F I N A L

Opotiki Harbour Development
Social and Economic Evaluation

Prepared for

Opotiki District Council

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SOCIAL AND ECONOMIC EVALUATION OF THE OPOTIKI HARBOUR DEVELOPMENT

URS

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Executive Summary

The district of Opotiki is located in the Bay of Plenty region on the north-east end of the North Island of New Zealand. It is made up of an area of 3,105 square kilometres, accounting for around 25 per cent of the total land mass of the Bay of Plenty region. It is the second biggest district in the region, second only to Whakatane (4,442 square kilometres).

Opotiki District Council (ODC) has undertaken a Social and Economic Impact Evaluation of a proposed Opotiki harbour development, as part of the process of establishing a business case to take to various levels of the New Zealand Government.

Currently a number of restrictions exist on boats entering and exiting Opotiki harbour. Because of the existence of a bar, only boats drawing less than approximately 0.5 metres can enter and exit the harbour and the entry/exit channel is generally inoperable two hours either side of the low tide. In addition there are many days - approximately 73 days per year or 20 per cent of the days of the year - when weather or bar conditions prevent use of the channel. Further restrictions on usage are also generated by weather – ie when poor weather makes usage of the channel hazardous.

The social and economic evaluation of the harbour development has been prepared on the basis of four scenarios, being considered by the ODC, as follows:

- Base Case Scenario - Do Nothing;
- Scenario 1 – Harbour Development;
- Scenario 2 – Harbour Development with Mussel Farm; and
- Scenario 3 – Harbour Development with Mussel Farms & Processing Plant.

At the same time that the ODC is investigating the harbour development, Eastern Seafarms Ltd is investigating whether to establish a mussel farm approximately three to six kilometres off the Opotiki coastline which caters for spat catching and an on–growing marine farm. The establishment of the mussel farm and associated opportunities will be included in Scenario 2 and 3.

An analysis of demand for the harbour has been undertaken using surveys and other stakeholder consultation. Demand for the harbour development may come from four main sources:

- recreational boaters;
- charter boat operators;
- commercial fishing operators; and
- mussel farm operators.

Financial Feasibility

A discounted cash flow approach has been taken to establish the financial feasibility of the harbour development options. The financial feasibility analysis has been undertaken on a pre tax basis.

The key steps in the financial feasibility analysis include:

- determination of analysis parameters;
- assessment of potential demand;
- development of a revenue estimate;
- assessment of capital expenditure and operating costs; and

The results of the financial feasibility highlight that on a stand-alone, commercial basis, the harbour development is not feasible. All three scenarios generated a negative NPV of more than $12.8m, with insufficient revenues to justify the high capital costs involved.

ES - 1

Financial Feasibility Results - Harbour Development

Parameter	Scenario 1	Scenario 2	Scenario 3
Net Present Value	-$13.0m	-$12.9m	-$12.8m
Net Present Value - Revenues	$0.85m	$0.99m	$1.03m
Net Present Value - Costs	$13.9m	$13.9m	$13.9m
Rev-Ex Ratio	**0.06**	**0.07**	**0.07**

Source: URS analysis

Benefit Cost Analysis

Benefit-Cost Analysis (BCA) attempts to take into account the claims a project makes on an economy and any gains it provides to the economy as a whole, so the perspective is "economy wide", rather than that of any particular individual, organisation, or region. The BCA analysis is inclusive of the financial feasibility analysis as well as investigating the impact of the project on:

- social welfare
- boat safety;
- flood costs; and
- tourism.

The results of the cost benefit analysis are set out in ES - 2 below. The outcomes highlight what the impact of the development of the harbour would be on the economy as a whole.

In summary, Scenarios 2 and 3 generate a benefit-cost ratio greater than one, while Scenario 1 generates a benefit-cost ratio between zero and one, that is benefits do not cover costs. The main implication of this

BCA result is that ODC should not proceed with the harbour development without the commitment of Eastern Seafarms to the development of the mussel farm and preferably the processing plant as well.

The main contributors to a benefit-cost ratio greater than one for Scenarios 2 and 3 are savings from reductions in unemployment and associated reductions in crime.

ES - 2

Cost Benefit Analysis Results

Parameter	Scenario 1	Scenario 2	Scenario 3
Net Present Value	-$1.3m	$3.5m	$15.7m
Net Present Value - Benefits	$5.4m	$5.5m	$5.5m
Net Present Value - Costs	$6.7m	$1.9m	-$10.2m
Benefit Cost Ratio	**0.89**	**1.28**	**2.32**

Source: URS analysis

Economic Impact Assessment

An economic impact assessment has been undertaken as part of this report to determine the effect of the potential developments that may occur in Opotiki. The three developments considered were the harbour development, a mussel farm and a mussel processing plant.

The analysis has been undertaken for the short term, that is during the construction phase, and the long term, when the operations are working at their full potential. The short term effects only last over the period of construction, while the long term impacts are those that occur annually.

The outcomes of the economic impact summary are shown in ES - 3. The table highlights that the value added or GDP effects of the scenarios range from $2.7m per annum to $34.6 million per annum, which is 23% of the current Opotiki region GDP. Employment effects range from 72 new employment position to 936 positions if the processing plant is established. The effect of this increase in employment on household incomes range from $2.1 million in Scenario 1 to a high of $27.3 million in Scenario 3.

ES - 3

Economic Impact – Scenario Summary

Economic Impact Indicator	Harbour Construction	Scenario 1 – p.a	Scenario 2 – p.a	Scenario 3 – p.a
Output	$18.0m	$3.8m	$22.0m	$44.9m
Value Added	$11.2m	$2.7m	$10.8m	$34.6m
Household Income	$6.4m	$2.1m	$5.1m	$27.3m
Employment (FTEs)	61	72	189	936

Source: URS analysis

Conclusions

The Opotiki harbour development has the potential to significantly transform the Opotiki district from both an economic and social perspective and markedly improve Opotiki's performance on the Index of Deprivation. Based on the analysis undertaken in the report, the construction of an all weather channel to provide continuous, safe access to Opotiki's harbour will only be achieved, economically feasibly, if the development of the harbour attracts major marine industries – such as mussel farming and processing - to the Opotiki district.

In the best case the scenario (Scenario 3, in this report) the attraction of charter/fishing vessels, the mussel farm and the processing plant is predicted to transform Opotiki in the following ways:

- unemployment will be reduced and population growth will be encouraged;
- Opotiki's performance on the Deprivation Index will improve considerably; and
- some of the social problems currently experienced by the district will be reduced.

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1.1 Background

URS Finance & Economics (URS) was commissioned by the Opotiki District Council (ODC) to undertake a Social and Economic Impact Evaluation (the Evaluation) of the proposed Opotiki harbour development.

The Opotiki harbour development relates to a proposal to improve access to Opotiki harbour through the development of an all weather channel. Currently, access to the harbour is restricted by weather and bar conditions which make accessing the harbour hazardous or impossible. URS understands that community concerns have been raised that these restrictions may deter commercial boat operations such as charter, fishing and other commercial activity, from locating in Opotiki.

The creation of an all weather channel to access Opotiki Harbour has been costed at $12.4 million. The key issues for this study are:

- to determine the extent to which commercial boat operations and other developments may be attracted to the Opotiki area because of the creation of the all weather channel, with particular focus on the potential for a mussel farm and associated processing to be developed in Opotiki;
- to determine the impact that the attraction of additional operators may have on the community and economy of the Opotiki district; and
- to determine the financial feasibility of the proposed development from ODC's perspective.

URS understands that from an economic and social perspective, the Opotiki district is one of the most deprived areas in New Zealand and that ODC has identified the attraction of additional commercial boat operations and marine industries as a key element of its strategy to improve the district's performance on the Deprivation Index. URS further understands that ODC views this Study as a critical step in justifying investment in the harbour development by potential funding organisations.

The funding for the Social and Economic Impact Study has been provided by the ODC, Work and Income New Zealand, Environment Bay of Plenty and potentially the Bay of Plenty Community Trust and the Ministry of Economic Development. This funding arrangement reflects the desire by these organisations to provide for regional development opportunities in deprived areas of the Bay of Plenty. Consequently, in the conduct of this study, URS has adopted methodologies consistent with standards used by the New Zealand Ministry of Economic Development and New Zealand Trade & Enterprise.

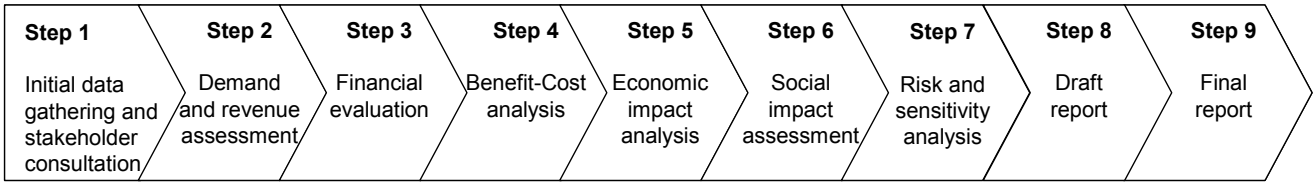
1.2 Study Process

In undertaking this study, URS has developed a process to assess the proposed harbour development in a way that provides national and local government policy makers with clear decision making frameworks to consider the harbour development.

The process developed by URS for the purposes of this Study involved nine steps as set out below in Figure 1.

Figure 1

Steps Involved in Determining Social & Economic Impacts of Proposed Harbour Development



A brief description of each of the steps is set out below:

- ***Step 1 – Initial data gathering*** – the first step in the process is initial data gathering and stakeholder consultation. This step ensures a sound understanding of the project and work that has already gone into it – eg the engineering costing/analysis.

- ***Step 2 – Demand and revenue assessment*** – the second step is to make an assessment of the demand likely to be generated by the development. For this project, demand assessments include the potential for commercial fishing and charter boat operations to establish in Opotiki and the potential for a substantial mussel farm development/processing plant to proceed. Once potential demand has been established, potential revenue streams can be estimated.

- ***Step 3 – Financial feasibility assessment –*** the third step involves assessing, based on the combination of the cost analysis and the demand/revenue analysis, whether the investment is justifiable on a stand-alone commercial basis from ODC's perspective. In addition to being important it is own right, the feasibility assessment is a critical input into the benefit-cost and economic impact analyses.

- ***Step 4 – Benefit-Cost analysis –*** the fourth step involves conducting a benefit-cost analysis. Benefit-cost analysis seeks to identify all benefits and costs arising from a project, regardless of which persons or organisations they fall on. Such benefits and costs may be market based or non-market based (ie social or environmental).

- ***Step 5 – Economic impact analysis –*** the fifth step involves assessing, from a purely economic perspective, the economic impact of any developments attracted to Opotiki on the district economy, utilising measures such as turnover, value added, household income and employment.

- ***Step 6 – Social impact assessment –*** the sixth step involves assessing, from a purely social perspective, the impact of any developments attracted to Opotiki on the local community, examining issues such as employment, crime and deprivation.

- ***Step 7 – Risk and sensitivity analysis –*** the seventh step involves conducting risk and sensitivity analysis. Typically, assessments of projects such as the Opotiki Harbour Development involve a number of assumptions and estimates which need to be tested via sensitivity analysis. In addition, key risks to the outcomes of each of the analyses need to be determined and assessed.

- ***Step 8 – Draft report –*** the eighth step involves the preparation of a draft report. Once all of the analyses have been completed, URS typically prepares a draft report which forms the basis of discussions with the client and other stakeholders.

- ***Step 9 – Final report –*** the ninth and final step involves the preparation of a final report. A final report incorporates any fine-tuning and changes identified in discussions on the draft report.

1.3 Stakeholder Consultation

During the conduct of this Study, a number of key individuals and organisations were consulted. The purposes of the consultations included:

- generating greater understand of the background to the proposed developments and the work completed to date;

- gathering of critical data inputs into the study; and

- informing key stakeholders of the process being undertaken.

A list of key stakeholders consulted is set out in Table 1 below.

Table 1

Key Stakeholders

Stakeholder Category	Key Stakeholders
National Government	• Ministry of Social Development • Work and Income New Zealand
Regional/Local Government	• ODC (councillors & officers) • Whakatane District Council (officers) • Environment Bay of Plenty (officers)
Industry and Business	• Business Groups • Sea Farmer Groups • Whakatohea Trust
Community Groups	• BOP Community Trust • Iwi and Opotiki Community • Key local media

1.4 Government Standards and Regulations for Investment

New Zealand Trade and Enterprise (NZTE) has established a set of guidelines for the evaluation of capital infrastructure and developmental projects. The guidelines, known as the "Economic Benefit Appraisal Toolbox", establishes the parameters for economic evaluation in New Zealand. The purpose of the guidelines are to explain the frameworks for appraisal of the economic benefits of major economic development projects including those that request funding under the Regional Partnerships Programme.

The guidelines promote the use of financial feasibility study, economic cost benefit analysis and economic impact analysis. The guidelines seek to create a standard for appraisal which allows the comparisons of projects across location and across time.

The analysis and evaluation undertaken in this report has attempted to remain consistent with the guidelines set out by the NZTE in the Economic Benefit Appraisal Toolbox.

1.5 Outline of Report

The report is outlined as follows:

- Section 2: Regional Context;
- Section 3: Financial Feasibility;
- Section 4: Benefit-Cost Analysis;
- Section 5: Economic Impact Analysis;
- Section 6: Social Impact Assessment;
- Section 7: Risk Factors; and
- Section 8: Conclusion.

