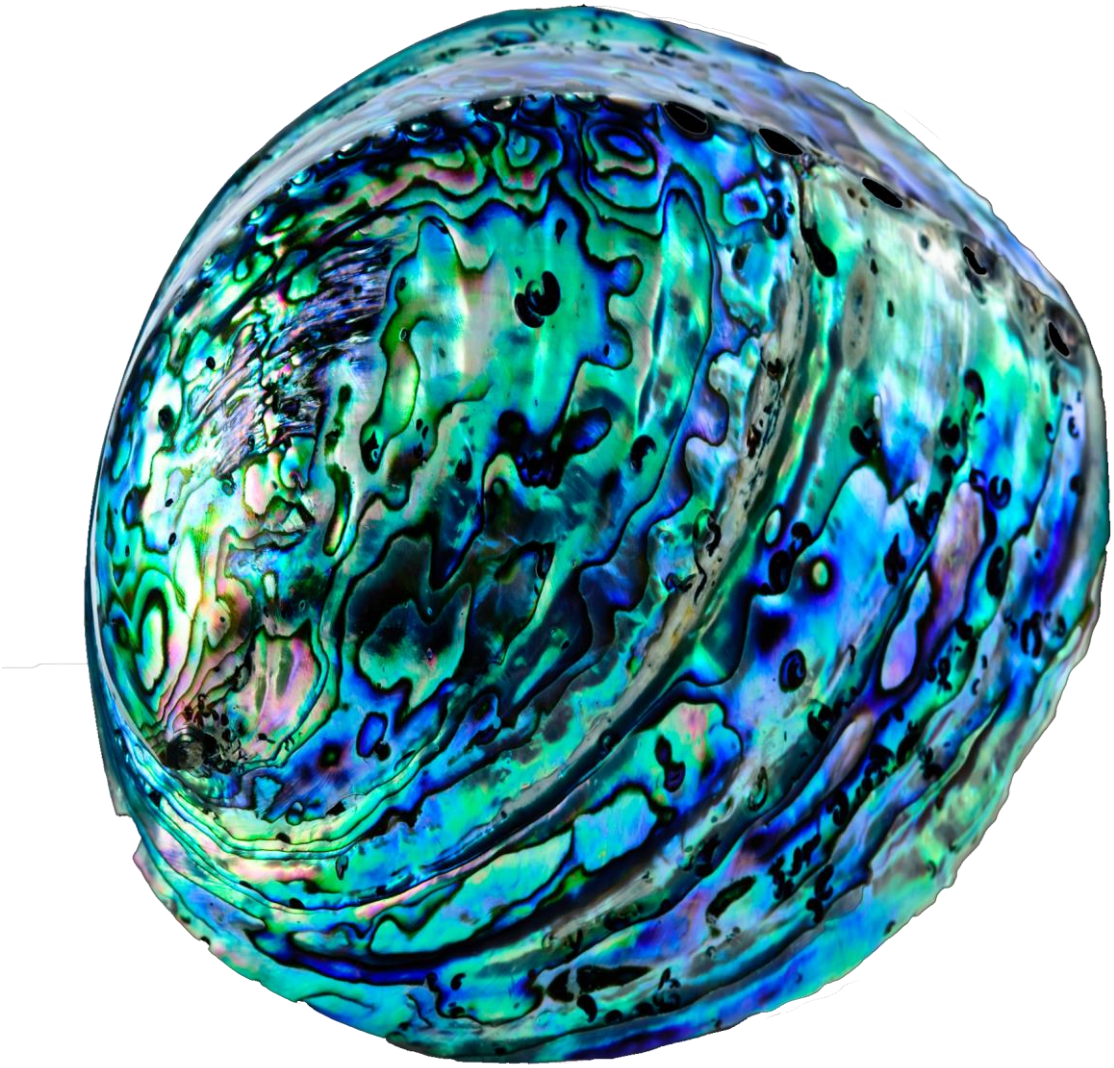
Deloitte.



Te Araroa Port Development

Final Report

Te Rimu Trust

October 2017

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E tipu e rea mō ngā rā o tō ao

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Ko tō wairua ki tō atua, Nānā nei ngā mea katoa

Me mihi ki te Atua, nāna nei te tīmatanga me te whakamutunga i nga mea katoa. Kororia ki tōna ingoa tapu.

Ki te hunga mate, rātou kua huri ki tua o te ārai, haere, haere, haere atu ra. Moe mai i te poho o Papatuanuku.

Ki a tātou te hunga ora, e hāpai nei i ngā take o te āo Māori, tēna tātou katoa.

Nō reira, he mihi maioha tēnei ki a koutou ō Te Rimu Trust mo tēnei tono ki te tuku awhina ki a koutou i roto i ōu nei mahi rangatira.

Ka hoea te waka e mātou i tō taha.

Nō reira, tēnā koutou, tēnā koutou, tēnā tātou katoa.

Glossary

AMG	Ata Marie Group Limited
BBC	Better Business Case
CAPEX	Capital expenditure
MCDA	Multi Criteria Decision Analysis
GMT	Green metric tonne
MBIE	Ministry of Business, Innovation and Employment
NZTA	New Zealand Transport Agency
OCEL	OCEL Consultants NZ Limited
OPEX	Operating expenditure
Opus	Opus International Consultants Ltd
SOC	Strategic Outline Case (Business Case)
Te Rimu	Te Rimu Trust
WACC	Weighted Average Cost of Capital

List of Figures and Tables

1. Executive Summary

This report summarises Deloitte's Phase 1 review findings and recommendations in relation to the Te Rimu Trust's (**Te Rimu's**) proposed development of a port facility at the mouth of the Karakatuwhero River, Te Araroa.

Our Phase 1 scope of works included review of feasibility reports commissioned to date by Te Rimu. We have undertaken a gap analysis in relation to this information and make recommendations on next steps, including presentation of this opportunity within a Better Business Case (BBC) framework. A financial assessment including scenario-based and sensitivity analysis has also been undertaken. We have not attempted to verify information provided to date or otherwise address identified information gaps.

Research conducted by SCION has forecast a material increase in the volume of plantation forestry available for harvest in the East Cape in the coming years. The Te Rimu Trust has commissioned several different organisations, including Opus, OCEL Consultants Ltd, Ata Marie Group Ltd and Fulton Hogan to provide preliminary feasibility and cost / benefit appraisal of the proposed port development. Collectively these reports examine port development costs, potential transportation savings and indirect benefits of the proposed development, relative to the current method of transportation by road. While these reports provide a useful background to the project and key aspects of the costs and benefits, we note that they are highlighted as preliminary in nature by their respective authors, do not address all costs associated with a port development and in some cases apply inconsistent assumptions.

Our preliminary financial analysis highlighted variation in assumed development costs, operating method and the sensitivity of project economics to variation in operational costing and volume assumptions. Further work is recommended to refine these assumptions, address costing gaps, and develop a business case that is appropriate to share with potential Government partners.

In addition to the emerging financial case, a previous report by Opus also highlighted the upper limit of wider economic benefits could be in the order of $165m, which is many times the probable capital cost of the project, indicating that there may be a case for public sector involvement. We suggest the next phases frame this around a Better Business Case approach, particularly around a strategic case, narrative, investment logic mapping and engaging with wider stakeholders.

Financial analysis illustrates that applying a weighted average cost of capital (WACC) rate of 10%, the required return / revenue on investment per GMT ranges between $33.84 to $34.20 (reflecting the range of capital and operating costs provided). This compares to $38.61 per green metric tonne (GMT) cost for road transport - presented in the Ata Marie Group (AMG) report as the existing road transport cost hurdle. These results, while encouraging, should be viewed as indicative only, reflecting observed data limitations and the likelihood that any port development would have to offer savings in addition to an existing proven land based logistics solution to attract exporters. Prior research reports commissioned by Te Rimu have assumed an annual log throughput at the proposed port of 600,000 GMT. For comparison purposes, in Appendix F, we have also conducted additional analysis that assumes an annual log throughput of 350,000 GMT. Applying this log volume assumption, the average cost per GMT equates to $37.26, which still falls below the $38.61 GMT for the existing road transport cost hurdle.

The key cost of service drivers include port development costs, operating costs, volume of wood transported via the port and the assumed return on investment. Scenario analysis undertaken to date demonstrates that assumed log volumes and operating costs have the most material impact on the competitiveness of the proposed port development. An increase in operating costs of 10% adding $2.94 per GMT and a decline in assumed log volumes of 10% adding $3.36 per GMT assuming all other parameters remain constant. We note also that potential for movement in key assumptions are not mutually exclusive and therefore the potential effect is cumulative.

Phase 1 analysis does not include consideration of the potential to export aggregates or other land uses, such as tourism activities, which may materially improve the forecast economics of the port. Opportunities for incremental volumes should also be further assessed.

Our desktop review of historical analysis undertaken on the Te Araroa Port development, in addition to our financial / sensitivity analysis, has provided the basis for undertaking an initial gap analysis. Key areas of focus are highlighted in the following image with a more detailed gap analysis assessment presented in Section 6.

