



Rail Working Party Interim Recommendation Report

on

Hamilton to Auckland Passenger Rail Service

January 2011

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A: Auckland Transport review of proposed Hamilton – Auckland passenger rail service options

1 Introduction

This report has been prepared by Environment Waikato and John Bolland Consulting on behalf of the Hamilton to Auckland Passenger Rail Working Party. Technical inputs to the report have been provided by Auckland Transport and KiwiRail. The purpose of the report is to bring together the findings to date for the proposed passenger rail service from Hamilton to Auckland and recommendations for the way forward. Following on from the recommendations this is deemed to be an interim report with a final recommendation report intended to be prepared in August/September 2011.

2 Background

2.1 Previous Services and Studies

A previous service, the Waikato Connection, began in June 2000 but was abandoned in October 2001. The service required \$400k pa subsidy but this was not forthcoming. It operated during the peaks only (arriving Auckland at 08:11 and leaving at 17:19), using Silver Fern (SF) railcars and typical patronage was around 30 – 33 passengers per one-way trip.

A study in 2006 by Rutherford & Paling proposed combining a Hamilton service with the MAXX service from Pukekohe, which at that time was operated by SF. It also raised the possibility of a loco hauled service. The advantage of extending the Pukekohe service to Hamilton was to reduce congestion at Britomart by not adding to the number of peak services there.

The 2006 study assumed that one train and the relevant stations would be refurbished at a cost of about \$10m. Costs would be shared with ARTA. Patronage of 50 – 100 per one-way trip per day was forecast. The proposal scored reasonably well against the NZTA funding criteria at the time.

Following this, in 2009 a study by Paling *et al* set out to produce a preliminary business case. The service proposals were less ambitious than the 2006 study, with the aim to “start small”. The proposal was to use refurbished SF railcars and the central passenger forecast was 64 one-way, which is similar to the ridership between Wellington and Palmerston North on the Capital Connection.

Paling *et al* assumed an average fare of \$24 one-way. It was estimated that patronage would drop by 15% if it was not possible to go through Newmarket (i.e. the train was routed through Glen Innes). The prospect of not being able to get a path into Britomart was raised. Possible off-peak weekday services were also discussed. The report pointed out that scheme is not in current NLTP which is a necessary condition for NZTA funding.

The 2009 study was peer reviewed by John Bolland Consulting. The review found that in terms of the economics, the approach used is fully consistent with EEM and that none of the possible downside risks to the economic case caused the BCR to fall below about 1.2. The patronage forecasts were considered to be as robust as can be expected given the lack of precedent. The review pointed out that: “finding a path into Britomart in the morning peak is a potential stumbling block but if this cannot be achieved then no real costs will have been incurred”.

There are a few parallels of similar long-distance passenger rail services in NZ. For both the Wairarapa (3 /peak) and Capital Connection (1 /peak) weekday services to Wellington, patronage is reported to be stable or growing. However a substantial proportion of patronage on the Capital Connection only travels to Waikanae and there is uncertainty over the future of the service after electrification to Waikanae allows EMUs to operate there.

In contrast, a peak service between Helensville and Auckland did not attract patronage and was abandoned after a few months.

2.2 The Working Party

In view of the considerable public interest shown in the service, the Hamilton to Auckland Passenger Rail Working Party was formed and held its first meeting on October 4th 2010. It comprises members from EW, Hamilton City Council, Waikato and Waipa DCs, Kiwirail, Auckland Transport (AT), Auckland Council, NZTA and the Campaign for Better Transport.

The agreed purpose of the Party is to:

- Identify options for a future passenger rail service between Hamilton and Auckland including timings and costings
- Determine the willingness of parties to contribute to funding such a service
- Provide a recommendation to EW and all member organisations for establishing a passenger rail service between Hamilton and Auckland. The recommendation will be based on appropriate technical considerations and approvals from the ARTA /AT Board
- Discuss any matters of relevance to the project.

The Terms of reference for the Working Party are available on <http://www.ew.govt.nz/PageFiles/18093/1769744-TermsOfReference.pdf>

3 Public Attitudes

EW commissioned Versus Research to undertake a survey of residents to investigate attitudes to public transport, including the proposed rail service, and a telephone survey was undertaken of 1,155 residents during October – November 2010.

Four main issues were covered in the survey:

- attitudes to PT
- travel to Auckland
- attitudes to the proposed service
- willingness to pay for the service.

The survey provides useful insights into the market for travel from Hamilton to Auckland, including trip purpose, arrival times into Auckland, likely destinations and appropriate fare levels. However in relation to possible patronage for the service it suffers from the usual limitations of so-called “Stated Intention”, in that when offered a new service or product, respondents usually say yes without necessarily thinking through the consequences. The result is that reported usage is perhaps five or ten times the amount which actually eventuates.

As with all similar surveys there is a margin of error for the results. For example, of 650 Hamilton residents surveyed 1.8% said they would use the service for work but the margin of error for this figure is +/- 1.02% so the actual figure could be as low as 0.8%.

In relation to travel to Auckland, 11% have travelled weekly or more frequently and a further 32% travelled either fortnightly or monthly. The main purposes for travel were: 48% visiting friends or family, 21% for work or business and 19% to go to the Airport.

