

IN THE MATTER OF The Resource Management Act
1991

AND

IN THE MATTER OF An application for Private Plan
change to Rezone Rural H Zoned
land to Industrial Business, at Te
Puna Station Road.

STATEMENT OF EVIDENCE OF IAN STUART CARLISLE

INTRODUCTION

1. My full name is Ian Stuart Carlisle. I am the Transportation Manager of the Tauranga office of Opus International Consultants Limited (Opus) and an Associate in the company.
2. I hold a Bachelors degree with honours in Civil Engineering and a Masters degree in Civil Engineering, both from the University of Canterbury. I am a Registered Engineer, a Member of the Institute of Professional Engineers of New Zealand (MIPENZ) and the IPENZ Transportation Group.
3. I have eighteen years experience as a practising civil engineer predominantly in the transportation field with the last twelve years specialising in transportation engineering in the Bay of Plenty region. I have worked for a government agency, local authority and as a consultant. In my role as a consultant I have advised both government and local authority agencies on traffic and transportation matters associated with developments affecting the public road network.
4. I have been engaged on this project to assess the traffic impacts of the proposal to re-zone an area of rural land to Industrial Business.

SCOPE OF EVIDENCE

5. My evidence to follow outlines the primary traffic issues and, where necessary, suggested mitigation measures. Recommended plan conditions are included to enable implementation of those measures. Full details of the traffic assessment are included in my earlier report dated May 2002. The primary issue can be summarised as:

The ability of the local roading network, and the intersections with the State Highway, to accommodate the traffic generated by the re-zoning, from both a safety and capacity perspective.

EXISTING ROAD ENVIRONMENT

6. The proposed Plan Change originally sought to rezone approximately 32.3 hectares of Rural H zoned land to Industrial Business Zone. The proposed re-zoning area has been subsequently reduced to approximately 30.5 ha.
6. The land is located adjacent to Te Puna Station Road from 350m to 1350m east of Te Puna Road totalling approximately 1500 lineal metres of potential Business/industrial land fronting onto Te Puna Station Road to both the north and south of the existing road.
7. Te Puna Station Road is a collector road linking the developments to the west of Te Puna Road with State Highway 2 and Tauranga. Alternative access to the area is available from Te Puna Road. Clarke Road is a low traffic volume local road also linking Te Puna Station Road with State Highway 2. (refer to site location plan in my earlier report).
8. Te Puna Station Road is a low lying, level road for most of its length from State Highway 2 with a steeper rise up to the Te Puna Road ridge over the last 300 metres. The horizontal alignment follows the same pattern with an 80kph mean vehicle speed over the majority of its length dropping to 40kph over the last 300m, due to sharp horizontal and

vertical curves. Existing traffic volumes are assessed from Council records as 2000vpd near the State Highway end with three percent proportion of heavy commercial vehicles and a carriageway width varying from 6.8 – 7.2m. This width is under-width for the current Council standards; which specify an 8.5m wide carriageway. I note that this width is less than the 9.0m included in my earlier report as it reflects the updated terrain description for the road as of April 2003.

9. Te Puna Road has a rolling profile with an overall speed environment of 80kph. The road has been zoned and 80 kph speed zone. A combination of vertical and horizontal curves over the 400m section prior to Te Puna Station Road, results in reduced sight distance corresponding to safe stopping sight distances down to 60kph. Existing traffic volumes are assessed from Council records as 1800vpd near the State Highway end with three percent proportion of heavy commercial vehicles and a carriageway width varying from 6.5 – 6.9m. This width is under-width for the current Council standards, which specify a 9.0m wide carriageway from the State Highway to Armstrong Road followed by 8.5m to Te Puna Station Road.
10. Clarke Road is characterised by its function as a local access road with substandard width for the volume of traffic carried. Existing traffic volumes are assessed from Council records as 200vpd with less than three percent proportion of heavy commercial vehicles and a carriageway width less than 5.0m. This width is under-width for the current Council standards which specify a 7.0m wide carriageway.
11. State Highway 2 is the arterial link for Te Puna, Clarke and Te Puna Station Roads to Katikati in the north of Tauranga to the south. The highway is undulating and the length is recognised as a high crash risk. The highway is zoned 100kph with the exception of a section of 80 kph zone through Te Puna settlement. Speeds are significantly lower in mid-week peak hour flow periods. Transit New Zealand is about to commission a study into safety improvements on this section of highway.

The only traffic count site with an historical record is a count station adjacent to Snodgrass Road intersection with a 2001 traffic count of 13400vpd and an average 11% proportion of heavy vehicles. A more recent count station 480m west of Wairoa Road has a traffic count of 14820.

