

Technical Report No 21

**PEKA PEKA TO NORTH ŌTAKI EXPRESSWAY PROJECT
ASSESSMENT OF ECONOMIC EFFECTS**

**Prepared for
New Zealand Transport Agency**

**By
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INTRODUCTION

Author experience and qualifications

1. This report has been prepared by Mr Michael Copeland, a consulting economist and managing director of Brown, Copeland and Company Limited. He has undertaken a wide range of studies for public and private sector clients in New Zealand and overseas. Mr Copeland holds a Bachelor of Science degree in mathematics and a Master of Commerce degree in economics. He has over 35 years experience in the application of economics to various areas of business including transport economics and resource management matters.

Purpose

2. The purpose of this report is to assess the economic effects of the proposed Peka Peka to North Ōtaki Expressway Project (the Project), where the Project incorporates a 1.2 kilometre realigned section of the North Island Main Trunk (NIMT) railway line through Otaki and new local roads. In this report the term “Expressway” is used when specifically referring to the Expressway rather than other aspects of the Project.

Scope

3. The remainder of this report is in nine parts:
 - a. Executive summary;
 - b. Project background;
 - c. Economics and the Resource Management Act (RMA);
 - d. Conventional cost benefit analysis;
 - e. Wider economic benefits;
 - f. Business redistribution effects;
 - g. Increased economic activity during project construction and operation;
 - h. Loss of productive land;
 - i. Property value effects;
 - j. Issues arising during consultation; and
 - k. Recommendations for mitigation.

EXECUTIVE SUMMARY

4. The Project is one of eight sections of the Wellington Northern Corridor Road of National Significance (RoNS).
5. The NZ Transport Agency’s (NZTA’s) objectives for the Wellington Northern Corridor RoNS are:
 - a. to enhance inter-regional and national economic growth and productivity, by supporting a growing population and increasing freight volumes in the region;

- b. to improve access to Wellington's central business district, key industrial and employment centres, port, airport and hospital;
 - c. to provide relief from severe congestion on the state highway and local road networks;
 - d. to improve the journey time reliability of travel on the section of State Highway 1 (SH1) between Levin and Wellington Airport; and
 - e. to improve safety of travel on State highways.
6. In addition, project-specific objectives include:
- a. to appropriately balancing the competing functional performance requirements of inter-regional and local traffic movements, and to facilitate others to provide modal choice opportunities, to enable facilities and amenities in the Kapiti Coast District to be efficiently accessed; and
 - b. to efficiently serve Ōtaki and its future development by providing appropriate vehicle access and signage to and from the new Expressway.
7. NZTA has scored the whole of the Wellington Northern Corridor RoNS investment package (of which the Project is a part) 'high' (H) for strategic fit, 'high' (H) for effectiveness and 'low' (L) for efficiency; and this 'HHL' combination gives the RoNS investment package a 'priority 3' ranking out of 11 possible priority for funding rankings, where priority 1 is the highest ranking and priority 11 the lowest ranking.
8. The latest NZTA benefit cost ratio (BCR) for the whole of the Wellington Northern Corridor RoNS investment package is 1.2. This means that the benefits of the whole of the Wellington Northern Corridor RoNS investment package are sufficient to exceed the 8% real (i.e. net of inflation) opportunity cost of funds set by NZTA - i.e. the benefits exceed the costs, including an 8% real cost of capital. Another way of expressing this is that the Wellington Northern Corridor RoNS investment package has an economic internal rate of return (EIRR) greater than NZTA's hurdle rate of 8%.
9. The latest NZTA estimated BCR for the Project is 0.5. However:
- a. the Project is a sub-component of the Wellington Northern Corridor RoNS investment package, which has a BCR of 1.2 and is rated 'high' for strategic fit and effectiveness;
 - b. the NZTA quantitative BCR analysis does not take account of all costs and benefits of the Project;
 - c. NZTA's estimation of the BCR for the Project takes a national viewpoint. From a narrower Kāpiti Coast District or Wellington regional perspective the BCR would be much higher since the district and region will receive most of the benefits but only meet a small proportion of the costs; and
 - d. the Project, and therefore its BCR, will be refined and reviewed before funding is approved. Construction funding and approval will depend upon the results of the Project's refinement and review, the BCR's refinement and review and the Government's other funding requirements.

10. For most businesses within the Ōtaki Railway Retail Area (see Appendix 1 for a map of Ōtaki retail areas), the Project will have neutral or positive effects. There will be negative business redistribution effects for a small minority of businesses within this area. However, competing businesses at other centres between Wellington and north Ōtaki will be similarly affected by the proposed Transmission Gully project and the proposed MacKays to Peka Peka and Peka Peka to North Ōtaki expressway projects. Also, by the time the Project is operational, growth in population and expenditure is likely to more than offset any negative business redistribution effects and the Project will not result in any reduction in public amenity values for the Ōtaki Railway Retail Area commercial centre.
11. The Project will have minimal business redistribution effects on businesses located within the Ōtaki Main Street centre.
12. Negative business redistribution effects of the Project are likely to be greatest for a small number of businesses on or near SH1 at Te Horo and on SH1 between Te Horo and South Ōtaki. Whilst important from the perspective of the residents of Te Horo, these businesses do not constitute a significant commercial centre in terms of the hierarchy of centres within the Kāpiti Coast District. Also a number of competing businesses elsewhere between Wellington and north Ōtaki will be similarly affected as a consequence of the Expressway and other components of the Wellington Northern Corridor RoNS (e.g. the Transmission Gully Project and the MacKays to Peka Peka Expressway).
13. During the construction of the Project, there will be increased expenditure, employment and incomes, with associated economic benefits for local and regional businesses and residents.
14. Once operational the Project will also contribute economic benefits to local and regional businesses and residents as a consequence of:
 - a. savings in vehicle operating costs, travel time costs and accident costs;
 - b. improvements in trip travel time reliability; and
 - c. increased business development and population growth.
15. Some property values may possibly be negatively affected by the Project. However such effects are a reflection of, and not in addition to, the intangible impacts of the Project identified in other Technical Reports of the Assessment of Environmental Effects (AEE).
16. In terms of recommended mitigation of economic effects, appropriate signage at exit points on the new expressway will provide some protection against negative business redistribution effects for the small number of businesses, heavily reliant on the passing motorised trade at Te Horo, between Te Horo and Ōtaki and at Ōtaki.
17. The Project will have significant overall net positive benefits for the Wellington region and especially the Kāpiti Coast District.

