

Case Studies of Two Alternative to Roding Projects

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Abstract:

This paper describes two current freight transport Alternative to Roding proposals and their passage through the Transfund funding approval process. It illustrates the protracted nature of the process and that not all of the Transfund criteria can be found in Transfund's published material. It concludes that policy in this area is still developing.

Introduction

This paper describes two ATR proposals (known as Coromandel Quarry Aggregate Barging and Central Log Rail) and discusses their progress through the Transfund funding approval process.

What Is An Alternative to Roding

Section 3D of the Transit New Zealand Amendment Act 1995 allows funds from the National Land Transport Account to be applied to “*outputs that consider or develop efficient alternatives to the provision or maintenance of roading*”. Such outputs are generally known as Alternatives to Roding (ATRs).

Coromandel Aggregate Barging Proposal Description

Aggregates quarried on the Coromandel peninsula that are destined for the Auckland market are currently transported by road truck and trailer units along state highways 25, 2, & 1. H G Leach & Co. Ltd. (Leach) operates a hard rock quarry at Matatoki (7 km south east of Thames). Significant quantities of aggregate from this quarry are transported Leach's Rockshop (stockpile and on selling depot) at Henderson (using the above state highways plus a section of SH16) for distribution to Auckland markets, primarily in the northern and western areas of Auckland.

In late 2000 Leach engaged Messrs Beca Carter Hollings & Ferner Ltd to undertake “Auckland Aggregate Market Research” to assess the potential market opportunities for crushed aggregate in the Auckland region. The report, received in 2001, concluded “...*major projects within this time period (2001-2011) present an opportunity for entry of a new quality aggregate product to the Auckland market, particularly in the area north of Mt Wellington.*” The report supports the Leach's view of the Auckland market.

The Auckland isthmus presently uses some 10 tonnes of quarry products per capita per annum, which is almost 10 million tonnes of aggregate per annum. The large volume of new

road construction being proposed for Auckland in the medium term will lead to growth in the demand for quarry aggregate.

Presently, approximately 2 million tonnes of this demand is sourced from the Waikato region and south thereof. This equates to approximately 69,000 truck and trailer trips pa north over the Bombay Hills, and the same number in return.

A number of the quarries in the Auckland area have closed or will close shortly (Mt Wellington has closed, Wiri North will close in eighteen months [650,000 tonne pa capacity], Reliable Way will close in two years [150,000 tonnes pa capacity]). These closures create a need for an alternative source of supply and could lead to additional truck and trailer trips over the Bombay Hills if the material is to be supplied from the south of Auckland as seems likely. The market research identified that options for supply from the north of Auckland were limited in number, resource quantity and quality.

Leach presently sells in excess of 40,000 tonnes of aggregate per annum to many customers in the West Auckland and Central Auckland areas. The present volume equates to approximately 1,380 truck and trailer trips pa and could be replaced by 66 barge trips. Leach's belief (informed by the Beca market research) is that their sales into the Auckland market will increase to 200,000 tonnes per annum over a six-year period.

Leach recognised that barging may be a viable alternative to road transport for the Coromandel – Auckland movement of quarry aggregate and initiated investigations and some trial shipments. The proposed barging operation can potentially remove some 13,800 trips (based on 200,000 tonnes pa) north and the same south, i.e. removing some 20% of the quarry aggregate truck numbers on SH1 between the Waikato and Auckland.

To this end, Leach applied for consents under the RMA in 1998 to construct a conveyor based barge-loading terminal at Kopu, to facilitate transport of aggregate by barge to Auckland. Environment Waikato and the Thames Coromandel District Council (TCDC) granted the required consents in 1998.

Leach has secured a lease from TCDC for the land area required for the barging terminal. During 2002, Leach sought variations to its consents to allow the loading and unloading of "roll on, roll off" type barges, which are simpler to operate, more economical and require significantly less infrastructure works for loading and offloading than the conveyor based system originally envisaged.