12. Peak hour traffic flows have been derived from intersection traffic turning movement surveys undertaken in 1999, for an earlier consent for a pack-house development on the property to be re-zoned by this application. (to the north of Te Puna Station Road). Traffic surveys were undertaken at the major intersections on State Highway 2.
13. Traffic growth rates of 4% per annum have been used for both State Highway 2 and the local road network. This is supported by both historical analysis of growth rates over the last ten years and growth rates predicted by the Tauranga Transportation Model for State Highway 2, for the next ten years.

RELEVANT TRANSIT NEW ZEALAND STUDIES

14. There are three studies either complete or yet to be completed that are relevant to this application.
 - i. The Wairoa Road intersection with State Highway 2 has been identified by Transit New Zealand as requiring further investigation as to options to upgrade this intersection. Given the close proximity of Te Puna Station Road, it is likely that any solution to this intersection will also involve the intersection with Te Puna Station Road.
 - ii. Secondly, the Tauranga Northern Arterial route has now been designated and this route bypasses the section of State Highway considered by this application. When this bypass is complete traffic volumes on the existing State Highway 2 will substantially reduce with the road reverting to a collector road

function. The northern arterial proposal currently includes on/off ramps to be accessed from a new roundabout at Clarke Road intersection. The timing of this arterial is subject to funding and it is unlikely that this will occur prior to 2011 as assumed by the Tauranga Transportation Model.

- iii. Thirdly a study will soon commence to identify improvements on the State Highway between Katikati and Tauranga including the intersections analysed as part of this assessment.

TRAFFIC GENERATION

16. I have researched the historical trip generation rates for a range of industrial developments. Given the diverse range of activities permitted in an industrial zone, I have adopted trip generation rates for an Industrial Park area. An industrial park development can include a diverse range of manufacturing, service and warehouse facilities with a wide variation in mix proportions between developments. For such a development the following trip generation criteria has been adopted:

- Daily trip generation (week day) : 142 trips/ha/day
- Peak hour volume : 15% ADT
- Direction split peak hour : 80%/20%
- Proportion heavy vehicles : 25%

17. For the proposed 30.5ha development, this results in traffic generation of 4331 vehicles per day with 650 vehicles per peak hour split as 520vph/130vph for the appropriate peak hour of the day.

18. I have assessed that the traffic generated by the proposal is expected to be distributed to the State Highway network via either Te Puna Station Road (to Tauranga/port) or Te Puna Road (to north). Heavy vehicle traffic is expected to be evenly split between the two directions with

staff/visitors more likely 70% of Tauranga origin. For purpose of analysis, I have adopted an average directional split of 60% to/from Tauranga and 40% to/from the north. Clarke Road would be a longer journey for either direction, and therefore unlikely to be favoured by traffic as is demonstrated by the current low traffic volumes on this road.

19. My trip distribution model conservatively disregards the proportion of trips that may be internal to the development and/or destined for western Te Puna. The effect of such movements would be to reduce the demand at the State Highway intersections.

CONSULTATION

20. I have consulted with both the Western Bay of Plenty Council Roading Manager and Transit New Zealand engineers on the recommendations of my assessment. We have received advice from Transit New Zealand that they do not oppose this application based on agreed Plan rules as suggested below that have been accepted by the applicant. The Council staff have also accepted recommendations subject to agreement on a method(s) for collection of impact fees.

TRAFFIC IMPACTS

Access

21. Future development of the proposed zoned land will be subject to the access provisions of the District Plan. Principal constraints to access locations will be the need to maintain adequate sight distance at any proposed access point and the separation requirements for adjacent access points.
22. To retain an adequate level of service on Te Puna Station Road and avoid a proliferation of access points along the road, I have recommended that the frequency and standard of access be controlled.

A rule has been suggested to be included in the District Plan requiring a minimum separation of access points of 200m to mitigate this concern.

Safety

23. A detailed crash history for the affected roads and intersections is included in my original report. That record shows that there have been no injury crashes at the State Highway intersection with Te Puna Station Road which is less than the national average. There were three injury crashes at the Te Puna Road/Minden Road intersection, which is marginally higher than the national average. Furthermore the crash rate on the local roads themselves is lower than the national average.
24. In my opinion the increase in traffic volumes that will be generated by this proposal is not expected to significantly increase the accident rate per count volume on the existing road network. Speeds on the State Highway section are currently reducing due to capacity deficiencies and this reduction in speed can also lead to a reduction in the crash rate or lower severity crashes.