PROJECT BACKGROUND

Wellington Northern Corridor Road of National Significance

18. The 2009 Government Policy Statement identified seven roads of national significance (RoNS) throughout New Zealand that the Government signalled would be the focus for investment in order to achieve economic growth over the next 10 years. One of these is the Wellington Northern Corridor RoNS from Wellington International Airport to Levin. The Wellington Northern Corridor RoNS has been retained within the 2012 Government Policy Statement.
19. The NZTA's objectives for the Wellington Northern Corridor RoNS are:
 - a. to enhance inter-regional and national economic growth and productivity, by supporting a growing population and increasing freight volumes in the region;
 - b. to improve access to Wellington's central business district, key industrial and employment centres, port, airport and hospital;
 - c. to provide relief from severe congestion on the state highway and local road networks;
 - d. to improve the journey time reliability of travel on the section of State Highway 1 (SH1) between Levin and Wellington Airport; and
 - e. to improve safety of travel on State highways.
20. The Project is one of eight sections of the Wellington Northern Corridor RoNS. Other NZTA studies of SH1 sections that link to the Project are also being considered or are being progressed concurrently. These studies cover the following projects:
 - a. the Transmission Gully Project;
 - b. the MacKays to Peka Peka (M2PP) Expressway Project; and
 - c. the Ōtaki to north of Levin State Highway (SH1) Improvement Project.
21. This report principally addresses the economic effects of the Project as a stand-alone project, but it is also important to consider the Project in the context of the total Wellington Northern Corridor RoNS investment package.

Project Description

22. The Project will provide an expressway with two lanes of traffic in each direction from the Peka Peka interchange ramps (being developed as part of the MacKays to Peka Peka project), through to an interface with the existing SH1 near Taylor's Road, north of Ōtaki, a distance of approximately 13km. Two half interchanges together with local road bridges will be provided to the south and to the north of Ōtaki. Local road bridges over the expressway at Te Horo and Rahui Road to maintain safe connectivity between the eastern and western sides of the expressway are also proposed as part of the Project, which also includes approximately 1.2 km of realignment of the NIMT railway line.
23. On completion, it is proposed that the expressway will become SH1 and that the existing SH1 between Peka Peka and North Ōtaki will become a local road, allowing for the separation of through traffic and local traffic. The Project will cater for both road passenger traffic and road freight traffic travelling within and through the Kapiti District. The Integrated Traffic and Transportation Report (Technical Report No 6) estimates

that heavy commercial vehicles (HCVs) are currently between 12% and 14%¹ of the traffic on the existing SH1 and by 2031 this is expected to grow to between 17 and 22% by 2031 without the Project.

24. The key project-specific objectives include:

a. To:

- I. Enhance inter-regional and national economic growth and productivity;
- II. Enhanced efficiency and journey time reliability from, to and through the Kapiti District, Wellington's CBD, key industrial and employment centres, the port, airport and hospital;
- III. Enhance safety of travel on SH1; and
- IV. Appropriately balance the competing functional performance requirements of inter-regional and local traffic movements, and to facilitate others to provide modal choice opportunities, to enable local facilities and amenities in the Kapiti Coast District to be efficiently accessed;

by developing and constructing a cost-optimized new State highway to expressway standards between Peka Peka and north of Ōtaki

- b. To work with NZ Rail Corporation Ltd/KiwiRail Ltd to achieve an integrated design for both the new State highway Expressway and a realigned main trunk railway; and
- c. To efficiently serve Ōtaki and its future development by providing appropriate vehicle access and signage to and from the new Expressway.

Business Redistribution Effects

25. A consequence of the Project is that SH1 through traffic will no longer pass through Ōtaki and Te Horo, and passing traffic wishing to visit these centres will be required to exit and rejoin the Expressway. At Ōtaki, this will be relatively straightforward. SH1 through traffic from the south can exit at the South Ōtaki off-ramp and re-enter at the North Ōtaki on-ramp. SH1 through traffic from the north can exit at the North Ōtaki off-ramp and re-enter at the South Ōtaki on-ramp. The distances to be travelled along a local road will be 2.3 km for traffic from the south and 3.6 km for traffic from the north.

26. However, for Te Horo this will be more problematic. SH1 through traffic from the south will need to exit at the Waikanae (Te Moana Rd) off-ramp and re-enter at the North Ōtaki on-ramp. SH1 through traffic from the north will need to exit at the North Ōtaki off-ramp and re-enter at the Waikanae on-ramp. The distance to be travelled along a local road for through traffic wishing to visit Te Horo will be 15 km.²

27. Leaving the Expressway to visit either or both of Ōtaki and Te Horo will result in a longer total travelling time as compared to remaining on the Expressway. This will create a disincentive for passing motorists to visit Ōtaki and Te Horo with potentially

¹ Depending on location between Peka Peka and Ōtaki and direction of travel.

² 10 km between Waikanae and Te Horo and 5 km between Te Horo and North Ōtaki.

negative implications for local businesses. On the other hand removing through traffic from the existing SH1 provides the opportunity to improve access, parking and the general ambience of these centres, potentially encouraging more visitors to them.

28. The positive and negative business redistribution effects of the Project on Ōtaki and Te Horo are discussed in more detail later in this report.

ECONOMICS AND THE RMA

Community Economic Wellbeing

29. Economic considerations are intertwined with the concept of the sustainable management of natural and physical resources, the promotion of which is the purpose of the Resource Management Act (RMA). In particular, Part 2 section 5(2) refers to enabling “people and communities to provide for their ... economic ... well being” as part of the meaning of “sustainable management”.
30. As well as indicating the relevance of economic effects in considerations under the RMA, section 5 also refers to “people and communities” (emphasis added), which highlights that, in assessing the effects of a proposal, it is the effects on the community, and not just the applicant or particular individuals or organisations, that must be taken into account. This is underpinned by the definition of “environment” which also extends to include people and communities.