Leach has built a temporary ramp on the right hand (east) bank of the Waihou River at Kopu, where it loads "roll on, roll off" type barges with aggregate for transport to Auckland.

Leach has undertaken a number of barging trials to transport aggregate to Auckland from Kopu. Truck and trailers transport aggregate from the Matatoki Quarry, some five kilometres to the Kopu Quay site, where the aggregate is stockpiled awaiting arrival of the barge.

To date barge trials have been conducted using Messrs Subritzky Line's BK Subritzky, a roll on roll off barge capable of taking up to 750 tonnes of payload. Subject to the tide level, the self-propelled barge motors up the Waihou River to Kopu and pulls up to the ramp, usually some 2-3 hours before high tide to ensure optimum water depth during the bar crossing on the outbound (fully loaded) trip.

On berthing, the barge lowers its fore ramp and Leach proceed to load some 600 – 750 tonnes (600 tonnes on a neap tide and 750 tonnes on a spring tide) of premium aggregate onto the barge using a CAT966 or similar size front end loader. Loading takes some two hours, after which the ramp is pulled up and the barge steams off, ensuring it travels over the bar at the river mouth at fullest tide, and heads up the Firth of Thames to Auckland.

Subject to weather, the barge takes some 6 – 8 hours to motor to Auckland and under the Auckland Harbour Bridge towards the Te Atatu Peninsula. On reaching Te Atatu, the barge has to wait for the high tide (\pm 12 hours from last high tide at loading), at which point it motors up the Henderson Creek to the Concourse Wharf where the aggregate is unloaded using a 20 tonne hydraulic excavator, into trucks, which travel some 300 metres to Leach’s depot on Selwood Road, for storage and distribution. Offloading by excavator takes some three hours.



Photo 1: Truck Unloading, Stockpiling and Barge Loading

The barge payload of up to 750 tonnes equates to the following: -
 1 truck and trailer average payload = 29 tonnes
 Therefore one barge load = 26 truck and trailer loads.



Map 1: Barge & Truck Routes

Alternatively, the trucks would travel some 125 kilometres along the following routes to reach the Henderson depot: -

- From the quarry, along SH26 to Kopu
- Kopu to Mangatarata on SH25
- Mangatarata to Bombay Hills on SH2
- Bombay to Auckland on SH1, and finally
- Auckland to Lincoln Road along SH16, Henderson and then onto
- Selwood Road to the depot – approximately 300m.

To date, Leach has undertaken 20 barge trips as part of its trial in order to confirm the physical aspects of the operation, such as tide constraints, inclement weather, loading and unloading constraints and to establish the actual cost of barging operation. To date all the trials have been successful, and it has been established that the barge can transport 600-750 tonnes, subject to the specific tide on the trip (e.g. spring tide or neap tides).

Case Study – Coromandel Quarry Aggregate Barging

The barging trials demonstrated that barging is not commercially viable at present. Once Leach realised that the barging would not be commercially viable they approached Environment Waikato (EW). EW saw merit in the project and proposed it to Transfund for inclusion in the National Land Transport Programme (NLTP) in the Alternatives to Roothing output class.

An evaluation was undertaken August-October 2003. This evaluation was in terms of Transfund's Evaluation Procedures for Alternatives to Roothing (EPATR) and Transfund's Programme and Funding Manual (P&FM). The New Zealand Transport Strategy (NZTS) had been released at the end of 2002; the evaluation also addressed the issues raised by that document. The evaluation was based on an ongoing subsidy over 25 years and considered costs and benefits over the 25 year analysis period.

One of the elements of the evaluation is savings to government in road maintenance and capital expenditure. As all the roads involved are State Highways Transit New Zealand's (Transit's) regional office was approached for assistance with estimation of the savings. Transit reviewed the government cost saving figures in the evaluation and advised that they believed that the government cost savings had been significantly over estimated. Transit provided estimates that were substantially less than the estimates in the evaluation and substantially less than the Road User Charge (RUC) paid by the truck and trailer units. This appeared to be an anomaly as RUC is (in theory) the individual vehicles share of the cost to government of providing the road network.