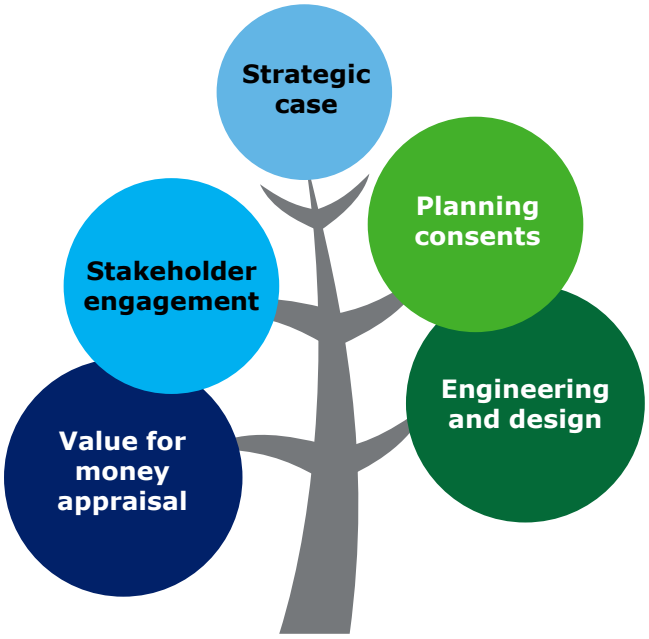


Figure 1: Summary of key gaps

A range of reports have been undertaken so far to explore the viability of developing a port at Te Araroa. Further work is required to refine key costs, revenues and assumptions as well as gauging support from key stakeholders, in order to present a strong case for investment to potential Government and private partners. We have identified some questions and information gaps that need to be refined/addressed to support further financial analysis and a full business case.

In summary, analysis conducted to date supports the progression of this project to the next stage of review and that the Te Araroa Port Development project could potentially be an exciting opportunity to generate meaningful cultural, social and economic benefits in the East Cape region.

2. Scope & Approach

2.1. Scope of Works

Deloitte has been engaged by the Te Rimu Trust (Te Rimu) to assist in reviewing reports it has commissioned in developing its understanding of the proposed port development at the mouth of the Karakatuwhero River, Te Araroa, East Cape. The proposed port development has been identified as a potentially cost-effective logistics option, incorporating the transportation of logs by barge, relative to existing transportation exclusively by road to export ports.

The scope of our engagement included the review of existing reports and financial analysis completed to date and the identification any gaps or information requirements to support development of a detailed financial and economic case to attract investment. We also examined the potential indirect costs and benefits of the proposed development and present a framework needed to move towards a strategic outline case (SOC).

This engagement has been performed subject to our Letter of Engagement (dated 25 October 2017) and Deloitte's Master Terms of Business.

2.2. Approach

Our approach to this engagement is summarised in the below figure 2. The scope of our work and this report relate to Phase 1 (the blue section) only.

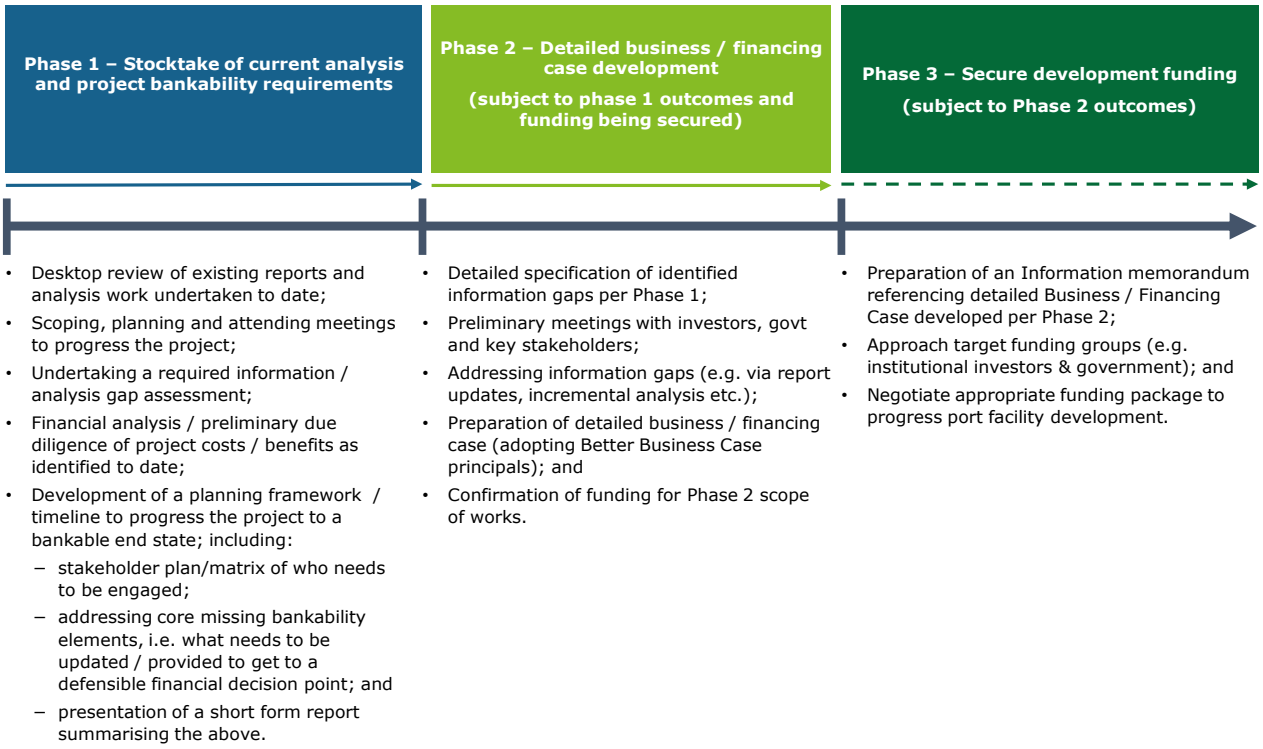


Figure 2: Project phasing

3. Background to Project

Significant volumes of wood will be available to be harvested across the east coast of the North Island of New Zealand, including the East Cape, in the coming years. Te Rimu has commissioned a number of studies to explore the feasibility of developing a barging operation to accommodate this increase in logging and to mitigate the associated growth in road transport in the region. A port development at the mouth of the Karakatuwhero River in Te Araroa has been identified as potentially providing benefits to the trust, providing transport cost savings, as well as generating wider economic benefits.

3.1. Te Araroa Port

Te Araroa is located at East Cape in the Gisborne region.

