

## **PROPOSED TRAFFIC LINK**

## **LAXON TERRACE – FURNEAUX WAY**

## **NEWMARKET**

## **TRAFFIC SAFETY REVIEW**

***Prepared By:***  
**Bryce Hall and**  
**Anatole Sergejew**

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**Auckland Office:**  
P O Box 60-255, Titirangi, Auckland 0642  
Level 1, 400 Titirangi Road, Titirangi Village  
Tel: (09) 817 2500  
Fax: (09) 817 2504  
[www.trafficplanning.co.nz](http://www.trafficplanning.co.nz)

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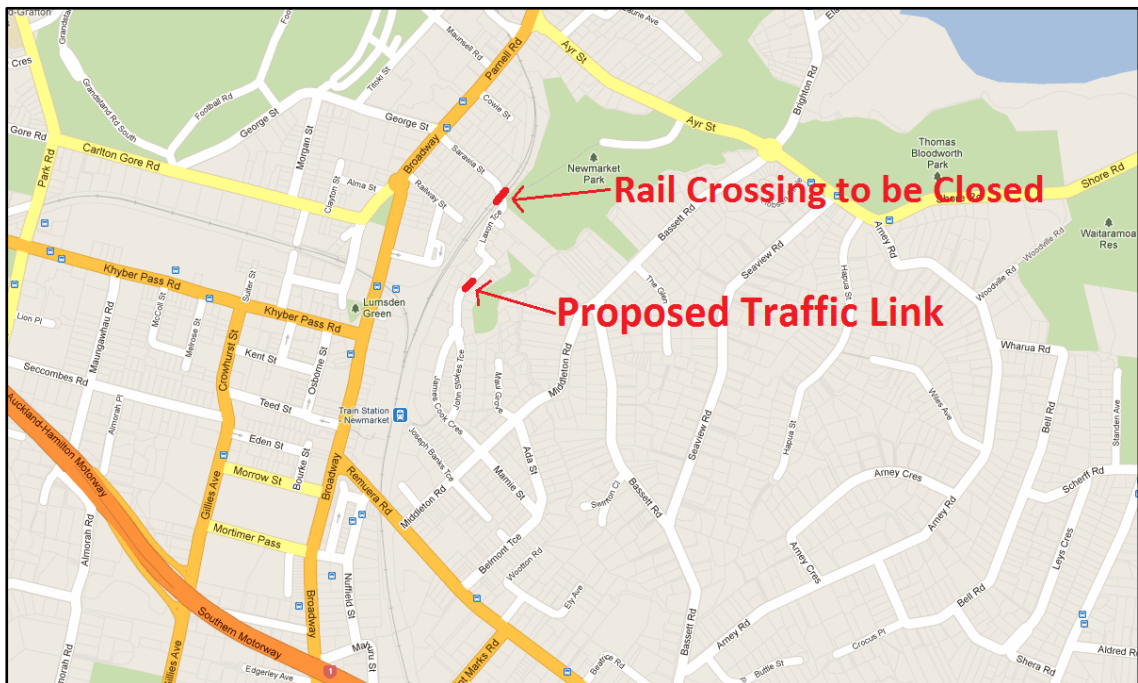
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## 1.0 INTRODUCTION

This report comments on the traffic engineering implications of the proposal to establish a traffic link between Laxon Terrace and Furneaux Way in Newmarket to allow the Sarawia Street rail level crossing to be closed to vehicular traffic. The report specifically describes the existing transport environment in this location, provides a comparative assessment of the proposed traffic link, and summarises the findings of a safety audit that was carried out of the proposed traffic link.

The proposed traffic link occupies an existing pedestrian link that is provided between Laxon Terrace and Furneaux Way and its location is shown in Figure 1.