2.1 Contextual Issues

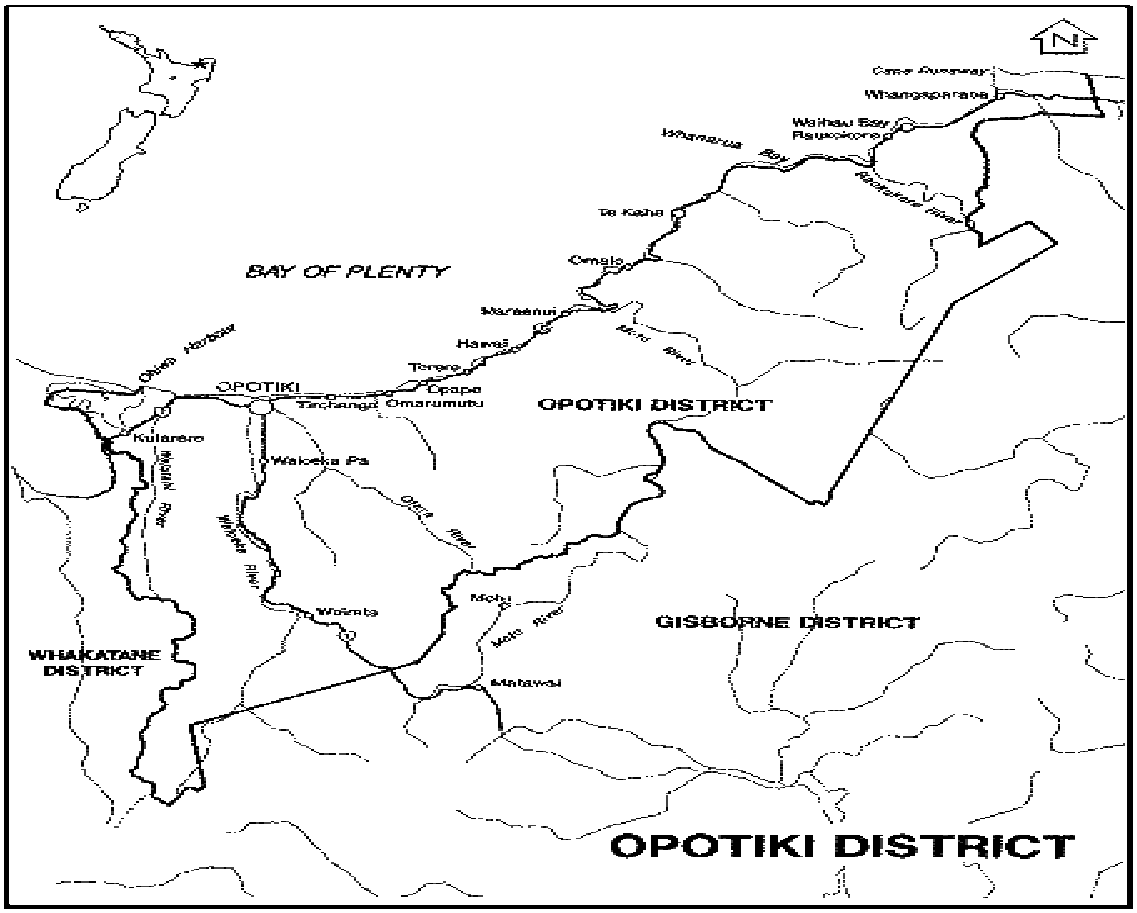
This Evaluation of the social and economic impacts of the proposed Opotiki harbour development has been conducted within the context of the Opotiki district as a region and as an economic entity. These contextual issues are a key part of the consideration of the proposed harbour development.

2.2 Regional Context

The district of Opotiki is located in the Bay of Plenty region on the north-east end of the North Island of New Zealand. It is made up of an area of 3,105 square kilometres, accounting for around 25 per cent of the total land mass of the Bay of Plenty region. It is the second biggest district in the region, second only to Whakatane (4,442 square kilometres). A map of the Opotiki region is provided in Figure 2 below.

Figure 2

Opotiki District



Source: Opotiki District Council

According to the 2001 Statistics New Zealand Census, the population of Opotiki stands at 9,201 people. Over the five years to 2001, the region's population fell by 2 per cent, juxtaposed against a population growth of around 7 per cent for the entire Bay of Plenty region. The Opotiki district accounts for just 3.8 per cent of the total population of the Bay of Plenty region.

Given its land mass and population, population density is lower in Opotiki than in any other district in the region at just 3 persons per square kilometre. This contrasts to a regional average of 19.2 persons per square kilometre.

The population of the Opotiki district is mostly rural, with just 43 per cent of the population living in urban areas, the lowest of any district in the region and compares against a regional wide average of 80 per cent of the population living in urban areas.

Geographically, much of the region, with the exception of urban coastal areas and farmland, is covered by native and exotic forest. The nearest major town to Opotiki is Whakatane, around half an hour's drive west. The township of Opotiki sits at the conjoin of the Waioeka and Otara Rivers, which when considered together with the district's weather, results in a potential for flooding.

From a governance perspective, the district is governed by Opotiki District Council with Environment Bay of Plenty providing regional government.

2.3 Economic Context

The Opotiki district had a GDP of $157.2 million for the year ended March 2003[1], with the greatest production being in agriculture, forestry and retail trade. It's contribution to regional GDP is dwarfed by neighbouring region, Whakatane (GDP of $714 million) and the region's primary economic engine, Tauranga (GDP of $1.9 billion). In GDP terms, Opotiki also lags behind other districts in the region, including Kawerau (GDP of $196.5 million). More detail on the socio economic make up of the Opotiki district can be found in Section 7.

In 2001, unemployment in Opotiki was around 16% for people 15 years and over. This is significantly higher than the New Zealand average of the time which was 8%. While URS understands that the level of unemployment in the Opotiki district has been reduced in recent years, the Opotiki district still faces a higher level of unemployment and other social deprivation than other regions within New Zealand.

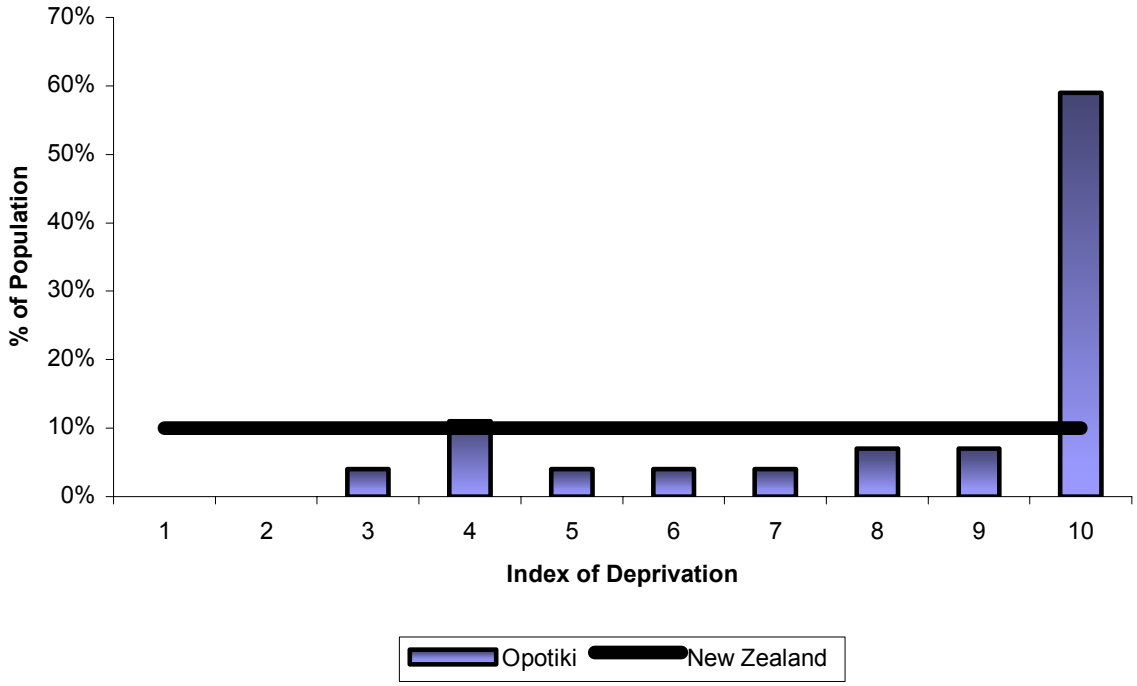
The Opotiki district ranks last of all the Bay of Plenty and New Zealand districts in terms of Statistics New Zealand's Index of Deprivation, which assesses districts and regions against nine variables measuring material and social deprivation. In summary, 59 per cent of Opotiki's population has been assessed in the "most deprived" category. This compares to just 15 per cent across the Bay of Plenty region.

[1] Analysis of the Eastern Bay of Plenty Economy, Infometrics Ltd, March 2004

The Eastern Bay of Plenty Economic Strategy has also identified the Opotiki harbour as a key growth component for the region and the harbour development project has been identified as the largest opportunity for economic growth and employment in the Opotiki district[2]. A comparison of deprivation levels against the national average is set out in Figure 3 below.

Figure 3

Index of Deprivation – Opotiki v's New Zealand

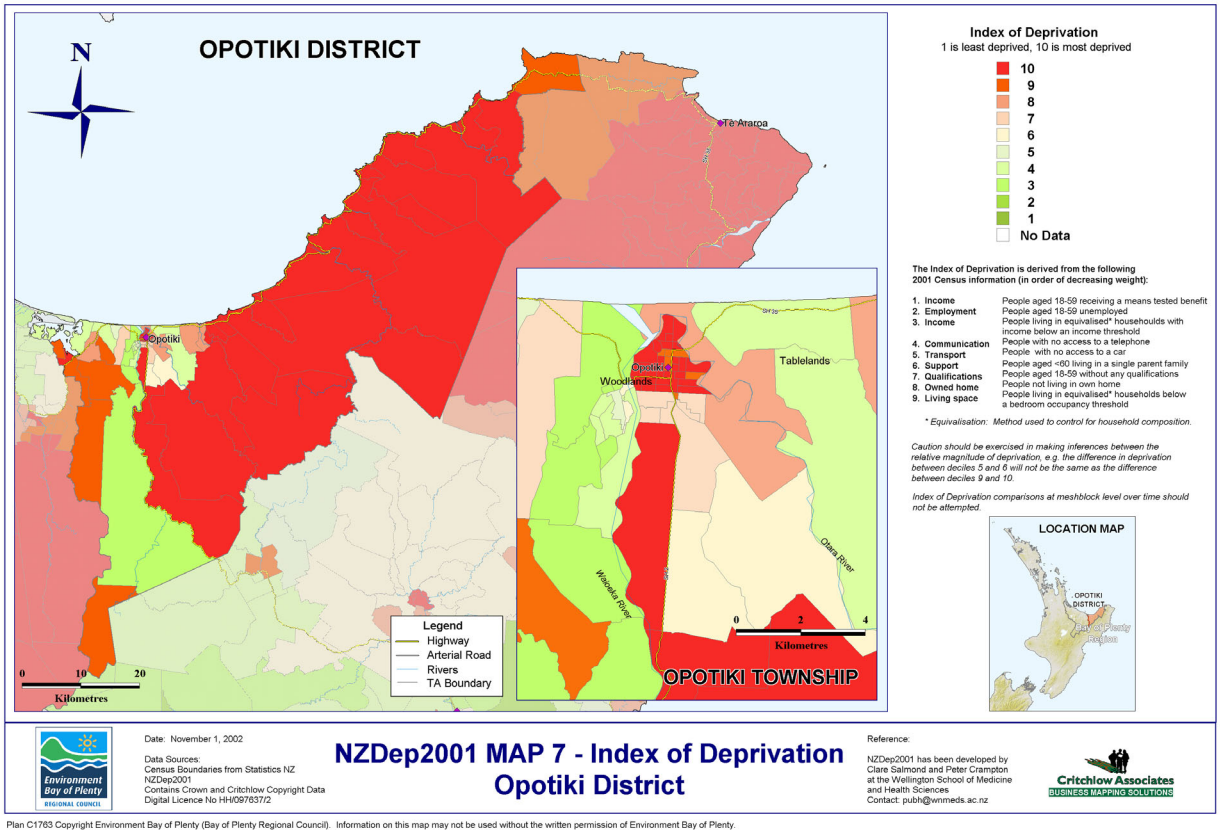


Source: Profile 2001, A Socio Economic Profile of the People of the Bay of Plenty Region – Census 2001, EBOP.

[2] Opotiki District Council (ODC) – Long Term Council Community Plan 2004 - 2014

Figure 4

Deprivation Area Opotiki



Source: EBOP

2.4 Historical Context

Opotiki was built around the use of the adjacent rivers for trading local produce grown on the district's extensive fertile plains. In 1853 six boat building yards were operating in the township upstream of the current wharf (this area has since been reclaimed). In 1859 people from the local Iwi Whakatohea owned at least 20 ships, each about 20 tons, trading goods to and from Auckland.

Following the land wars and confiscations in the 1860s the Opotiki wharf continued to be a busy port with the Northern Steam Ship Company running a regular service between Opotiki and Auckland. At this time the Opotiki township bustled with general stores, bakers, butcher shops, large hotels, post/telegraph centre, a brewery, apiary, sugar mill and various community facilities. In 1881 the total population in the district was around 2100 with some 800 people residing in the township. One of the largest steam ships calling into the Opotiki port was the Waiotahi which was 278 tons which operated in the early 1890s. The last boat yard operated until about 1930 and the last trading boat visited the Opotiki wharf in 1956.

3.1 Proposed Harbour Development

At present, a number of restrictions exist on boats entering and exiting Opotiki harbour. Because of the existence of a bar, only boats drawing less than approximately 0.5 metres can enter and exit the harbour and the entry/exit channel is generally inoperable between two and three hours either side of the low tide.

In addition there are many days - approximately 73 days per year or 20 per cent of the days of the year - when weather or bar conditions prevent use of the channel. Further restrictions on usage are also generated by weather – ie when poor weather makes usage of the channel hazardous.

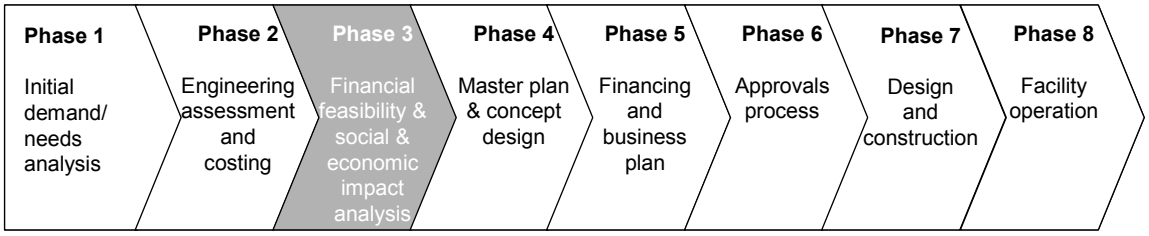
It is not uncommon for some restrictions on usage of harbour entry/exit channels throughout the Bay of Plenty region – for example at Whakatane, Ohiwa and Rangitiki.

The primary development being considered at Opotiki is the establishment of all weather entry/exit channel. In addition, some consideration is being given to wharf and boat harbour developments as well as associated infrastructure and commercial developments.

A development of the type being considered at Opotiki is typically brought to development and operating stages through the process set out in Figure 5 below.