As would be expected, those using the service for work purposes wanted to arrive before 08:30 and depart between 17:00 and 18:00. For social use of the proposed service the preferred arrival time in Auckland was between 08:30 and 11:00 and the preferred departure time was between 16:00 and 18:00. For entertainment purposes, however, the best time to leave was considered to be after 21:30. The most favoured destination (for all trip purposes) was Auckland CBD (82%).

The average acceptable return fare was found to be \$36; for comparison, previous studies have assumed fare values in the range \$20 - \$25 one way, consistent with the Wellington long-distance services. However they also assumed that there would be discounts for products such as ten-trip tickets.

Of those interviewed 81% supported the proposed service (i.e. scored 6 or more on a scale of 1 to 10). The primary reasons for support were traffic congestion, the use of the service by others and using it oneself.

In terms of general funding of PT through rates, 77% of Hamilton residents said that the current average rate of \$127 is acceptable. 66% of residents generally support the continuing use of rates to fund PT.

Regarding the implications for funding, the survey found that 85% of respondents said a rates increase of \$15 - \$20 annually was acceptable to fund the service. 68% said \$20 - \$24 per annum increase was acceptable but the proportion that was prepared to pay greater amounts fell to the point where only 10% were willing to pay more than \$35.

4 Economic Evaluation

The two most recent studies (2006 and 2009) have used the NZTA Economic Evaluation Manual (EEM) to look at the economic efficiency (benefit: cost ratio, BCR) of a service over a period of 15 years. The relevant section of EEM is SP9 in volume 2 relating to new PT services. Any future funding application to NZTA would require an evaluation along similar lines along with a profile of effectiveness and strategic fit (see section 5). A minimum BCR of 1 is required for any project to be considered worthwhile.

The Rutherford and Paling work (2006) had a BCR of 1 but this was a relatively high cost approach which had appreciable upfront costs for infrastructure. Paling *et al* (2009) had less upfront cost and used costs for the Silver Ferns calculated by Kiwirail which effectively spread the refurbishment costs. The result was a BCR of 1.9 based on their patronage forecast of 57 per one-way trip. It was found that the BCR fell to 1 if patronage drops to 40, but for a high patronage /high growth scenario a BCR above 2 could be achieved.

As a result of recent discussions held with Auckland Transport and KiwiRail it is likely that the assumptions made by Paling *et al*, especially that it would be possible to run into Britomart, may no

longer be valid, which could reduce patronage and hence adversely affect the economic performance.

Since the 2009 study, benefit values have gone up by around 3% as part of the annual EEM update. The latest cost information from Kiwirail indicates that the cost of operating the SF railcars, assuming an Auckland terminus at Newmarket, is 3.5% - 4% higher than the 2009 figure. A more detailed review of likely station costs will be carried out by Kiwirail early in 2011. Overall, then, if the scheme investigated in 2009 was still possible the BCR would be little changed.

The Working Party has commissioned work by Boulter Consulting and Transport Futures covering possible additional benefits which are not covered by EEM but may be accepted by NZTA and these are covered in section 6.

A full report on this work is available on <http://www.ew.govt.nz/Regional-services/Transportation-planning/Hamilton-to-Auckland-rail-working-group/>

5 Funding

Previous studies have assumed fare levels in the range \$18 - \$24 per one-way trip, with discounts for products such as 10-trip tickets. The latest costings by Kiwirail assume an average fare of \$19.95, GST inclusive, per trip, which is consistent. However the Kiwirail costs assume a service terminating at Newmarket and it is not clear whether an onward service to Britomart would be included in this figure. While this may not affect the final fare much it needs to be taken into account in more detailed financial analysis.

The scheme would need to be in the NZTA National Land Transport Programme (NLTP) to be eligible for funding subsidy from them but currently this is not the case and the earliest this could change would be July 1st 2012. In turn, to get into the NLTP the scheme would have to be in the Waikato Regional LTP.

To qualify for NZTA funding the scheme would need to be assessed, and score favourably, against the relevant criteria regarding:

- Efficiency (BCR)
- Effectiveness
- Strategic fit.

Each of the three is ranked as high, medium or low.

Following the December meeting of the Working Party, NZTA agreed to provide a letter setting out their position in relation to funding and this is available at <http://www.ew.govt.nz/PageFiles/18093/HLZ-AKL%20Commuter%20Train%20-%20NZTA%20Funding.pdf> The letter points out that the scheme is not in the current NLTP and does not appear to be covered by the priorities in the current RLTP. It sets out the NZTA criteria (as given above) and raises a number of issues such as farebox recovery. Overall it is far from certain that the scheme would get funding under current NZTA criteria, even if it were in the current NLTP.

The NZTA letter also refers to their "farebox policy". The farebox recovery ratio (FRR) is the proportion of PT costs recovered through fares and under a recent NZTA decision this must be at least 50%. The Paling study in 2009 found that the FRR would indeed be around 50% over the 15-year life of the proposal but in the light of recent changes that calculation will need to be revisited.

There are two options for paying the local share of funding. Firstly an EW targeted rate could be levied by EW across areas of benefit. The second option is that the relevant local authorities (HCC, Waikato DC, Waipa DC) could share the cost. This needs to be worked out with the funding partners once the costs of implementing a service are worked out in detail.

Given the tenor of the letter from NZTA it is clear that when considering future options, the costs to EW and the relevant TAs both with and without NZTA funding should be examined.

6 Wider Assessment

A further report by Boulter Consulting in association with Transport Futures Ltd (BTF) provides a wider assessment, supplementing the previous assessments which were based on the NZTA Economic Evaluation Manual.