Economic Efficiency

31. Part 2 section 7(b) of the RMA directs that in achieving the purpose of the Act, all persons “shall have particular regard to ... the efficient use and development of natural and physical resources” which includes the concept of economic efficiency.³ Economic efficiency can be defined as:

“the effectiveness of resource allocation in the economy as a whole such that outputs of goods and services fully reflect consumer preferences for these goods and services as well as individual goods and services being produced at minimum cost through appropriate mixes of factor inputs.”⁴

32. More generally, economic efficiency can be considered in terms of:
- a. maximising the value of outputs divided by the cost of inputs;
 - b. maximising the value of outputs for a given cost of inputs;
 - c. minimising the cost of inputs for a given value of outputs; and
 - d. minimising waste.

Viewpoint for Economic Assessment

33. An essential first step in carrying out an evaluation of the positive and negative economic effects of a project is to define the appropriate viewpoint that is to be

³ See, for example, in *Marlborough Ridge Ltd v Marlborough District Council* [1998] NZRMA 73 at [86], the Court noted that all aspects of efficiency are “economic” by definition because economics is about the use of resources generally.

⁴ Pass, Christopher and Lowes, Bryan, 1993, *Collins Dictionary of Economics* (2nd edition), Harper Collins, page 148.

adopted. This helps to define which economic effects are relevant to the analysis. Typically a district (city) or wider regional viewpoint is adopted and sometimes a nationwide viewpoint might be considered appropriate.

34. For the Project, the Kāpiti Coast District is a relevant community of interest, because the economic effects of the Project will largely (but not solely) affect on the residents and businesses in the District. The wider Wellington region is also a relevant community of interest, particularly in the context of the Project forming part of the Wellington Northern Corridor RoNS. Also, because funding for the Project will be through NZTA, as the central government agency, and because of the scale of the Project, the national economic effects of the Project are also relevant. This is underscored by the Project being part of the Wellington Northern Corridor RoNS, which is included in the Government's portfolio of RoNS.
35. Generally with projects considered under the RMA⁵, the financial or commercial 'business case' analysis undertaken from the viewpoint of the project proposer is considered to be irrelevant. This is because such an analysis is of private costs and benefits, rather than the cost and benefits for "people and communities." Relevant in such cases are only the so called 'externalities' - i.e. those side effects of the project which affect third parties other than the buyer and seller.
36. In this respect, the 'business case' analysis undertaken by NZTA in relation to the Project (and other road improvement or alternatives to roading projects) is unusual in that the analysis is undertaken not from its own narrow NZTA perspective but from a broader national perspective with the costs of the Project compared to road user and other benefits. However, the NZTA's quantified assessment of the Project's efficiency only in part addresses "... people and communities ... economic ... wellbeing" and "... the efficient use and development of natural and physical resources" as required under the RMA in that:
 - a. not all costs and benefits are included in NZTA's quantified assessment; and
 - b. the NZTA's quantified assessment is from the national viewpoint. It does not consider the efficiency of the Project from a Kāpiti Coast District or Wellington regional viewpoint.
37. These factors are considered later in this report.

With and Without Analysis

38. In analysing the economic effects of the Project, it is necessary to compare two forward looking scenarios ('with Project' versus 'without Project'), rather than a 'before' and 'after' comparison. This means the proper baseline for evaluating future economic (and non-economic) effects of the Project are the future volumes of traffic on the network without the Project, not current traffic volumes.

Intangible or Non-monetarised Effects

39. In economics, 'intangible' costs and benefits are defined as those which cannot be quantified in monetary terms. For any project such effects may include amenity effects, landscape effects, ecological effects, Māori cultural and relationship effects and

⁵ For example new supermarkets for Foodstuffs, a new cement plant for Holcim (NZ) Limited, renewal of gold mining resource consents for Oceana Gold (NZ) Ltd and a new power station for Meridian Energy Ltd.

recreational effects. Such effects may be positive or negative – i.e. a benefit or a cost for a particular community of interest.

40. Sometimes attempts can be made to estimate monetary values for so called 'intangibles' using techniques such as willingness to pay surveys or inferring values on the basis of differences in property values. However these techniques are frequently subject to uncertainty and criticism.
41. It is generally better to not attempt to estimate monetary values for these effects but to leave them to be part of the overall judgement under s 5 of the RMA. This also avoids the danger of 'double-counting' - i.e. including them within a quantified measure of efficiency and treating them as a separate consideration in the overall judgement under s 5. The 'intangible' effects of the Project are considered in other Technical Reports appended to the AEE.

CONVENTIONAL COST BENEFIT ANALYSIS

42. Conventional cost benefit analysis of road improvement projects involves comparison of project benefits (including vehicle operating cost savings, travel time cost savings, accident cost savings and trip travel time reliability improvements) with project costs (including capital costs and changes in operation and maintenance costs).
43. The methods used to estimate the benefits and the costs together with the procedures to adopt for their evaluation are set out in the NZTA's Economic Evaluation Manual (EEM)⁶ and are based on considerable local and international research. The methods and data have been refined over a number of years. They are consistently applied over all road improvement project evaluations and alternatives⁷ to roading project evaluations seeking funding from the NZTA. This is done to assist with the prioritisation of alternative NZTA and local authority projects⁸ which are proposed to be funded from the National Land Transport Fund.⁹
44. In New Zealand (and overseas) a discount rate is used to cover the time value of money and the opportunity cost of funds (i.e. the returns available from alternative road improvement projects, other government projects or programmes and/or private sector use of funds). The discount rate used for many years for roading projects and other public sector investment projects was 10%¹⁰, but in recent years this has been reduced to 8%.¹¹
45. The benefits of a project are divided by the costs of the project (incorporating a cost of funds (the discount rate) of 8% in real terms - i.e. excluding the effects of inflation) to derive a benefit cost ratio (BCR). If the BCR is greater than 1, project benefits exceed project costs and generally this is interpreted as meaning that the use of funds for the project will be an efficient use of resources.

⁶ Previously this document was called the Project Evaluation Manual (PEM). When the procedures were first developed they were contained in a document referred to as Technical Recommendation No. 9 (TR9).

⁷ For example, public transport projects.

⁸ I.e. those seeking NZTA funding.

⁹ The EEM procedures and databases are not used to determine the overall size of the budget for investment in road improvement projects – in other words the analysis is not used to determine the relative priorities of transport and non-transport related projects.

¹⁰ Following a directive from The Treasury in 1972.

¹¹ Upon the recommendation of The Treasury – see EEM, section 2.6, page 2-11.