There could be a number of reasons for this difference. The traffic volumes on State Highways are high; consequently the cost per vehicle could be low on State Highways. However the substantial capital expenditure being budgeted for the Auckland region over the next ten years suggests that the capital cost component should be higher than it would be in other regions. RUC is calculated on a fully allocated cost basis and the savings to government of road maintenance and expenditure from removing trucks from the road would be the short run marginal cost rather than the fully allocated cost. However the short run marginal costs are understood to make up the majority of the fully allocated costs.

Auckland Regional Council staff were very helpful, assisting with the estimation of travel time savings on the Auckland Motorway system that could be achieved by removing the quarry aggregate truck and trailer units from the traffic stream.

Political support was obtained from the EW Regional Land Transport Committee (RLTC), who were (and continue to be) a prime driving force behind the project, and the Auckland Regional Council.

The final evaluation report and request for funding were submitted to Transfund in October 2003. Transfund arranged a peer review of the evaluation, which resulted in a small change to the calculated Efficiency Ratio (ER). The funding request was for 100% (in accordance with clause 8.4.1 of the P&FM). Transfund management asked if EW would consider contributing “local share”. EW replied, drawing attention to Transfund policy which states that *“benefits that accrue to State Highway will be funded at the State Highway FAR”*.

EW expected that the funding request would be considered by the Transfund Board at its December meeting. They were subsequently advised that the request was not put to the December meeting as Transfund were awaiting advice of Transit’s support for the project.

Further discussions were held with Transit head office staff and with Transfund. Differences between fully allocated costs, short run marginal costs and long run marginal costs were explored. The outcome was agreement on a methodology of estimating saving to government of road maintenance and capital expenditure that gave an answer that was of the same order as the RUC. Transit head office wrote to Transfund advising that the methodology used in the evaluation to estimate government cost savings *“represent good industry practice, reflect the current state of technical knowledge and are appropriate for the task and that Transit is comfortable with the estimation of the net savings to government including road and construction”*.

Following the December Board meeting Transfund advised that they are reviewing their ATR Freight projects funding criteria.

In January EW were advised by Transfund that their management team have requested that the “Government Cost Savings” of \$890,000 pa identified in the evaluation be deducted from Transit’s future maintenance budget; that this be a condition of funding and asking whether this was acceptable to EW and Transit. Further discussions were held with Transit and Transfund. The outcome of these discussions was that Transfund accepted that Transit’s annual maintenance funding requests are “zero based” and decided not to pursue the proposed condition.

The Road Transport Forum (RTF) has been a staunch opponent of the bargaining proposal. In February the RTF representative on the EW RLTC wrote to the committee questioning a number of aspects of the evaluation and of Transfund’s policy. The RLTC were not inclined to alter their support for the proposal.

Also in February EW were advised that the RTF national office had commissioned McKenzie Podmore to review the evaluation and that there were some issues arising from that review. A copy of the McKenzie Podmore review was provided; it contained thirty-seven separate points that queried or disagreed with the evaluation. Each of these points was responded to individually. Subsequent advice from McKenzie Podmore was *“We accept that the consultants who have undertaken the analysis have considerably more familiarity with the detail of the proposal than we have and that their analysis is diligent and that it follows the ATR rules”*. The RTF’s covering note indicated that they continue to strongly oppose the proposal.

Transfund then advised us that the project had been considered by the Board at its February meeting and a number of concerns had been raised. These were a mix of project related issues which were for the applicant to respond to and wider issues that were for Transfund

staff to address. A response to the project specific issues raised by the Board was prepared. This took several months, as there were some issues associated with the confidentiality of commercially sensitive information requested by Transfund and these had to be worked through.

Transfund then required that the project be assessed under the Transfund Allocation Process (TAP). At that stage the TAP was a new process and there was little experience of its application. The TAP forms were completed and sent to Transfund.