BTF argue that the EEM does not, on its own, provide a comprehensive assessment of the economic case for potential rail services. For this reason, KiwiRail commissioned BTF to produce a *Preliminary Economic Evaluation Handbook*. This is consistent with EEM but supplements it in cases where EEM gives no quantification of particular benefits types or allows further benefits to be included if a robust supporting case can be made. KiwiRail's *Handbook* draws on peer-reviewed international research, together with original New Zealand based research where values need to be calibrated.

KiwiRail's *Handbook* itself recognises that a strategic assessment (as distinct from one which is solely project- or package-based) is needed; that not all benefits can be quantified; and that some pertinent analysis methodologies also need to be taken into account.

The BTF report finds the case for a Hamilton-Auckland rail service to be strong at the strategic level of assessment. It further finds that issues which might mitigate against such a service are at the detailed level and do not significantly impinge on the strength of the strategic case.

The resulting benefit-cost score of a direct service is reasonably strong and the case is strengthened by strategic factors not conducive to monetisation. It is also very important that the underlying assumptions and detailed parameters of a service are considered and taken into account. Whilst possible service options have not yet been fully specified, some conclusions can be drawn on the comparative strengths and weaknesses of particular service possibilities from information available to date. The BTF report provides an outline assessment, so far as this is possible within the constraints of being at a scoping level and incomplete information on service parameter variables.

7 Operational Aspects

7.1 General

In terms of rolling stock, previous proposals have assumed that the Auckland service would be operated either by SF railcars or loco hauled trains with the common assumption that it would be possible to operate into Britomart.

Timing of services: studies and costings to date have assumed one peak service in each direction each weekday, with the possibility of a further weekday offpeak service in each direction. If the peak service is operated using SF, the Kiwirail costings show that it is possible to add off-peak service at a small marginal cost. However, as discussed in section 4, peak services are necessary to get the benefits for the economic case.

Because of the high degree of interaction with the Auckland passenger network, ticketing would need to be integrated with MAXX.

A new peak hour service from Hamilton would need to follow stopping trains on the MAXX network since no overtaking is possible with the existing track layout. This situation is not expected to change in the short to medium term. However it may not be a major issue and could be partly addressed by appropriate timetabling. The running time from Hamilton to Britomart has been estimated at 2hrs, 15min.

7.2 Operating on the MAXX Network

The following options have been investigated by Auckland Transport PT Operations in association with Veolia Transport and also forwarded to KiwiRail for review and comments.

- Terminating Hamilton services at Britomart Station and availability of berthing during the morning and afternoon peak periods
- Terminating Hamilton services at Newmarket Station and the availability of berthing at Newmarket Station during morning and afternoon peak periods
- The ability to run an additional train through the network during peak periods without adversely impacting on existing and planned MAXX commuter services
- Extending an existing MAXX Pukekohe - Auckland services to depart from Hamilton Station
- Terminating Hamilton Services at The Strand and providing bus service connections to the CBD
- Terminating Hamilton Services at Pukekohe and connecting with existing MAXX services
- Terminating Hamilton Services at Papakura and connecting with existing MAXX services
- Coupling a Silver Fern railcar at Pukekohe to an existing MAXX locomotive hauled carriage service.

A full report of the review of options carried out by Auckland Transport is included in Appendix A.

Table 7.1 summarises the strengths and weaknesses of the available options from the wider perspective of the Working Party. It is clear from the Table that, with the exception of the “original” option of a SF-operated through service, both the likely patronage and the expected costs will differ from those used in the 2009 study. For example, a service terminating at Papakura may cost less to operate but having to change may deter some passengers, resulting in lower revenue and fewer benefits. Hence at this stage it is not possible to estimate how the economic case may have changed for the more recent options.

Hamilton Service Options	Strengths	Weaknesses
Silver Fern through service to Britomart	<ul style="list-style-type: none"> ○ No changing; fast, comfortable trip ○ Least number of stops 	<ul style="list-style-type: none"> ○ Not currently feasible due to capacity issues as assessed by AT.

