

Report 4: Capital Investment

To: Rail Development Group

From: William Peet [WITHHELD UNDER SECTION 9(2)(a) of the OFFICIAL INFORMATION ACT 1982].

Date: 21 August 2008

Executive Summary

Ministers have directed that the Rail Development Group consider the capital investment issues and make recommendations to them for approval.

This paper provides an overview of the key customer and market issues for rail and recommends an aligned capital investment programme, split into:

- Renewals (funded by profits and Crown support);
- Catchup (funded by Crown); and
- Growth (funded by Crown with customer contribution) to close any gaps between that recoverable from the market and the cost.

It is intended to be the first of a rolling 5+ year programme.

Undertaking the investment recommended in this paper will deliver a more reliable railway able to accept heavier and larger loads, to increase competitiveness with road. The investment will deliver greater capacity so that the desired mode shift can be commenced and improve the operating efficiency of the railway. There will also be investments into support infrastructure such as workshops and depots.

The growth and catchup programmes total \$764m in nominal terms, with a further \$275m of capacity projects in Auckland and Wellington which will provide benefits to both domestic freight and metro commuter users. The paper specifically excludes metro-only projects such as improvements to capacity at Britomart, Quay Park Junction, Newmarket and increasing platform lengths throughout Auckland.

The plan represents a mid-point scenario but the business will need to be responsive to changes in customer demand and general economic activity. It is assumed that growth projects will need to be carefully prioritised as part of normal SCI and business planning processes.

Recommended Action

I recommend that you:

- 1) **Note** this paper;
- 2) **Recommend to Ministers that they:**
 - a) **Note** the renewals programme, noting that the Crown proportion of funding will be through the purchase of non-commercial services;
 - b) **Approve** the funding for 5 year catchup expenditure (\$159m); and
 - c) **Approve** the funding envelope for 5 year growth (proposed \$606) and metro growth (proposed \$275m) projects, indicate broad priorities within those programmes and that they should be funded from Vote: Finance (alternatively they could be funded from NZTA).

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Purpose of Report

- 1) We understand that Ministers want to consider a capital expenditure programme for the rail industry, excluding the investments already committed for metro passenger services (DART, Electrification and WRRP) and the \$80.2m urgent capex approved to support KiwiRail in the short term.
- 2) This report describes the key issues to consider and proposes an integrated investment plan.

Background

- 3) The proposed capital investment programme has been broken into 3 groups, defined as:
 - a) Renewals: the like-for-like replacement of worn assets, generally with more efficient assets. It is proposed that this is funded by borrowing with depreciation and interest costs met from profits and direct ongoing Crown funding;
 - b) Catchup: catch-up to get the asset base to an adequate standard funded by capital grants;
 - c) Growth: investments which improve economic utility (e.g. more capacity or higher speeds) ranging from fully commercial to those projects which have a part commercial and part economic return funded by capital grants.
- 4) The establishment unit will provide further advice on funding issues as part of the normal SCI and business planning processes.
- 5) [WITHHELD UNDER SECTION 9(2)(g)(i) of the OFFICIAL INFORMATION ACT 1982].
- 6) The information on which this paper has been based is derived from ONTRACK's network development plan of late 2006 "A Convenient Solution" (updated to reflect escalation and new information) and working papers from KiwiRail and ONTRACK engineering staff. Normal approval processes will operate prior to expenditure being committed.

The challenges of rebuilding a transport and infrastructure network

- 7) Rail is capital intensive and requires dedicated capital commitment and a long term view for the sector to compete and grow. The investment timeframes required for rail and ferry businesses are long (10-50+ years) and require planning to be integrated into wider transport and infrastructure decision making.
- 8) On a pure financial basis rail is not commercially sustainable without a significant reduction in the size of the existing network. Depending on the cost allocation methodology, this return differs across the rail network with some routes having a good commercial rate of return (15-20%) whilst others operate on negative returns.
- 9) The network economics are such that it is hard to shed cost faster than revenue, meaning closure of lines or services does little to reduce overall cost, whilst having the potential to significantly impact the supply chain. Similarly, cherry picking or competition on profitable lines has high potential to drive down overall returns making the networked operation uneconomic.