A further Transfund requirement was that the proposal be assessed against the National Energy Efficiency and Conservation Strategy (NEECS). A copy of the evaluation report was sent to the Energy Efficiency and Conservation Authority (EECA) with a request for comment concerning consistency with NEECS. EECA wrote to Transfund advising that *“EECA considers that the Kopu Barging ATR proposal is consistent with the NEECS and the transport sector action plan. More specifically we consider that the proposal supports the strategies commitment to develop Energy Efficient Modes. Barging appears, in this case, to be a less energy intensive form of transport than the alternative. Additionally the project is supportive of Pricing and Energy Efficient Road Networks and Traffic Management action points of the transport sector action plan”*.

Transfund then advised us that the project had been further considered by the Board at its April meeting and the Board had resolved to receive the submission and keep it in confidence until a decision is made. This Board meeting raised two new issues, which were:

- *“The Board wants to look at what options are available for public sector involvement in the transport of aggregate and what other mechanisms are available for achieving this investment.*
- *Transfund perhaps preferring to put money into barging terminals at both ends and having it available to all commercial companies”*

The first dot point above related to the Board’s concern about interfering in a product market. The second dot point seemed to miss the point that the terminals are existent and that it is the barge operator cost that need subsidy to make it viable. The advice from Transfund included *“The Board is still positive about ATR”*.

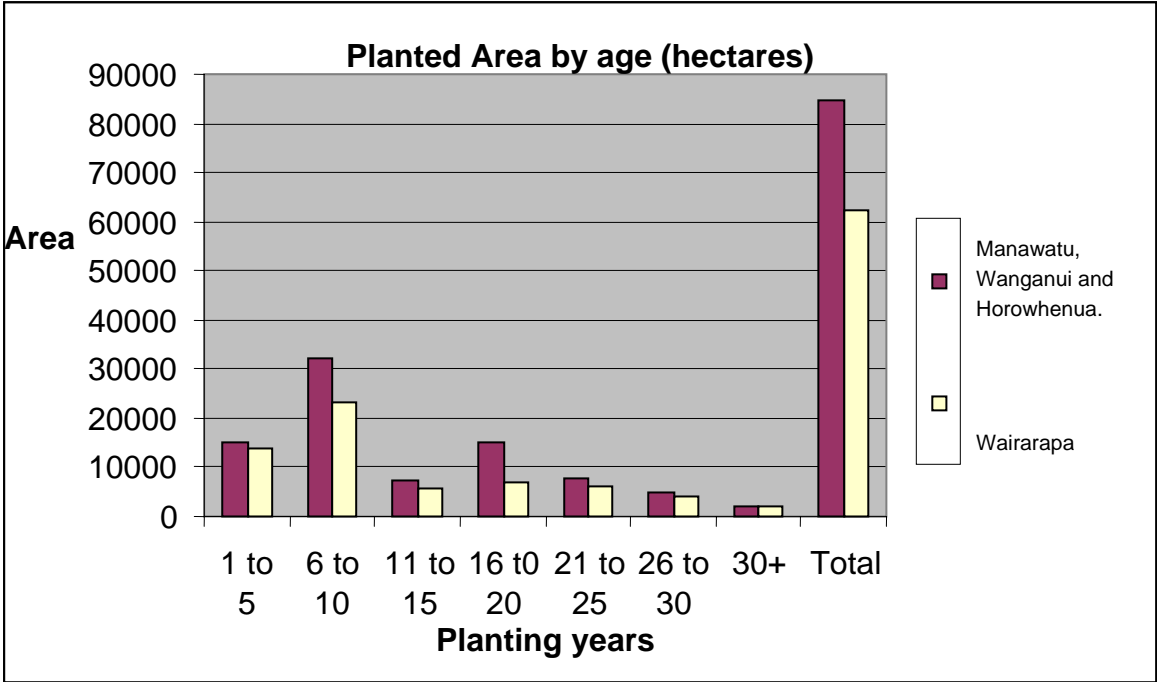
At a meeting with Transfund staff in June the applicant was advised: *“Transfund are not sure what the current ATR funding criteria are and Transfund has not set a clear road to get to a decision”*. Transfund’s view was explained as being that there is general lack of clarity around freight policy and that it is unlikely to be resolved until other public sector freight issues, primarily rail, are resolved. The ability of Transfund to give clear decisions on these proposals has been hampered by the lack of clear policy on freight from the government.