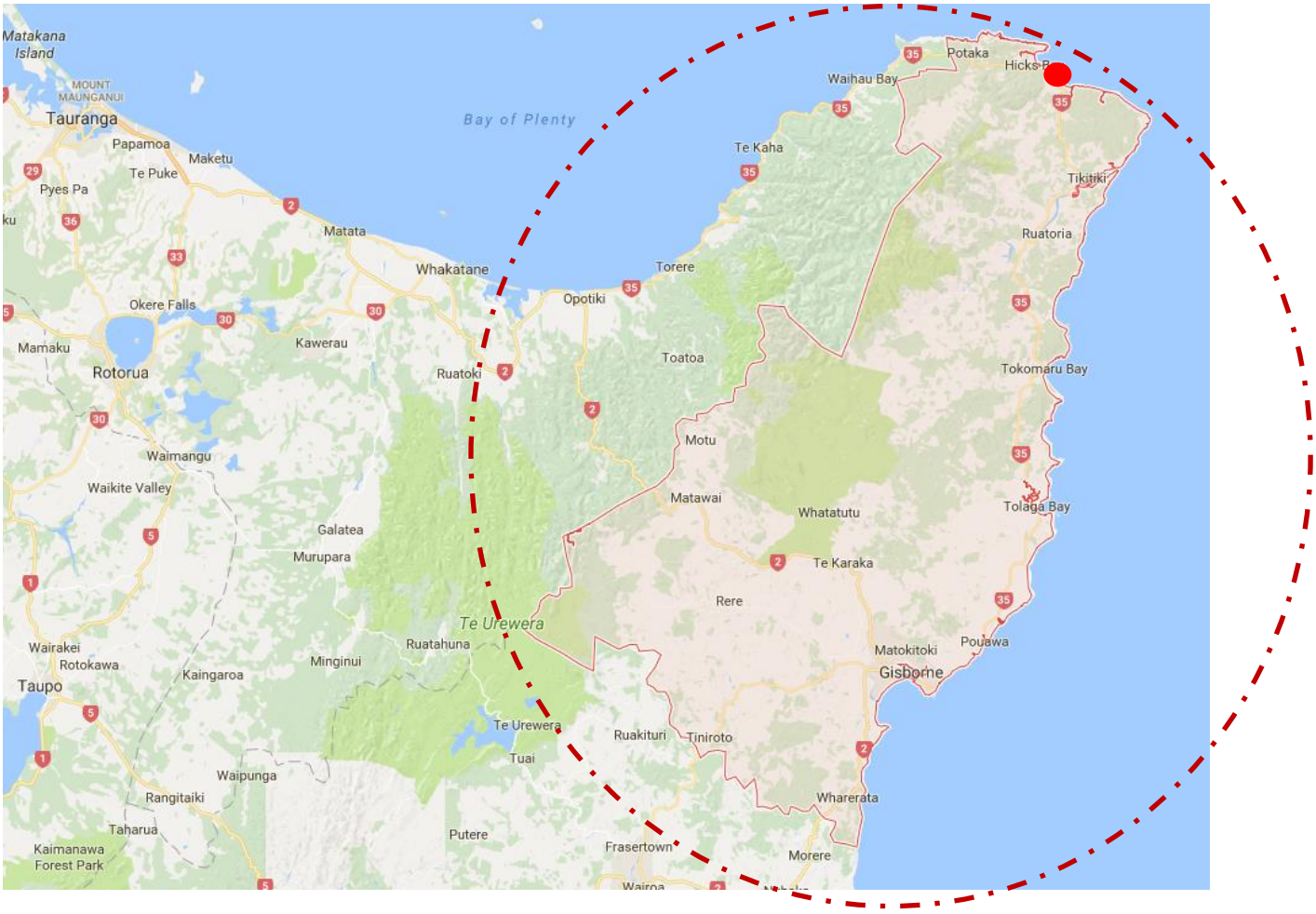


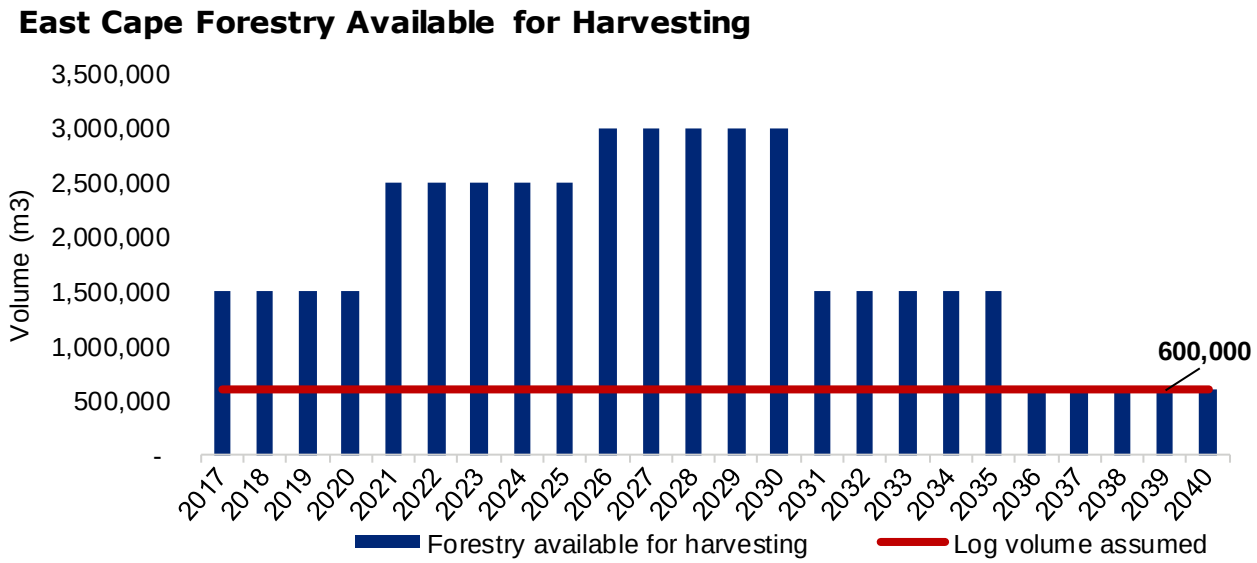
Figure 3 – Te Araroa Port (red dot) in the context of the East Cape Region

The viability of developing a barge port facility at Te Araroa, for the purpose of transporting log volumes, has been considered over a number of years and in previous studies. A study undertaken by OCEL Consultants NZ Limited (OCEL) in 2015, highlighted that barging studies covering the East Cape (Te Araroa) and Coromandel had been conducted in the 1980's, in addition to barging options being considered at the nearby Hicks Bay location (2000).

The existing method of transporting East Cape log harvests for export is via road to the nearest port. Most of the export volume passes through Eastland Port (Gisborne Port) with a lesser proportion also transported to Port of Tauranga. Logging traffic is however placing significant strain on existing roading infrastructure into Gisborne, a situation that will worsen with forecast increases in harvesting.

Local economic conditions also lend support to investigation of a port development and the potential to exploit logging growth, via the creation of related jobs and the need for supporting businesses.

An illustration of available log harvest volumes in the East Cape is illustrated in Figure 4 below. It presents the total harvestable volume per annum, against the assumed log volume throughput as set out in the OCEL report.



Source: Opus International Consultants Ltd

Figure 4 – East Cape Forestry Available for Harvesting

The forestry industry has been identified as a key driver of employment in the region, with forecast growth of 50-75% over the next five years (Tairawhiti-Gisborne Labour Market: Future Sector/Regional Workforce Growth, Issues and Support Opportunities October 2016) the potential exists to almost double employment in the region, when direct and indirect employment opportunities are considered. The NZTA has also noted that parts of the highway network in the Gisborne Region lack the capacity to handle the expected increases in freight demand.

The market is already beginning to react to this forecast harvest growth. An Eastland Port analysis of the East Cape forestry industry has identified that harvests will likely peak between 2025-2030 (Gisborne Council Infrastructure Strategy), at double today's production volume and the Port has announced plans to invest $70m over the next 5 years to enable twin berthing of log vessels, increasing its capacity from 2.9m tonnes to 5m tonnes per annum.

There has been significant variability in new forest planting in NZ. This has resulted in an irregular pattern in the maturation of harvestable forest areas in the East Cape.

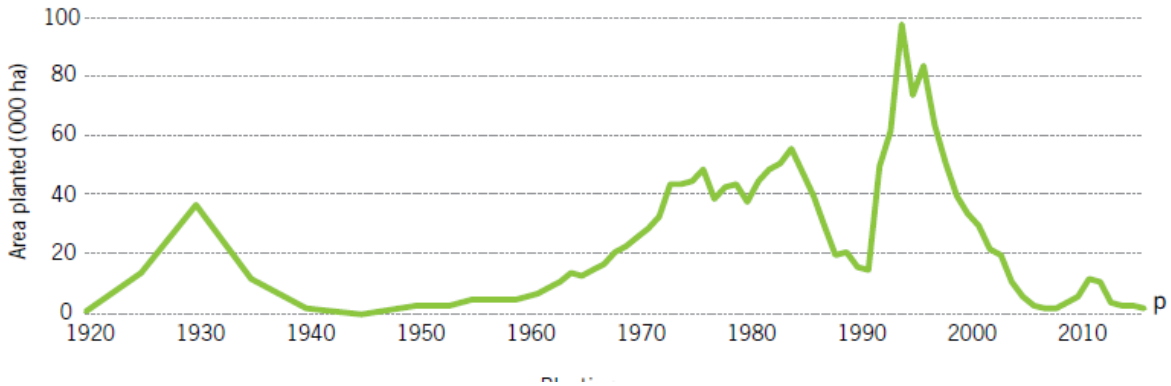


Figure 5 - New Forest Planting 1920 - 2016 (source: National Exotic Forest Description 2016)

Log transport forms a large portion of the cost in bringing timber to market. Reducing these costs through a more accessible port location could improve the productivity and cost competitiveness of the East Cape forestry industry.

Increasing the forestry stock could have a number of wider benefits such as such as reducing erosion, offsetting carbon emissions and improving biodiversity all of which are Government objectives and could theoretically reduce spending by authorities such as the Ministry of Primary Industries improving the value for money proposition.

The current phase of investigation into a proposed barge port development is part funded by the Ministry of Business, Innovation & Employment (MBIE) through the Te Pūnaha Hiringa: Māori Innovation Fund.

4. Review of Current Analysis

4.1. Overview of Existing Information

Te Rimu have previously engaged OCEL, Ata Marie Group Ltd (AMG), Opus International Consultants Ltd (Opus), Fulton Hogan and SCION to provide:

- A high-level engineering study of the feasibility and design of the proposed port facility (OCEL);
- A review of the main barge types suitable for the proposed port, associated log handling and shipping operations, and cost estimates of barging (AMG);
- A study of potential social benefits generated if log harvests were to be transported by barge via Te Araroa port, rather than via road (Opus);
- An indicative port construction cost estimate (Fulton Hogan); and
- Analysis of the potential log harvests within the Te Araroa catchment (SCION).

The above studies were developed in a sequential manner building upon previous analysis. The key outputs of each study are summarised in the following sections, with a timeline presented in figure 6 below. We note that while prior studies do exist, we have only reviewed those shown to the right of the green dashed line.

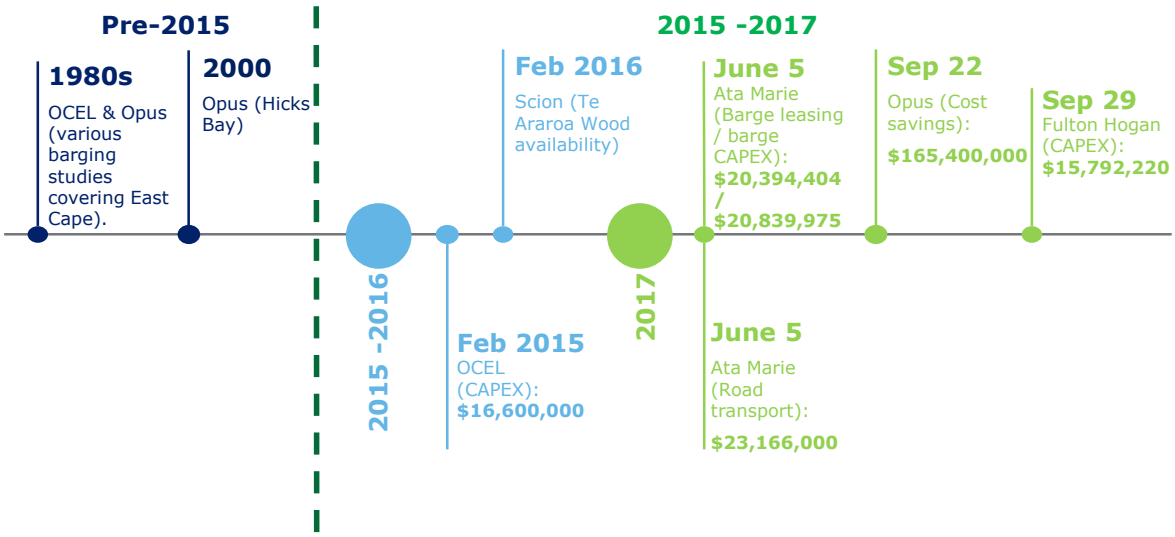


Figure 6 – Summary of Previous Studies/Research Inputs

4.2. Te Araroa Barging Harbour & Offshore Loading Proposal – OCEL Consultants NZ Limited

The 2015 OCEL technical study was a development of previous work, building on the recommendation of a 'Barging Harbour Concept' design to accommodate a single berth for a barge up to 100m in length. Significantly, the three subsequent studies based their analysis on this initial high-level design (as shown below in figure 7).