	<ul style="list-style-type: none"> ○ Likely to max patronage ○ Costs limited to SF refurbishment 	<ul style="list-style-type: none"> ○ Would require a proposed MAXX service (e.g. from Manukau) to be foregone ○ Higher risk of unreliability on MAXX network
SF through service to Newmarket	<ul style="list-style-type: none"> ○ Allows an almost uninterrupted trip ○ Option to change to bus at Newmarket 	<ul style="list-style-type: none"> ○ Short available dwell times necessary at Newmarket ○ Higher risk of unreliability ○ Might not be feasible after new Manukau & west line services are introduced. ○ Current available time slots might not be suitable for passengers (08:38 & 14:35). ○ Poor connections with CBD & Westline services with available morning slot
Terminating Hamilton services at The Strand	<ul style="list-style-type: none"> ○ Might be next best option to terminus at CBD ○ Almost uninterrupted trip to central destination ○ Costs limited to SF refurbishment 	<ul style="list-style-type: none"> ○ Will require provision of new bus services to/from CBD and infrastructure (bus stops) ○ Requires a service transfer ○ Might not be attractive to customers due to location
Connecting SF railcar to MAXX carriage at Pukekohe	<ul style="list-style-type: none"> ○ No changing; comfortable trip ○ Likely to max patronage ○ Costs limited to SF refurbishment ○ No additional path needed into Britomart ○ Allows better timing of an off-peak SF service 	<ul style="list-style-type: none"> ○ Discounted due to operational difficulties <ul style="list-style-type: none"> - Shortage of suitable motive power - Too heavy for current locos to operate within the existing timetables. - Platforms will have to accommodate 8 car trains - Risks associated with reliability on MAXX network
Extend existing MAXX service from Pukekohe by adding "special" carriages	<ul style="list-style-type: none"> ○ No additional path needed into Britomart ○ Next best option for a through service after SF ○ Allows better timing of an interpeak SF service 	<ul style="list-style-type: none"> ○ Extra capital cost of carriages ○ Need to agree with AT and Kiwirail re who pays ○ May be higher operating cost ○ Operational complexities, e.g. reserving carriages ○ Contract/ operations issues ○ Will need detailed assessment and evaluation by AT
Train stops at Pukekohe or Papakura	<ul style="list-style-type: none"> ○ Minimal impact on MAXX services ○ Reduced operating cost for Hamilton ○ A second service could leave Hamilton around 08:30 to serve the leisure market and go directly to Britomart ○ Earlier start to service than other feasible options possible 	<ul style="list-style-type: none"> ○ Almost all passengers will have to change ○ Possible overcrowding closer to Auckland and need for additional carriages on MAXX network ○ Reduced level of service (e.g. no toilets) for later part of trip ○ More stops

Table 7.1: Summary of Options

8 Planning and Timing Considerations

The development of the Regional Land Transport Programme (RLTP) and LTCCPs in 2011/12 will be the appropriate place to address the rail service options and funding. It will also provide the opportunity for any necessary further consultation.

It is also clear that there is no possibility of NZTA funding support before mid-2012 due to the project on being included in the current NLTP. While no support can be guaranteed even then, it would be rash to go ahead at a time which completely precluded any central funding.

Introducing a service in mid-2012 allows time for the necessary planning and negotiation to take place to ensure that the service does not fail as a result of an over-hasty launch, which (it is understood) contributed to the demise of the Helensville service.

While it might be possible to start a service on a trial basis before mid-2012, this would be a high risk option in that if problems arise these could lead to adverse publicity which would endanger the long-term future of the service.

9 Recommendations

It is understood that further operational feasibility assessment, impact assessment of the preferred options, detailed timetabling and costing including estimated capital costs will need to be carried out. Therefore, the working party recommends that –

1. Three preferred options be further assessed
 - a. A Silver Fern train from Hamilton to Papakura with a transfer to the MAXX service at Papakura
 - b. Extension of the MAXX service to Hamilton
 - c. The composite train option (Silver Fern railcar coupled to the back of an existing MAXX service at Pukekohe)
2. Detailed assessment and costing to be carried out on the preferred options in 2011/2012.
3. Focus group surveys to be carried out as part of the assessment (if deemed necessary).
4. All partner councils should work together to develop a common message for consultation and the preferred options be tested through the 2011/2012 Annual Plan consultation process of all partner councils (except Auckland Council) with detailed consultation to follow as part of the 2012/22 RLTP and 2012/22 LTCCP processes.
5. A Technical Project Team of staff from AT, HCC, EW, KiwiRail, Waipa District Council and Waikato District Council be set up to work through the technical details of the preferred options. This project team will also work on costing out the preferred options and well as working through all associated costs, including infrastructure upgrade requirements and refurbishment of rolling stock. The project team will report back to the Working Party on a regular basis (approx. once in two months).
6. The Working Party make a decision on the service delivery option by August/September 2011 including costs, which will be included in the 2012 RLTP and 2012 LTCCP's for public consultation.

7. In the absence of a fully assessed preferred option for service delivery as well as costs, it would be premature to set out the funding policy. It is therefore recommended that the funding policy be worked out as part of the further investigation work to be carried out in 2011/12, by the technical project team.
8. This Interim Recommendations report of the Hamilton to Auckland Passenger Rail Working Party be circulated to all Rail Working Group Partner organizations for their consideration.

Appendix A

Proposed Hamilton – Auckland Rail Passenger Services Auckland Transport Review and Recommendations

COVER SHEET	
Project:	Hamilton – Auckland Rail Passenger Services
Paper Title:	Proposed Hamilton – Auckland Rail Services AT Review and Recommendations (Rev3-AT&VT)
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1. ***Purpose***
2. ***Executive Summary***
3. ***Background***
4. ***Options investigated by Auckland Transport***
5. ***Conclusions***
 - 5.1 ***Britomart Station Access during Peak Periods***
 - 5.2 ***Newmarket Station Access during Peak Periods***
 - 5.3 ***Network Access during Peak Periods***
 - 5.4 ***Extension of existing MAXX services to Hamilton NIMT Station***
 - 5.5 ***Terminating Hamilton Services at The Strand and providing bus service connections to the CBD***
 - 5.6 ***Terminating Hamilton Services at Pukekohe to connect with MAXX services***
 - 5.7 ***Terminating Hamilton Services at Papakura***
 - 5.8 ***Connecting Silver Fern Railcar at Pukekohe to a MAXX Carriage service***
6. ***Auckland Transport's Recommendation***
7. ***Preferred Option***
8. ***Next Steps***

1. Purpose:

The reassessment of options for the provision of Hamilton - Auckland daily commuter rail passenger services by Environment Waikato, KiwiRail, Auckland Transport and Veolia Transport.