Figure 1 – Site Location



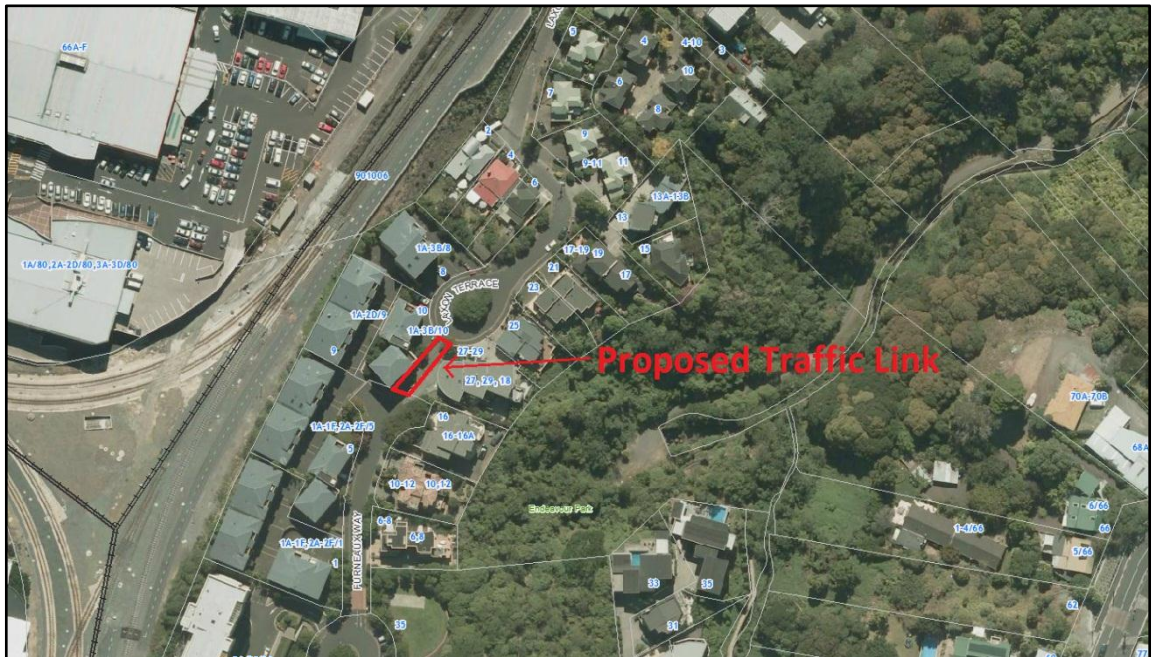
Source: [www.wises.co.nz](http://www.wises.co.nz)

By way of a summary of the detail contained within this report, it can be stated that there are a number of traffic safety issues that need to be resolved to allow the proposed traffic link to operate in an appropriate manner.

## 2.0 EXISTING TRANSPORT ENVIRONMENT

The proposed traffic link occupies an existing pedestrian link that runs between Laxon Terrace and Furneaux Way. The typical traffic management arrangements on both streets are shown in Figure 2.

Figure 2 – Laxon Terrace – Furneaux Way Traffic Management Measures



Source: <http://maps.aucklandcouncil.govt.nz/AucklandCouncilViewer/>

## 2.1 Laxon Terrace

Laxon Terrace is located to the north of the proposed traffic link. It extends south from the rail level crossing at Sarawia Street and provides access to a number of residential properties. It is classified as a Local Road in the District Plan with the primary function of providing for property access.

In this location, Laxon Terrace has a kerb to kerb carriageway width of approximately 6 metres which provides for one traffic lane in each direction. A “no stopping at all times” parking restriction is marked along most of the length of Laxon Terrace although some limited on-street parking is available near the cul-de-sac head located just to the north of the proposed traffic link.

The traffic management arrangements on Laxon Terrace are indicated in Figure 3.

Figure 3 – Laxon Terrace Traffic Management Arrangements



The results of traffic counts carried out at a point just to the west of the rail level crossing on Sarawia Street have been used as a proxy for traffic flows on Laxon Terrace in this location. The results are summarised in Table 1.