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- 10) The economic viability of the rail freight business is underpinned by bulk product and by IMEX (import/export) containerised traffic. This business is directly threatened by the current moves to introduce larger and heavier trucks (50 tonne truck trials) and coastal shipping. In particular, enabling larger and heavier trucks to operate has the potential to eliminate rail's current competitive advantage in containerised freight unless the real cost to the roading system (both capital and maintenance) for this increased loading is paid for by the users.
- 11) In addition to the increased regulatory compliance costs faced by rail, the road industry has been insulated from increasing infrastructure cost through the design of the funding mechanisms and cross subsidisation.
- 12) To improve its competitiveness, rail has to:
 - a) Improve its quality of service for customers, especially culture, reliability, capacity and speed of service;
 - b) Improve access to rail with sidings, warehousing, container terminals and/or freight villages;
 - c) Improve the skills of its people for the new rail model;
 - d) Improve its core operating model – carrying heavy loads along arterial routes – by improving utilisation, increasing its network fundamentals (clearance, axle load etc.) and leveraging its cost base better than road or sea competition. The proposed change in network fundamentals is included as attachment 2;
 - e) Manage assets efficiently over their life cycle;
 - f) Use information more effectively to better price and drive the operation; and
 - g) Invest in modern fuel efficient locomotives and higher capacity wagons to take advantage of the increased axles loads and greater loading gauge.

Capital assets in the rail freight business

- 13) Rail freight is a seasonal business with peaks and troughs. The cyclic nature of the business means that capital deployment and resourcing requirements vary, with insufficient rolling stock, locomotives and at times people available in peak periods and redundant rolling stock and underutilised personnel in the low season. As an example, the milk wagons deployed in Taranaki are fully utilised through the milk season, but have minimal utilisation outside that.
- 14) This feature of the business can be successfully managed through careful planning, strong people management and through managed capital investment that enables greater flexibility within the engineering fleet. In particular, capital investment should be focused on equipment (locomotives and wagons) that can operate across the network and in a range of capacities as market needs change.
- 15) Having additional capability and flexibility within the fleet will be a critical component of rail retaining, growing and acquiring customers and new markets. **[WITHHELD UNDER SECTIONS 9(2)(b) and 9(2)(i) of the OFFICIAL INFORMATION ACT 1982].**
- 16) Targeted investment, such as purchasing and deploying new locomotives on key routes over peak periods, will significantly improve the service and the flexibility of rail and will provide for growth. As an example, the additional power and capacity of new locomotives on the Auckland to Tauranga route over peak periods would enable additional capacity to be carried (1 new locomotive would have the same power as 2 older locomotives), whilst also freeing up a number of older locomotives for redeployment to less time-sensitive regions or regions with lower demand. The same

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new locomotives can be redeployed to other regions or other operations (e.g. bulk movements) in non-peak periods.

- 17) Aligning infrastructure investment with rail operational investment and associated customer requirements is also critical to ensure that the right investment is made at the right time.

[WITHHELD UNDER SECTIONS 9(2)(b),9(2)(i) and 9(2)(j) of the OFFICIAL INFORMATION ACT 1982].

The benefits of an integrated view of rail are substantial.

- 18) A further and less controllable challenge for capital decision making, is the susceptibility of the network to occasional weather events. Targeted infrastructure development and more flexible work practices by fleet and infrastructure staff will mitigate this risk.

Core markets

19) General

- a) Broadly speaking the three key freight segments in which rail competes, are characterised by their own unique drivers and circumstances. The ferry business also competes in the freight commercial vehicle market, but can do so with more generic assets than rail.

Segment	Timelines	Load	Distance	Total NTK	Net tonnes
Bulk (coal / forestry / minerals)	Less Important	Wagon Loads Up to Full Train	Up to 400km	[WITHHELD UNDER SECTIONS 9(2)(b)(ii), and 9(2)(i) of the OFFICIAL INFORMATION ACT 1982].	
Export (import / export)	Important	Containers Single to Multiple	Up to 400km		
Domestic (retail / wholesale) (FCL / LCL)	Critical	Smaller Loads (consolidated as wagon or container loads)	300 to 1200km; though opportunities exist for shorter hauls with the right operating model		

- b) The focus for the first period will need to be on customer retention with investment in growth once a strong operational base is built, or rail will continue to face customer churn and subsequent rate cannibalisation.
- c) The upcoming peak season is a high risk period, as customer expectation for improved service and capacity will be high, and demand is likely to be strong due to continued high fuel costs. Unfortunately, KiwiRail will have less capacity than last year due to lack of maintenance and investment funding in recent years.