46. However, as noted earlier in this report, not all the costs and benefits of a project can be quantified in monetary terms. 'Intangibles' will need to be considered outside the quantitative BCR calculation and decision makers will need to 'trade off' the BCR against any positive or negative 'intangible' effects.
47. NZTA's BCR is calculated from the national perspective. It is a measure of national economic efficiency. It does not provide information about the distribution of costs and benefits. However, with respect to the Project and the Wellington Northern Corridor RoNS, a BCR greater than 1 when calculated from a national perspective will be larger from a Wellington regional perspective. This is because most of the benefits will accrue to Wellington businesses and residents, whereas the costs of the Project will be funded from a national pool of resources.
48. The latest NZTA's BCR based on conventional cost benefit analysis for the Project is estimated at 0.5.¹² Whereas in the past the BCR and a qualitative¹³ assessment of any 'intangibles' were the only criteria on which New Zealand road improvement projects were assessed and ranked, this assessment of a project's efficiency is now only one of the relevant assessment and ranking criteria, with other criteria relating to 'strategic fit' and 'effectiveness'.
49. NZTA has scored the whole of the Wellington Northern Corridor RoNS investment package (of which the Project is a part) 'high' (H) for strategic fit, 'high' (H) for effectiveness and 'low' (L) for efficiency; and this 'HHL' combination gives the Project a 'priority 3' ranking out of 11 possible priority for funding rankings, where priority 1 is the highest ranking and priority 11 the lowest ranking.¹⁴
50. These other criteria are an attempt to cover costs and benefits which have been excluded from NZTA's BCR calculation. Whereas from the perspective of economists, an efficiency measure for a project should be all encompassing (even if some costs and benefits of the project are not quantified in monetary terms) non-economists do not necessarily use the same framework and hence seek additional criteria to efficiency to describe other effects of a project.
51. Therefore, from the point of view of having regard to "... the efficient use and development of natural and physical resources", as set of in Part 2, s 7(b) of the RMA, it is necessary to look beyond just NZTA's BCR estimated for the Project. In this respect:
 - a. the latest NZTA BCR for the whole of the Wellington Northern Corridor RoNS investment package is 1.2.^{15 16} This means that the benefits of the whole of the Wellington Northern Corridor RoNS investment package are sufficient to exceed the 8% real (i.e. net of inflation) opportunity cost of funds set by NZTA - i.e. the benefits exceed the costs, including an 8% real cost of capital. Another way of expressing this is that the Wellington Northern Corridor RoNS investment

¹² See Appendix K, PP2O Scheme Assessment Report; December, 2011.

¹³ Or at least not quantified in money terms.

¹⁴ See National Land Transport Plan 2012-2015, Wellington Region Section; NZ Transport Agency website; 31 August, 2012.

¹⁵ See Wellington Northern Corridor RoNS Detailed Business Case; NZ transport Agency; 2 November, 2009.

¹⁶ The BCR of 1.2 for the total Wellington Northern Corridor RoNS investment package was estimated before it was decided to not construct an expressway from Ōtaki to Levin, but to instead make improvements to the existing SH1 between these two centres. This is likely to mean that the BCR for the reformulated RoNS investment package will be higher than 1.2.

package has an economic internal rate of return (EIRR) greater than NZTA's hurdle rate of 8%.

- b.
 - c. NZTA's EEM requires national average values for travel time to be adopted. Travel time values are a function of wage rates and incomes. For the Wellington region, incomes are 12.5% above national average incomes.¹⁷ Increasing travel time values by 12.5% would increase the BCR for the Project to 0.6.¹⁸
 - d. There are benefits from the Project which have been excluded from the quantitative analysis estimating the BCR for the Project (and the Wellington Northern Corridor RoNS investment package). In particular no account has been taken in the BCR's estimation of the residual value of the Project at the end of the 30 year analysis period. Whilst the Project does not have a residual value in the sense that it cannot be sold or redeployed in other uses, it has a residual value in that at the end of the analysis period it is likely to continue providing a stream of net traffic operating benefits out into the future before major reinvestment is required.
52. NZTA's BCR has been estimated using a national economic viewpoint. However adopting a narrower Kāpiti Coast District or Wellington regional viewpoint, the BCR will be much higher since local residents and businesses will receive most of the Project's benefits but pay only a proportionate share of its costs.¹⁹ In fact there is no certainty that, if the Project does not proceed, the funds earmarked for it will be available for road improvement (or other) roading projects in Kāpiti Coast District or the Wellington region. The funds may instead be used for road improvement (or other) roading projects elsewhere in New Zealand. Therefore, from a Kāpiti Coast District or Wellington regional perspective, the Project has a very high BCR since the benefits are significant but the opportunity cost of the funds for Kāpiti Coast District and the Wellington region is very low.
53. Finally, NZTA's BCR estimate for the Project (and the whole of the Wellington Northern Corridor RoNS) will be refined and reviewed in the future before funding is approved for the Project's construction. For example, the proposed lowering of the Te Horo Underpass will lower the cost of the Project and raise the estimated BCR. Construction funding approval will depend on the results of the Project's refinement, the BCR's refinement and the Government's other funding requirements. Therefore it is inappropriate to rely only on the latest NZTA BCR estimate for the Project to assess the efficient use of resources under the RMA.
54. Having regard to these various factors the Project, despite its current NZTA BCR estimate of less than 1, is consistent with enabling "people and communities to provide for their ... economic ... well being". It might also be considered consistent with having regard to "the efficient use and development of natural and physical resources" when considered in the context of it being an integral part of the Wellington Northern Corridor

¹⁷ See Statistics New Zealand New Zealand Income Survey, June 2011 – median weekly earnings for those in paid employment by Regional Council area.

¹⁸ Based on data taken from Appendix K, Peka Peka to North Ōtaki Scheme Assessment Report; December, 2011.

¹⁹ The assessment of traffic effects identifies that the Project will significantly benefit local traffic – i.e. that with an origin and/or destination within the Kāpiti Coast District (see later in this report and Technical Report No 6 (Integrated Traffic and Transportation Effects)).

RoNS investment package, which has an estimated NZTA BCR of 1.2 and to which NZTA has ascribed 'high' ratings for strategic fit and effectiveness.