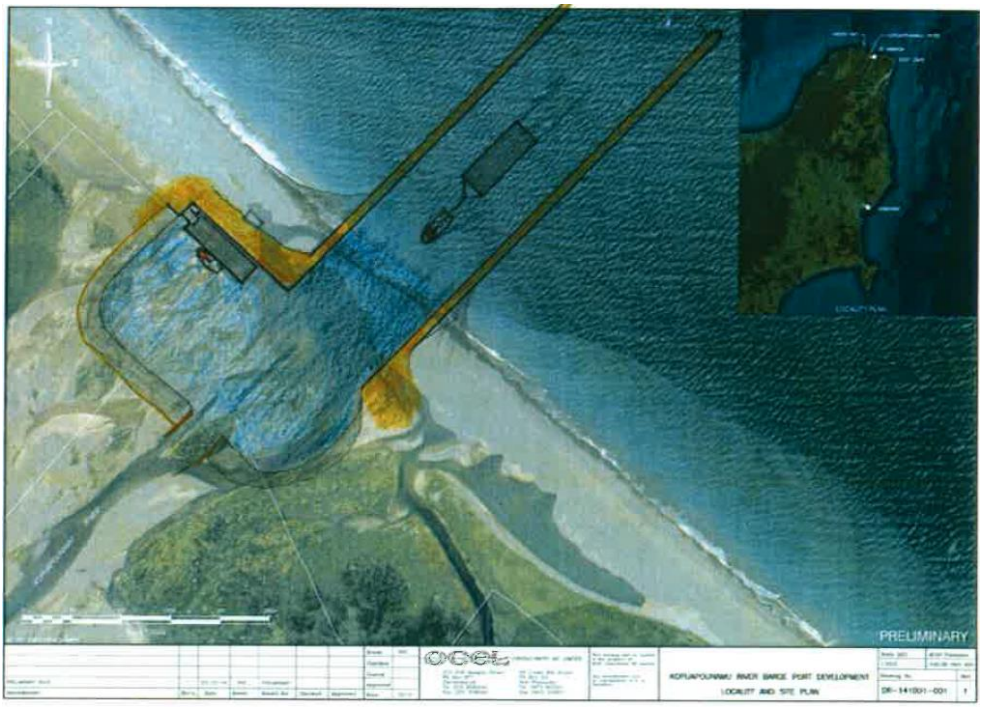


Figure 7 – High Level Summary design from OCEL

Reference to two other project options were also made, these included; a bridge out to an artificial island and, use of the Hicks Bay Wharf. The former was discounted due to "inordinate costs", and the latter also given a complete rebuild would be required, which coupled with Te Araroa's superior location, led to Te Araroa being recommended as the preferred port option.

A key consideration of feasibility of a port in this area is the local marine conditions. OCEL commissioned an analysis of the Wave Energy Environment which concluded that 400m breakwaters at 4m (above Chart Datum), would be beyond the surf zone for 95% of the time, defining the parameters of a key cost component of the port.

The estimated total costs for Te Araroa port are set out below. OCEL also provided a costing estimate for additional offshore loading infrastructure (a single point mooring), which would allow for direct log transfer to export vessels, potentially generating further efficiencies.

Capital Cost Estimate for Port Construction - OCEL

OCEL Report Cost Estimate

$	
Breakwater Construction	9,600,000
Dredging	3,000,000
Quay faces	2,000,000
Port hardstand, offices	2,000,000
Total	**16,600,000**
Offshore loading Infrastructure	2,500,000
Allowance for line vessel	500,000
Total inclusive of offshore	**19,600,000**

Source: OCEL Consultants NZ Limited

Table 1 – OCEL Report Development Cost Estimates

It is not clear whether or not the costs provided are inclusive of risk/contingency, or what base year the prices are provided in. There is also no reference to professional fees (for example design costs) and other costs such as those required in gaining consents, therefore it is assumed that these costs are excluded.

Key outcomes from the OCEL report include:

- Construction of a port facility at Te Araroa is feasible;
- The marine environment is suitable for port operations;
- Local aggregate material is assumed available and suitable for construction of the port, reducing costs by $4.8m per breakwater;
- A throughput of 600m^3 p.a. is considered achievable;
- Weather related downtime is estimated at 25%;
- Export of local aggregate was identified as a commercial opportunity;
- A detailed quantitative assessment of littoral sand drift volumes will be required to assess potential for sand build-up and / or undermining of breakwaters;
- Based on wave data analysis, an off-shore mooring ship loading option would provide loading availability better than 50% (possibly up to 70% in summer months);
- Cargo storage and marshalling areas are located on river flood plains; and
- The report recommends that a detailed environmental study is undertaken.

Key design assumptions included:

- The log and barge capacity required can be accommodated with one berth;
- A 100m long berth is appropriate for the operational infrastructure required;
- The logs will be transported (barged) to Tauranga Port, Gisborne Port or direct to vessels moored in Hicks Bay;
- Log transport is the only function the port is designed to handle; and
- Ready availability of quarry rock in the local area. The ability to quarry suitable breakwater armour rock is key to assumed costings and feasibility.

We note that there are a number of elements excluded from the design and subsequently remain un-costed, these include:

- Tug and barge capex;
- Loading equipment capex;
- Marshalling and other port operating costs.

4.3. Analysis of Barging Costs from Proposed Port on East Cape, New Zealand – Ata Marie Group Ltd

The Ata Marie Group report undertook a high-level appraisal of the operational options for Te Araroa Port, principally an assessment of whether 'Dumb' Barges or Motorised Barges should be preferred for the transportation of logs from Te Araroa. Further definition of the associated requirements to facilitate these operations was also undertaken, culminating in an operational cost estimate.

Key conclusions of the Ata Marie study included:

- The recommendation to use Dumb Barges over Motorised Barges (on a cost basis) - noting that the barge configuration / size adopted will materially affect the design of the port infrastructure;
- Barges much larger than those currently used in New Zealand may be required.
- Analysis of assets required for Dumb Barge operation:
    - Three Dumb Barges
    - One large Tug Boat
- The report suggests a different barge berthing configuration than that assumed by OCEL;
- A recommendation to load 50% of logs directly onto barges (also known as "Hot Decking") to improve efficiency and reduce handling costs;
- A recommendation that the port be designed to have a draft of 5m.
- Wider social benefits or externalities (positive and negative) that may occur, noting significant positive benefits such as a reduction in carbon emissions and safety improvements due to reduced road traffic; and
- Operating the port in the suggested manner could reduce log transport costs by approximately 12% compared to the existing road transport method (based on the current limited available information).
- The report assumed the barging of logs to Tauranga.

Operational costs estimates

Ata Maria Operation Cost Estimate

$	Cost (p.a.)	per m3	% diff to road transport model
Barge CAPEX model	20,839,975	34.23	*(10.0%)*
Barge leasing model	20,394,404	33.49	*(12.0%)*
Existing road transport model	23,166,000	38.61	

Source: Ata Marie Group Ltd

Table 2 – Ata Marie Report Cost Estimate

We highlight a number of observed and potential limitations including:

- Export of aggregate volumes has been excluded;
- Excludes a number of cost items such as refitting tug and barges to NZ maritime standards. The report notes that better estimates of cost could be obtained by engaging a marine engineer with substantial knowledge of log barge design. The report also suggests a field visit to speak to transport operators to confirm assumed transport costs;
- Excludes some costs elements of the existing road transport option such as loading and unloading of trucks;
- The potential supply chain options differ from previous reports; the potential options are the existing trucking model to Gisborne versus barging logs from Te Araroa to Tauranga rather than barging logs from Te Araroa to Gisborne;
- Log craning options are described, but it isn't clear which option is used in the estimate;
- Crew costs seem to be based on typical costs in Asia rather than New Zealand and the report raises the potential for New Zealand to be a higher cost and / or lower productivity environment – crew costs are the single largest cost in operating barges;
- Some of the referenced domestic port cost assumptions are outdated and a reduction in assumed export port fees is assumed based on no need for scaling;
- We note that the use / reliance on a single second-hand $2m tug could create risks in relation to assumed operational availability;

To better visualise the numbers in the Ata Marie report, we have produced figure 8 below.