The possibility of EW (as a public body) holding the barging contract and making use of the barge available to all commercial operators was mooted.

Recent verbal advice is that freight ATR policy is evolving to consider favorably proposals that require initial subsidy to get them started and then achieve commercial viability. The Kopu Barging proposal is currently being reexamined by the applicant in light of this advice. It is thought that economies of scale could allow commercial viability to be achieved in about 3 years.

**Central Log Rail
Proposal Description**

The expanding tree planting programmes of the last 30+ years in the Southern North Island region has resulted in the creation of a significant forest resource, totalling around 147,000 hectares in the Wairarapa, Wanganui, Manawatu and Horowhenua areas. Although the forest is still heavily weighted to the younger age classes, the planted area maturing over the next few years will increase steadily. The graph below is taken from recent national planting area data (March 2003), published by Ministry of Agriculture and Forestry.

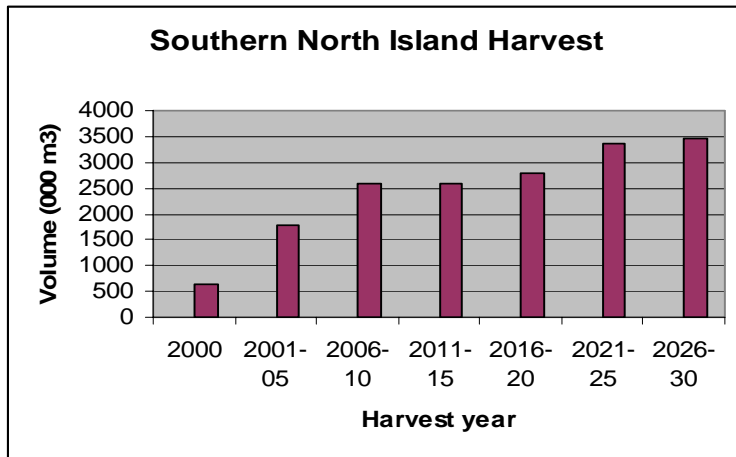


The harvest from the maturing forest area will increase significantly, doubling from the present level of around 1 million cubic metres a year within 5-6 years, and steadily climbing to over 3.5 million cubic metres a year by the mid 2020s. The first stages of this expansion are already well underway; for example the volume being transported to the Port of Wellington for export in log form has increased markedly over the last three years (YE June 30, 2001 – 138,000 m³; 2002 – 174,000 m³; and 2003 – 203,000 m³).

Export of logs (as opposed to manufactured wood products) reflects the fact that wood processing capability in the region has not kept pace with harvest volumes, a situation shared with other regions around New Zealand. Export of a significant percentage of the total harvest as logs in the “raw” form is unlikely to change in the near future as lack of infrastructure and difficult international markets for wood commodities are unlikely to encourage the necessary new wood processing investment in the short term.

In the even shorter term (1-2 years) almost all of the increased harvest is likely to be exported in log form as processing capability does not have the ability to expand beyond existing levels of production without significant further planning and other approvals.

Harvest volume forecasts derived from MAF data published in March 2003 are illustrated below.



In addition to the shortage of wood processing capability to handle these volumes, there are a number of other infrastructural problems. Paramount amongst these is highway capacity to handle the structural loading, safety and traffic flow associated with the transport of logs in these quantities.

CentrePort operate the only port operation in the Southern North Island, being more than 325 km by road from either east or west coast alternatives (New Plymouth and Napier).