20) Bulk

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- a) Bulk commodities are fairly well suited to rail where there is an intrinsic ability to carry large consignments and utilise the benefits of scale. In most cases there is a one-to-one relationship that exists between customer and equipment, where operating models and circuits can be established that optimise asset utilisation and provide the most efficient results for all parties.
- b) The market is typified by the following qualities:
 - i) Mature: volume growth is generally well signalled and planned in advance;
 - ii) Customer funded growth: the one-to-one relationship between customer and equipment enables volume growth to fund new assets;
 - iii) Bulky: typically large in volume and weight - coal, wood, milk, steel, fuel, gravel and minerals;
 - iv) Low value commodities: low value primary products, relatively sensitive to the influences of exchange rate and global commodity price fluctuations;
 - v) Not time sensitive: stockpiles can be consolidated at port or factory gate;
 - vi) Specialised equipment: equipment is fairly specialised, and on the most part, only engaged in a one way hauling capacity;
- c) Opportunities

[WITHHELD UNDER SECTIONS 9(2)(b),9(2)(i) and 9(2)(j) of the OFFICIAL INFORMATION ACT 1982].

21) Import and Export (IMEX)

- a) Due to proximity to market and the number of ports in NZ, only a limited amount of international trade volumes are conducive for rail transportation.

[WITHHELD UNDER SECTION 9(2)(g)(i) of the OFFICIAL INFORMATION ACT 1982];

- b) Heavier commodities, which tend to be moved in large quantities, lend themselves towards a typical rail model, where superior axle load capacities can more efficiently transport large and heavy consignments than road. This is especially the case in the transportation of twenty-foot containers, where road transport operations have difficulty in pairing two containers together to provide an efficient load that is legally able to be carried. Any extensions of axle load tolerances on road have a direct and negative impact on the rail industry;
- c) The following trends and issues will continue to shape this market:
 - i) Port Density: New Zealand is served by a relatively high number of ports;

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- ii) Customer Behaviour: trend towards Shipping Lines and not Cargo Owners (exporters) determining their choice of transport provider;
- iii) Shipping Line Rationalisation: consolidation in the global shipping industry and development of coastal shipping competition;
- iv) Port Call Rationalisation: to reduce the number of Ports visited in NZ;
- v) Larger Vessels: trend globally towards larger ships and ramifications for Ports, which need to make major investment decisions around their infrastructure and ability to cater to these larger vessels;
- vi) Port Mergers: an increasing need for capital expenditure to accommodate larger vessels (dredging, land reclamation, new cranes) will drive this strategy, but will require a national co-ordinated approach;
- vii) Environmental Changes: the focus on environmental sustainable systems, "food miles" and "carbon footprint", threaten to put further pressure on NZ exporters. At the same time, FTA's with China and potentially the USA are expected to open a range of opportunities;
- viii) Exchange Rates: the buoyancy of the NZ\$ is suppressing some volume;
- ix) Potential axle load increases for trucks: increasing truck weights to 50t provides a 15% load advantage compared to the standard maximum of 44t.

WITHHELD UNDER SECTION 9(2)(g)(i) of the OFFICIAL INFORMATION ACT 1982];

x) IMEX Opportunities:

(1) [WITHHELD UNDER SECTIONS 9(2)(b),9(2)(i) and 9(2)(j) of the OFFICIAL INFORMATION ACT 1982];

(2) [WITHHELD UNDER SECTIONS 9(2)(b),9(2)(i) and 9(2)(j) of the OFFICIAL INFORMATION ACT 1982].

(3) Port and ship call rationalisation will continue to be both positive and negative to the rail business; and

(4) Opportunities to reconnect to sidings where operations were withdrawn under the previous business model. [WITHHELD UNDER SECTIONS 9(2)(b),9(2)(i) and 9(2)(j) of the OFFICIAL INFORMATION ACT 1982].

22) Domestic:

- a) The domestic market is defined as all other products that are transported on the rail network whose end destination is not directly for an international market, or alternatively is moved in quantities that do not warrant an individual tailored service, such as those provided to the bulk market. While the majority of this market is of products fit for immediate domestic consumption or use, there is a broad array of other commodities transported including grain, steel, milk, wine, coal and fuel;
- b) There are a number of factors that categorise the market, and influence the attractiveness of the rail network against other competing modes in this sector;
 - i) Transfer Costs: many products require a pick-up or delivery by road. There is a cost and time penalty to transfer to rail;
 - ii) Trade Imbalance: due to the population density patterns in the country;
 - iii) Time Sensitivity: rail is more readily suited to compete in the "Stock Transfer" portion of the market, rather than for customer who utilise a "Just in Time" operating model. There is often questionable economic value in rail providing a service to complete in the just-in-time (JIT) market;
 - iv) Erosion of Competitive Advantage: the natural distance threshold where road becomes more advantageous over rail has shrunk, as road continues to expand in their ability to provide cost competitive and timely services, particularly to the overnight market. While simultaneously the capability in rail has contracted, due