Local Road Loadings

25. The traffic generated by the development will place increased strain on the existing road pavements, in particular due to the increase in heavy vehicles. The resultant reduced life of the pavement has been mitigated by inclusion of associated cost impacts in the calculation of a development impact fee that is suggested for the proposed zone.

Te Puna Road and Te Puna Station Road

26. The existing level of service for Te Puna Road (Austroads methodology) is calculated at LOS C as defined by the Austroads Guides to Traffic Management. To maintain that level of service road upgrading is required to a minimum width of 8.5 - 9.0m to comply with Council standards for the section of road up to and beyond Armstrong Road respectively.

However, as I have already commented, the existing road is currently under-width for the traffic volume carried.

27. I have calculated the existing operating level of service for Te Puna Station Road to be LOS B as defined by Austroads. To maintain that level of service, road upgrading to provide a minimum width to Council standards (8.5m) is required. I have previously noted that the existing road width is already substandard in terms of the Council policy.
28. To mitigate the impact of this road widening required for both Te Puna Station and Te Puna Roads, a development impact fee has been recommended which will both provide the developers contribution to the widening as appropriate and enable the Council to advance the necessary upgrade within the current works programme.

Clarke Road

29. Clarke Road is a narrow road with and steep and winding alignment at the Te Puna Station Road end. I have assessed that the road is not likely to be attractive to heavy traffic servicing the proposed Industrial Business Zone. The route from Te Puna Station Road to the east via Clarke Road is 1.3km longer than the modelled Te Puna Station Road option. Similarly, the route to the west using Clarke Road /SH2 is approximately 0.5km longer than the modelled Te Puna Road option.
30. Notwithstanding, the above opinion, I have recommended further precautionary mitigation measures in the form of traffic calming devices to be installed to the northern end of Clarke Road. Such traffic calming will be designed to accentuate the role of Clarke Road as local road access only. While the final design would be subject to the Council approval, it is likely that the two thresholds proposed would take the form of:

- a. One kerbed threshold at the Te Puna Station Road entry to Clarke Road, which will highlight the already narrow width of the road.
- b. A second central island threshold requiring vehicles to alter their course around the island. Widening would be required in the vicinity of the island to enable it to be located safely.

Te Puna/Te Puna Station Road Intersection

31. I have identified several existing deficiencies with this intersection including poor sight distance to the south; left turn into Te Puna Road is steep and tight for heavy vehicles; and lack of turning space for right turn from Te Puna Road.
32. The following upgrade works are proposed to mitigate the impact of the proposed development on this intersection:
 - Installation of right turn bay from Te Puna Road. This feature will mitigate the impact of additional right turning traffic at this intersection and less than desirable sight distance to the south.
 - Installation of left turn bay from Te Puna Road.
 - Widening of intersection to accommodate the turning path of heavy vehicles.
 - Re-grading of Te Puna Road profile (for left turn out of Te Puna Station Road).
33. If the above improvements are completed then I estimate that the intersection form will have more than sufficient capacity to cope with the loading from the proposed industrial area and, in addition, will also cope with the expected local traffic growth over the next 8 to 10 years.

T Puna Station Road/State Highway 2 Intersection

34. The existing intersection has good visibility (300m+) in both directions and has a short right turn bay for right turn from the State Highway. The short right turn bay is necessitated by the close proximity to Wairoa Road intersection to the southeast.
35. I have modelled this intersection using 2003 traffic flows with the full development with the result that the right turn bay available queue length is exceeded and the left turn out of Te Puna Station Road reaches saturation in the evening peak period.
36. To mitigate the impacts on this intersection I have recommended that a short section of widening be undertaken to improve the left turn out of Te Puna Station Road movement and secondly that the development be limited to 70% of the zoned area until such a time as the construction of the northern arterial which will significantly reduce the traffic volumes on the State Highway.
37. Transit New Zealand has reviewed the proposal and has agreed with the proposed conditions.

Te Puna Road/State Highway 2 Intersection

38. Te Puna Road intersects with State Highway 2 within the settlement of Te Puna, which is an 80kph zone. Minden Road is located opposite Te Puna Road and offset by approximately 10m. Both Te Puna Road and Minden Road have less than desirable sight distance to the south (less than 150m). Based on the adopted growth rates of 4% without any industrial development, this intersection reaches saturation in the year 2009, i.e. the level of service for the Minden Road approach becomes unacceptable.

39. The intersection has been modelled using the proposed traffic generated from the development and the level of service drops to an unacceptable level particularly in the evening peak period.
40. One of the solutions to mitigate the impact on this intersection is to construct a roundabout. This solution may also complement Transit New Zealand plans for safety measures on this section of highway and if a roundabout were to be constructed then it would also form a logical point of linkage to the future northern arterial route.
41. Transit New Zealand has reviewed the proposal and has agreed with the proposed conditions.