Figure 5

Typical Development Process



Source: URS analysis

Figure 4 highlights that the Opotiki harbour development is at Phase 3 of an eight stage development process. The key objective of this Evaluation is to determine whether there is sufficient justification to proceed to the next stages of master planning/concept design and the development of financing and business plans.

3.2 Assessment of Scenarios

The social and economic evaluation of the harbour development has been prepared on the basis of four scenarios as follows:

- Base Case Scenario - Do Nothing;

- Scenario 1 – Harbour Development;
- Scenario 2 – Harbour Development with Mussel Farm; and
- Scenario 3 – Harbour Development with Mussel Farms & Processing Plant.

These scenarios are discussed in further detail below.

3.3 Base Case Scenario- "Do Nothing"

The base case provides a benchmark against which other options can be assessed. In this case, the base case is a "do nothing" scenario. Doing nothing means that current users and potential users of the harbour will face the same restrictions on operations that have to date hindered any significant development of the harbour. These constraints include capacity constraints (ie restrictions on the size of boat that can enter and exit the harbour), accessibility constraints (there are approximately 20 per cent of days in the year when weather or bar conditions prevent use of the entrance to the harbour, as well as two to three hours before and after the low tide) and safety constraints.

If the harbour entrance is not improved, URS has assumed that there will be no development of additional commercial charter or fishing operations in Opotiki and that the mussel farm and associated processing plant will not proceed in Opotiki.

3.4 Scenario 1 - Harbour Development

Scenario 1 is based on the harbour development, involving the construction of two moles approximately 140 metres apart, constructed some six hundred metres from the foreshore, providing an all weather safe passage for craft drawing up to 2.5 metres at low tide, will proceed.

This scenario assesses the social and economic impact of any commercial boating operations that would be attracted to Opotiki, other than the mussel farm development.

3.5 Scenario 2 – Harbour Development with Mussel Farm

Scenario 2 is based on an assessment of the harbour development and the attraction of commercial boating operations, including the mussel farm development. A more detailed description of the mussel farm operation and development are found in Section 3.5. The development will involve the establishment of a mussel farm which is serviced via Opotiki which will involve the establishment of the mussel farm, maintenance of the lines and harvest of the product.

3.6 Scenario 3 – Harbour Development with Mussel Farm and Processing Plant

A mussel farm off the coast of Opotiki brings the opportunity for the development of a processing plant in Opotiki. A processing plant will result in a significant number of jobs. Scenario 3 involves the harbour development from Scenario 1 and the mussel farm of Scenario 2.

3.7 Aquaculture – Mussel Farming

The mussel farming industry in New Zealand has typically been concentrated in the Marlborough Sounds area on the South Island. There has been some concern about the scale and density of operations in this area which has led to the industry investigating alternative areas for offshore mussel farming.

Eastern SeaFarms Ltd is investigating whether to establish a mussel farm approximately three to six kilometres off the Opotiki coastline which caters for spat catching and an on–growing marine farm. The farm will most likely be in exposed open ocean conditions in depths ranging between 30 and 50 metres.

The proposed mussel farm is a joint venture between the Whakatohea Maori Trust Board, Tasman Mussels Limited, which includes Sealord Shellfish Limited, and New Zealand Seafarms Limited. The development generally has support from the local community, particularly for its effects on employment.

The proposal includes options for:

- the development of a mussel farm;
- the development of associated maintenance facilities; and
- the development of a mussel processing plant.

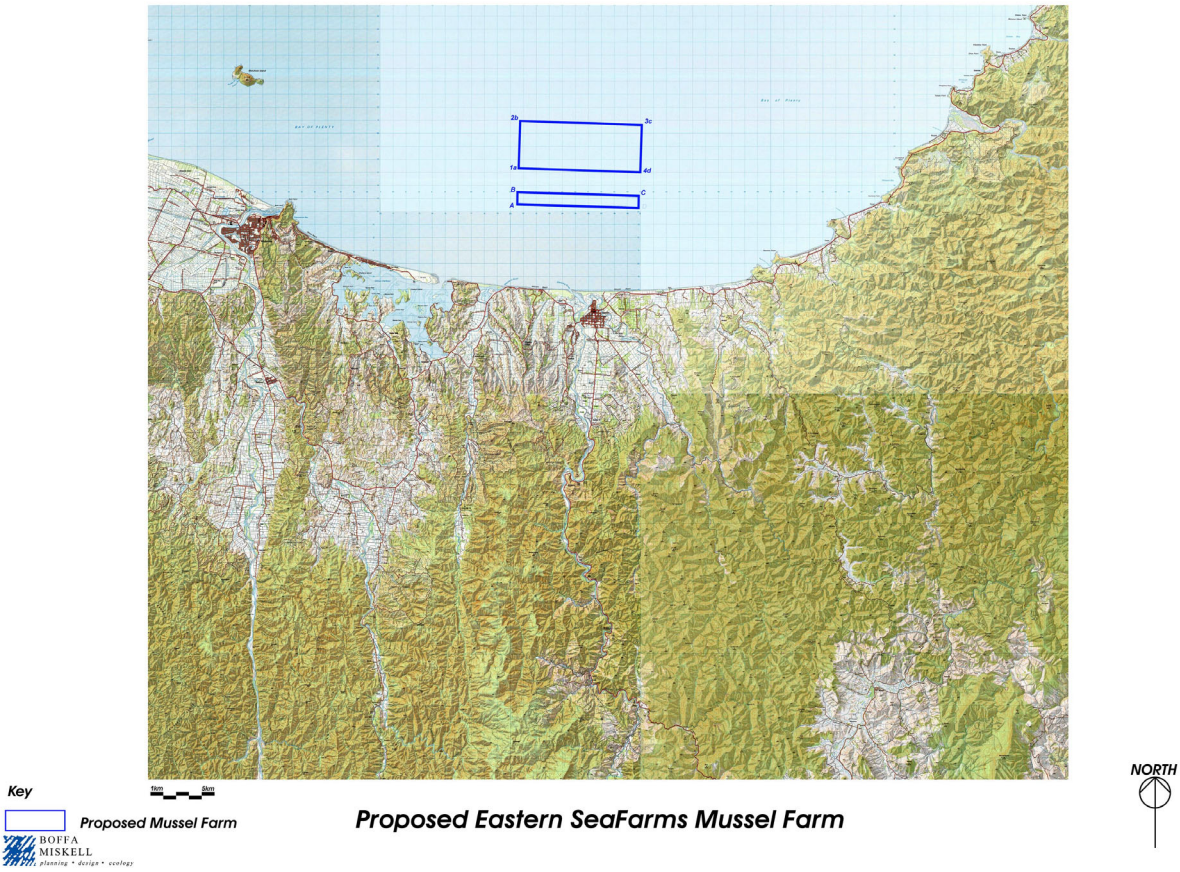
The mussel farm, at full operation, is likely to be 3,200 hectares with an additional 1,550 hectares of navigating space required. The farm is forecast to consist of approximately 1,300 lines, which should result in an annual haul 25,000 tonne of mussels.

Currently the Eastern Sea Farms Group is undertaking tests on the suitability of the area for long line mussel farming and is attempting to confirm the grant of the resource consent and gain fisheries approval for the farm. This means that currently, all the outcomes associated with Option 2 and 3 are forecast or potential outcomes.

Figure 6 details the proposed location and size of the mussel farm and where it sits in relation to Opotiki.

Figure 6

Proposed ESL Mussel Farm Location



Source: Eastern SeaFarms

3.8 Other Commercial Opportunities

With the establishment of a safe, all weather harbour, other commercial opportunities may develop in the Opotiki region, using the Opotiki Harbour as the base for operations. These opportunities may include :

- offshore fish farming;
- barging of forestry and other products; and
- commercial fishing opportunities.

4.1 About Financial Feasibility Analysis

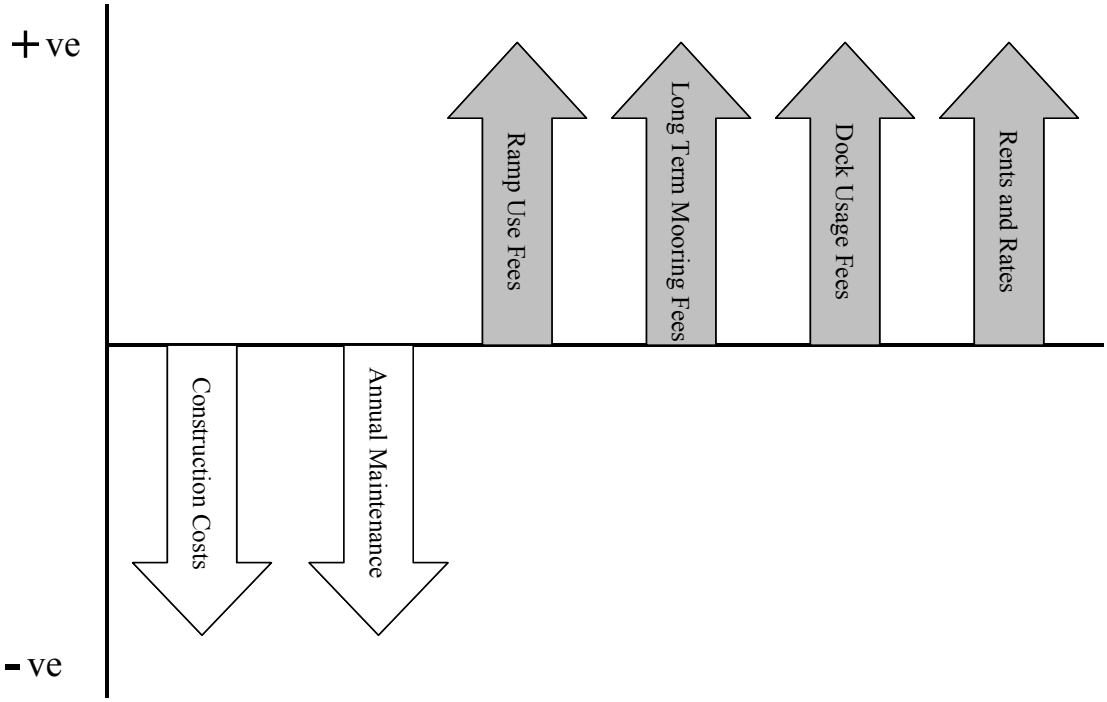
The first step in evaluation of the harbour development and its associated scenarios is the conduct of a financial feasibility analysis. Financial feasibility is a key input into benefit-cost and economic impact analysis.

Financial feasibility analysis is undertaken to determine whether the cash flow gains from a development are greater than the cash outflows associated with the development. It is used to assess, on a net profit basis, whether the project will provide positive return to investors.

For this section of the Evaluation, the required parameters are those that generate actual cash benefits and costs for the project, as set out in Figure 7 below.

Figure 7

Identify Parameters of Financial Feasibility



The financial feasibility in this Evaluation has been done from the perspective of the ODC, to determine the financial outcomes for the Council, on the assumption that they will be funding the development. Capital cost sensitivity analysis of the feasibility can be undertaken if alternate funding sources are identified.

The key steps in the financial feasibility analysis include:

- determination of analysis parameters;

- assessment of potential demand;
- development of a revenue estimate;
- assessment of capital expenditure and operating costs; and
- completion of the feasibility modelling.

These steps are described in further detail below.

4.2 Feasibility Analysis Parameters

The feasibility analysis has been conducted utilising an industry standard technique called Discounted Cash Flow (DCF) modelling. DCF modelling seeks to evaluate whether a stream of cash flows over a period of time can justify a capital investment at a given required rate of return. In order to undertake DCF modelling however, the financial parameters of the model need to be determined. URS have attempted to be consistent with NZTE guidelines when determining these parameters. The key financial parameters of the discounted cash flow model adopted by URS include:

- the adoption of an 8% real discount rate – this is a discount rate typically used in government infrastructure projects; and
- the utilisation of a 25 year analysis period – this is the industry standard analysis period for investments of this nature, driven primarily by asset life and depreciation assumptions.

4.3 Demand Assessment

In determining the financial feasibility of a product or infrastructure development, the starting point is to determine incremental demand – that is, what additional demand will be generated by the development. For the Opotiki harbour development, URS has identified four groups of potential beneficiaries – recreational boats, charter operators, commercial fishers and the mussel farm operator.

The following sections of this report details evidence that URS has been able to identify and analysis that URS has been able to conduct in order to generate evidence that these users groups will increase their usage of the harbour and entry/exit channel, as a result of the proposed development.

4.3.1 Recreational and Sport Boating

The recreational boating market in the Bay of Plenty is typically driven by the recreational fishing demand. There is a large recreational fishing market in and Opotiki and the surrounding areas, as well as a number of sports fishing clubs around the area[3], such as :

- Opotiki – 80 members;
- Waihau Bay – 443 members;
- Whakatane – 2,405;
- Mt Maunganui – 1,817;
- Tauranga – 3,895;
- Bowentown – 913;
- Whangamata – 3,452;
- Mercury Bay – 1,887; and
- Te Kaha – 203 members.

While there is a demand for safe entry and exit to the harbour, increased recreational usage of the channel/harbour, particularly by additional non-local users, is limited due to:

- other locations around the Opotiki and surrounding districts providing entry and exit points;
- the use of direct beach entry to enter the water, rather than river entry, as virtually all recreational vessels in the area are trailer stored boats; and
- lack of time pressure – ie recreational boat owners can more easily put off their usage of the harbour/channel if weather or bar conditions are inappropriate.

Nevertheless, based on consultations with local stakeholders, ODC and the Opotiki Coast Guard, URS has estimated that recreational usage of the harbour and channel will grow by around 66 per cent from an average of 12 per day to an average of around 20 per day, as set out in Table 2 below.

[3] NZBGFC Yearbook 2004.

Table 2

Recreational Boating

Options	Average Boats Per Day	Boat Entries Per Year
Base	12	4,380
All Developments	20	7,300

Source: Consultations with ODC and the Opotiki Coast Guard

Note: The recreational boating numbers are estimates as the Marine Safety Authority, who are the main boating statisticians in New Zealand, do not keep statistics on recreational boat users and registration is not required.

Using recreational boating data, gained from the Whakatane harbour master, and developing it for Opotiki, it has been estimated that the annual growth in recreational boat usage, post the harbour development will be 2% per annum. This will result in recreational boating trips in 2030 of approximately11,064.