WIDER ECONOMIC BENEFITS

55. Conventional cost benefit analysis of transport projects is now being extended to cover increases in productivity (or efficiency) at the regional and national levels that are in addition to the conventionally measured benefits (e.g. savings in vehicle operating costs, travel time and accidents). The inclusion of a number of additional benefits such as 'agglomeration' benefits can be justified. These arise when the productivity and the supply of labour and other resources are enhanced when travel times between points within a district, city or region are reduced and this leads to an effective increase in the density or concentration of business activity. Another wider economic benefit may occur as a result of road improvement projects increasing the level of economic activity in an area and economies of scale leading to increased productivity and economic efficiency.
56. The NZTA's EEM now includes procedures and data for estimating agglomeration economies. Conceptually the inclusion of wider economic benefits is appropriate but the quantification of such benefits in New Zealand (and probably overseas) is not as well developed as conventional cost benefit analysis. Therefore any estimates of wider economic benefits need to be treated with some caution.
57. Wider economic benefits have not been included in the estimation of the NZTA's BCR for the Project, but have been included in the BCR estimated for the total Wellington Northern Corridor RoNS investment package.

BUSINESS REDISTRIBUTION EFFECTS

General comments

58. Generally under the RMA, retail or business redistribution effects are not relevant insofar as they impact on individual competitors. Such impacts are only relevant under the RMA to the extent they are of such significance that they threaten the public amenity values (e.g. critical mass, sustainability, vibrancy and vitality, etc.) of city, town or suburban centres.²⁰
59. The Project is not an investment by a competitor in retail or other businesses within city, town or suburban centres, but may nonetheless have a negative impact on the economic wellbeing of some Kāpiti Coast District businesses heavily dependent on the passing motorized trade along the existing SH1 alignment.

²⁰ See *Eldamos Investments Limited v Gisborne District Council* (EnvC W047/2005, 22 May 2005) at paras 217-235; *General Distributors Limited v Waipa District Council* (HC Auckland CIV-2008-404-4857, 19 December 2008) at para 93; and *Discount Brands Limited v Westfield (New Zealand) Limited* [2005] 2 NZLR 597 (SC) at paras 8-17.

60. Before considering the three retail centres²¹ potentially affected by the new Expressway (i.e. Ōtaki Railway Retail Area (on and adjacent to the existing SH1), Ōtaki Main Street and Te Horo) and the businesses between Te Horo and Ōtaki, there are a number of general comments to be considered:
- a. From a Kāpiti Coast District (and Wellington regional) viewpoint, the Project will not reduce the overall level of business activity - indeed the improvements in accessibility to, from and within the District (and region) brought about by the Project will be likely to increase the overall level of business activity within the District as a consequence of increased competitiveness for local businesses and an increase in the District's attractiveness to live or visit. Therefore, any losses in trade for individual businesses will be offset by increases in trade for other businesses.
 - b. Business transactions involve transactions between suppliers and consumers. Where consumers change their destination purchasing patterns there are likely to be benefits to them as well as to the suppliers who gain trade and such benefits should not be ignored by focusing only on suppliers who lose trade.
 - c. Lost sales revenue greatly overstates the "bottom line impact" on business suppliers. It is really only lost profits, which are likely to be considerably less than lost sales revenue, that are the cost impact on suppliers who lose business. Over time businesses will react to their new business environment to minimise such lost profits by downsizing, changing their offering or by relocating.
 - d. Even without the Project, businesses must address changing business conditions and their future viability is not assured.
 - e. Appropriate signage can be put in place to provide some mitigation of the negative impacts on businesses reliant on the passing motorised trade along the existing SH1. Also, in some instances property purchases by NZTA will include a component for lost future business profits, and these business owners will therefore be compensated.
 - f. Competing businesses between Wellington and north of Ōtaki will be similarly disadvantaged in that there will be no direct access to individual businesses from SH1 along the length of the motorway (including the Transmission Gully section) and the proposed expressways from McKays to Peka Peka and from Peka Peka to north of Ōtaki. Access to and from all businesses along this route will only be possible via a limited number of exit and entry points.
 - g. Over time growth in business sales (as a result of population and household growth and increases in real per capita and per household expenditure) will help to offset any reductions in sales for some individual businesses as a consequence of the Project. This is particularly so in the context of the total Wellington Northern Corridor RoNS investment package, which is expected to increase economic growth in the Kāpiti Coast District and wider Wellington region.

²¹ See Appendix 1 for a map showing the two Ōtaki retail areas.

Otaki Railway Retail Area

61. The Ōtaki Railway Retail Area contains a mixture of shops and businesses which serve local Ōtaki residents, visitors to Ōtaki and passing traffic. An inventory²² of the businesses in the Ōtaki Railway Retail Area shows that out of a total of 85 businesses, 63 were involved in retail. Of these 30 (48%) were classified as clothing and footwear, 13 (21%) were cafes, bakeries and takeaways, 3 (5%) sold food, groceries and/or liquor, 3 (5%) were petrol stations and 14 (22%) were classified as miscellaneous retail stores. Of the 22 other businesses in this area, 8 provided professional and business services, 4 provided auto repair services, 2 were motels, 1 was a hotel providing accommodation and bar services, 2 were healthcare businesses and 5 provided other services.
62. The high number of clothing and footwear stores reflects the concentration of “factory outlet” stores in the Ōtaki Railway Retail Area. This has attracted other clothing and footwear stores and other retail outlets to also locate in the area and has made the Ōtaki Railway Retail Area an attractive shopping destination for visitors. The removal of through-traffic from existing SH1 through the retail area will have positive amenity benefits for shoppers, whilst reductions in travel times and improvements in travel time reliability for journeys to and from Ōtaki as a result of the Project (and other components of the Wellington Northern Corridor RoNS) will make the Ōtaki Railway Retail Area a more accessible shopping destination, despite the need to leave and then rejoin the Expressway at the on and off-ramps to the south and north of Ōtaki.
63. Therefore the Project is expected to have little, if any, negative effect on clothing and footwear and miscellaneous retail store categories, which make up 70% of the total retail outlets in the Ōtaki Railway Retail Area. Indeed, especially in conjunction with the other components of the Wellington Northern Corridor RoNS, the Project may have a positive impact on these stores.
64. Of the other retail outlets in the Ōtaki Railway Retail Area (i.e. 13 cafes, bakeries and takeaways; 3 food, liquor or grocery outlets; and 3 petrol stations) their sales can be expected to be negatively affected by the Project. However these businesses will not be totally reliant on the passing motorised trade. Local residents form an important part of the market for these businesses and this trade will not be affected by the Project. Also these businesses (especially the cafes, bakeries and takeaways) will draw trade from “destination shopper” visitors to the Ōtaki Railway Retail Area and this segment of their market will remain after the Project is completed.
65. The other businesses (apart from the 2 motels) located within the Ōtaki Railway Retail Area (i.e. auto repairers, hotel, healthcare service providers, professional and business service providers, and other service providers) predominantly meet the needs of the local Ōtaki community and therefore will not be negatively affected by the Project. For the 2 motel businesses and the hotel (with respect to the accommodation side of its business), appropriate signage on the expressway will help to mitigate loss of trade. The extent of “detour” off the Expressway will not be significant and competing businesses at for example Waikanae, Paraparaumu, Paekakariki, Pukerua Bay, Plimmerton and Mana will face the same disadvantage assuming the completion also of the MacKays to Peka Peka and Transmission Gully projects.