Auckland Transport in association with KiwiRail and Veolia Transport is required to:

- Confirm technical/network feasibility of Environment Waikato's preferred option and the timetables as provide by KiwiRail.
- Identify any issues with the provision of the Environment Waikato's preferred option and associated timetable.
- Investigate and report on the possibility of using Britomart and/or Newmarket as the terminal stations for the proposed Hamilton services.
- Identify and investigate other available alternative service options

2. Executive Summary:

Environment Waikato have surveyed their residents and concluded that there is "significant support" for a subsidised Hamilton - Auckland rail passenger service.

Initially their preferred option was to utilise the Silver Fern railcars to operate services that include two return trips per day travelling via Newmarket Station terminating at Britomart station.

However as Auckland Transport is committed to:

- an extensive morning and afternoon peak MAXX service timetable
- the continued operation of the recently introduced Onehunga services into Britomart
- the introduction during 2011 of two additional Western Line services per peak hour
- the introduction of Manukau services from mid-2011
- the continued growth in the use of MAXX rail services, particularly during commuter peak periods
- and the associated reduction in use of private motor vehicles

There is presently no operational and berthing capacity available at either Britomart or Newmarket stations during morning and afternoon peak periods. It is therefore recommended that the proposed Hamilton Silver Fern railcar services terminate at either Pukekohe or Papakura and connect with the existing MAXX services.

Both of these options will provide good connections to access all stations on the planned Auckland Electrified Rail Network without negative impact on the operation of existing MAXX services and those to be introduces during 2011. They also offer a choice of transfer services travelling via the Eastern Line directly to Britomart or via the Southern Line via Newmarket to Britomart

The only negative impact on the existing MAXX services will be caused by the increase in patronage. It is proposed that this is managed by the acquisition of two additional SA carriages. Any further patronage growth will be accommodated by the introduction of EMU services.

Environment Waikato however considers that any service that requires passenger transfers could be unattractive to commuters.

At the Environment Waikato Rail Working Group meeting of 13 December 2010 it was generally agreed that their preferred option was a direct service via Newmarket terminating a Britomart Station.

As a direct independent Silver Fern Railcar service could not presently be accommodated due to network and station capacity and access issues, the extension of MAXX Pukekohe – Auckland services with additional carriages with toilet facilities was considered a suitable alternative option. It was generally agreed that the extension of Pukekohe services could provide a required reliable, robust quality commuter service with direct access to and from Britomart Station during peak periods. To accommodate the expected 100+ passenger two additional SA type cars will be required and as the journey is in excess of two hours duration these cars will need to have toilet facilities.

Environment Waikato is to include the costs of providing the proposed Hamilton – Auckland rail service in their draft 2011/12 Annual Plan, do further planning work on the proposed service to include it in their LTCCP and RLTP and also apply for funding from NZTA.

KiwiRail are to provide a detailed operating plan and associated costs for the proposed services for inclusion in the business case being prepared by Environment Waikato for NZTA funding. They are also providing cost estimates for the required station platforms based on similar works recently completed on the Wellington rail network.

Subject to review and funding the target date for the introduction of the service is mid-2012

3. Background:

A telephone survey of a random sample of 1155 residents conducted between 6th October and 8th November 2010 by Versus Research on behalf of Environment Waikato indicated that there is good community support for a rail passenger service between Hamilton and Auckland.

Environment Waikato has concluded that the potential users of the services are:

- Commuters who want to arrive in Auckland before 8.30 am
- Social users who want to arrive in Auckland before 11.00 am

Environment Waikato propose that the service comprise two trains each week day from Hamilton to Auckland (1 morning peak and 1 morning off peak) and two trains each week day Auckland to Hamilton (1 afternoon peak and 1 evening off peak).

A weekend service is also proposed comprising one train in each direction per day.

The services are initially to depart from Hamilton NIMT Station (Hamilton Terminal) with proposed passenger stops at:

- The Base in Hamilton
- Te Kauwhata
- Tuakau

KiwiRail have been requested to provide:

- costs for the proposed midweek services option
- costs for the proposed weekend service option
- an indication of additional infrastructure requirements at the stations.
- and develop the operating timetable

Auckland Transport (in association with KiwiRail) has agreed to:

- Confirm feasibility of the option
- Recommend timetable for Auckland section of rail network (to be confirmed by KiwiRail).
- Suggest any alternatives, if there are issues.

- Investigate terminating services at Britomart and/or Newmarket stations
- Investigate other alternative options for service termination & connection to Auckland CBD

The provisional analysis of the survey data indicates that the preferred destinations and associated departure/arrival times for services are:

- Commuters:
 - Auckland (CBD) arrival 08:30am
 - Auckland (CBD) departure between 05:00pm and 06:00pm.
- Other users:
 - Auckland (CBD) arrival mid to late morning
 - Auckland (CBD) departure between 04:00pm to 07:00pm

Required destinations (from survey respondents):

- Auckland CBD (Britomart Station) - 82% (commuters – 60%)
- Newmarket - 12% (commuters – 6%)
- Airport (bus service from Papatoetoe Station) - 6% airport

The success of the Hamilton rail passenger service is dependent on meeting the needs of commuters (i.e. travel time, arrival and departure times at their required destinations).

