relies heavily on the proposed Structure Plan. Therefore, it is imperative that the Structure Plan provides certainty around transport access to the development sites and requires a connection from Moir Street, to at least Tara Road to be completed in conjunction with the first stage of development of any housing and / or subdivision.

- 5.3 Improving pedestrian and cycle integration to Moir Street is essential for enhancing accessibility and promoting sustainable modes of transportation, ultimately reducing dependency on vehicular traffic.
- 5.4 Addressing these constraints is vital to ensure the proposed development is well-connected, accessible, and sustainable while mitigating potential traffic issues in the future. An unconnected development will not achieve the objectives of the Proposal.
- 5.5 The proposed upgrading of key intersections, as outlined in Mr. Kelly's supplementary transport assessment, is deemed necessary. Safety improvements, footpath, and cycleway upgrades need to be prioritised and implemented before lots are developed, with capacity-related upgrades staged in line with development triggers. Without this certainty the transportation effects of the Proposal will not be appropriately managed.
- 5.6 The proposed Structure Plan and associated development Area provisions should comprehensively incorporate these upgrades to ensure necessary mitigation is provided as the area is built out.
- 5.7 Specific constraints associated with the Tara Road/Moir Street intersection require further consideration due to current limited visibility to the west and the potential need to acquire private land to undertake the required works. Further assessment is recommended to ensure that the safety outcomes are achievable given the expected substantial increase in traffic volume and the intersection's critical role in facilitating traffic movements to and from the Mangawhai village centre.
- 5.8 The proposed north-south connections in the draft structure plan<sup>5</sup> are considered appropriate, and the ability to deliver a southern connection is crucial for achieving transport connectivity. For this reason, the alternative connection suggested in my evidence (or similar) should also be included.
- 5.9 Vehicular and pedestrian connections to Moir Street are crucial in taking advantage of the site's proximity to the village centre and school and to managing the effects of the development.



- 5.10 If the proposed roading connections to Moir Street do not materialise, the only connection for the southern lots to the primary road network would be via a connection approximately midway along the northern boundary to Allot 247.
- 5.11 If this northern link is not extended to meet the boundary, there is a possibility that no viable primary road connection is formed to Allot 247 and subsequently other southern sites reliant on this connection.
- 5.12 Therefore, it is essential to ensure that at a minimum, connection is provided from Moir Street to Tara Road (Primary Road 2) at the first stage of development for housing and / or subdivision.
- 5.13 Proposed connections to Old Waipu Road and Mangawhai Central are uncertain, potentially diminishing the connectivity of the development area, increasing pressure on Tara Road and emphasising the need for a southern link to Moir Street. A connection to Mangawhai Central is important given the commercial role of that area.
- 5.14 Without a suitable southern connection to Moir Street, residents face significant detours if walking or cycling resulting in poor outcomes and an diminished transport network.
- 5.15 It is recommended that suitable alternate pedestrian/cyclist connections are shown on the structure plan to mitigate these issues.
- 5.16 There is limited information available in the plan change Proposal about accessibility for mobility-impaired users or the feasibility of achieving compliant gradients for roads and footpaths, highlighting the need for these factors to be considered in future design investigations.

**Amitabh Arthanari**

**Traffic Engineering and Management Limited**

**06 May 2024**