Table 1 – Laxon Terrace Traffic Flows

Weekday	Saturday	Sunday	Weekday Peak Hour	
			AM Peak Hour	PM Peak Hour
380	402	302	37	44

## 2.2 Furneaux Way

Furneaux Way is located to the south of the proposed traffic link. It extends north from the cul-de-sac head on James Cook Crescent and provides access to a number of residential properties. It is currently a private road and effectively operates as a Local Road.

In this location, Furneaux Way has a kerb to kerb carriageway width of approximately 5.5 metres which provides for two-way traffic flow. A “no stopping at all times” parking restriction is marked along both sides of Furneaux Way in this location.

The traffic management arrangements on Furneaux Way are indicated in Figure 4.



Figure 4 – Furneaux Way Traffic Management Arrangements



The results of traffic counts carried out at the northern end of James Cook Crescent have been used as a proxy for traffic flows on Furneaux Way in this location. The results are summarised in Table 2.

Table 2 – Furneaux Way Traffic Flows

Weekday	Saturday	Sunday	Weekday Peak Hour	
			AM Peak Hour	PM Peak Hour
220	213	205	29	26

### 2.3 Furneaux Way – Laxon Terrace Pedestrian Link

The Furneaux Way-Laxon Terrace pedestrian link has a width of about 4 metres and rises from Laxon Terrace to Furneaux Way. The typical arrangements on the pedestrian link are shown in Figure 5.

Figure 5 – Pedestrian Link Management Arrangements



View looking down link



View looking up the link

Pedestrian usage of the link has been surveyed by others and this information has been provided to Traffic Planning Consultants Ltd with the hourly usage summarised in Figure 6.

Figure 6 – Pedestrian Link Usage Surveys



Typical hourly usage varies between about 6 and 20 pedestrians per hour.

### 3.0 COMPARATIVE ASSESSMENT

#### 3.1 Predicted Future Traffic Flows

Traffic use of the new traffic link will essentially be the same as the current Laxon Terrace traffic counts with weekday traffic flows of about 400 vehicles per day and weekday peak hour traffic flows of up to 40 vehicles per hour.

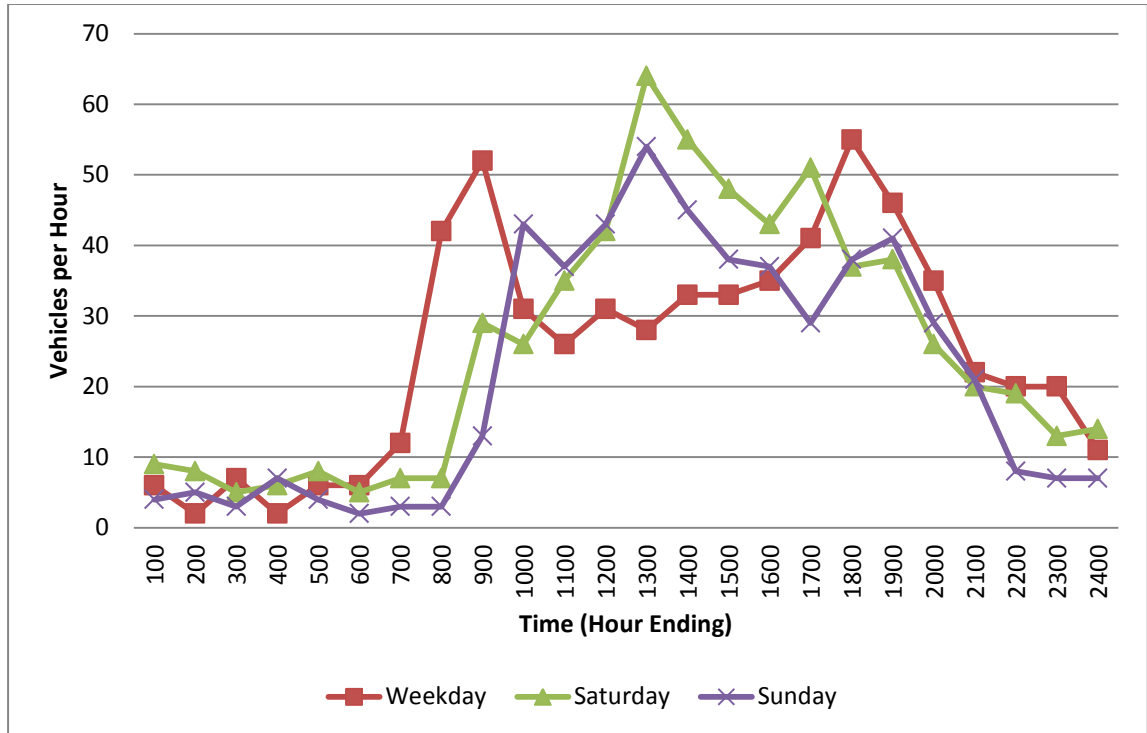
With the traffic link in place and the Sarawia Street rail level crossing closed, traffic flows on Furneaux Way will increase by the level of traffic currently using Laxon Terrace. Thus, future Furneaux Way traffic flows will be as indicated in Table 3 with a typical hourly traffic flow profile as per that indicated in Figure 7.