4. Options investigated by Auckland Transport:

- 4.1. Terminating Hamilton services at Britomart Station and availability of berthing during the morning and afternoon peak periods
- 4.2. Terminating Hamilton services at Newmarket Station and the availability of berthing at Newmarket Station during morning and afternoon peak periods
- 4.3. The ability to run an additional train through the network during peak periods without adversely impacting on existing and planned MAXX commuter services
- 4.4. Extending an existing MAXX Pukekohe - Auckland services to depart from Hamilton Station
- 4.5. Terminating Hamilton Services at The Strand and providing bus service connections to the CBD
- 4.6. Terminating Hamilton Services at Pukekohe and connecting with existing MAXX services
- 4.7. Terminating Hamilton Services at Papakura and connecting with existing MAXX services
- 4.8. Coupling a Silver Fern railcar at Pukekohe to an existing MAXX locomotive hauled carriage service.

These 8 options have been investigated by Auckland Transport PT Planning and Operations Teams in association with Veolia Transport and forwarded to KiwiRail for review and comments. The following conclusions are based on the KiwiRail network capacity, MAXX rail service commitments (particularly during morning and afternoon peak periods), and the station dwell time required by a long distance rail car service.

5. Conclusions:

5.1. Britomart Station Access During Peak Periods:

After a review of the Britomart Station berthing plan it is concluded that there is no berthing capacity available at Britomart Station during both the morning and afternoon peak periods. The recent introduction of Onehunga services has culminated in it being operated at its present capacity. Additional improvements planned by KiwiRail over the next 12 months will increase the terminal's capacity. However this additional capacity has already been allocated to the introduction of additional Western Line peak services. The introduction of the additional Western Line services are needed to cope with the increased use of rail services in west Auckland and achieve Auckland Transport's planned growth of rail patronage during the commuter peaks.

The initial introduction of Manukau services in 2011 does not require any additional paths into Britomart Station as they will be extensions of existing Otahuhu short run services.

To achieve the planned MAXX service level and associated timetable to/from this terminal station during peak times Auckland Transport requires utilisation of 19 paths per hour (i.e. 18 MAXX services plus 1 Overlander), for this to be achieved; it is likely that the whole existing MAXX timetable will need to be reconfigured. This will however provide no additional paths into the station.

It is therefore concluded that terminating additional direct Hamilton services at Britomart Station during peak periods is not feasible until the completion of the CBD loop.

5.2. Newmarket Station Access during Peak Periods:

Operating Hamilton services to and from Newmarket Station is presently achievable at the times specified below, without affecting the current MAXX services.

However, the introduction of two additional Western Line peak services per hour in 2011 will require the utilisation of all existing capacity at Newmarket and will therefore not allow additional services from Hamilton to terminate at this station.

Prior to the introduction of planned additional Western Line services and Manukau services, the most appropriate available times slots for a Hamilton service to berth at Newmarket Station are:

- Arriving at 0838 and 1435 hours and departing at 0920 and 1915 hours.

Connecting with services at Newmarket to Britomart would require an additional 9 and 11 minutes waiting time plus 8 minutes travel time. This may not be considered appropriate for the needs of commuters.

If Newmarket Station was utilised for terminating Hamilton services the platform dwell times would be limited and after discharging passengers, the train would need to continue to The Strand for any required layover period. Similarly departing trains would have only a very short dwell time at the Newmarket platform for passenger embarkation. It is also likely that different platforms would need to be used by arriving and departing services. This has the potential to confuse infrequent users when they require to catch the return service.

It is however concluded that Option 2 - Terminating Hamilton services at Newmarket Station is not feasible due to it only being available until the Manukau services are introduced. There are also poor connections with CBD and West line services at the

proposed morning arrival time, which would significantly affect the number of commuters who can/will use the services.

5.3. Network Access During Peak Periods:

The introduction in 2011 of all the planned Manukau services will result in a frequency of trains between Puhinui and Westfield during peak periods of 12 trains per hour with headways of 4 or 5 minutes. The running of any additional services through this section of the rail network during peak periods would therefore adversely affect the operation of MAXX services and the associated timetable.

The service planning that has formed a major part of the business case for the electrification of the Auckland Rail Network is based on the fundamental principle of evenly spaced services with ten minute headways from Papakura, Manukau and Waitakere, overlaid with two trains per hour on the Onehunga line, with all services operating all-stops to and from Britomart. Due to its regularity and simplicity this timetable is considered to be the most robust and attractive to the potential users of the services. All MAXX customers, potential customers and particularly commuters need only a basic understanding of the timetable and they can be confident that they can catch a train that will take them to where they need/want to go and that they will only have to wait a maximum of ten minutes.

Given this service pattern, the ability to operate additional trains through the network is extremely limited. This is mainly due to stations not having by-pass tracks and there are therefore very few places where trains can overtake other trains travelling in the same direction. The travel time of any express or limited stops service is therefore determined by that of all stops train(s) ahead.

The design of the Silver Fern railcar incorporates narrow end doors and vestibules with interior doors. It has been concluded from recent operational experience that this door arrangement is unsuitable for suburban/metro services operating within a high frequency timetable with short intermediate station dwell times. The door design has been found to slow loading and unloading of passengers at intermediate stations and therefore require extended dwell times. This presents the risk that the station dwell times will be dependent on passenger unloading/loading requirements and therefore dwell times are most likely to be randomly extended causing delays to following trains and disruption of the MAXX timetabled services.