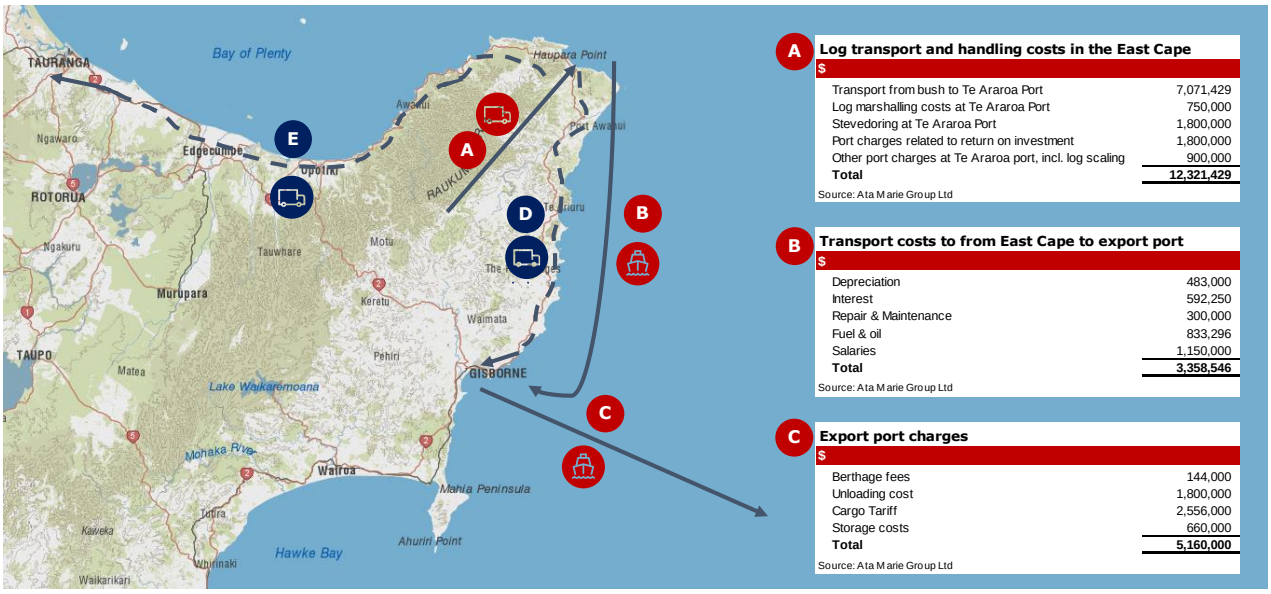


Figure 8 – Summary of costs by movement from Ata Marie Report (shown in red)

4.4. Te Araroa Barging Harbour and Offshore Loading Facility Estimate - Fulton Hogan

Fulton Hogan provided an updated capital cost estimate. It revised the cost estimate downwards and explicitly included a contingency of approximately 14.5%.

The Fulton Hogan cost estimate relates to port infrastructure development only and excludes tug, barge and operating costings.

Fulton Hogan Cost Estimate

$	
Establishment and P&G	2,000,000
Construct 5km haul road from Quarry	750,000
Win and cart armour rock to staging area	5,054,400
Win and cart core fill to staging area	590,040
Manage staging area	473,220
Construct core fill and armour rock	1,204,560
Dredging	2,900,000
Sheet piling for quay faces	375,000
Allow ance for loading ramp	200,000
Hardstand area	45,000
Compounded river bed shingle	100,000
Allow ance for office and w orkshop	100,000
Contingency	2,000,000
Total	**15,792,220**

Source: Fulton Hogan

Table 3 – Fulton Hogan Report Cost Estimate

The Fulton Hogan port costing is based on a review of the OCEL report and does not note any amendments made to the OCEL design for the purposes of their cost estimate. Therefore we assume that the same key requirements set out in the OCEL report are those used by Fulton Hogan.

4.5. Te Araroa Port Feasibility Study – Opus

Opus was commissioned to provide an assessment of the wider social benefits (externalities) likely to occur in developing the Te Araroa Port facility. These externalities (both positive and negative) covered a number of areas and were valued based on New Zealand Transport Authority (NZTA) guidance as set out in the Economic Evaluation Manual (EEM). The impacts considered were:

- Savings in road wear;
- Savings in road accident costs; and
- Savings in CO_2 emissions.

The key output of the study was a monetised appraisal of these assumed externalities, resulting in an estimated upper limit of $165.4m of wider social benefits over the appraisal period. A breakdown is shown in table 4 below.

Opus Total Wider Social Benefits

$	
Savings in road wear	58,200,000
Savings in road accidents	98,800,000
Savings in CO2 emissions	8,400,000
Total	**165,400,000**

Source: Opus International Consultants Ltd.

Table 4 – Opus Report Benefit Assessment

This analysis restricts the appraisal period to 24 years (up to 2040).

Observed report limitations include:

- Benefits are assumed to occur from 2017 with no period given for construction;
- Assumes all log volumes available for harvest by the various land owners in the catchment area, will be logged, these numbers should be treated as the upper limit;
- No replanting is assumed post 24 years;
- A number of externalities are not analysed;
- Throughput of the report is inconsistent with the existing port analysis, assuming 700m^3 p.a. compared to 600m^3 p.a.

We note that the scale of wider economic benefits identified are potentially many times the value of the project, warranting further investigation to substantiate the value and ultimately drive the case for potential Government investment in the scheme.

4.6. Assessment of the Potential Wood Availability in the East Cape Region – SCION

SCION produced a report in February 2016 with the aim of understanding the potential available log harvest in the area local to Hicks Bay.

Key report outputs include:

- A total of 64,040 ha of forest that are 21 years of age or older (planted after 1994);
- Approximately 3.8 million m^3 p.a of available harvests using the Ministry for Primary Industries (MPI) split non-declining yield scenario to smooth harvests over a 20-year period; and
- Of the above area, 18,830 ha are located within 100km of Hicks Bay, and 47,598ha within 150km.

Report limitations included:

- Notes that calculations are likely to be an overestimate due to the remote sensing tools inability to differentiate some tree species;
- The catchment is assumed to be any area where the road distance to Hicks Bay is shorter than to Gisborne, therefore a number of areas exist where there are marginal differences in distances that are included (whereas other factors may influence log transport preferences);
- Excludes the potential for road transport to Tauranga; and
- Assumes all trees are available to be harvested, many other factors relating to availability are excluded such as MPI projects to protect existing forests to limit the erosion and its negative impacts to the region.

Figure 9 (over page) shows exotic (non-native) forest areas in the East Cape region. The denser areas are nearer Gisborne Port and as such we recommend more detailed analysis is conducted on the most cost effective transportation method.

Figure 9 – Exotic Forest Area Local Geography

5. Financial analysis

5.1. Overview

Following a desktop review of the existing analysis and reports commissioned for the proposed Te Araroa port in section 4, we have conducted our own financial analysis to review and compare capital costs of developing the port facility and undertake preliminary sensitivity analysis. Our analysis is based solely on the costs outlined in each of the reports provided - CAPEX costs have been drawn from the OCEL, Fulton Hogan and AMG reports, whilst OPEX (log transport / handling, transport costs from East Cape to the export port and export port charges) numbers have been drawn from AMG.

Table 5 summarises the capital cost and operating cost estimates that have been provided by existing reports and that have been used in our financial analysis:

Summary of report cost estimates

$	
Port CAPEX	
OCEL	16,600,000
Fulton Hogan	15,792,220
Ata Marie	18,000,000
Tug CAPEX	
Ata Marie	2,000,000
Barge CAPEX	
Ata Marie	3,750,000
Depreciation	
Ata Marie	483,000
OPEX (Ata Marie)	
Log transport and handling costs	10,521,429
Transport costs to from East Cape to export port	2,283,296
Export port charges	5,160,000

Source: OCEL Consultants NZ Limited, Opus International Consultants Ltd, Ata Marie Group Ltd, Fulton Hogan

Table 5 – Capital and Operating Cost Summary

The CAPEX costs provided by OCEL, Fulton Hogan and AMG range from $15.5m to $18.0m (excluding offshore mooring), whilst OPEX and depreciation costs are c.$18.5m per AMG.

5.2. Methodology

Our financial analysis is underpinned by the following assumptions:

- Hurdle rate: Weighted average cost of capital (WACC) midpoint indicative estimate of 10% (see Appendix B for further detail);
- Throughput; 600,000 metric tonnes of log volume passing through the port (consistent with what is used in the existing reports);
- CAPEX: Inclusive of port, 1 x tug and 3 x barge capex costs.
- OPEX: Comprising:
    - Log transport and handling costs in the East Cape;
    - Transport costs to from East Cape to export port; and
    - Export port charges.
- Return on Investment: Hurdle rate multiplied by underlying CAPEX costs (i.e. asset base);
- Depreciation – Based on tug and barge depreciation provided in the AMG report (we have currently assumed no depreciation on port CAPEX consistent with AMG's methodology for the purposes of a single year cost comparator assessment).

CAPEX costs have been taken prima facie from the OCEL, Fulton Hogan and AMG reports respectively. Our analysis has included different scenarios to account for the CAPEX variations between the reports:

- Scenario 1 – Ata Marie CAPEX + Ata Marie Barge CAPEX model / Barge leasing model;
- Scenario 2 – OCEL CAPEX + Ata Marie Barge CAPEX model / Barge leasing model; and
- Scenario 3 – Fulton Hogan CAPEX + Ata Marie Barge CAPEX model / Barge leasing model.

The tug and barge numbers (which are sourced from AMG) have been assumed to be constant through each of the scenarios.