Table 3 – Future Furneaux Way Traffic Flows

Weekday	Saturday	Sunday	Peak Hour	
			AM Peak Hour	PM Peak Hour
600	615	507	66	70

Figure 7 – Future Furneaux Way Hourly Traffic Flow Profile



Thus, weekday hourly traffic flows will typically be in the range of 30 to 55 vehicles per hour between about 8am and 8pm with weekend traffic flows varying between 30 and 65 vehicles per hour over a similar period.

### 3.2 District Plan Guidance

Section 12.6.2.2 of the Auckland Council District Plan – Isthmus Section (District Plan) provides the following description of a Local Road environment.

#### **Function**

*Local roads provide direct access to abutting properties. With the exception of cul-de-sacs, they also collect and distribute traffic to and from other streets within, and in some cases beyond the local area.*

#### **Traffic**

*Most local roads carry less than 1,000 vehicles/day. The road network configuration can, however, result in some local roads carrying higher flows of up to approximately 5,000 vehicles/day.*

*It is desirable to keep through or extraneous traffic flows on local roads to a minimum. Measures may be taken to inhibit such traffic on local roads.*

*Such measures will, however, only be undertaken where there is an identified problem, there has been full consultation with affected parties and the works are co-ordinated with Council's overall work priorities.*

**Form**

*There is seldom the need to provide for more than two traffic lanes plus on-street parking, property access and pedestrian needs on local roads.*

*Road reserve widths can vary from 14m (12m in short cul-de-sacs) to 20m.*

The District Plan indicates that Local Roads can generally be expected to carry less than 1,000 vehicles per day. The traffic flows on the traffic link and on Furneaux Way will be in the order of 400 vehicles per day and 600 vehicles per day respectively and as such are entirely consistent with that anticipated by the District Plan.

### **3.3 New Zealand Land Development and Subdivision Infrastructure Standard**

As a further comparison, the provisions of New Zealand Standard 4404:2010 “Land Development and Subdivision Infrastructure” (NZS 4404) have been used to determine the appropriateness of the current road cross sections on Furneaux Way to cater for the additional Laxon Terrace traffic that would use it with the Sarawia Street rail level crossing closed.

NZS 4404 indicates that the two fundamental roles of a road are to provide a space for interaction between people for a range of purposes (place context) and access to land uses so that movement between places can occur (link context). It describes a relationship between land use, area type and the transport context.

For Furneaux Way it describes the “place context” as live and play (residential and parks) and the “link context” as a combination of lane (limited through movement) and local road (low vehicle speeds, pedestrian and local amenity values predominate).

On this basis, Table 4 indicates the dimensional and traffic flow parameters indicated in NZS 4404:2010.