²² Undertaken in March 2011 (see Table 1 in *Ōtaki Customer Survey: Report of Pedestrian Intercept Surveys Conducted in March 2011*; Opus International Consultants Limited; 2011. This report is attached as Appendix 1 and its results are discussed in a later section of this report). The business inventory was updated in October 2012.

66. In summary, the Project potentially will have significant negative business redistribution effects for a relatively small number of businesses located in the Ōtaki Railway Retail Area, but the vast majority of businesses are not so dependent on the passing motorised trade that they will be significantly affected. To the extent the businesses identified as being potentially negatively affected are reliant upon the passing motorised trade, appropriate signage on the new Expressway will help to retain some of their business. Also, the removal of through traffic from the existing SH1 has the potential to improve public amenity values (see Urban Design Assessment, Technical Report No 7. Therefore, from a whole of centre perspective, any negative business redistribution effects of the new Expressway will not be sufficiently significant to affect the public amenity values of the Ōtaki Railway Retail Area.

Ōtaki Main Street

67. The Ōtaki Main Street centre contains a number of shops and other commercial activities, which principally serve the local community rather than visitors to Ōtaki or passing through traffic who stop at Ōtaki. Because of the particular mix of activities and its distance from SH1, it is not a “destination” centre attracting visitors to Ōtaki and is less reliant on the passing motorised trade than is the Ōtaki Railway Retail Area, which is on or adjacent to the existing SH1.
68. An inventory²³ of the businesses in the Ōtaki Main Street centre shows that out of a total of 59 businesses, 28 were involved in retail. Of these only 4 were classified as clothing and footwear, 11 were cafes, bakeries and takeaways, 6 sold food, groceries and/or liquor, and 7 were classified as miscellaneous retail stores. Of the 31 other businesses in this area, 3 provided professional and business services, 2 were hotels (of which only 1 provides accommodation as well as bar services), 4 were healthcare businesses and 22 provided other services.
69. There appears little reason to suggest that the Project will have any significant negative effects on businesses within the Ōtaki Main Street centre, given their predominant servicing of local residents and businesses. In fact, to the extent that the Project (and other components of the Wellington Northern Corridor RoNS investment package) leads to higher economic growth in Ōtaki the public amenity values of the Ōtaki Main Street centre may be enhanced.

Te Horo

70. At Te Horo there is a small cluster of businesses on SH1 and down Te Horo Beach Road, near to SH1. These include 2 cafes, 2 art galleries, a jewellery shop, an auto repairer, a building products yard, a museum, a plant, fruit and vegetables store, a hairdresser and a caravan sales yard. Whilst these businesses form something of a commercial “centre” from the perspective of the local Te Horo residents, they do not constitute a significant commercial centre in terms of the hierarchy of centres for the wider Kapiti Coast District. Te Horo is a small rural community and is likely to remain so as the Kapiti Coast District Council’s District Plan seeks to restrict residential development in this area so as to retain its rural character (see (see AEE main text, Part C (Description of the Environment)).

²³ Undertaken in March 2011 (see Table 1 in *Otaki Customer Survey: Report of Pedestrian Intercept Surveys Conducted in March 2011*; Opus International Consultants Limited; 2011. This report is attached as Appendix 1 and its results are discussed in a later section of this report). The business inventory was updated in October 2012.

71. Of these businesses the 2 cafes, art gallery, the jewellery shop and the plant, fruit and vegetables store are likely to be those most dependent upon the passing motorised trade and therefore most likely to be negatively affected by the Project bypassing Te Horo and there being no interchanges nearby (e.g. at Peka Peka). Appropriate signage on the Expressway may mitigate these effects but this mitigation will be limited because of the significant detour required from the Expressway.²⁴ In addition, as noted previously, a number of competitors to these businesses at other locations on the existing SH1 between Wellington and north of Ōtaki will be similarly disadvantaged by the proposed Transmission Gully and two expressway projects.²⁵
72. There are other businesses within Te Horo (including a bed and breakfast, a cookery school, a lavender farm, kennels and a plant wholesaler) but not adjacent to SH1. These businesses are not expected to be significantly affected by the Project, since they are already located some distance from SH1 and therefore not particularly dependent upon the passing motorised trade.
73. In summary, the public amenity values of the Te Horo SH1/Te Horo Beach Road cluster of businesses is likely to be reduced for Te Horo residents by the Project if any of the businesses in this cluster are forced to close. However, even Te Horo residents will need to venture outside Te Horo for shopping and other commercial activities with or without the Expressway. Also it should be noted that the absence of direct access on and off the Expressway at Te Horo is consistent with the Kāpiti Coast District Council's desire to limit urban development at Te Horo.

Te Horo to Ōtaki

74. Between Te Horo and Ōtaki Gorge Road (the proposed site of the South Ōtaki off and on-ramps) there are a number of individual businesses which to varying degrees are dependent upon the passing motorised trade. These businesses include several fruit, vegetable and flower outlets, a property consultant, a hydroponics store, kennels, a bed and breakfast and a restaurant and winery. Whilst the Expressway will have some negative effects on each of these businesses, from a broader community perspective they do not constitute a "centre", which will have reduced public amenity values from closures or reductions in vitality and vibrancy.