4.3.2 Charter Boats

The market for charter boats in the Bay of Plenty region revolves around fishing and scenic tours. Table 3 below shows the major charter attractions in the region.

Table 3

Charter Boat Operations – Eastern Bay of Plenty

Charter Type	Activity
Fishing	Yellow Fin Tuna Striped Marlin Sharks Kingfish/Yellowtail
Scenic Tours	White Island Coastline Ecotourism[4]

Source: Stakeholder discussions

There are at least two part time charter boat operations based in Opotiki, however, there are no established or full time charter operations based in Opotiki. URS understands this is primarily due to a combination of:

[4] Ecotoursim includes activities such as swimming with Dolphins, Whale watching and diving.

- Opotiki being further east of the main population centres and tourism markets than competing locations such as Whakatane; and
- the charter boat industry being put off Opotiki as a location due to infrastructure difficulties (such as the lack of appropriate mooring facilities) and operational difficulties associated with bar conditions.

Based on consultations with key stakeholders, there is evidence that additional charter boat operators will establish operations in Opotiki if the harbour development proceeds. This is based on:

- Opotiki being more accessible to White Island and key fishing areas than alternate ports such as Whakatane; and
- the removal of operational restrictions at Opotiki would make operating out of Opotiki more attractive to charter operators than continuing to operate out of ports where operational restrictions remain such as Whakatane.

As part of the process of determining how many charter operators may establish in Opotiki, if the harbour development proceeds, URS has conducted a survey of the charter boat operators in surrounding areas, including the 15 charter boats greater than 12 metres operating out of Whakatane, as well as selected charter boat operators based in Tauranga and Mt Manganui. A copy of the survey can be found in Appendix B.

Although the survey response rate has to date been low (due primarily to seasonal factors), analysis of data provided suggests that initially, up to six charter boat operations could locate in Opotiki following the provision of an all weather channel as set out in Table 4 below.

Of these six potential operators, four are expected to be operators relocating from Whakatane or Whakatane operators setting up parallel operations in Opotiki. In addition, the Whakatane Charter Boat Owners Group believes that a sufficient market may exist for an additional two new operators to base in Opotiki.

For the purpose of the Evaluation, it has been assumed, based on consultation with charter boat operators, that the charter boats would operate 155 days per year, undertaking taking an average of one trip per day.

Based on consultation with ODC and stakeholders, it has been estimated that a new charter boat will be established in Opotiki every four years. This has been based on growth patterns in Whakatane over the last 15 years. The growth implications are illustrated in table 4.

Table 4

Estimated Opotiki Charter Harbour Users

Type	2009	2013	2017	2021	2025	2029
Whakatane Relocation	4	4	4	4	4	4
Opotiki Established	2	3	4	5	6	7
Total	**6**	**7**	**8**	**9**	**10**	**11**

Source: URS analysis of survey data and consultation with charter operators

4.3.3 Commercial Fishing

The provision of an all weather channel may also make Opotiki attractive to commercial fishers. Through ODC, a survey of 11 commercial fishers based at other locations in the surrounding region – including Tuaranga, Ohope and Whakatane – has been undertaken to determine whether there would be any movement from the current port location to Opotiki.

The survey responses indicated that with right infrastructure and support services a limited number of commercial operators would establish operations in Opotiki. The reason given for a movement to Opotiki mainly revolved around the closeness to the major fishing region. The difficulties faced by those commercial fishers, that would operate out of Opotiki, are the distance to processing plants the lack of support services which currently exist in the region.

In the evaluation conducted in this report, URS has estimated that two commercial fishing operators would establish in Opotiki after the harbour development, with an increase of one operator every 6 years.

Table 5

Estimated Opotiki Commercial Harbour Users

Type	2009	2013	2017	2021	2025	2029
Opotiki Established	2	2	3	4	4	5

Source: URS analysis of survey data and consultation with Whakatane Harbour Master

One of the difficulties faced by commercial operators is the quota system, introduced 15 years ago, which is enforced across New Zealand waters. Smaller operators must compete with the larger operators for quota's in the fishery areas. In Whakatane the number of commercial operators crashed post the introduction of the quota system, but has gradually recovered over time. Due to this recovery, we have included commercial operations and a growth factor.

4.3.4 Mussel Farm Demand

The Bay of Plenty region has been identified as an area suitable for aquaculture developments, in particular, mussel farming. The potential establishment of a mussel farm off the Opotiki coast is currently being evaluated by Eastern Sea Farms, albeit that they are also looking at other locations in the Bay of Plenty region.

Although URS has signed a confidentiality agreement with Eastern Sea Farms, which limits the information that can be provided in this report, URS has developed a harbour demand estimate which includes the mussel farm. URS has received advice from Eastern Sea Farms, that mussel farming (and of course mussel processing) would not be practical out of Opotiki with the current harbour access.

Given that the proposed mussel farm is centred three miles off Opotiki, the harbour development would provide an efficient access point to the farm. This would improve the financial viability of the farm and increase the likelihood if the farm development proceeding.

Consequently, the demand estimate is based on the establishment of the first lines by 2010 and full production being reached in 2028.

Assuming that the Opotiki harbour development proceeds and Eastern Sea Farms choose Opotiki, Eastern Sea Farms have indicated that at full production, up to 6 boats would be located in Opotiki. However, in the early stage of development, Eastern Sea Farms have indicated that they would service their start-up operations by utilising vessels based at other locations such as Coromandel.

The demand for the use of Opotiki harbour will revolve around the number of trips that boats will make out to the mussel farm per year. There are three major reasons for boat trips out to the mussel farm which include, establishing the lines, maintaining the lines and harvesting the mussels from the line. Table 6 below sets out the parameters for trips used in the evaluation.

Table 6

Mussel Farming Boat Usage Demand

Parameters	Per Trip
Number of lines established per trip	2
Number of lines maintained per trip	50
Number of tonnes harvested per trip	20

Source: Eastern Sea Farms/ Sea Lords

On the basis of these trip parameters, URS has estimated that at start-up, around 14 trips in and out of Opotiki will be required, ramping up to around 1,500 trips at full production.

4.4 Other Commercial Opportunities

With the establishment of a safe, all weather harbour, other commercial opportunities may develop in the Opotiki region, that make use of the facilities developed. We have not included values for other commercial opportunities in this evaluation, due to the early stages of development, and the lack of available data, but have included a description of possible activities.

4.4.1 Barging

There are opportunities in forestry in the Opotiki district, particularly in the eastern segment of the region. The movement of wood harvested to market could move by road or potential by water. The movement by water will create usage of the harbour development and would ultimately improve the feasibility of the evaluations undertaken in this report because of industry investment, harbour revenues and employment. The movement of forestry products by barge is likely to be determined by the relative transport costs of road transport compared to barge transport and potentially by government regulation on the use of roads for forest.

4.4.2 Fish Farming

Offshore fish farming is being explored as an opportunity, operating off the coast of Opotiki, with the fish farm being serviced from the Opotiki harbour. Fish farming involves the establishment of nets or cages in the open sea. The fish are fed, to increase their size, until they are harvested. A fish farm would result in increased use of the harbour, as trips would need to made out to the farming facility for feeding, maintenance and harvesting purposes.

4.5 Revenue Estimate

From ODC's perspective, there are two sources of potential revenue for the harbour development:

- fees charged for mooring, ramp use and docking at the wharf; and
- rate income that may be generated from the establishment of a maintenance and/or processing plant.

The two sources of revenue are discussed in the following sections.

4.5.1 Fees

URS has developed estimates of potential revenue that ODC may be able to generate from recreational, charter, fishing and mussel farm related usage of harbour facilities.

In terms of recreational users, URS believes it may be possible to levy a charge on users of the ramp and wharf facility of $10 per use or per day. Although charging fees to recreational users is not common, it is

growing in both New Zealand and Australia. Suggestions for how such revenue can be generated include maritime facilities licences, access charges or parking charges.

URS estimates that revenue can also be generated from charter, commercial fishing and mussel farm vessels. Fees may be levied on these operators in the form of dock/wharf usage fees and swing mooring fees. Revenue estimates are based on pricing benchmarks gathered from Whaktane and Tauranga of $10 per usage of the dock/wharf and an annual fee of $120 for swing moorings[5]. Again, such revenue may be generated in the form of annual usage agreements, maritime facilities licences or other forms of access charges.

Table 7

Harbour Usage Fees

Harbour Use	Fees
Ramp Use – Recreational (use)	$10
Dock/Wharf Use (use)	$10
Long Term Mooring (annual)	$120

Source: Bay of Plenty Regional Navigation and Safety Bylaws,2004, charter boat operator survey & URS analysis

4.5.2 Rate Income

URS has developed estimates associated with rate income from any land based developments that may accompany operations establishing in Opotiki. Incremental rate income has only been assumed in the scenarios involving attraction of the mussel farm and associated processing plant.

No rate income has been assumed on the basis of the attraction of the 6 charter boat operations. Based on consultations with charter operators, URS has assumed that charter boat property requirements will be very limited. Any growth in demand will most likely not involve new development but rather take up of existing facilities. Similarly, no rate income increase has been assumed associated with growth is harbour usage by recreational boats.

Based on data gathered from Eastern Sea Farms and consultations with ODC, URS has developed rate income estimates for ODC. Table 8 sets out broad estimates of facility size and potential rate income.

[5] Source: *Bay of Plenty Regional Navigation and Safety Bylaw*s, EBOP, 2004 and industry consultations.

Table 8

Rate Income Estimates

Facility	Size (m^2)	Rate Income
Maintenance Facility – Stage 1	300	$5,000
Maintenance Facility – Stage 2	1,500	$10,000
Processing	Up to 20,000	$15,000

Source: Eastern Sea Farms and ODC

Based on information gained from ODC, the rate for these facilities will increase by 2.5% per annum. This growth has been included in the evaluation.

URS have been advised by ODC that there are no further services required as a result of the development of a mussel farm and processing plant in Opotiki. The roads are forecast to be able to handle any increases in trucking and the water and electricity infrastructure will be suitable for the facilities.

4.5.3 Dry Dock Revenue

Although not investigated as part of this evaluation, another source of potential revenue at the harbour could come from the establishment of dry docking facilities around the area of the boat ramp at Opotiki. The dry docks being considered would service the recreational boating market, mainly but not exclusively, allowing owners to store boats out of the water. The benefits to dry docking include reductions in cleaning requirements and protection from storm conditions, among others. The establishment of a dry docking facility at Opotiki Harbour would put the Opotiki district in a unique position in the Eastern Bay of Plenty, as there is currently no dry docking facilities established in the region. This niche market may allow for premium revenues to be received. There will be capital and maintenance costs associated with establishment and operation of the dry docking facility and as such a feasibility analysis will be required to determine the returns to the potential Opotiki facility. The ODC will pursue this further analysis as part of on going work to establish the harbour development.

4.5.4 Summary of Revenue Estimates

A summary of the revenue estimates included in the feasibility model is set out in Table 9 below. Annual income estimates range from $86,000 to $184,000.

Table 9

Revenue Estimates by Scenario

Stage of development	Scenario 1	Scenario 2	Scenario 3
Mussel farm start-up stage	$86,000	$96,000	$96,000
Mussel farm operational stage	$133,000	$165,000	$184,000

Source: URS analysis and estimates

4.6 Cost Estimates

The next step in the feasibility analysis involved the development of both capital and operating cost estimates. The estimates have been taken from previous engineering studies undertaken by ODC and are set out below.[6]

4.6.1 Capital Cost Estimates

Capital costs for the construction of the two moles and associated works to create an all weather channel have been estimated by ODC at around $12.925m. Of this $12.925m, around 70 per cent relates to the cost of supplying rock material to create the moles, with the remainder being for labour and associated costs.

From a discounted cash flow modelling perspective, the timing of the expenditures is important, with the expected construction timetable and associated spend rates set out in Table 10 below. A three year construction period is envisaged by ODC, although the actual timing depends on securing the funding required to finance the project and on approvals for construction and development being granted.

[6] Coastline Consultants Ltd report to ODC.

Table 10

Timing of Construction Costs

Timing	Task	Capital Costs ('000s)
Year 0 – 2006	Investigation & Modelling	$225
Year 0 – 2006	Design	$250
Year 1 – 2007	Resource Consent	$450
Year 1 – 2007	Construction	$6,000
Year 2 – 2008	Construction	$6,000
Total		$12,925

Source: Engineering Services Manager – Council Paper, February 2005.

No capital cost estimates have been considered for the mussel farm and processing plant, as part of the financial evaluation, as these are private sector costs.

4.6.2 Other Infrastructure Construction Costs

In addition to the construction of the all weather channel, URS understands that ODC is considering the construction of other, ancillary infrastructure including a new wharf, a boat harbour developments and other general facilities.

ODC has estimated these additional facilities will cost around $4-6 million to construct, although at this stage, given the uncertainty as to whether such a development would proceed or in what form, this capital cost has not been considered in the feasibility assessment.

4.6.3 Maintenance and Operating Costs

The maintenance and operating costs of the harbour development have been estimated by ODC at between $50,000 and $300,000 per year. For the evaluation, the figures used for maintenance and operating costs has been taken from the ODC February Council Paper, Engineering Services section. For the first two years after construction the annual maintenance and operating cost of the harbour development will be $450,000 per annum, which consists of rock replacement and dredging. For the remainder of the evaluation, the annual maintenance of the harbour development is $200,000 per annum, which mainly consists of dredging costs.

Table 11

Maintenance Cost and Profile

Year	Cost p.a ('000s)
2009 & 2010	$450
2011+	$200

Source: Engineering Services Manager – Council Paper, February 2005.

4.7 Financial Feasibility Results

A discounted cash flow approach has been taken to establish the financial feasibility of the harbour development options. The financial feasibility analysis has been undertaken on a pre tax basis.

The results of the financial feasibility highlight that on a stand-alone, commercial basis, the harbour development is not feasible. All three scenarios generated a negative NPV of more than $12.8m, with insufficient revenues to justify the high capital costs involved.

Table 12

Financial Feasibility Results - Harbour Development

Parameter	Scenario 1	Scenario 2	Scenario 3
Net Present Value	-$13.0m	-$12.9m	-$12.8m
Net Present Value - Revenues	$0.85m	$0.99m	$1.03m
Net Present Value - Costs	$13.9m	$13.9m	$13.9m
Rev-Ex Ratio	**0.06**	**0.07**	**0.07**

Source: URS analysis

Although the project is not financially feasible on a commercial basis, this does not mean that the project should not proceed. A broader perspective on the Opotiki harbour development is adopted in the benefit-cost and economic impact analysis as set out in following sections of this report.