Table 4 – NZS 4404:2010 Road Design Standards

Local Attributes	Locality Served	Target Operating Speed	Parking	Carriageway Width	Typical Maximum Traffic Flows (vehicles per day)
Side or rear service access	Up to 100m in length between streets, 1 to 20 lots	10km/hr	Separate and recessed	2.75m to 3m	Up to 200 vpd
Access to houses / townhouses	1 to 20 dwelling units	20km/hr	In movement lane	5.5m to 5.7m	Up to 200 vpd
Primary access to housing	1 to 200 dwelling units	30km/hr	In the movement lane or separate and recessed	5.5m to 5.7m	Up to 2,000 vpd
All other land uses	All	50 km/hr	Separate and recessed	2 x 4.2m	Up to 8,000 vpd

The third row in Table 4 would relate to Furneaux Way and confirms that the 5.5 metre width of the road could carry up to 2,000 vehicles per day. With actual predicted traffic flows of about 600 vehicles per day, Furneaux Way will be able to accommodate the level of traffic likely to use it with the Sarawia rail level crossing closed and the traffic link in operation.

## 4.0 SAFETY AUDIT FINDINGS

A safety audit of the concept designs was carried out by Bryce Hall and Anatole Sergejew to identify potential traffic safety issues associated with the use of the traffic link in the manner anticipated.

The potential safety concerns identified have been grouped as follows:

- **Serious Concern** – a major safety concern that should be addressed and requires changes to avoid serious safety problems.
- **Significant Concern** – a significant safety concern that requires consideration of changes to improve safety.
- **Minor Concern** – a safety concern of lesser significance, but which should be addressed as it may improve overall safety.
- **Comment** – a concern or an action that may be outside the scope of the road safety audit, but which may improve overall design or be of wider significance.

#### 4.1 Serious Concern – Lack of provision for or warning of pedestrians

The proposed one-lane link between Furneaux Way and Laxon Terrace as shown does not appear to make any separate provision for pedestrians, who it is assumed must share the traffic lane. The title of drawing sheet 2 “Option 2 – Proposed Vehicular Access Through Furneaux Way/Laxon Terrace Shared Use Path” seems to imply the area will be a shared space, but it is not signposted as such. Instead, it is posted with RG19 and RG20 single lane signs. Motorists are therefore unlikely to expect to encounter pedestrians on the one-lane road or to give way to them.

***Recommendations:***

*Need to clarify the priority between pedestrians and motor vehicles or provide a separate footpath through the one-lane link.*

#### 4.2 Significant Concern – Potential confusion over vehicle priorities

Drawing sheet 2 indicates the one-lane link will be signposted with an RG19 single lane - give way and an RG20 single lane – priority sign. There are similar signage arrangements elsewhere, for example nearby on Middleton Road some 150 metres north of Maui Grove, and so motorists are likely to understand the signage. Nevertheless, there is a conflict between the extent of the proposed new coloured paving between what is shown in the landscape concepts plan and in drawing sheet 2. The former shows the coloured paving extending a short distance into Furneaux Way and extending across the cul-de-sac on Laxon Terrace.

Extending the coloured paved area onto the approach roads as shown in the landscape concepts plan may make it less clear which motorist must give way to which. It is critical that at the entries to the one-lane link motorists have a clear and unambiguous understanding of which vehicle has right of way.

***Recommendations:***

*Do not extend the coloured paved area onto the approach roads as shown in the landscape concepts plan.*

#### 4.3 Minor Concern – Visibility and control on Furneaux Way

Drawing sheet 2 indicates that the Furneaux Way entry into the one lane link will be controlled by give way control. But from a point 9 metres back from the limit line, visibility of traffic on the one-lane link is restricted by a vertical crest curve where Furneaux Way meets the one lane link. The restricted visibility may make it unsafe to approach the intersection at a speed greater than 10 km/h<sup>1</sup> as shown in Figure 8.