Results from Ōtaki Customers' Survey

75. In March 2011, Opus International Consultants Limited (Opus) collected data from a sample of 500 pedestrians intercepted in the two retail areas of Ōtaki²⁶ to predict the likelihood that people will deviate from the Expressway so that they will continue to shop in Ōtaki, and to estimate the sales value impacts of the Expressway on Ōtaki's

²⁴ North bound traffic will need to leave the expressway at Waikanae, 10 km south of Te Horo and south bound traffic would need to leave the Expressway at North Otaki, 5 km north of Te Horo.

²⁵ At Ōtaki, Waikanae and Paraparaumu, the necessary detours off the expressways will be much shorter than for Te Horo. However for Paekakariki, Pukerua Bay, Plimmerton, and Mana the detours off the proposed Transmission Gully motorway will be significant.

²⁶ Opus did not undertake a customer intercept survey at Te Horo. A retail store survey was undertaken in Ōtaki and Te Horo. This involved survey forms being left with retailers and customers being encouraged by retailers to complete the survey. For Ōtaki this survey yielded 145 returns, but only 5 for Te Horo. The Ōtaki returns indicated similar results to the pedestrian intercept survey. Unfortunately there were insufficient returns from Te Horo for meaningful analysis.

retail areas. The Opus report²⁷ on the survey and its results is attached as Appendix 2 to this report.

76. Initially, survey respondents were divided into four groups - those who live in Ōtaki and whose shopping behaviour would therefore not be affected by the Expressway (42.2% of respondents); those who would continue to stop in Ōtaki regardless of the time savings the Expressway would deliver (42.6% of respondents); those willing to stop in Ōtaki but only if the time saving sacrifice was less than a specified number of minutes (6.6%); and those who would continue on the Expressway and therefore avoid Ōtaki whatever the time saving sacrifice involved (8.6%).
77. Since diverting from the Expressway was estimated to add about 2.5 minutes to the overall journey time, those who indicated they were willing to sacrifice 2.5 minutes or less were combined with those who originally stated they would avoid Ōtaki. Those who indicated they would sacrifice 3 minutes or more were combined with the group who stated they were willing to stop in Ōtaki regardless of time savings. This then reduced respondents to three groups:
 - a. those who live in Ōtaki, so the Expressway would not affect their behaviour (42.2%);
 - b. those who would stop in Ōtaki, despite the time saving on the new Expressway (46.9%); and
 - c. those who would continue on the Expressway and avoid Ōtaki (10.9%).
78. Because this third group (those who would avoid Ōtaki) spend on average less than the other two groups, the Opus report predicted that this 10.9% reduction in pedestrians in Ōtaki shopping centres would equate to only a 9.2% reduction in expenditure.
79. Disaggregating the results for each of the Ōtaki Railway Retail Area and Ōtaki Main Street shopping centres, the Opus report predicted:
 - a. for the Ōtaki Railway Retail Area: a 13.8% reduction in pedestrian count and a 12.3% reduction in expenditure; and
 - b. for Ōtaki Main Street: a 4.6% reduction in pedestrian count and a 2.9% reduction in expenditure.
80. The decline in retail sales was estimated to be greatest for cafes, bakeries and takeaways (15%), clothes and footwear (12%) and petrol (11%).
81. The survey also asked respondents what one thing could be changed about Ōtaki that would increase their desire to return to Ōtaki for shopping purposes. Leaving aside those respondents that said they would change nothing, 59.8% said that they would reduce traffic flow problems, increase/improve parking or alleviate roading issues.²⁸ These are issues which the Project is intended to address.

²⁷ *Otaki Customer Survey: Report of Pedestrian Intercept Surveys Conducted in March 2011*; Opus International Consultants Limited; 2011.

²⁸ The other response headings were increase shopping/retail variety, improve the look and facilities of the town and increase advertising.

82. Also the Opus survey only attempts to estimate the reduction in foot traffic and expenditure as it relates to the stated behaviour of shoppers in Ōtaki at the time the survey was taken - i.e. in March 2011. It does not take account of:
- a. an increase in visitors to Ōtaki as a consequence of improved accessibility arising from the Project and other components of the Wellington Northern Corridor RoNS investment package; and
 - b. an increase in expenditure in Ōtaki as a consequence of population growth and growth in real per capita expenditure between now and when the Project will be completed. For example, Statistics New Zealand's "medium" projections between 2011 and 2021 are for population in the Kāpiti Coast District and the Wellington region to grow at average annual rates of 1.0% and 0.6% respectively. In retail impact studies an additional 1% per annum for growth in real per capita expenditure is usually applied, suggesting growth in expenditure by 2021 over 2011 levels of between 17% and 22%.
83. Therefore the Opus survey's estimated reductions in pedestrian counts and sales turnover from the Project on the Ōtaki Railway Retail Area and Ōtaki Main Street commercial centres are conservatively high. By the time the Project is operational, growth in expenditure will more than compensate for any negative business redistribution effects of the Project.²⁹

INCREASED ECONOMIC ACTIVITY DURING PROJECT CONSTRUCTION AND OPERATION

Project Construction

84. During the Project's anticipated 3.5 to 4 year construction period (2016-19 inclusive) there will be increased economic activity for the Kāpiti Coast District and the wider Wellington region, as a consequence of the additional expenditure, employment and incomes directly generated by the Project's construction and the indirect (or multiplier) expenditure, employment and incomes generated as a consequence of impacts on suppliers of goods and services to the Project and those employed on it.
85. NZTA takes no account of such effects in its estimation of a project's BCR because in taking a national viewpoint the level of economic activity (i.e. expenditure, employment and incomes) are likely to be the same with or without the project - if funds are not utilised on one project they are likely to be utilised on an alternative NZTA project, even if in a different region in New Zealand. However, taking a Kāpiti Coast District or Wellington regional perspective, there are likely to be increased levels of economic activity as a consequence of the Project, since without it, the funds earmarked for it are likely to be used elsewhere in New Zealand and not on an alternative road construction project in the Kāpiti Coast District or the Wellington region. Local firms will be engaged

²⁹ When assessing the amenity values associated with business activity, the Environment Court compares the amenity values of the current levels of business activities with the changes to amenity that would result from a new project in the future. (For example, see: *Eldamos Investments Ltd v Gisborne District Council* W047/2005 (22 May 2005, Environment Court, Wellington). See paragraphs 245 and 249. The base year is not specified in the Judgement, but it has been confirmed as the year of analysis (2004) and not the year preceding the opening of the development (personal communication, Mr M Tansley, the expert witness upon whose analysis and evidence the Court relied). It is presumed this focus is because, under the RMA, consideration is given to assessing the amenity effects of business closures, shop vacancies and reductions in pedestrian counts rather than simply lower (or forgone) levels of business activity generally.

to provide goods and services to the Project, local residents will be engaged to work on the Project and local firms will in turn provide goods and services to these employees.