Table 6 summarises these scenarios and a $ / GMT figure for each using *AMG's barge CAPEX model* (refer Appendix C for cost scenarios when applying AMG's barge leasing model):

Comparison of cost scenarios - Barge CAPEX

$	Scenario 1	Scenario 2	Scenario 3	Average	$ / GMT (Average)	Road transport
CAPEX						
Port	18,000,000	16,600,000	15,792,220	16,797,407	*28.00*	
1 x Tug	2,000,000	2,000,000	2,000,000	2,000,000	*3.33*	
3 x Barge	3,750,000	3,750,000	3,750,000	3,750,000	*6.25*	
Total CAPEX	**23,750,000**	**22,350,000**	**21,542,220**	**22,547,407**	**37.58**	
WACC	*10.0%*	*10.0%*	*10.0%*	*10.0%*	*10.0%*	
Return on CAPEX	**2,375,000**	**2,235,000**	**2,154,222**	**2,254,741**	***3.76***	
Depreciation	483,000	483,000	483,000	483,000	*0.81*	
OPEX						
Log transport and handling costs in the East Cape	10,521,429	10,521,429	10,521,429	10,521,429	*17.54*	
Transport costs to from East Cape to export port	2,283,296	2,283,296	2,283,296	2,283,296	*3.81*	
Export port charges	5,160,000	5,160,000	5,160,000	5,160,000	*8.10*	
Total Depreciation and OPEX	**18,447,725**	**18,447,725**	**18,447,725**	**18,447,725**	***30.25***	
Total	**20,822,725**	**20,682,725**	**20,601,947**	**20,702,466**	***34.00***	**23,166,000**
Volume of logs harvested	600,000	600,000	600,000	600,000		600,000
$ / GMT per scenario	*34.20*	*33.97*	*33.84*	*34.00*		*38.61*
$ / GMT per AMG Barge lease model	*33.49*	*33.49*	*33.49*	*33.49*		*33.49*
$ / GMT per AMG Barge CAPEX model	*34.23*	*34.23*	*34.23*	*34.23*		*34.23*

Source: Deloitte analysis based on OCEL Consultants NZ Limited, Opus International Consultants Ltd, Ata Marie Group Ltd, Fulton Hogan

Table 6 – Comparison of cost scenarios

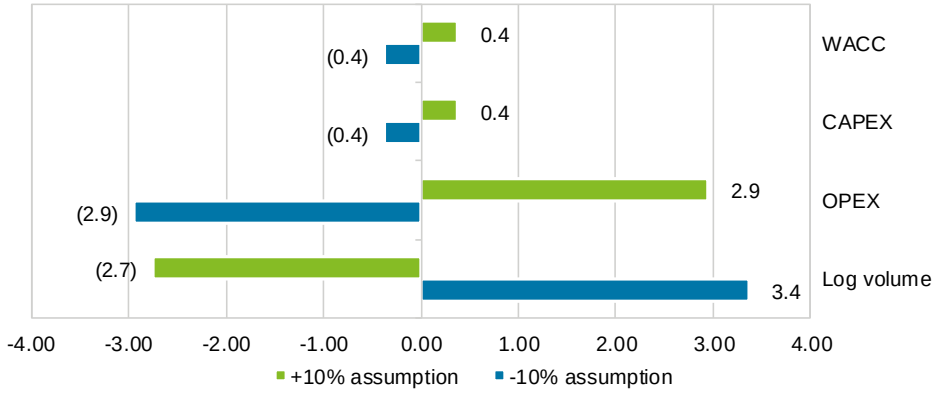
The $ per GMT observed between the 3 scenarios provides a range of $33.84 to $34.20 (average $34.00 per GMT) which falls significantly below the $38.61 per GMT road transport option (Te Araroa to Port of Gisborne cost) and also below AMG's barge CAPEX cost per GMT ($34.23 per GMT).

Assuming a 600,000 log volume throughput, our total average service cost per GMT of $34.00, comprises a return on CAPEX of $3.76 per GMT based on 10% WACC and depreciation of $0.81 and other OPEX costs of $30.25. This breakdown per $ per GMT highlights the relative importance of operating costs (comprising barging transport, road transport and export port charges) in the overall service delivery. If any funding is secured for CAPEX, while this would further reduce the cost per GMT of the project, the effect will be limited relative to other OPEX costs.

5.3. Sensitivity Analysis

In conjunction with the above financial analysis, sensitivity testing has been conducted by flexing key model assumptions, namely WACC, CAPEX, OPEX and log volumes harvested. This is shown in figure 10 and table 7.

Sensitivity analysis - Effect on $ / GMT (+/- 10%)



Source: OCEL Consultants NZ Limited, Opus International Consultants Ltd, Ata Marie Group Ltd, Fulton Hogan

Figure 10 – Sensitivity Analysis Summary

The results of the sensitivity analysis and the effect of these changes on the average $ / GMT of the scenarios mentioned above are outlined in the chart above and table below which highlights +/- 10% changes to each of the key assumptions applied in isolation.

Sensitivity analysis (+/-10%)

$	+10% assumption	Average base $ / GMT	Variance	-10% assumption	Average base $ / GMT	Variance
WACC	34.38	34.00	**0.38**	33.63	34.00	**(0.38)**
CAPEX	34.38	34.00	**0.38**	33.63	34.00	**(0.38)**
OPEX	36.95	34.00	**2.94**	31.06	34.00	**(2.94)**
Log volume	31.25	34.00	**(2.75)**	37.36	34.00	**3.36**

Source: Deloitte analysis based on OCEL Consultants NZ Limited, Opus International Consultants Ltd, Ata Marie Group Ltd, Fulton Hogan

Table 7 – Sensitivity Analysis (+/- 10%)

Key observations:

- Table 7 highlights relatively small changes to $ / GMT when flexing the WACC and CAPEX assumptions ($0.38 variance to base $ / GMT of $34.00).
- Sensitising OPEX, however, produces a more pronounced effect to $ / GMT with +/-10% change in OPEX resulting in a higher / lower cost per GMT range (+/- $2.94 per GMT) – assuming log volumes remain unchanged.
- The assumption which provides the largest cost variance, when changed by +/- 10%, is log volumes handled through the port, which is in most reports is assumed to be 600,000 MT. Flexing log volumes by +/- 10% results in a $2.75 drop in $ / GMT ($31.25) and a $3.36 increase in $ / GMT ($37.36), assuming all other costs remain unchanged.

The above analysis serves to highlight the importance of an accurate assessment of volumes and assumed operating / transport costings. It is important to note that flexing more than one variable will provide a cumulative effect on observed service costs and that a number of potentially significant design related and operational costs are either absent from analysis to date or have been described as ball-park / preliminary in their associated report. In addition, it is highly likely that a new unproven logistics solution would have to

demonstrate meaningful cost savings to exporters (not merely match existing costs) to entice a move towards a more complicated road and barge operation, relative to a proven land based option.

6. Gap Analysis & Next Steps

6.1. Overview

To add value and demonstrate a stronger proposal for Te Araroa Port, we have identified a number of gaps in the project appraisal framework that we suggest are considered moving forward.

As the key audience for this opportunity is potential Government funding partners, we recommend a business case is developed following the Better Business Case (BBC) approach in order to meet standards required for any Government investment. This model has been created to ensure that the correct investment decisions are made, best value is sought throughout project development, and is recommended for all investments whether private or public in nature. A key component of this approach is definition of the problem to be addressed, the benefits sought and a robust single option selection process.

A BBC compliant business case consists of 5 cases demonstrating the following:

1. **The Strategic Case** - That the intervention is supported by a compelling case for change and provides a holistic fit with other parts of the organisation and public sector;
2. **The Economic Case** - That the intervention represents best public value;
3. **The Commercial Case** - That the proposed opportunity is attractive to the market place, can be procured and is commercially viable;
4. **The Financial Case** - That the proposed spend is affordable; and
5. **The Management Case** - That what is required from all parties is achievable.

In order to give the project the best chance of success, risks, opportunities and benefits must be managed throughout development of the project with the above BBC framework in mind. Appraising various options through the Options Framework provides a systematic approach to identifying and filtering a broad range of potential projects. It is a core component of the BBC and will be a key focus for all reviewing authorities.

As summarised in figure 1, our proposed next steps can broadly be categorised into the following areas:

- Working towards the Strategic Outline Case – (SOC)
- Consideration of alternative / additional options
- Stakeholder management & planning consents
- Value for money appraisal (Economic Case)
- Engineering and design development (including cost estimate)

Appendix A gives some background and context on the BBC approach.

6.2. Working towards the Strategic Outline Case (SOC)

What is not evident in the existing documentation is the objectives driving the project. Definition of these investment objectives and the associated benefits will be key to providing the framework for project development and demonstrating to the relevant Government ministries that the best value solution has been selected for investment.

For illustrative purposes in this section, a limited set of objectives are assumed in the absence of more detail, these include:

- Te Rimu's desire to gain a revenue stream from its land assets (shown in Appendix D) and to achieve wider aims such as local Māori employment and economic development;
- A financially viable project;
- Secure funding from external parties; and
- Kaitiakitanga over existing whenua, awa and resource.

The He kai kei aku ringa is "the Crown-Māori Economic Growth Partnership and national Māori economic development strategy. Established in 2012, it provides a vision for a productive, innovative, export oriented Māori economy driven by whānau. Literally it means 'providing food by my own hands'. It has become a metaphor for the resilience and economic self-determination of Māori people."

E RERE represents the five goals of He kai kei aku ringa:

- *Employment – Whai Mahi - growing the future Māori workforce;*
- *Rangatahi – supporting Māori youth to define and lead their economic aspirations;*
- *Enterprise – Whai Pakihi- growing Māori enterprises;*
- *Regions – Rohe Tū Pakari - increasing Māori participation in regional economies;*
- *Education – Whai Mātauranga - upskilling the Māori workforce.*

To develop our understanding of this we propose a workshop with Te Rimu Trust to ensure the project objectives fully incorporate your requirements and meet the terms of the funding and can be assessed against other projects competing for Government investment. Many analysis techniques could be used in these sessions such investment logic mapping which will provide evidence of a considered approach.

6.3. Consideration of alternative / additional options

To derive best value, thought should also be given to a wider programme of complementary projects that provide synergies to the existing Te Araroa Port project. For instance, ensuring a sustainable supply of trees past 2040 could significantly increase the value of the project, while working with other Government agencies and private partners to increase the demand for East Cape logs could provide synergies that generate increased returns on investment when viewed as a holistic and integrated programme.

Additionally, transport of other goods should also be considered as it may require minimal additional spend to increase capacity or meet industry requirements during the initial construction phase, rather than undertake a future project that would incur increased relative costs and potentially disrupt the existing business.