It is therefore considered that the operation of an additional passenger train during peak periods will present operational challenges through the highest density sections of the network (Wiri – Westfield) and will likely cause delays to following services and disruption of the MAXX timetable.

5.4. Extension of existing MAXX services to Hamilton NIMT Station:

The extension of MAXX Pukekohe – Auckland peak services from/to Hamilton was initially discounted as to implement this option will require resolution of the following acquisitions and contractual and operational issues and will therefore require a significant longer timeframe to complete the provisional work required prior to implementation:

- Acquisition of additional passenger rolling stock, the initial requirement for a start-up service is considered to be 2 additional carriages
- As the duration of the Hamilton – Auckland journey is predicted by KiwiRail to be 2 hours 15 minutes any passenger rolling stock used will require to have toilet facilities. It should be noted that Auckland Transport have no spare rolling stock available for use on a Hamilton service and none of the existing fleet have toilets.

- The availability of suitable rolling stock, upgrade designs for any required refurbishment and the resources to rebuilding or refurbish the additional passenger rolling stock to the required standard and include toilet facilities.
- The timeline and associated costs to rebuilding or refurbish of any additional passenger rolling stock with toilet facilities
- Agreement with KiwiRail and Veolia for Veolia staff to operate services between Hamilton and Pukekohe or KiwiRail employing suitable staff to operate the services.
- Variation of Auckland Transport's operating agreement with Veolia Transport to include extension of Pukekohe services from/to Hamilton.
- Variation of Auckland Transport's operating agreements with KiwiRail to include access for Hamilton - Pukekohe services.
- Completion of relevant staff training and certification for the route extension
- Changer to staff rosters and rolling stock operating and stabling plans.
- Agreement with KiwiRail/Veolia for the require changes to the rolling stock maintenance and servicing scope and schedules (i.e. to include toilet cars and additional operational kilometrage).
- Agreement with KiwiRail and staff representatives to permit the operation of Auckland Transport rolling stock outside the Auckland area (i.e. use of push-pull motive power and associated driving trailer cars). Note that to mitigate or effectively manage this issue without this agreement would require the train set to be split, some vehicles turned and the train remarshaled at the end of each trip, this would have significant impact on the operation of subsequent services operated by the train set and crew.
- Stations used by the services will initially be required to accommodate 6 car train sets and if loadings increase as predicted 8 car train sets.
- Environment Waikato and Auckland Transport agreement for funding and cost sharing.

It is also likely that due to the additional kilometrage that the rolling stock will be required to run additional rolling stock will be needed to allow for servicing associated maintenance. If KiwiRail have suitable staff and capacity, an alternative solution may be to stable and service the train set over night at Te Rapa.

At the Environment Waikato Rail Working Group meeting of 13 December 2010 it was generally agreed that the extension of MAXX services was the preferred option. It was also considered that this option would be sufficiently robust to provide the level of comfort and reliability required specifically for the proposed commuter services and also allows direct access to and from Britomart Station during peak periods.

5.5. Terminating Hamilton Services at The Strand and providing bus service connections to the CBD:

Although this option is operationally feasible, with the introduction of Manukau services the peak frequencies of trains between Puhinui and Westfield will preclude running additional services through this section without adversely affecting MAXX services.

To make this a viable option would also require the provision of new bus services to/from the CBD and the installation of associated bus stops.

It is considered that this option is unlikely to be attractive to prospective customers particularly commuters, due to the remote location of The Strand Rail Station and the requirement of bus service connections to/from the Auckland CBD.

This option does not provide for the stated needs of commuters to have direct access to Britomart Station and therefore it cannot be recommended.

5.6. Terminating Hamilton Services at Pukekohe to connect with MAXX services:

Auckland Transport presently operates 8 morning peak and 6 inter-peak services from Pukekohe to Auckland CBD, which all terminate at Britomart Station:

- all Pukekohe services stop at Papatoetoe Station where bus connections are available to Auckland Airport
- 3 morning services travel via Newmarket and 5 via Glen Innes.

The most appropriate MAXX service connections (current timetable) that meet the stated needs of the Hamilton commuters are:

- Depart 06:54, via Glen Innes, arrives Britomart 08:04
- Depart 07:03, arrives Newmarket 07:57, arrive Britomart 08:06

The evening return commuter service could be scheduled to connect with either of the following MAXX services from Britomart (current timetable):

- Depart 17:26, via Newmarket, arrive Pukekohe 18:33
- Depart 17:30, via Glen Innes, arrive Pukekohe 18:37

The second service could connect with:

- Departs Pukekohe 09:49, via Newmarket, arrives Britomart 10:58.

The second evening return service would need to connect with the MAXX service that:

- Departs Britomart 19:12, via Glen Innes, arrives Pukekohe 20:18.

The operation of connecting services from Hamilton to Pukekohe, subject to KiwiRail network access south of Pukekohe, will permit additional services to be operated with a single train-set and will also provide arrival and departure times that the Environment Waikato survey indicates are appropriate.

This option has significant advantages for potential users over a single direct service as it can provide appropriate departure arrival times for both commuters and day trips, good journey times and the connecting MAXX services provide access to both Britomart Station (Auckland CBD) and Newmarket Station and access to all other destinations on the South and East lines of the Auckland rail network. It also provides the option of transferring to West line services at Newmarket.

However, once EMU services are introduced, the Hamilton services will need to be extended to connect with EMU services at Papakura.