86. Economic impacts such as increases in business turnover, employment and incomes are not in themselves measures of improvements in economic welfare or economic wellbeing. However, there are economic welfare enhancing benefits associated with increased levels of economic activity. These relate to one or more of:
- a. increased economies of scale: Businesses and public sector agencies are able to provide increased amounts of outputs with lower unit costs, hence increasing profitability or lowering prices;
 - b. increased competition: Increases in the demand for goods and services allows a greater number of providers of goods and services to enter markets and there are efficiency benefits from increased levels of competition;
 - c. reduced unemployment and underemployment³⁰ of resources: To the extent resources (including labour) would be otherwise unemployed or underemployed, increases in economic activity can bring efficiency benefits when there is a reduction in unemployment and underemployment. The extent of such gains is of course a function of the extent of underutilized resources within the local economy at the time, and the match of resource requirements of a project and those resources unemployed or underemployed within the local economy; and
 - d. increased quality of central government provided services: Sometimes the quality of services provided by central government (such as education and health care) are a function of population levels and the quality of such services in a community can be increased if increased economic activity maintains or enhances population levels.
87. It is reasonable to assume that any increases in economic activity as a consequence of increased road construction activity in Kāpiti Coast District and the Wellington region from the Project will give rise to one or more of these four welfare enhancing economic benefits for the District and region.

Project Operation

88. The Project will lead to reductions in vehicle operating costs, travel times and accident costs and improvements in trip time reliability for through traffic and local traffic - i.e. local residents and businesses. These traffic-related benefits of the Project are detailed in Technical Report No 6 of the AEE. It is interesting to note that whereas some major infrastructure projects give rise to national and regional economic benefits, but localised (or “community”) costs, this Project is anticipated to bring significant local economic benefits in addition to national and regional economic benefits. Technical Report No 6 estimates that approximately 90% of the traffic using the new route will have an origin or destination within Kāpiti District.
89. For businesses, savings in vehicle operating costs, travel times and accident costs and improvements in trip time reliability result in increased productivity and improvements in business competitiveness. For residents the traffic related benefits of the Project will

³⁰ Underemployment differs from unemployment in that resources are employed but not at their maximum worth; e.g. in the case of labour, it can be employed at a higher skill and/or productivity level, reflected in higher wage rates.

provide expenditure savings and the freeing up of time for other productive or leisure activities.

90. Improving the accessibility within and to Ōtaki and the Kāpiti Coast District will increase the attractiveness of Ōtaki and the District for business and residential development. Therefore the Project³¹ is likely to result in increased levels of economic activity within Ōtaki and the District from greater employment and population growth. As discussed previously in relation to the Project's construction, increases in levels of economic activity are not in themselves measures of improvements in economic welfare or economic wellbeing. However, there are economic welfare enhancing benefits associated with increased levels of economic activity to the extent that they lead to increased economies of scale, increased competition, reductions in unemployment and underemployment of resources and improvements to services provided by central government.
91. These types of economic benefits arise at the local level. However at the wider regional or national level, it is most likely such benefits will only be transfers - i.e. the faster growth in business and residential development within Ōtaki and the Kāpiti Coast District will be at the expense of slower growth elsewhere within the region or country.³²

LOSS OF PRODUCTIVE LAND

- 90 The productivity of land required for the Project is incorporated in the cost to NZTA for the purchase of the land. It is therefore internalised into NZTA's decision making process and does not need to be separately considered as an externality at the local, regional or national level.

PROPERTY VALUE EFFECTS

92. A number of properties within the vicinity of the Project will possibly be adversely affected as a consequence of visual, noise, severance and other so-called "intangible" effects. In economics, intangible effects are those which cannot easily be measured in monetary terms. Whilst it may sometimes be possible to estimate property value changes³³ as a consequence of the Project, such potential property value changes are a reflection of, and not in addition to, the intangible effects. Any potential change in property value effect does not materialise unless and until an owner sells the property. At this point there is a potential wealth loss to the seller, but no ongoing environmental effects to be borne by the seller. The purchaser of the property gains by potentially having to pay a lesser price for the property but incurs the costs of the ongoing intangible effects. From the perspective of the Kāpiti Coast District or the Wellington region as a whole, these are the costs of the intangible effects as potentially reflected in the reduction in property values but not in addition to the reduction in property values.
93. For other property owners, the increase in attractiveness of the District for business and residential development is likely to mean increases in property values. For

³¹ Especially in conjunction with the other improvements proposed as part of the Wellington Northern Corridor RoNS investment package.

³² This is with the exception of so-called "agglomeration economies" discussed above.

³³ In practical terms this is not straightforward since a number of factors influence changes in property values over any given time period.

example, the Project (including the south Ōtaki interchange) and the other RoNS components may encourage industrial development within the Riverbank mixed use zone at Ōtaki as a consequence of improved accessibility. However this is likely to largely be a transfer effect from a broader regional or national perspective. To the extent that the Project increases the demand (and price) of properties for development within the District, there will be lesser demand (and price) for properties elsewhere in the region.

94. Also, whilst the accessibility benefits for the occupiers of existing commercial and residential properties will exert upward pressure on these properties' values, these are a reflection of, not in addition to, the traffic related benefits already discussed above in this report. In the cost benefit analysis undertaken in accordance with NZTA's EEM procedures the traffic related benefits are estimated in terms of savings in vehicle operating, travel time and accident costs and improvements in trip time reliability. Property value gains are excluded from the cost benefit analysis to ensure no double counting of benefits occur.

ISSUES ARISING DURING CONSULTATION

95. Economic related issues arising during consultation were the negative effects of loss of through traffic trade for businesses at Te Horo and Ōtaki and the positive effects the Project will bring for residents and businesses in the local area. Both of these types of effects have been addressed earlier in this report.

RECOMMENDATIONS FOR MITIGATION

96. Appropriate signage at exit points on the Expressway will provide some protection against negative business redistribution effects for the small number of businesses, heavily reliant on the passing motorised trade at Te Horo, between Te Horo and Ōtaki and at Ōtaki.