4.8 Financial Feasibility Sensitivities

There are a number of parameters in the financial feasibility study that are variable. URS has undertaken sensitivity analysis on the variable parameters which have an impact on the feasibility outcomes. The sensitivities undertaken include:

- boat ramp usage charges set to zero;
- demand for Harbour (boat usage); and

- discount rate variations at 6% and 10%.

In summary, none of the sensitivities generate a positive NPV on a stand-alone, commercial perspective.

An outline of the sensitivity analyses undertaken is set out below.

4.8.1 Boat Ramp Fee Sensitivity

Undertaking the evaluation without a ramp charge give the results shown in Table 13 below. As there is currently no ramp charge at Opotiki, it may be difficult for the council to institute and charge. With a reduction in revenue, all the scenarios suffer a decrease in NPV when compared to the base financial feasibility result.

All scenarios provide a negative result at the financial feasibility level. The range of NPV's is a low of negative $13.6 million and a high of negative $13.7 million.

Table 13

Ramp Usage Fee Zero Sensitivity

Parameter	Scenario 1	Scenario 2	Scenario 3
Net Present Value	-$13.7m	-$13.6m	-$13.6m
Net Present Value - Revenues	$0.13m	$0.26m	$0.3m
Net Present Value - Costs	$13.9m	$13.9m	$13.9m
Rev-Ex Ratio	**0.01**	**0.02**	**0.02**

Source: URS analysis

4.8.2 Demand Sensitivity

URS has analysed the effect of an increase and decrease in the demand for harbour facilities by recreational and commercial vessels. The demand used in the base evaluation has been increased and decreased by 20%. The results of the increase/decrease in demand sensitivity is shown in Table 14 below.

An increase in demand for the harbour development results in an improvement in the NPV of the evaluation when compared to the base analysis. The NPV results are still negative however, with Scenario 1 returning an NPV of negative $12.9 million, Scenario 2 returning an NPV of negative $12.7 million and Scenario 3 an NPV of negative $12.7 million.

If the demand for the development does not reach the base level forecast in the report, the NPV results of the project will be reduced. The sensitivity analysis is undertaken with a 20% reduction in demand by recreational and commercial facilities as shown in Table 12 below. The resulting NPV's are negative

$13.2 million for Scenario 1, negative $13.0 million for Scenario 2 and negative $13.0 million for Scenario 3.

Table 14

Vessel Demand +/-20% Sensitivity

Parameter	Scenario 1	Scenario 2	Scenario 3
Increasing Demand Sensitivity			
Net Present Value	-$12.9m	-$12.73m	-$12.68m
Net Present Value - Revenues	$1.00m	$1.14m	$1.18m
Net Present Value - Costs	$13.9m	$13.9m	$13.9m
Rev-Ex Ratio	**0.08**	**0.08**	**0.08**
Decreasing Demand Sensitivity			
Net Present Value	-$13.15m	-13.02m	-$12.98m
Net Present Value - Revenues	$0.7m	$0.8m	$0.9m
Net Present Value - Costs	$13.9m	$13.9m	$13.9m
Rev-Ex Ratio	**0.05**	**0.06**	**0.06**

Source: URS analysis

4.8.3 Discount Rate Sensitivity

Discount rate sensitivity is one of the key sensitivities required by NZ Government guidelines for the conduct of financial feasibility assessments. In this evaluation, discount rate sensitivity will be undertaken at the 10% level and 6% level. The outcomes of the discount rate sensitivities is set out in Table 15 below.

Typically, using a higher discount rate reduces the financial feasibility of a development. However, on this occasion, because costs significantly outweigh revenues, using a 10 per cent discount rate improves the NPV outcomes (because costs occur over time, they get discounted as well). The NPV for Scenario 1 is negative $12.5 million, Scenario 2 is negative $12.4 million and Scenario 3 is negative $12.4 million.

Typically, using a lower discount rate improves the financial feasibility of the development. However on this occasion, because costs significantly outweigh revenues, using a 6 per cent discount rate worsens the NPV outcomes. Using a 6 per cent discount rate, the NPV for Scenario 1 is negative $13.5 million, Scenario 2 is negative $13.4 million and Scenario 3 is negative $13.3 million.

Table 15

Discount Rate Sensitivities

Parameter	Scenario 1	Scenario 2	Scenario 3
10% Discount Rate Sensitivity			
Net Present Value	-$12.5m	-$12.4m	-$12.4m
Present Value Revenues	$0.7m	$0.8m	$0.8m
Present Value Costs	$13.2m	$13.2m	$13.2m
Rev-Ex Ratio	**0.05**	**0.06**	**0.06**
6% Discount Rate Sensitivity			
Net Present Value	-$13.5m	-$13.4m	-$13.3m
Present Value Revenues	$1.1m	$1.2m	$1.3m
Present Value Costs	$14.6m	$14.6m	$14.6m
Rev-Ex Ratio	**0.06**	**0.08**	**0.09**

Source: URS analysis

4.9 Financial Feasibility Summary

No scenario analysis undertaken as part of the analysis, nor any sensitivity analysis, returned a positive financial feasibility outcome. However, it was never envisaged that the harbour development would be financially feasible given the nature of the development and the limited commercial opportunities available from the stage 1 development.

Other developments such as boat harbour facilities may result in additional commercial opportunities, but at this stage, on a stand-alone, commercial basis, the harbour development is not financially feasible.

4.10 Additional Benefits

The financial feasibility analysis set out above highlights that on a stand-alone commercial basis, done from ODC's perspective, the harbour development is not feasible. The feasibility analysis also highlights that the development would not attract private sector financing.

This is not to say that the development should not proceed. Many items of social and physical infrastructure do not have the capacity to be financially feasible on a stand alone basis. This does not mean however that such infrastructure should not be provided by Government, providing a project has

broader or indirect benefits. Non-market benefits can be identified by taking a broader (and hence less commercial) approach to the evaluation of the project.

For government funding to be considered and approved, a benefit-cost analysis and an economic impact assessment need to be undertaken to determine whether on a broad perspective the development generates more benefits than costs and whether the development will generate a significant positive impact on the Opotiki economy.

5.1 Benefit-Cost Analysis

Benefit-Cost Analysis (BCA) attempts to take into account the claims a project makes on an economy and any gains it provides to the economy as a whole, so the perspective is "economy wide", rather than that of any particular individual, organisation, or region. These often include both market and non-market factors such as externalities including, for example, environmental benefits or costs.

BCA analysis typically involves a three step process as set out below:

- Step 1 - setting parameters;
- Step 2 – discovering potential benefits & costs; and
- Step 3 - valuing (either directly or via proxy) benefits and costs.

These steps are discussed in further detail below.

5.2 Setting BCA Parameters

The first step in a BCA process involves setting parameters for the analysis in terms of:

- ***the perspective of the analysis*** – ie from whose perspective is the analysis being undertaken. On this occasion, the perspective is national – ie from a New Zealand wide perspective, what are the benefits and costs that arise from the Opotiki harbour development;
- ***the establishment of a base case and scenarios*** – for this analysis, URS has set the do nothing as the base case and assessed three scenarios;
- ***selection of modelling approach*** - the feasibility analysis has been conducted utilising an industry standard technique called Discounted Cash Flow (DCF) modelling. DCF modelling seeks to evaluate whether a stream of quantifiable flows over a period of time can justify a capital investment at a given required rate of return. In order to undertake DCF modelling however, the financial parameters of the model need to be determined.
- ***determination of a discount rate*** - an 8% real discount rate has been adopted. This is typical of a discount rate used in government infrastructure projects; and
- ***determination of the assessment period*** - the utilisation of a 25 year analysis period – this is the industry standard analysis period for investments of this nature, driven primarily by asset life and depreciation assumptions.

5.3 Process of Discovery

The second step in any BCA is a process of discovery, where all potential benefits and costs are initially identified, regardless of perspective and where the benefits and costs fall.

For this assessment, the process of discovery involved discussions and consultations with key stakeholders such as ODC, WDC, EBOP, national government, industry groups, current and potential users, community groups and Iwi representatives.

From these consultations, URS identified a set of potential benefits and costs. The list of potential benefits and costs identified for the BCA analysis is set out in Table 16 below.

Table 16

Potential Benefits & Costs

Potential Benefits	Potential Costs
Revenue from fees, charges & rates	Capital costs
Improved safety of channel usage	Operating/maintenance costs
Potential flood mitigation	Potential worsening of the flood
Growth in employment	Potential damage to beaches, sea grasses
Increased tourism to Opotiki	

Source: URS analysis based on stakeholder consultations

5.4 Valuing Benefits & Costs

Once potential benefits and costs have been identified, the next step in the BCA process involves determining an appropriate valuation methodology for each benefit and cost. In assessing valuation methodologies for benefits and costs, either of three outcomes are possible:

- valuation methodologies are identified that are direct and information is readily available;
- valuation methodologies are identified that need to consider indirect or proxy methods where information is readily available or can be produced through the application of economic analysis or benchmarking techniques; or
- valuation methodologies are not available or information cannot be gathered in a cost effective manner. In this case only qualitative analysis can be provided.

A discussion on each identified potential benefit and cost and their valuation is set out below.

5.4.1 Financial Benefits and Costs

For the BCA, both the revenue and cost numbers associated with the harbour development from the financial feasibility analysis were adopted.

5.4.2 Safety Benefits

A number of key stakeholders consulted believed that there would be significant safety benefits associated with the provision of an all weather channel at Opotiki. This is based on anecdotal reports of a number of incidents in recent years where boats have run aground on the bar or experienced other difficulties associated with the bar.

In Opotiki the nature of the bar, and the entrance to the harbour, means that there is some risk to those that enter or exit the harbour. As mentioned earlier in the report, the bar is not passable 20% of the time due to tides and /or the prevailing weather conditions.

Some of the accidents that have occurred either at the Opotiki bar or in the region, that may have been avoided if a safe, all weather, harbour existed, include:

- two people drown crossing the bar, early 1980's;
- game fishing boat run aground after losing anchor off the coast of Opape, 2000;
- yacht capsized in the entrance to Ohiwa Harbour after losing a keel on bar, 2003; and
- catamaran run aground due to storm off Waihau Bay, 2004.

According to the Opotiki Coast Guard, there are only 2 incidents that occur at the mouth of the harbour each year and to date, these have typically been low risk occurrences – ie minor strandings on the bar. In addition, the Maritime Safety Authority records show only one significant incident report on file for Opotiki over the past five years and this incident was not related to bar or weather conditions (actually a loss of steering).

Nevertheless, there is an economic cost associated with marine accidents. The costs that are associated with marine accidents include:

- lost earnings;
- family and community costs;
- vessel and cargo damage;
- insurance costs; and
- pain and suffering.

There little publicly available information on economic costs of maritime accidents in New Zealand. URS understands that the Maritime Safety Authority does not have, or use, a standard measure for the average economic cost of maritime accidents. For this Evaluation, a measure of per accident average cost has been developed using information gained from the Australian Bureau of Transport and Regional Economics[7] augmented and developed to suit the New Zealand conditions, which results in an average incident cost of $31,600.

On the basis that the provision of an all weather channel will eliminate bar related accidents, URS has adopted an estimate of the annual benefit to the community of $63,200 in avoided costs associated with the improved safety of the harbour entry/exit.

5.4.3 Flood Mitigation

There is a possibility that there may be savings to the local and national government, as well as the community in general, associated with flood mitigation. It is possible that the moles, groynes or training walls and dredging associated with the harbour development will allow for better discharge of the river, if the walls are located more than 120 metres apart[8]. This could lessen the chance of flooding and also have the benefit of a reduction in materials build up which currently occurs within the river.

URS has received information from ODC on the estimated cost of a town based flood within the Opotiki District. The estimate was calculated on the basis of an inundation due to stopbank breaching. Items which are likely to be effected by a flood, in terms of cost, are housing and furniture, commercial businesses, vehicles, roading , water, sewerage and power.

It was estimated, by the ODC, that the inundation and stopbank breaching, of the nature costed for this evaluation, is a one-in-one hundred-year event. The financial cost of this type of flood has been estimated at approximately $52 million. This gives an annualised flooding cost in the Opotiki region of around $518,400.

For the BCA, URS developed a methodology to generate a proxy value for the potential flood mitigation benefit. This methodology is based on the reduction in annualised cost if, as predicted, the moles have the effect of reducing the township flood from a one-in-one hundred-year event to a one-on-two hundred year flood. On this basis, the annualised cost falls to around $259,200 – a saving of $259,200 per annum. This data is set out in Table 17 below.

[7] Cost of Maritime Accidents in Australia, Bureau of Transport and Regional Economics.

[8] Ecos Nomos Ltd & Coastal Consultants, Opotiki Entrance: Navigation Improvements Feasibility Study Phase 2, 2004.

Table 17

Annualised Flood Costs and Mitigation ('000s)

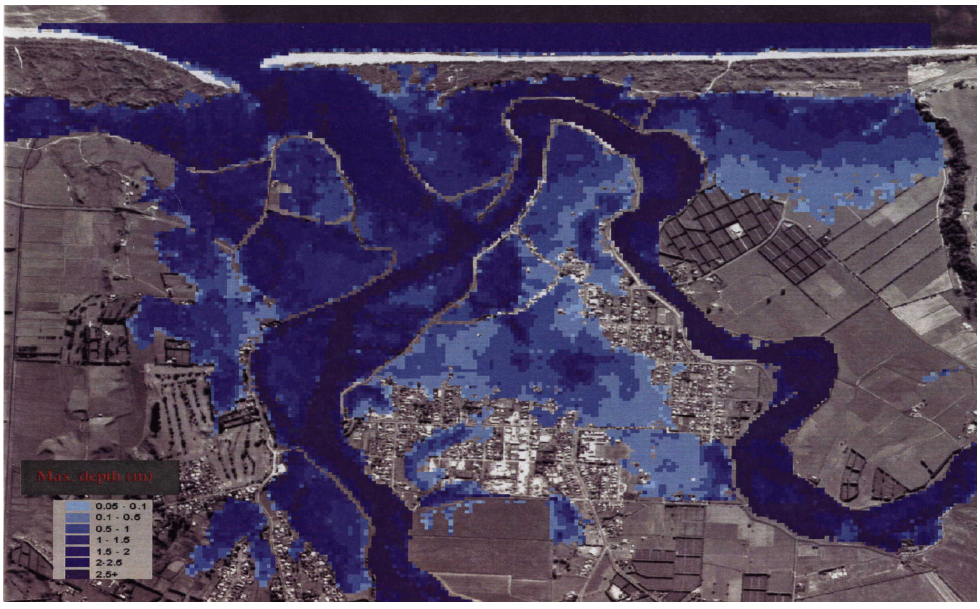
Cost Items	Cost and Parameters
Households	$40,000
Commercial	$10,000
Vehicles	$1,000
Roading	$200
Water/Sewerage	$240
Power	$400
Total	$51,840
Current Flood Frequency (years)	1 in 100
Annualised Flood Cost	$518.4
Revised Flood Frequency (years)	1 in 200
Annualised Flood Mitigation Savings	$259.2

Source: ODC Flood Scenario Costing

This scenario has been tested as a sensitivity in which the flood mitigation savings of the development are set to zero. Figure 7 shows the potential outcomes of a town based flood.