Transport of local aggregate and/or tourism initiatives are examples of beneficial adjuncts to the proposed port project worth exploring further.

There are existing issues related to the availability of a suitably trained workforce to undertake the roles referenced in the OCEL report. It is likely that additional expenditure will be required to fill the skills gap and should be considered early in the project to reduce any future delays. We would seek to develop options and present them in an options framework such as that shown in Appendix E. This approach would allow us to demonstrate you have a preferred option among a number of others that were considered. It also allows for relative analysis and would give Te Rimu and other potential funders' confidence that this is the best solution.

6.3.1 Auckland aggregate supply shortage

To give a more specific example, aggregates could be an additional market to build into the Case, reflecting that:

- There are predicted major shortages of aggregate supply to service the current demand in Auckland's construction industry;
- Increased pressure on existing supply chains due to Auckland's growing economy amid upcoming infrastructure projects such as the City Rail Link (CRL);
- The OCEL report touches upon the idea that large amounts of high quality aggregate material (i.e. high-quality rock) are available in the Karukatuwhero river bed which can be barged out to be used for construction around the North Island (i.e. Auckland) and could be an additional revenue stream for Te Rimu.

Further analysis on this should be conducted to quantify the potential benefits and opportunities of aggregate materials in the Te Araroa area.

Next steps

Aims	Actions
• Develop Te Rimu investment objectives • Identify potential funding opportunities and incorporate their objectives • Understand the case for acting and the wider context	• Facilitate a workshop with the Te Rimu Trust to work jointly on the SOC • Issue draft Strategic Case • Issue draft Multi Criteria Decision Analysis (MCDA) • Report on potential complementary projects such as aggregate export

6.4. Stakeholder Management & Planning Consents

Good stakeholder management can be the difference between project success or project failure. A key next step will be to develop an understanding of the various stakeholders with an interest in the Te Araroa Port Project, their views and their ability to affect the project outcomes.

Critically, a strong understanding of, and good relationship with the local planning authorities that will ultimately grant permission to construct the proposed infrastructure will be paramount in delivering a successful project. Consents will be a key aspect for this project and will need external advice, particularly around riparian rights of the Te Rimu Trust land ownership (shown in Appendix D) – regardless of these it is anticipated that council consent will be required.

Stakeholder meetings with the following parties could be undertaken to better understand the project interaction and wider costs/benefits/other options as well as offering an opportunity for early engagement:

- Local planning authorities;
- Gisborne District Council;
- Local land owners;
- Logging companies;
- Road Transport companies;
- Port of Gisborne - Capacity of Gisborne (potential to view development as a competitive threat);
- Forest resource availability; and
- Potential Government partners (for example NZTA may have an interest as they are considering investment in the road network - shown by D in Figure 8 – which is an example of a potential wider stakeholder impact).

Next Steps

Aims	Actions
• Identify key stakeholders • Understand key stakeholder views • Identify opportunities to work with stakeholders • Identify stakeholder conflicts and risks • Manage opportunities and risks	• Issue stakeholder engagement strategy/plan • Engage key stakeholders • Issue Project Plan/schedule • Issue risk management plan

6.5. Value for Money Appraisal (Economic Case)

The BBC methodology requires that wider economic benefits as well as direct financial costs and benefits are assessed in the business case for each option. There are two important elements to this economic assessment; the Benefit Cost Ratio (BCR) and Multi-Criteria Analysis (MCA).

The BCR approach uses well established guidance to monetise impacts so they can then be compared to all other costs and benefits at a common base. This approach demonstrates the Value for Money of a project (VfM) and is a way of prioritising projects and selecting a preferred option through an accepted and well researched framework, where any BCR >1 demonstrates at least acceptable value for money. The BCR approach while extremely useful, can be limited and it is recommended that it is used in conjunction with MCA to provide a more holistic view of the project and how it aligns with the goals of the sponsor organization.

For instance (and as noted above) employment may be a key benefit for the sponsoring organisation, so in a scenario where two competing projects demonstrate good value for money through the BCR approach they can be differentiated through an MCA framework that correctly values employment impacts.

In their own words the Opus report is a "rough order evaluation" and it is clear there are many externality categories that potential Government funders and planning authorities will be keen to see addressed. These include, but are not limited to:

- Marine ecology impacts;
- Land ecology impacts;
- Erosion;
- Impacts on the wider Government budget;
- Updated analysis of the Opus reported categories;
- The current financial analysis conducted assumes all assumptions, costs and data provided in the existing analysis to be prima facie; and
- Analysis should be performed that includes more detailed analysis of costs and assumptions (i.e. due diligence on the data used and numbers presented by the existing analysis and reports provided and referenced).

A summary of the cost and benefit gaps which we would recommend for further analysis are presented in table 8.

	Costs	Benefits
Cashable	• Port assets • Operational assets • Planning consents • Design • Other professional fees • Operational costs	• Port access charges • Stevedoring / log marshalling charges
Non-cashable	• Impacts on marine ecology • Impacts on land ecology • Erosion impact on local environment • Impacts on other Te Araroa Trust assets such as the farm	• Reduction in road H&S incidents • Increased local employment • Reduction in road wear • Reduction in CO2 emissions • Avoided government spending such as NZTA funded road improvements • Increased L&D opportunities for Te Araroa community

Table 8 – Indicative Costs and Benefit Gaps suggested for further analysis

Next Steps

Aims	Actions
• Understand the wider social and economic impacts of the schemes • Demonstrated Value for Money to Government partners	• Undertake options appraisal • Identify and quantify monetised benefits • Identify and quantify non-monetised benefit • Refine cost estimate for the existing road transport model • Undertake MCA • Issue Economic Case

6.6. Engineering & Design Development

There are a number of engineering and design gaps identified in the previous reports and subsequently by Deloitte as part of this analysis. The key issues relate to missing cost elements that potentially lead to the total cost being under estimated. These will need to be refined in the next stage of analysis.

Illustrative examples include:

- The Ata Marie report recommended a draft of 5m may be required whereas OCEL has designed the port to include 4m;
- Operational requirements such as the log throughput, stevedoring and craning equipment requirements are based on high level analysis that will need to be further developed in consultation with marine and forestry experts; and
- No account has been taken of consenting and other project development costs which can form a sizeable portion of a project budget.

Key areas for consideration also include:

- Marine transport advice on barge configuration options and costings (Ata Marie p20);
- In depth study of origin and destination port logistics;
- Fulton Hogan assumes there is a quarry within 5km of the site; and
- Development of requirements and costs for cargo storage and marshalling areas.

Next Steps

Aims	Actions
• Finalising the key infrastructure requirements • Understand the reliability implications of procuring one second hand tug	• Resolve the question of whether draught of 4m or 5m is required • A recommendation of whether 'hot decking' should be pursued • Refine cost estimates such as the refitting of vessels to NZ maritime standards • Refine log harvest estimates in line which SCION'S recommendation that they are likely to be an overestimate

7. Conclusion

In summary, the work to date build's towards a potentially positive case for investment and continued development of the Te Araroa Port project as one that supports meaningful cultural, social and economic benefits in the East Cape region. This report also outlines the additional steps that would be required to demonstrate a robust case to stakeholders; including Te Rimu's board, other local Maori, potential investors and Government agencies.

Deloitte has reviewed the work commissioned to date which provides useful background to the project and key aspects of the costs and benefits. We have however identified some gaps and inconsistencies in the data. While the preliminary financial analysis is encouraging, it does highlight the sensitivity of the project to variation in operational costing and throughput assessment, as such further work is recommended around costs and potential volumes to enhance the reliability of key assumptions and develop a more defensible investment case. Potential logging volumes have been looked at in earlier reports, but the effects of complementary activities such as aggregate transport and tourism activities should be considered.

It is notable that the wider economic benefits forecast by Opus could be many times the capital cost of the project and that Government support could potentially be justified in these circumstances therefore, subject to below requirements being met, targeting a partnership with Government authorities may be a prudent next step.

In order to mobilise Government support, the next phase of the project needs to develop a robust business case using the BBC model. We therefore recommend further business case development with a focus on the **Strategic and Economic Case's**, in order to incorporate the; **Stakeholder Engagement**, **Planning Consents** and **Engineering/Design** work streams.

This in turn allows the preparation of a Full Business Case (FBC), the final stage of development required for Government investment approval, and the ability to target funders, with all the opportunities and constraints being clearly understood and a compelling case made. These work-streams are summarised in figure 1 and section 6.

The next stage of work should be delivered by a multi-disciplinary team that can adopt an agile approach to project development incorporating and managing the various work streams that will ensure the proposed project has a robust business case, while providing the best chance of securing funding and stakeholder support.

We wish Te Rimu well in its continued hikoi.

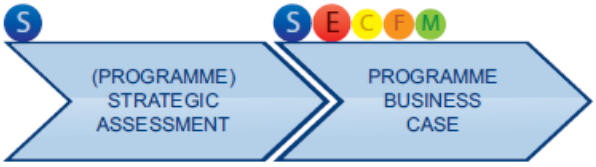
Appendix A: Better Business Case

BBC Pathway – Treasury guidance

THE PATHWAY OF THE PHASED BBC PROCESS CAN BE USED TO SELECT WHICH TYPE OF BUSINESS CASE BEST DELIVERS THE REQUIRED DECISION/S

PLANNING AND SCOPING

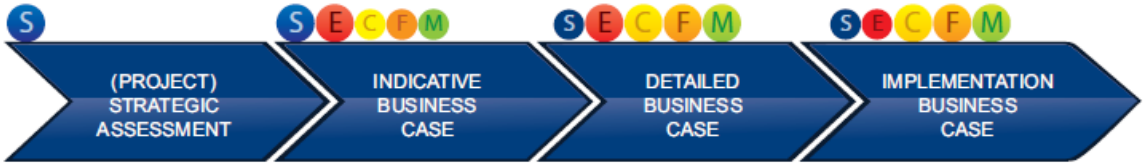
■ **Portfolio or programme**



Outline fit with strategy and the need to invest

Confirm case for change, preferred programme, project tranches, funding.