The port is the terminus for both major North Island road and rail routes and for inter-island traffic, and is also the major export/import facility for this part of New Zealand. Facilities are good with an 11m draft able to handle any demand likely to be posed by log export shipping. The port is already an established log export facility; other forest produce from regional wood processors is also exported here.

Its location in relatively close geographical proximity to Picton and Nelson, which are also major log export ports, enables multiple port loading to occur with minimal delays and increased frequency of uplift.

CentrePort Limited (CPL), Toll Rail Limited (TRL) and Pentarch Forest Products Limited (PFP) have jointly given consideration to proposals to provide efficient alternative transport of logs from both western and eastern parts of the Southern North Island (especially Wanganui, Manawatu and Taihape-Waimarino areas), and from the Wairarapa to the Port of Wellington.

The three parties have agreed to utilize their capability and combine their interest in a joint venture/partnership basis to increase the volume of logs and associated forest produce carried by rail to the port, and in the process lift the volume of these products shipped through the port of Wellington.

This involves establishment of log storage and loading facilities at centrally located rail-yards in both areas, and direct daily rail transportation to the export wharf. The rail-yards will initially be at Masterton, Marton and Wanganui respectively, but other locations may also be considered. To be effective the rail alternative must be cost competitive against road transport, taking into account the additional loading and unloading costs, and must be secure given the varied ownership of logs likely to be carried. The expectation is that there will be a

behaviour change cost in the initial years of operation. The subsidy requests largely relates to the behaviour change costs.

The project will be implemented as follows:

- Establishment of a joint venture company (“Central Log-Rail Limited”) to operate a one-stop (from regional log yard to on-wharf Wellington) transport service for logs and other forest produce. The members of the JV Company will be CPL and PFP initially.
- The JV Company to contract with Toll Rail for the provision of competitive rail transport services to the port of Wellington, and the provision of suitable land for operating regional log storage yards. Toll Rail will supply initial rolling stock (eight wagons).
- PFP will, on behalf of the JV, provide yard operating and cleaning services and to otherwise administer and promote the service in the regions, and acquire wood directly at the yard where this will facilitate an increase in the throughput volume.
- CPL will provide priority unloading area and storage for logs delivered to the port by rail.
- The JV Company to seek support for the operation of the service from Alternatives to Road funding sources provided by Transfund through local Government agencies.
- The JV Company will meet the cost of rolling stock (other than the first eight wagons that are to be provided by Toll Rail).

In addition log exports the Port handles 150,000 tonnes of wood-pulp per annum (mostly ex Winstone Pulp Industries mill at Tangiwai) and 85,000m³ of laminated and veneer products from JNL’s plant at Masterton. In addition approximately 40,000m³ of sawn timber is currently exported through the Port per annum. This is handled both by CentrePort, and Capital City Stevedores who have an operation at the port. This total includes volume from WPI Tangiwai, Taranaki Sawmills and Eurocell’s mill in Upper Hutt. Total processed volume is accordingly around 275,000 tonnes per annum. Both JNL and WPI have their own load out facilities and utilise rail extensively, however this is not the case for new facilities, which will tend to locate near to and utilise efficient transportation services.

Distribution of the resource around different parts of the Southern North Island region is relatively uniform with around 50% of both log production and 50% of wood product coming from the Wairarapa. This situation will not change too much as both forest area and age class is similar either side of the Tararua Range. The big surge in harvest volume occurs over the period 2006-2010, and it is likely much of this volume will be exported in log form while development of new wood processing facilities catches up. Longer term the volume of logs exported in unprocessed form should diminish as more processing capability is commissioned.

Table of Expected Rail Transfer to Port of Wellington from Nominated Depots - (,000 tonnes/ annum)

Period	Masterton		Marton		Wanganui	
	<i>Logs</i>	<i>Wood Products</i>	<i>Logs</i>	<i>Wood Products</i>	<i>Logs</i>	<i>Wood Products</i>
2004	60	15	60	20	20	20
2005	80	20	60	20	20	20
2006	100	25	60	20	20	20
2007-11	250	200	250	250	150	150
2012-16	200	200	200	200	150	200
2017-21	150	250	200	250	150	200
2022-26	150	250	200	250	150	250
2027	100	250	200	250	150	250
2028-30	100	300	150	300	100	300

Successful establishment of this operation will remove significant volumes of log truck from the State Highway network in the southern North Island



Case Study – Central Log Rail

The business plan prepared by the JV participants indicated that subsidy would be required for the first three years of operation. The subsidy is in effect a behavior change cost.