Figure 8

Opotiki Flood Model Diagram



Source: ODC Engineering Services.

5.4.4 Unemployment Benefits

Developments in Opotiki brought forward by the harbour development have the potential to reduce unemployment within the region. This may generate a benefit, from a national perspective, in terms of reduced unemployment benefit recipients.

The current working age population in the Opotiki district is approximately 4,200 people. From the table below, the average number of unemployed over the last nine years has been 802, which equates to an average unemployment rate of 15% for the region, over the time period, compared to a New Zealand average of 5.8% over the same time period. Unemployment benefit recipients in 2004, for the Opotiki district, totalled 535, an unemployment rate of 12.9%, a substantial reduction from recent times. The current rate of unemployment nationally is 3.6%[9], which is 9.3% lower than the current Opotiki rate.

Table 18

Unemployment Levels in Opotiki

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Unemployment Benefit Recipients	898	876	868	948	852	837	728	680	535

Source: Ministry of Social Development

The annual cost of unemployment benefits paid in the Opotiki region for the 2003/04 financial year was $5.5 million – an average of $10,220 per person per year. Consequently, for every currently unemployed person that is employed as a result of the harbour development and associated activities, on an ongoing full time equivalency basis, the National New Zealand Government will save $10,220 per annum.

The profile of additional employment (in absolute terms) under each of the scenarios is shown in Table 19 below. It highlights the number of jobs generated by each of the scenarios on an annual basis, additional to what currently is available in the region. It does not represent additional jobs each year, but the total available each year.

[9] Statistics New Zealand, Household Labour Force Survey, December 2004 quarter.

Table 19

Employment Levels By Scenario

Year	Scenario 1	Scenario 2	Scenario 3
2006	-	-	-
2007	-	-	-
2008	-	-	-
2009	10	10	10
2010	10	17	17
2011	10	19	19
2012	10	22	22
2013	12	31	31
2014	15	36	36
2015	15	32	32
2016	15	41	41
2017	17	37	37
2018	17	57	57
2019	17	45	45
2020	20	53	255
2021	22	76	313
2022	22	80	317
2023	22	86	376
2024	22	57	377
2025	24	70	390
2026	27	89	409
2027	27	93	466
2028	27	88	514
2029	29	79	540
2030	29	79	540

Source: URS Analysis, Whakatane Economic Development Officer, Eastern Sea Farms

In Scenario 1, the increase in employment comes from the estimated additional charter and commercial boat operations forecast to move to Opotiki. It is estimated that two new charter boats and two new commercial fishing operators will be established post the harbour development. Information gained in surveys and from stakeholder consultation shows that the average employment on charter boats is 2 people, while it is 3 people on commercial fishing boats, hence the increase of employment by 10 people

in Scenario 1. With growth estimations the total employment opportunities in Opotiki for Scenario 1 will be 29 at the end of the evaluation period.

In Scenario 2, where the harbour is developed and a mussel farm is established, additional employment increases to 79 people over the course of the 25 year evaluation period. The 79 people include the 29 employed as a result of the increased charter and commercial boat activity and the remaining 50 employees are associated with the mussel farm development. The employment of people in mussel farm work fits into three categories, the maintenance and harvest of mussel lines and mussels, which is work that takes place on the water, the land based work undertaken at the maintenance facility on mussel lines and other equipment, and the production and manufacture of floats and anchors.

For Scenario 3, which involves the harbour development, the mussel farm and processing plant, there is an additional 540 employment opportunities for the region. This employment level, is an estimate based on general processing ratios and the estimated harvest size from the mussel farm.

For the BCA, URS has assumed that each new job created will result in a one-on-one reduction in the number of unemployed in Opotiki. While this is unlikely in absolute terms, especially for Scenario 3 which involves the attraction of 540 jobs, it may be possible in relative terms. That is, unemployment numbers may not actually fall in absolute terms due to a potential growth in population associated with greater economic prosperity in the Opotiki district. As a result, the development will result in new jobs for people currently unemployed which would otherwise not occur.

Consequently, the scale of benefit associated with reduced unemployment benefits, at an ultimate development stage, is set out in Table 20 below.

Table 20

Reductions in Unemployment Benefits

Year	Scenario 1	Scenario 2	Scenario 3
2010	$102,000	$174,000	$174,000
2030	$296,000	$807,000	$5,519,000

5.4.5 Government Services Costs

According to ODC, its current infrastructure services (eg water, power, roads, sewerage etc) all have sufficient capacity to service all the harbour development scenarios considered in this evaluation. Consequently, no allowance has been made in the BCA for addition costs borne by ODC for the provision of additional infrastructure services.

A government service that has been identified as being required if the mussel farm was to be established offshore of Opotiki would be a crane to load and unload equipment and mussels at the dock. According to Eastern Sea Farms, this cost is usually borne by the local council. However, for the purposes of the

BCA, URS has assumed that this cost would be recovered directly from Eastern Sea Farms as they would be the primary (and most likely, the only) beneficiaries.

5.4.6 Social Issues Including Crime

It was stated earlier in the report that there were issues in Opotiki the levels of education, health and crime, for example, according to EBOP's Profile 2001 report, 34% of Opotiki district residents have no educational qualifications. By undertaking projects which lead to increases in economic activity and employment in the area, the ODC are seeking to improve the social outcomes for the community. For the evaluation undertaken in this report, the effect of the project on crime has been valued.

It has been suggested by a number of key stakeholders that the level of crime in Opotiki is (at least in part) an outcome of the high level of unemployment in the region. There are approximately 1,200 criminal offences recorded in the Opotiki district annually[10]. The criminal activities undertaken include: burglaries; thefts; family violence; violence and violent attacks; disorder; and sex offences.

URS has undertaken a literature review of the studies on any correlation between unemployment and crime, particularly in rural areas. While no specific New Zealand reports have been identified, an Australian report, by the Institute of Criminology, has found that economic climate does contribute to crime in regional areas, although not uniformly over types of offences[11]. On the basis of the findings of the Australian study, URS has assessed that reductions in unemployment caused by the harbour development in Opotiki would have a benefit from a BCA perspective as set out in Table 19 below. By way of example, it is thought that the creation of as many as 496 jobs in Scenario 3 may result in up to a 10 per cent reduction in crime in Opotiki.

According to a NZ Institute of Economic Research, economic value subscribed to the cost of crime in New Zealand is $11,790 per incident[12]. This includes property damages, income opportunity costs, counselling and other crime related costs. On this basis, it is possible to ascribe a proxy value to the benefit received by the community from a reduction in crime in Opotiki should the harbour development proceed and generate new employment. An estimate of potential annual benefits resulting from reduced crime is set out in Table 19 below. The estimate ranges from $0.37 million under Scenario 1 to $2.2 million under Scenario 3.

However, it should be noted that it is difficult to correlate crime solely to employment issues. Although undoubtedly a major factor, it is not the only factor. The Australian Institute of Criminology identifies a number of other contributory factors including population size, urban density, industry types and level of

[10] Opotiki District Council – District Profile Information.

[11] Australian Institute of Criminology – Regional Development and Crime, 2000.

[12] NZ Institute of Economic Research – Report for the NZ Dept of Justice.

education[13]. For this reason, URS has also undertaken a sensitivity analysis of the BCA without any benefits arising from a reduction in crime.

It is not just crime reduction that increased opportunities can bring to a community. The Opotiki district is in the worst category of deprivation, on the New Zealand Index of Deprivation[14]. A development which results in increased employment and increased levels of spending in the community is likely to result in an improvement in the levels of deprivation within the region.

Table 21

Cost of Crime – Opotiki

Development Option	Crime Reduction	Value
Scenario 1	2.5%	$0.37m
Scenario 2	5%	$0.73m
Scenario 3	10%	$2.19m

Source: URS Analysis.

5.4.7 Tourism Benefits

The attraction of charter operators into the Opotiki district may result in an increase in tourism visitation. An increase in tourism in the Opotiki area will have benefits for the harbour development economic feasibility and generates flow on impacts for other businesses and community groups in the area.

For the purposes of this Evaluation, URS has concentrated on the increase in visitors to the Opotiki district associated with the establishment of charter boat services. As was shown earlier in the Evaluation, URS has estimated that, initially, two new charter boats will be established in the district, operating out of Opotiki. The evaluation can only take into account the newly established charter operations because the evaluation is investigating the benefits and costs at a national level. The value of switching operations from Whakatane, for example, to Opotiki, does not generate new benefits and costs to the Bay of Plenty region or the national economy.

Using information gathered through surveys and through consultation with the Whakatane Economic Development Officer, the tourism benefits of additional charter boat operations for the Opotiki region were calculated. The results are shown in the Table 22 below.

[13] Australian Institute of Criminology – Regional Development and Crime, 2000.

[14] NZDep2001 Index of Deprivation, Department of Public Health, August 2002.

Table 22

Tourism Potential Value

Items	Initial Benefits	End of Evaluation Benefits
Additional Charter Boats	2	8
Charter Services	310	1,085
Passengers Serviced	2,170	7,595
Charter	$195,000	$683,550
Other	$106,000	$372,155
Total	**$302,000**	**$1,055,705**

Source: Surveys and Whakatane Economic Development Officer

Incremental revenue from charter operations is around $195,000 per annum at the beginning of the evaluation, but moves to $683,550 per annum at the end of the evaluation period. The flow on impacts of the increased charter boat operations accrue to providers of accommodation, fuel, takeaway food, groceries and alcohol. The estimate of flow on benefits to the Opotiki community are $106,000 at the beginning of the evaluation period, but move to $372,155 at the end of the evaluation period.

5.4.8 Environmental Costs

A number of stakeholders identified the potential for environmental costs associated with the construction of two moles at the entrance to Opotiki's harbour. Such environmental costs may include possible change/damage to beaches and impacts on marine life and sea grasses. However, at this stage, a detailed environmental assessment of the development has not been completed. Consequently, it is not possible at this stage to identify potential environmental costs nor is it possible to ascribe a value to such costs from a BCA perspective. The major environmental costs that may develop, unless mitigating engineering is employed are[15]:

- scouring – will result in the undermining of the wall structure, potentially at the entrance and along the walls. Scour protection will be required along the margin of the walls to avoid this problem;
- upstream erosion – where the banks of the river erode allowing outflanking and scour of unprotected upstream areas during high flows. Carefully tying the landward ends to the adjacent banks should mitigate this factor; and

[15] Ecos Nomos Ltd & Coastal Consultants, Opotiki Entrance: Navigation Improvements Feasibility Study Phase 2, 2004.

- prevention of longshore drift – the training walls may not allow for longshore drift across the entrance. This can lead to erosion or a lack of build up on the downdrift shoreline. It has been determined that net littoral drift will be slow and the walls should not lead to serious erosion.

5.5 Cost Benefit Analysis Results

The results of the cost benefit analysis are set out in Table 23 below. The outcomes highlight what the impact of the development of the harbour would be on the economy as a whole.

In summary, Scenarios 2 and 3 generate a benefit-cost ratio greater than one, while Scenario 1 generates a benefit-cost ratio between zero and one, that is benefits do not cover costs. The main implication of this BCA result is that ODC should not proceed with the harbour development without the commitment of Eastern Sea Farms to the development of the mussel farm and preferably the processing plant as well.

The main contributors to a benefit-cost ratio greater than one for Scenarios 2 and 3 are savings from reductions in unemployment and associated reductions in crime.

Table 23

Cost Benefit Analysis Results

Parameter	Scenario 1	Scenario 2	Scenario 3
Net Present Value	-$1.3m	$3.5m	$15.7m
Net Present Value - Benefits	$5.4m	$5.5m	$5.5m
Net Present Value - Costs	$6.7m	$1.9m	-$10.2m
Benefit Cost Ratio	**0.89**	**1.28**	**2.32**

Source: URS analysis

5.6 Cost Benefit Analysis Sensitivities

Given that the project is still at the design phase, there are many "what ifs" or "maybes" associated with the project, besides those identified in the scenario analysis (ie. mussel farm and processing plant). URS has identified three sensitivities that it believes are appropriate to ODC's consideration of the BCA outcomes. These three sensitivities are:

- discount rate sensitivities;
- a no flood mitigation savings sensitivity; and
- a no crime reduction benefits sensitivity.

These sensitivity analyses are described in further detail below.

5.6.1 BCA Discount Rate Sensitivities

New Zealand government guidelines for economic evaluation prescribe that sensitivities should be undertaken on the discount rate used in the evaluation. The sensitivity analysis on the discount rate needs to be undertaken at a level higher and lower than the base. The guidelines give as an example a + and – 2% range for discount rate sensitivity. As a base discount rate, URS used a rate of 8% for the discount rate, and have done sensitivity analysis on 10% and 6% discount rate levels. The results of these discount rate sensitivities are set out in Table 24 below.

Table 24

BCA Discount Rate Sensitivities

Parameter	Scenario 1	Scenario 2	Scenario 3
10% Discount Rate Sensitivity			
Net Present Value	-$3.0m	$0.9m	$10.0m
Net Present Value - Benefits	$4.3m	$4.4m	$4.4m
Net Present Value - Costs	$7.3m	$3.6m	-$5.6m
Benefit Cost Ratio	**0.83**	**1.15**	**1.97**
6% Discount Rate Sensitivity			
Net Present Value	$1.0m	$7.2m	$23.7m
Net Present Value - Benefits	$6.8m	$7.0m	$7.0m
Net Present Value - Costs	$5.8m	-$0.3m	-$16.7m
Benefit Cost Ratio	**0.97**	**1.45**	**2.78**

Source: URS analysis

A 10% discount rate will make it more difficult for the project to return a positive NPV. Scenario 1, results in a negative $3.0 million, scenario 2 results in a positive $0.9 million return and Scenario 3, results in approximately $10.0 million NPV.