■ **Project (Large scale and / or high risk)**



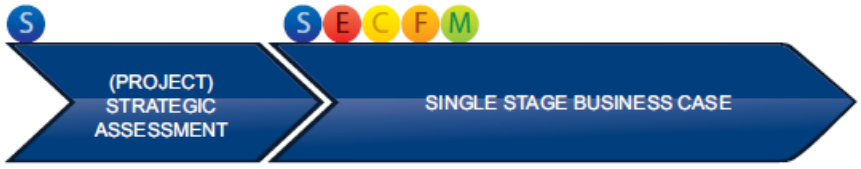
Outline fit with strategy and the need to invest

Confirm way forward with short-listed options (consider non-traditional procurement).

Confirm best value for money option, outline potential deal and delivery plan, assess affordability.

Confirm supplier offering best value, detailed commercials, confirm affordability, detailed management and delivery arrangements.

■ **Project/s (Other)**



HOW DOES BBC ALIGN WITH OTHER MANAGEMENT PROCESSES?

The BBC process aligns with the following other processes at programme and project level as follows:

Programme Business Case

- Portfolio and Programme Management (e.g. Managing Portfolios and Managing Successful Programmes)
- Programme Assurance (Gateway, Independent Quality Assurance)

Project Business Case

- Project Management (e.g. PRINCE2)
- Public Private Partnerships
- Strategic procurement including early engagement with suppliers
- Feasibility, detailed studies, design, develop etc.
- Project Assurance (Gateway, Independent Quality Assurance, Quantitative Risk Analysis)

The five case model

The business case is always comprised of five sections or 'cases'

Case	Objective/ demonstrates
Strategic Case	• Is the proposed investment supported by a compelling **case for change** that fits within the strategic context and meets business needs? • Clearly defines the problem, case for change, strategic objectives, critical success factors, potential benefits, risks and stakeholders
Economic Case	• Does the preferred investment option demonstrate **value for money**? • A long list of options is narrowed down into a short list using CSFs and objectives • Shortlisted options are evaluated on NPV, benefits, risks – results in **preferred option**
Commercial Case	• Is the preferred option **commercially viable**? • Procurement method explored, soft market testing, legal implications and commercial structure.
Financial Case	• Is the preferred option **affordable** and how can it be funded? • Preferred option put into an accounting/ budgetary impact. What is the total capital and opex spend? What will this do to budgets, financial statements? Do we have the funds/ borrowing capacity?
Management Case	• Is the preferred option **achievable** and can it be delivered successfully? • Includes stakeholder management plans, benefits realization plans, risk register/ risk management plan, key project roles and governance framework

Appendix B: Weighted Average Cost of Capital (WACC)

Te Araroa Port WACC Calculation

Inputs		Low	High	Note:
Cost of Equity				
R_f		3.0%	3.0%	NZ 10Y Government Bonds, at 26 October 2017
L	= D/(D+E)	35.0%	35.0%	Target leverage
D/E		53.8%	53.8%	
T_c		28.0%	28.0%	Corporate tax rate
β_e	= β_a(1+D/E)	0.88	0.94	
TAMRP		7.5%	7.5%	Tax adjusted market risk premium
K_e	= $R_f(1-T_i) + \beta_e$TAMRP	8.8%	9.3%	
α		4.50%	4.50%	Project risk premium
K_e*	= K_e + PRP	13.3%	13.8%	
Cost of Debt				
Base rate		3.0%	3.0%	NZ 10Y Government Bonds, at 26 October 2017
Margin		2.0%	2.0%	
K_d	= *Base rate* + *Margin*	5.0%	5.0%	
Weighted Average Cost of Capital				
WACC	= K_e*(1-L)+K_d(1-T_c)L	**9.9%**	**10.2%**	
	Mid Point	**10.0%**		

Source: Deloitte Corporate Finance & Business Valuations Digest, Centre for Professional Development

Appendix C: AMG barge lease model

Comparison of cost scenarios - Barge lease

$	Scenario 1	Scenario 2	Scenario 3	Average	$ / GMT (Average)	Road transport
CAPEX						
Port	18,000,000	16,600,000	15,792,220	16,797,407	*28.00*	
1 x Tug						
3 x Barge						
Total CAPEX	**18,000,000**	**16,600,000**	**15,792,220**	**16,797,407**	***28.00***	
WACC	*10.0%*	*10.0%*	*10.0%*	*10.0%*	*10.0%*	
Return on CAPEX	**1,800,000**	**1,660,000**	**1,579,222**	**1,679,741**	***2.80***	
Depreciation						
OPEX						
Log transport and handling costs in the East Cape	10,521,429	10,521,429	10,521,429	10,521,429	*17.54*	
Transport costs to from East Cape to export port	2,912,975	2,912,975	2,912,975	2,912,975	*4.85*	
Export port charges	5,160,000	5,160,000	5,160,000	5,160,000	*8.10*	
Total depreciation and OPEX	**18,594,404**	**18,594,404**	**18,594,404**	**18,594,404**	***30.49***	
Total	**20,394,404**	**20,254,404**	**20,173,626**	**20,274,145**	***33.29***	**23,166,000**
Volume of logs harvested	600,000	600,000	600,000	600,000		600,000
$ / GMT per scenario	*33.49*	*33.26*	*33.12*	*33.29*		*38.61*
$ / GMT per AMG Barge lease model	*33.49*	*33.49*	*33.49*	*33.49*		*33.49*
$ / GMT per AMG Barge CAPEX model	*34.23*	*34.23*	*34.23*	*34.23*		*34.23*

Source: Deloitte analysis based on OCEL Consultants NZ Limited, Opus International Consultants Ltd, Ata Marie Group Ltd, Fulton Hogan

Appendix D: Map of Te Rimu Trust Land Ownership

Appendix E: Example Options Framework Matrix

Indicative Options Framework for Multi-Criteria Analysis								
	Weighting	Score type	Minimum threshold	Do nothing	Project 1	Project 2	Project 3	Project 4
Employment – Whai Mahi - grow ing the future Māori	*10%*	1-10	n/a	1	2	5	9	6
Rangatahi – supporting Māori youth to define and lead their economic aspirations	*10%*	1-10	n/a	1	2	5	9	4
Enterprise – Whai Pakihi- grow ing Māori enterprises	*10%*	1-10	n/a	1	2	5	9	5
Regions – Rohe Tū Pakari - increasing Māori participation in regional economies	*10%*	1-10	n/a	1	2	5	9	6
Education – Whai Mātauranga - upskilling the Māori w orkforce	*10%*	1-10	n/a	1	2	5	9	4
Environmental Impact	*10%*	1-10	n/a	1	2	5	9	2
Financial viability (ROI)	*10%*	%	≥ 0	**0%**	10%	50%	10%	20%
Value for Money (BCR)	*10%*	Benefit cost	n/a	**1**	2	1	9	0.7
Productivity / local capacity	*5%*	1-10	n/a	0	2	5	5	1
Planning consents	*10%*	1-10	3	10	2	1	5	10
Reputation	*5%*	1-10	4	5	2	3	5	6
Weighted total				22	20.1	40.5	78.1	44.9
Project rank				4	5	3	1	2

Appendix F: AMG barge capex model with 350,000 throughput

Comparison of cost scenarios - Barge CAPEX (350,000 log volume)

$	Scenario 1	Scenario 2	Scenario 3	Average	$ / GMT (Average)	Road transport
CAPEX						
Port	18,000,000	16,600,000	15,792,220	16,797,407	*47.99*	
1 x Tug	2,000,000	2,000,000	2,000,000	2,000,000	*5.71*	
3 x Barge	3,750,000	3,750,000	3,750,000	3,750,000	*10.71*	
Total CAPEX	**23,750,000**	**22,350,000**	**21,542,220**	**22,547,407**	**64.42**	
WACC	*10.0%*	*10.0%*	*10.0%*	*10.0%*	*10.0%*	
Return on CAPEX	**2,375,000**	**2,235,000**	**2,154,222**	**2,254,741**	***6.44***	
Depreciation	483,000	483,000	483,000	483,000	*1.38*	
OPEX						
Log transport and handling costs in the East Cape	6,137,500	6,137,500	6,137,500	6,137,500	*17.54*	
Transport costs to from East Cape to export port	1,331,923	1,331,923	1,331,923	1,331,923	*3.81*	
Export port charges	2,835,000	2,835,000	2,835,000	2,835,000	*8.10*	
Total Depreciation and OPEX	**10,787,423**	**10,787,423**	**10,787,423**	**10,787,423**	***30.82***	
Total	**13,162,423**	**13,022,423**	**12,941,645**	**13,042,164**	***37.26***	**13,513,500**
Volume of logs harvested	350,000	350,000	350,000	350,000		350,000
$ / GMT per scenario	*37.61*	*37.21*	*36.98*	*37.26*		*38.61*
$ / GMT per AMG Barge lease model	*33.49*	*33.49*	*33.49*	*33.49*		*33.49*
$ / GMT per AMG Barge CAPEX model	*34.23*	*34.23*	*34.23*	*34.23*		*34.23*

Source: Deloitte analysis based on OCEL Consultants NZ Limited, Opus International Consultants Ltd, Ata Marie Group Ltd, Fulton Hogan

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