The proposal was evaluated in terms of the EPATR and the NZTS objectives between August and November 2003. The evaluation was based on a 3-year subsidy and a 25-year analysis period and produced a healthy ER. Road user Benefits were estimated from modeling undertaken by the Access Planning Group at Greater Wellington (GW).

Transit's regional office was approached and provided a letter supporting the proposal.

Support for the proposal came from both the GW RLTC and the Horizons MW RLTC. The support from the Horizons MW RLTC was limited to in principle support for further investigation. Transfund indicated to the committee that some form of local contribution to the funding could be expected.

Transit's regional office provided a letter of support for the project stating: *"In principle Transit supports the use of existing rail infrastructure to transport large volumes of freight. This benefits the safety and efficiency of the State Highway system by reducing the numbers of heavy vehicles that would otherwise have to use the road to transport product to port or to processing centers. Less log traffic on key network constraints such as the Rimutaka Hill Road would be particularly beneficial as providing additional road capacity and passing opportunities is technically challenging and expensive"*.

The funding request was considered by the Transfund Board at their December 2003 meeting. The Board resolution was to: *"request the CE to develop a draft policy for funding or not funding rail freight and notes that, pending policy approval, no rail freight projects will be processed by Transfund"*. Transfund's letter advising of the Board's decision included *"The timing of the development of Transfund funding policy will be dependant to a large degree on the timing of TrackCo decisions on access charges and any government announcements on rail policy. Given these constraints, it seems unlikely the Board would be in a position to consider any rail freight applications before July 2004"*.

Given that the policy development process usually requires (as a minimum) initial policy development, consultation, policy refinement, followed by Board approval, and that the process was unlikely to start until there was clarity around the question of Governments involvement in, desires for and policy around the wider rail freight question it appeared that this proposal would not progress in the short term.

In April Transfund contacted GW and advised that the application could proceed forward. At this time Transfund forwarded comments on the evaluation from their peer reviewer.

In May Transfund requested a CEO-to-CEO meeting with CentrePort. At this meeting Transfund explained that the project meets a number of the government's transport objectives and that Transfund's attitude is to find a way to fund it.

The funding application was reconsidered by the Transfund Board at their July meeting. The Board opted to seek further information as the ER was close to 1 and because of possible questions related to the business case.

At one stage during the process it appeared that the ER might be less than 1 (on a 3 year basis). Transfund asked GW if they would be prepared to contribute local share to bring the ER up to one. As further traffic modeling showed that the ER was not below 1 the question was not answered.

The statement that the ER is close to 1 is based on considering the costs and benefits over 3 years. If a 25 year view is taken the ER is considerably greater than 1.

Recent Developments

In August Transfund made available for comment their draft “Interim Mechanism for Funding Alternative (non road) Freight Operations”. This mechanism substantially clarifies Transfund’s position and requirements. Once adopted as policy it will give applicants clear guidance as to Transfund’s funding criteria.

Conclusions

From an applicant’s or evaluator’s view point there appear to be some differences in the Transfund funding approval process applied to these two ATR freight applications.

There is a lack of clarity around exactly what features Transfund desires in a freight ATR funding application (noting that the previous Alternatives to Rooding Output Group is now included in the output group titled Travel Demand Management, Rail and Barging (ATR)).

Transfund’s assessment procedures applied freight ATRs are still developing. Once the “Interim Mechanism for Funding Alternative (non road) Freight Operations” are adopted as Transfund policy the delays and frustrations experienced with these two applications are unlikely to be repeated.