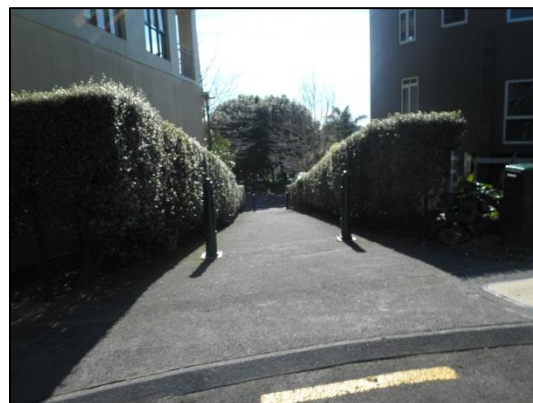
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<sup>1</sup> Note: It is unsafe to approach an intersection at more than 10 km/h if, a driver cannot see a vehicle on an uncontrolled approach at a distance (metres) of 1.2 times the speed (km/h) exceeded by 15% of vehicles on the priority route.

Figure 8 – Furneaux Way Visibility



View of one lane link on Furneaux Way approach



View looking down one lane link

**Recommendations:**

*Check if the visibility on the Furneaux Way entry into the one lane link is sufficient to allow the one lane link to be safely approached at a speed greater than 10 km/h as per Section 6 of Part 1 of the Manual of Traffic Signs and Markings. If it is not, either*

- install stop control on the Furneaux Way entry into the one lane link; or*
- remove the crest to improve the visibility from the Furneaux Way entry of traffic on the one lane link.*

#### **4.4 Comment – Forward visibility of traffic control**

The RG19 single lane - give way sign will come into the view of approaching motorists on Furneaux Way some 60 metres in advance of the limit line. The RG20 single lane - priority sign will come into the view of approaching motorist on Laxon Terrace some 50 metres in advance of the limit line.

The approach on Laxon Terrace is less critical, as all vehicles on this approach will have already passed through the one-lane section. The approach sight distances of the traffic control are more than adequate given the speed environment in this locality. However it will be important to ensure that any possible alteration to the landscape area on the Laxon Terrace cul de sac as indicated in drawing sheet 2 does not interfere with forward visibility of the RG20 sign and limit line on that approach to the one lane link.

#### **4.5 Comment – Visibility of one lane link from Laxon Terrace**

Currently visibility from Laxon Terrace of traffic on the one-lane link would potentially be restricted by the deciduous tree on the northwest corner of 27-29 Laxon Terrace, which is at the north-eastern end of the link. Drawing sheet 2 indicates that the tree is to be removed and this is supported.



The landscape concepts plan indicates that powder-coated steel railing will replace the existing hedges on both sides of the single lane link. It will be critical to ensure that the railing height and balusters are designed so that they do not impede inter-visibility at a maximum 1.1m eye height between traffic/pedestrians on the one lane link and traffic/pedestrians on Laxon Terrace. This is shown in Figure 9.

Figure 9 – Laxon Terrace Link Visibility



View of one lane link on Laxon Tce approach



View approaching one lane link from Laxon Tce

#### 4.6 Comment – Turning areas at end of Sarawia Street and Laxon Terrace

Drawing sheet 2 does not show the provision of turning areas at the new terminals of Sarawia Street and Laxon Terrace on either side of the railway line.

## 5.0 CONCLUSIONS

Based on the assessment described in this report, the following conclusions can be made in respect of the proposal to convert an existing pedestrian link between Laxon Terrace and Furneaux Way to a new vehicle access to accommodate vehicular traffic and pedestrians:

- Anticipated vehicle use of the link is about 400 vehicles per day with hourly traffic flows of about 30 vehicles per hour.
- Anticipated vehicle use of the Furneaux Way is about 600 vehicles per day with hourly traffic flows of about 70 vehicles per hour.
- Pedestrian usage of the link varies between about 6 and 20 people per hour.
- The anticipated traffic flows on Furneaux Way and the traffic link are appropriate for the current traffic management arrangements.

- A road safety audit undertaken for the project has highlighted some issues that need to be considered further in the detailed design. The most significant of these is the need to clearly define the vehicle and pedestrian paths along the link.

Prepared by:



Anatole Sergejew



Bryce Hall