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- to increasing temporary speed restrictions and reduction in equipment and network reliability;
- v) Route and Parcel Diversity: the configuration of the rail network and positioning of terminals restricts competition to particular routes. Road has greater flexibility to drop-off and pick-up along the route in terms of both location and size of consignment;
 - vi) Competition for stock transfers to move by coastal shipping;
 - c) Domestic freight will become progressively more in conflict with metro passenger services as customers wish to send their goods out during the evening metro peak and receive them during morning deliveries. While some JIT networks are starting to work around the clock, many customers cannot efficiently operate 24x7 and will only receive freight at specific times. Rail will need to invest in capacity in Auckland and Wellington if both markets are to be serviced;
 - d) Domestic Freight Opportunities:

[WITHHELD UNDER SECTIONS 9(2)(b),9(2)(i) and 9(2)(j) of the OFFICIAL INFORMATION ACT 1982].

Investment focus

- 23) The investments are focused around improving the long term service rail can offer to its customers in:
- a) Service:
 - i) Schedule robustness and reliability – network and asset performance;
 - ii) Transit time improvements – important for domestic freight and passengers;
 - iii) Operational capacity increases to grow domestic peak tonnage (longer trains, more rolling stock, increased ferry capacity);
 - iv) Increased frequency – to better serve branch line customers;
 - v) Targeted network improvements to address core markets – departure and transit time;
 - vi) Improved physical and system connectivity with customers – ease of doing business;
 - b) Efficiency:

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- i) New locomotives and wagons will reduce fuel and operating costs by allowing heavier trains;
 - ii) A new operating system and redesigned processes will provide better management tools – will enhance asset and labour productivity;
 - iii) Removal of temporary speed restrictions – less need to slow or stop – speed up and fuel reduction;
 - iv) Extension of Project Kupe – visibility will improve asset management and reporting;
 - v) Improved rolling stock performance, reliability and availability by upgrades;
 - vi) New wagons and locomotives will be designed to take advantage of the higher allowable axle loads and greater clearances being proposed on key routes;
 - vii) Equipment standardisation and simplification – will improved asset and maintenance management;
 - viii) Engineering tweaks to reduce asset wear rates and train rolling resistance;
 - ix) Identify and reduce “cost of poor quality” through an industry wide program;
- c) Safety:
- i) Extension of Project Kupe – increased visibility and automation;
 - ii) A strengthened quality management system working in alignment with operational and business processes;
 - iii) New and upgraded assets will provide improved staff safety;
 - iv) Upgraded terminals with improved assets, increased visibility and automation of key points;
 - v) New inspection and detection systems will aid in identifying deteriorating asset condition before failure; and
 - vi) Advancements to communications, visibility and process audit tools.

24) Many of these initiatives will deliver multiple benefits, and due to this interrelationship, investment will need to be considered across the impact to the total business, as well as against more targeted routes or customer specific initiatives.

Investment plan overview

25) The investment plan has been jointly prepared by KiwiRail and ONTRACK teams and has sought to optimise investment overall.

26) [WITHHELD UNDER SECTIONS 9(2)(b)(ii) and 9(2)(i) of the OFFICIAL INFORMATION ACT 1982].

27) [WITHHELD UNDER SECTIONS 9(2)(b)(ii),9(2)(i) and 9(2)(j) of the OFFICIAL INFORMATION ACT 1982].

28) While the renewals and catchup investments do not bring an incremental financial return (other than avoided loss), the growth projects should bring new volume and revenue to rail. Report 1: New Rail Industry Structure recommends prioritising funding gaps for growth capital on a weighted NTK basis. While there remains modelling work to do to finalise the weightings, this approach should form the basis for the Board to ensure capital investments are made in the right order for the business.

29) As part of the normal SCI and business planning process each year, Ministers will be able to provide further direction on the relative priorities of those projects.

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Summary by expenditure class:

[WITHHELD UNDER SECTIONS 9(2)(b),9(2)(i) and 9(2)(j) of the OFFICIAL INFORMATION ACT 1982].

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Attachment 1: Plan by project group

[WITHHELD UNDER SECTIONS 9(2)(b),9(2)(i) and 9(2)(j) of the OFFICIAL INFORMATION ACT 1982].

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Attachment 2: Improvement in Network Fundamentals – Principal Operating Parameters (POPs)

[WITHHELD UNDER SECTIONS 9(2)(b),9(2)(i) and 9(2)(j) of the OFFICIAL INFORMATION ACT 1982].