SUBMISSIONS

42. I have reviewed the submissions, which are of a generic nature with respect to traffic and roading. Safety and congestion was a typical concern expressed. I believe my evidence and proposed mitigation measures satisfactorily addresses any concerns in relation to the road capacity and safety.
43. Several submissions concerned the safety of pedestrians and cyclists and in particular school children attending Te Puna primary school. I have undertaken a further survey of pedestrian and cycle movements both before and after school on 27 and 27 May 2003 at the intersection of Te Puna Road and Te Puna Station Road. I found that in both the morning and afternoon hour period there were two pedestrians travelling along Te Puna Road to the south of Te Puna Station Road and one cyclist using Te Puna Station Road. This is a small number of movements. The recommended widening of both roads will provide additional shoulder for cyclists and therefore improve safety.

COUNCIL PLANNER'S REPORT

44. The issues raised by the planning report in relation, to financial contributions, access controls and Clarke Road impacts have been considered and appropriate mitigation measures and suggested contributions included in my evidence.

PROPOSED PLAN CHANGE PROVISIONS

45. In addition to the standard plan rules, the following particular plan change provisions are suggested. These changes are referenced to issues identified in my evidence.

- a. To mitigate the impact on the State Highway:

(i) *Staging Development*

No more than 70% (22 hectares) of the Industrial Business Zoned land shall be developed until such time as the proposed Northern Arterial route is constructed and operational. In this context "developed" means occupation and use of land or buildings for industrial business activities and does not solely relate to activities within the buildings or structures;

(ii) *Prior to commencement of any land use activity on the Industrial Business Zone land, Te Puna/ State Highway 2 intersection must be upgraded to a roundabout or similar traffic management alternatives, and in addition, Te Puna Station Road/ State Highway 2 intersection must be upgraded by widening for left turn traffic movements onto the highway or similar traffic management alternatives. Written evidence is to be provided to the Western Bay of Plenty District Council that the design and construction of both, the roundabout and the State highway widening, or similar traffic management alternatives, is to the*

satisfaction of the Regional Manager Transit New Zealand, and the Council's Roading Manager."

- b. To mitigate the impact on the Te Puna Road/Te Puna Station Road Intersection:

Prior to commencement of any land use activity on the Industrial Business Zone land, Te Puna/ Te Puna Station Road intersection must be upgraded to include provision for left turn and right turn movements or similar traffic management alternatives. Written evidence is to be provided to the Western Bay of Plenty District Council that the design and construction of the intersection upgrade, or similar traffic management alternatives, is to the satisfaction of the Director of Engineering, Western Bay of Plenty District Council.

- c. To mitigate the impact on Clarke Road:

Prior to commencement of any land use activity on the Industrial Business Zone land, a minimum of two traffic calming thresholds shall be installed at the northern end of Clarke Road. Written evidence is to be provided to the Western Bay of Plenty District Council that the design and construction of the road improvements are to the satisfaction of the Director of Engineering, Western Bay of Plenty District Council.

- d. To mitigate the impact of access onto Te Puna Station Road:

The number of new roads or accesses onto Te Puna Station Road shall be minimised and shall have a minimum separation distance between each access or intersection of 200m as measured along the road centre.

A change is also required to the existing rule 18.3.1 (c) to include the proposed Te Puna Industrial Business Zone.

- e. To mitigate the impact of the traffic generated by the development on the existing road network (mid-block), an impact fee shall be collected at the time of each development. The exact wording for this rule and amount are to be agreed with Council.

The existing road requires upgrading to address existing deficiencies and the design width will be sufficient to accommodate both existing traffic and that generated by this development. Therefore the impact on the existing road is limited to that of pavement deterioration. The present value of the impact on the present pavement is less than \$6000 per hectare. However the applicant appreciates that the development will require some road upgrading or widening to be advanced in its current programme. On this basis the applicant is prepared to offer an impact fee of equivalent to \$8,000 per hectare. The fee will be imposed on the basis of area of land developed for Industrial Business use.

CONCLUSION

46. On the basis of my assessment I conclude that the traffic effects of the proposed Industrial Business Zone, have been appropriately mitigated and there are no outstanding traffic or safety issues in relation to this proposal.
47. I have consulted with both Transit New Zealand and Western Bay of Plenty District Council who are satisfied with the proposed plan conditions.

Ian S Carlisle
27 May 2003

OPUS INTERNATIONAL CONSULTANTS LIMITED