A 6% discount rate will make it more difficult for the project to return a positive NPV. Scenario 1, results in a positive $1.0 million, scenario 2 results in a positive $7.2 million return and Scenario 3, results in approximately $23.7 million NPV.

5.6.2 BCA Flood Mitigation Sensitivity

The flood mitigating ability of the harbour development appears to be somewhat contentious. As such, URS has prepared a BCA sensitivity to determine the effect of excluding flood mitigation savings on the BCA outcomes.

Table 25

No Flood Mitigation Savings Sensitivity

Parameter	Scenario 1	Scenario 2	Scenario 3
Net Present Value	-$3.6m	$1.3m	$13.5m
Net Present Value - Benefits	$5.4m	$5.5m	$5.5m
Net Present Value - Costs	$8.9m	$4.2m	-$8.0m
Benefit Cost Ratio	**0.72**	**1.12**	**2.16**

Source: URS analysis

With no benefit attributable to flood mitigation the cost benefit analysis results in an NPV for scenario 1 of approximately negative $3.6 million. Scenario 2 has an NPV of $1.3 million and Scenario 3 returns a positive $13.5 million NPV.

In Section 5.4.6 we discussed the savings associated with a reduced crime rate in the region. The savings in economic crime costs is of significant value to the outcome of the study, it is therefore worth undertaking a sensitivity test on it. The reduction in economic costs of crime has been removed from the evaluation.

Table 26

No Crime Savings Sensitivity

Parameter	Scenario 1	Scenario 2	Scenario 3
Net Present Value	-$4.2m	-$2.1m	$4.3m
Net Present Value - Benefits	$5.4m	$5.5m	$5.5m
Net Present Value - Costs	$9.5m	$7.6m	$1.2m
Benefit Cost Ratio	**0.68**	**0.86**	**1.47**

Source: URS analysis

The removal of economic cost of crime savings, results in a negative NPV for Scenarios 1 and 2, with negative NPV's of $4.2 million and $2.1 million respectively and both having benefit cost ratios less than one. Scenario 3 still delivers a positive NPV result to the value of $4.3 million and a benefit cost ratio greater than one.

5.7 Cost Benefit Analysis Summary

The results of the cost benefit analysis show that from a holistic standpoint, there is a societal benefit to undertaking the port development in Opotiki on the basis of the attraction of the mussel farm and the associated processing plant. The major benefits are found in the improvements in unemployment and the effect that this has on the general community, for example a reduction in crime. There is also some benefits associated with a reduction in flooding.

6.1 Economic Impact Analysis

An economic impact analysis measures the total economic contribution of a project, infrastructure facility,business operation or industry on a regional, state or national economy. In this analysis, URS has assessed the total economic impact of the harbour development and associated scenarios, including both construction and on-going phases, on the Opotiki district economy.

The economic impact assessment utilising an input-output model of the Opotiki district economy prepared by Butcher Partners Limited, associated with the University of Waikato.

Economic impact analyses provide important information to government decision makers in terms of their willingness to fund developments.

6.2 Types of Economic Impacts and Indicators

There are two components to an economic impact analysis:

- a direct component; and
- a flow-on or indirect component.

While the direct employment and economic activity impacts of an investment are usually obvious, eg the number of employees used for construction, number of new staff employed in new industries, flow-on impacts are not so obvious, referring to the "multiplier effect" of the direct activity.

Economic impact is typically measured in terms of four key indicators. These include:

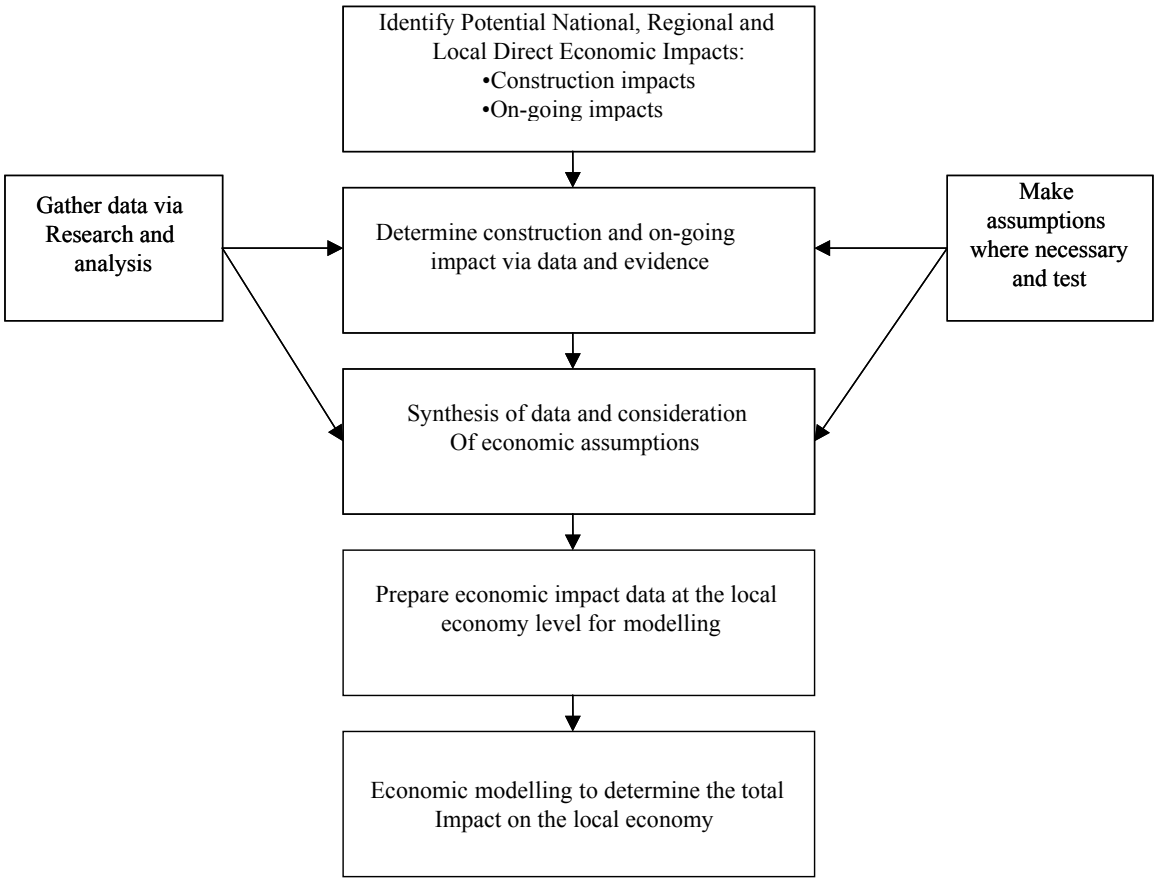
- ***output*** – ie the value of total sales;
- ***value added*** - an approximation of the contribution to Gross Domestic Product (GDP), consisting of gross operating surplus and wages/salaries of the employees;
- ***household income*** – ie the wages/salaries before tax of employees; and
- ***employment*** - the total number of employees.

6.3 Economic Impact Approach

In determining the overall impacts of the harbour development, a number of steps were undertaken including: the identification of direct economic impacts; data research and collection; synthesis of data; assumption consideration; and economic modelling. The figure below illustrates the process involved in undertaking this analysis.

Figure 9

Economic Impact Process Chart



6.4 Direct Impacts

Direct economic impacts are typically a combination of construction activity and activity that is expected to occur because of the development. For each of the development scenarios (ie harbour development only, mussel farm and mussel processing), URS has assessed the construction and on-going impacts.

6.4.1 Construction Impacts

Construction of the harbour development is likely to provide a short term burst to the economy, but the majority of the initial impacts will not continue into the future. The impact will be over the period of construction. The scale of construction impacts will depend on the extent to which labour and materials are sourced from within the Opotiki district economy.

6.4.2 On-Going Impacts

In terms of on-going impacts, the EIA focused on the potential for commercial boating operations arising from the harbour development, the operation of a mussel farm off the coast of Opotiki and the establishment and operation of a mussel processing facility in the region. The longer term impacts will include any effects on tourism, increased business opportunities and employment opportunities. The long term annual economic impacts have been calculated at the end of the evaluation period so that the outcomes can be reflective of the end position for the Opotiki district.

6.5 Economic Impact Results

6.5.1 Construction Impacts

Harbour Development - Construction

In order to determine the direct and indirect economic impacts of constructing the harbour development, URS gathered from ODC two key pieces of data:

- information on the total cost of construction, including breakdowns between labour and materials; and
- information of the geographic source of key labour and material inputs (ie from with the Opotiki district or from outside the district).

Based on this information, URS was able to model the economic impacts of the construction phase of the process. In this evaluation, URS has assumed that construction of the harbour development will take place over a two year period and that most inputs will be locally sourced, particularly the two biggest cost elements – labour and rock (used to construct the moles). Based on ODC advice, URS has assumed that 24 people will be directly involved in construction.

The results of the input output modelling highlights the direct and indirect impacts of the harbour development on the Opotiki district economy. The total economic impacts include:

- an increase of $18.0 million in output;
- a contribution of $11.2 million to Opotiki's Gross Domestic Product;
- provision of $6.4 million in household income; and
- employment of 61people.

A breakdown of the direct and indirect impacts of construction are set out below.

Table 27

Harbour Development Construction - Economic Impact Summary

Economic Impact Indicator	Direct Impact	Flow-on Impact	Total Impact
Output	$8.3m	$9.7m	$18.0m
Value Added	$4.5m	$6.7m	$11.2m
Household Income	$2.8m	$3.6m	$6.4m
Employment (FTEs)	24	37	61

Source: URS analysis

6.5.2 On-Going Economic Impact Results

Using the information provided by stakeholders and surveys, URS adjusted the data so that it was suitable for input output analysis allowing the calculation of flow on effects via industry multipliers. As mentioned earlier, URS normally calculates the economic impact of an industry in terms of output, value added, household income and wages/salaries. The economic impacts calculated are for the Opotiki region and reflect the annual outcome when the developments have been fully established.

Scenario 1 – Harbour Development only

When the harbour development is constructed and operational, there is a resultant increase in the demand for use by charter boat operators and recreational boaters. The direct and indirect impacts of the harbour development include:

- an increase of $3.8 million in output per annum;
- a contribution of $2.7 million to Opotiki's Gross Domestic Product per annum;
- provision of $2.1 million in household income; and
- employment of 72 people.

A breakdown of the direct and indirect impacts of the activity attracted to Opotiki through the harbour development alone set out below.

Table 28

Harbour Development Annual Economic Impact Summary

Economic Impact Indicator	Direct Impact	Flow-on Impact	Total Impact
Output	$1.7m	$2.1m	$3.8m
Value Added	$1.2m	$1.5m	$2.7m
Household Income	$0.9m	$1.2m	$2.1m
Employment (FTEs)	24	38	72

Source: URS analysis

Scenario 2 – Harbour Development and Mussel Farm

The second scenario evaluated for economic impact on the Opotiki region, is the harbour development accompanied by the establishment of a mussel farm. The drivers of economic activity in this scenario are the recreational boaters, the charter operators and the operation of a mussel farm. When fully operational, the mussel farm is likely to have 6 vessels and 29 employees undertaking maintenance, monitoring and harvesting. There will also be a requirement for approximately 21 people to undertake anchor and float construction. The annual direct and indirect economic impact of Scenario 2, when the mussel farm is fully operational, is estimated to include:

- an increase of $22 million in output;
- contribution of $10.8 million to Opotiki's Gross Domestic Product;
- provision of $5.1 million in household income; and
- employment of 189 people.

A breakdown of the direct and indirect impacts of the activity attracted to Opotiki through the harbour development and the mussel farm is set out below.

Table 29

Harbour and Mussel Farm Development – Annual Economic Impact Summary

Economic Impact Indicator	Direct Impact	Flow-on Impact	Total Impact
Output	$15.4m	$6.6m	$22.0m
Value Added	$4.8m	$6.0m	$10.8m
Household Income	$2.2m	$2.9m	$5.1m
Employment (FTEs)	84	105	189

Source: URS analysis

Scenario 3 – Harbour Development, Mussel Farm and Processing Facility

In Scenario 3, the harbour development, the mussel farm and a mussel processing plant are established in the Opotiki district. The economic impacts in Scenario 3 are the same as those in Scenario 2, as well as those that arise from the development of a mussel processing plant. The mussel processing plant will potentially result in over 400 jobs, when the mussel farm and processing plant are fully operational. The annual economic impact when operations of the processing plant are fully operational include:

- an increase of $44.9 million in output;
- contribution of $34.6 million to Opotiki's Gross Domestic Product;
- provision of $27.3 million in household income; and
- employment of 936 people.

Table 30
Harbour Development, Mussel Farm and Processing Facility – Annual Economic Impact Summary

Economic Impact Indicator	Direct Impact	Flow-on Impact	Total Impact
Output	$22.5m	$22.4m	$44.9m
Value Added	$20.0m	$14.5m	$34.6m
Household Income	$16.0m	$11.3m	$27.3m
Employment (FTEs)	545	391	936

Source: URS analysis

6.6 Economic Impacts Summary

As part of the Opotiki Harbour development analysis, an economic impact assessment was undertaken to determine the effect of the potential developments that may occur as part of the project. The three developments considered were the harbour development, a mussel farm and a mussel processing plant.

The analysis has been undertaken for the short term, that is during the construction phase, and the long term, when the operations are working at there full potential. The short term effects only last over the period of construction, while the long term impacts are those that occur annually.

The outcomes of the economic impact summary are shown in Table 31 below. The table highlights that the value added or GDP effects of the scenarios range from $2.7m per annum to $34.6 million per annum, which is 23% of the current Opotiki region GDP. Employment effects range from 72 new employment position to 936 positions if the processing plant is established. The effect of this increase in employment on household incomes range from $2.1 million in Scenario 1 to a high of $27.3 million in Scenario 3.

The scale of these economic impacts, particularly in Scenario 3 would make a significant difference to deprivation in Opotiki.