It must be noted that due to the heavy passenger loading on these key MAXX commuter services additional rolling stock will be needed to implement this option. It is considered that one additional SA carriage will be initially required and with the present rate of patronage growth a second is likely to be needed by the second year of operation.

5.7. Terminating Hamilton Services at Papakura

This option will provide similar service levels and access to the destinations on the Auckland Rail Network as the Pukekohe transfer option. However terminating at Papakura will offer greater choice of MAXX service connections and associated timetable options that will, subject to KiwiRail network access south of Pukekohe, allow a greater selection of departure times from Hamilton and Auckland to be considered.

KiwiRail will need to confirm that suitable berthing will still be available at Papakura Station, for Hamilton services, when the planned modifications of the track layout is completed.

It is also unlikely that this option will be available until the completion of the Papakura track remodelling program of works (November 2011 – June 2012)

It must also be noted as with the Pukekohe transfer option, due to the heavy passenger loading on these key MAXX peak commuter services similar additional rolling stock will be needed to implement this option.

5.8. Connecting Silver Fern Railcar at Pukekohe to a MAXX Carriage service

It was proposed that the Silver Fern Railcar would operate independently from Hamilton to Pukekohe were it would be coupled to an existing MAXX carriage service and towed as part of the MAXX train consist to Britomart. This could overcome the peak period access issues and allow direct access into the terminal as part of the MAXX service.

This option has been discounted due to a shortage of suitable motive power to haul the combined service. The MAXX service will need to be increased to a 6 car consist as the patronage increases and with the addition of a Silver Fern Railcar would be too heavy for the existing locomotives to operate within the timetable requirements. This option also requires platforms to accommodate 8 car train sets.

There are also significant risks associated with service reliability as the MAXX service would need to depart at the scheduled time and if the railcar arrived late at Pukekohe it would need to continue to Papakura and the passengers would have to transfer to the next available MAXX service, which is unlikely to have insufficient capacity for regular Auckland commuters and the additional Hamilton passengers.

6. Auckland Transport's Recommendation:

After investigation and review of the above 8 options it is considered that due to Auckland Transport's commitment to the:

- existing MAXX timetable and associated services
- continuation of Onehunga services
- introduction of Manukau Services
- introduction of two additional Western Line services per peak hour
- continued growth in the use of MAXX rail services particularly during commuter peak periods
- and the associated reduction in use of private motor vehicles

There are only three viable options that are suitable for commuter travel from/to Hamilton and provide access to Britomart Station during peak periods:

- A. Hamilton services to terminate at Pukekohe and transfer passengers to the appropriate MAXX services in the morning and the reverse in the evening

- B. Hamilton services to terminate at Papakura and transfer passengers to the appropriate MAXX services in the morning and the reverse in the evening.
- C. Extension of appropriate MAXX services from Pukekohe to Hamilton

Both options A and B are considered to offer an economical operationally viable service, as after passengers transfer from the Hamilton train to MAXX services the railcar could return to Hamilton for the second service:

- The running time for the railcar between Hamilton and Pukekohe is estimated as 67 minutes (this will need to be confirmed by KiwiRail)
- Running time for MAXX service from Pukekohe to Britomart is 68 minutes
- and Papakura to Britomart is 52 minutes

Journey times from Hamilton to Auckland CBD of approximately 2 hours and 15 Minutes are therefore achievable.

Option C is generally considered to be the preferred solution, however suitable additional rolling stock with toilet facilities will be need to be supplied prior to its implementation and after the completion of the network electrification and introduction of EMU services it may be necessary to revert to Option B.

It is recommended that:

- i. Detailed timetables and associated pricing are completed by KiwiRail for options A and B for Environment Waikato consideration.
- ii. KiwiRail supply costs and timeline for supply of two refurbished carriages with toilet facilities and similar for two SA carriages
- iii. Environment Waikato and partners to select the option required taking

It must be noted that:

- a. Environment Waikato and KiwiRail need to take into account the planned introduction of integrated electronic ticketing at all stations on the Auckland Rail Network
- b. any business case should not include revenue for trips (including transfers) that are made on MAXX services within the Auckland area.
- c. outside the commuter peak periods (i.e. interpeak, evening and weekends), subject to suitable access arrangements and operating time slots that do not conflict with MAXX present and planned scheduled services, options that provide for arrivals and departures at Britomart, could probably be accommodated.

7. Preferred Option:

At the Rail Working Group meeting of 13 December 2010 it was generally agreed by Environment Waikato team that their preferred option for the proposed commuter services is the extension of existing MAXX services to initially Hamilton NIMT Station. They considered that this option had the potential to deliver the most reliable and robust direct service that provides access to and from Britomart during peak periods.

It was considered that although this option is not immediately available it has the potential to meet the stated needs of their residents and subject to

funding and formal approve it is therefore intended to work toward its introduction by July 2012.

8. Next Steps:

- KiwiRail to prepare detailed proposed timetables and associated pricing for options A, B and their component of C for Environment Waikato consideration.
- KiwiRail to supply costs and timeline for supply of two refurbished carriages with toilet facilities and similar for two SA carriages
- KiwiRail to supply costs and timeline for station platform works
- Environment Waikato to select the required taking option

Once Environment Waikato have selected their preferred service option and have identified the actual stops they require:

- KiwiRail in association with Auckland Transport and Veolia Transport will develop the associated operating schedule, a detailed timetable and associated operating costs.