Table 31

Economic Impact – Scenario Summary

Economic Impact Indicator	Harbour Construction	Scenario 1 – p.a	Scenario 2 – p.a	Scenario 3 – p.a
Output	$18.0m	$3.8m	$22.0m	$44.9m
Value Added	$11.2m	$2.7m	$10.8m	$34.6m
Household Income	$6.4m	$2.1m	$5.1m	$27.3m
Employment (FTEs)	61	72	189	936

Source: URS analysis

7.1 Introduction

Social impact assessments are used to qualitatively define the existing social profile and trends within a community and analyse the effect of any developments on these social indicators. The outcomes of a social assessment are:

- to determine the likely social characteristics of the population in the event the harbour development takes place in Opotiki;
- to determine the social needs of the projected population; and
- assess the community opinion of a development – in the case of the Opotiki harbour development. URS has not undertaken detailed community consultation, but has relied on stakeholder information.

7.2 Current Socio – Economic Profile

The first stage of any social assessment is to give a brief account of the current socio economic profile within the region. In general, the Opotiki district can be considered a regional community, with an agricultural element and a town based population.

Further details on the demographic profile, the labour force, crime and social problems, leisure and recreation activities and deprivation are set out below.

7.2.1 Demographic Profile

Population

The current population in Opotiki is approximately 9,600. Between the 1996 and the 2001 census the population of Opotiki decreased by 2%.

Table 32

Population Number - Opotiki

Year	Number
1991	8,667
1996	9,375
2001	9,201
2004	9,600

Source: Profile 2001 – Environment Bay of Plenty

It is forecast that the Opotiki region will experience population growth over the next 15 years with the ODC Long Term Council and Community Plan 2004- 2014 indicating a population of 11,520.

Age and Gender Structure

The trend is towards and ageing population in the Opotiki District, with 60% of the current population over 25 years of age.

Table 33

Age Composition

Age Ranges	Number	Percentage
0 –4	756	8%
5 – 14	1,866	20%
15 – 24	1,023	11%
25 – 44	2,349	26%
45 – 64	2,067	22%
65 and over	1,137	12%

Source: Profile 2001 – EBOP

The gender structure of the region is very evenly split between male and female in the Opotiki District. The gender structure is not significantly different to the New Zealand.

Table 34

Gender Structure

Gender	Number	Percentage
Male	4,554	49%
Female	4,647	51%

Source: Profile 2001 – EBOP

Ethnic Origin

The current mix of ethnic composition in the Opotiki district is set out in the table below.

Table 35

Ethnic Composition

Ethnic Composition	Number	Percentage
Maori	4,995	49%
NZ European	4,842	48%
Other	291	3%

Source: Profile 2001 – EBOP

The ethnic composition statistics show that 49% of the population is Maori, 48% NZ European and 3% other. The proportion of Maori population within the district is slightly higher than the national average.

Household Structure

The Profile 2003 produced by EBOP sets out the current household structure. The results are shown in Table 34.

Table 36

Household Structure Figures

Family Type	Number	Percent
One Parent Family	657	28%
Two Parent Family	891	38%
Couple Only	786	34%

Source: Profile 2001 – EBOP

Table 37

Private Dwellings and Home Ownership

	Number	Percentage
Number of Private Dwellings		
1996	3,147	N/A
2001	3,207	N/A
Home Ownership		
Dwellings Owned by Resident	1,986	63%
Dwellings not Owned by Resident	978	31%

Source: Profile 2001 – EBOP

Dwellings owned by the resident in Opotiki totalled 63% of the home ownership market in Opotiki.

Education Levels

In Opotiki 34% of residents have no educational qualifications, those with a tertiary qualification made up 17% of the population and 27% had school level qualifications.

Table 38

Educational Qualifications

Qualification Level	Number	Percent
University	219	3%
Other Tertiary	945	14%
School	1,773	27%
No Qualifications	2,268	34%

Source: Profile 2001 – EBOP.

7.2.2 Labour Force

According to EBOP, the labour force participation rate is 49% for the Opotiki district. The non participating group is 42% while the unemployed is 9%. It is believed that this is understated. The analysis undertaken in section 5.5 uses an unemployment rate of 12.9%.

Table 39

Labour Force Participation

Labour Force	Number	Percent
Full time and Part time	3,090	49%
Non Participants	2,670	42%
Unemployed	535	9%

Source: Profile 2001 – EBOP.

7.2.3 Crime and Social Problems

The Bay of Plenty region has the second highest level of crime per 10,000 people in New Zealand, second only to the Auckland region[16]. The figures obtained from the ODC indicate that criminal offences in the

[16] Analysis of the Eastern Bay of Plenty Economy, Whakatane District Council, 2004

Opotiki district number approximately 1,200 per year. The criminal offences include burglaries, theft, family violence, violent attacks, disorder and sex offences.

Criminal activity is an area that the ODC have singled out as a major problem area for the district.

7.2.4 Leisure and Recreation

A range of facilities and spaces are available for leisure and recreation in the Opotiki District, in particular the community of Opotiki is involved in boating of which the existing boat ramp provides entry and exit points for trailer carried boats. Leisure and recreational facilities in Opotiki include:

- boating;
- fishing;
- beach going;
- hunting;
- walking;
- kayaking;
- waka ama; and
- a range of sports clubs (e.g. rugby, soccer and netball)

7.2.5 Deprivation Index

The Department of Public Health in New Zealand undertakes the modelling of deprivation for each of the regions in New Zealand. The deprivation index is a measure of social well being in a region. The measure takes into account eight dimensions of social well being including:

- income – income levels;
- employment – number of unemployed;
- communication – people with no access to a phone;
- transport – people no access to a car;
- support – single parent families;
- qualifications – people without qualifications;
- owned home – people not living at home; and

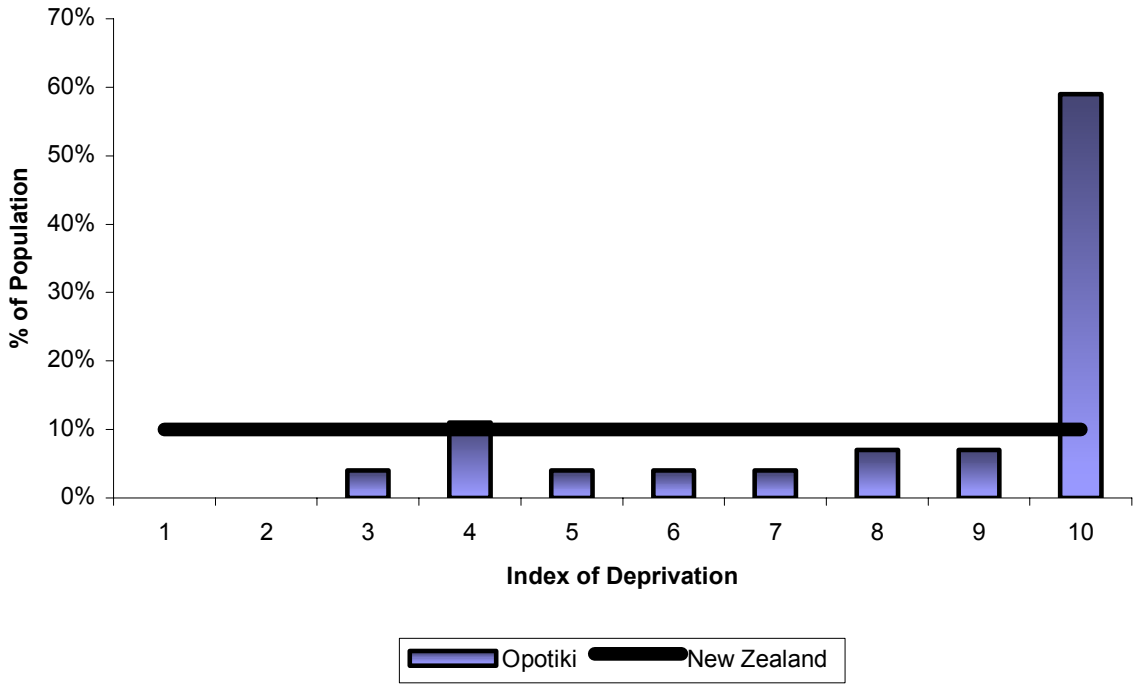
- living space – people living in equivalised households below a bedroom occupancy threshold.

From these indicators a position on an ordinal scale is determined for a region, which ranks the community with regard to these measures compared to other regions. The deprivation index rates the region on a scale of 1 to 10 where 1 is best.

The district of Opotiki is one the most deprived areas in New Zealand under the above evaluation parameters. The district has few people in the 1 to 9 category than the New Zealand average and far more in the 10 category than the New Zealand average. The latest deprivation characteristics are based on the census 2001 data.

Figure 10

Deprivation Comparison



Source: Profile 2001, A socio economic Profile of the People of the Bay of Plenty Region – Census 2001, EBOP.

7.3 Social Impact Assessment

A social impact assessment attempts to qualitatively assess the effect of a development on the community. In the case of the Opotiki region, the effect of an all weather harbour development is assessed.

7.3.1 Population Impacts

It is envisaged that the harbour development could result in an increase in the population of the region due to the increase in available jobs and economic activity in the region. For the ODC 2021 population forecast of 11,520 to be reached the development of the harbour will need to proceed. The harbour development may have the ability to attract population to the region because of the employment and lifestyle opportunities.

7.3.2 Construction Impacts

The construction impacts of the development of the Opotiki harbour are likely to be twofold:

- impact on employment over the period of construction; and
- impact on access to harbour during construction.

The impact on employment is covered in the economic impact component of the study. It involves construction over two years with up to 29 employees and approximately $12 million dollars worth of direct expenditure in the region. This has flow on effects for the region, with approximately 32 flow on jobs and $11.2 million worth of GDP effects.

There is the possibility that the construction of the all weather harbour may result in diminished access to the harbour entrance, during the period of construction. Given the current level of usage, documented in the demand section of the report, and the availability of alternate points of entry and exit to the ocean, it is unlikely that the effect on the community is going to be significant.

The actual construction location is not likely to create noise impacts or traffic issues within the town of Opotiki. The rock for the moles/groynes is to come from the local region and is likely to be taken by road to the construction site. There is no substantial residential population located near the construction site of the river mouth.

7.3.3 Employment Impacts

Unemployment rates in Opotiki range between 8 and 13 per cent. One of the major drivers for the undertaking of the harbour development is to attract a mussel farming development and subsequently attract a mussel processing development. If the mussel processing plant is developed in the region, it is possible for up to 496 new FTE positions to be created. This will have the effect of decreasing unemployment and increasing economic activity in the community. The benefit cost analysis and economic impact analysis contained within this report detail the financial and economic outcomes of improvements in unemployment.

7.3.4 Crime and Social Problem Impacts

If the development does attract other developments in the area and the employment opportunities that are forecast, eventuate, there is evidence that a reduction in crime could take place. Currently in Opotiki there are approximately 1,200 criminal offences. A reduction in the level of crime in Opotiki due to an decrease in unemployment and a change in economic position will result in improvements in the socio – economic position of the community. The benefit cost analysis and economic impact analysis contained within this report detail the financial and economic outcomes of improvements in the crime rate.

7.3.5 Environmental Impacts

There is the possibility that the harbour development will have a flood mitigating effect and reduce the risk or the frequency of flooding in the Opotiki district. There is a large cost associated with the occurrence of a flood which can include road works, relocation cost, private property repair cost, water supply and other infrastructure effects, not to mention the danger to the population of Opotiki.

There is a chance that the harbour development could generate negative environmental impacts. These negatives could include:

- increased flooding due to restrictions in the mouth of the river/ harbour;
- erosion/drift around the moles/ groynes, changing the foreshore; and
- any additional ecosystem changes.

7.3.6 Leisure and Recreational Impacts

With a all weather port providing safe entry and exit to the harbour, it is likely that the effects on recreation boating will be beneficial. There is likely to be increased use of the existing boat ramp, with users coming from around the district.

7.3.7 Deprivation Index

The harbour development, when accompanied by the mussel farm and the mussel processing plant, has the potential to significantly reduce unemployment and hence increase the average levels of income received by the community. Any outcomes which increase the economic activity within a community should reduce the level of deprivation experienced.

8.1 Risk Factors

With any feasibility study, it is unlikely that all risk will be able to be captured quantitatively. URS has identified risk factors, determining if the risks can be quantified and included in the analysis or qualitatively including them in the study. Once identified, an attempt has been made to discuss how these risk factors may be mitigated by the parties involved in the slipway and services facility analysis.

Table 40

Risk Factors and Mitigating Strategies

Risk Factor	Probability	Issue/Mitigation Strategy
Demand for Harbour Facilities	High	The number of vessels that will use the facility is a large risk factor in the analysis. The level of use of the harbour impacts on revenue and on the potential for employment and the economic impacts benefits for the region.
Mussel Farm establishment	High	The establishment of a mussel farm impacts almost every aspect of the evaluation, from revenue to unemployment and crime savings. The mitigating strategy for this project is to establish the mussel farm before developing the harbour.
Mussel Processing Plant	Medium/High	The mussel processing plant is the major determinant of the outcome of the evaluation undertaken in the above report. If the mussel processing plant is not established, the jobs growth and the criminal offence reductions do not occur.
Capital Cost Increases	Medium	Capital costs - it is possible that the capital costs will be higher than forecast due to physical environment or the availability of resources at the time of construction .
Revenue rates	Medium/High	Ability to gain revenue from ramp users. There does not seem to be a precedent in the area for paying fees. This may make it difficult to introduce to the area. Other areas have introduced ramp fees. Impacts on the revenue of the development.
Unemployment	Medium/High	The increase in employment due to the mussel farm and the processing plant is a significant risk factor to the evaluation. Employment should increase if there is a mussel farm and processing plant.
Crime Savings	Medium	Although there is a link between unemployment and crime, the link is by no means linear or well defined. If the crime rate does not fall as part of increases in employment and economic well being the evaluation result is significantly reduced.
Flood Mitigation	Medium	There appears to be differing stakeholder opinions on whether the harbour development will help or hinder Opotiki's flood problem. Further engineering assessment by flood experts may assist to reduce this risk.

9.1 Conclusions

Overall Conclusions

The Opotiki harbour development has the potential to significantly transform the Opotiki district from both an economic and social perspective and markedly improve Opotiki's performance on the Index of Deprivation.

However, based on the analysis undertaken in the report, the construction of an all weather channel to provide continuous, safe access to Opotiki's harbour will only be achieved, economically feasibly, if the development of the harbour attracts major marine industries – such as mussel farming and processing - to the Opotiki district.

Conclusions – Scenario 1

The financial feasibility, the benefit cost analysis and the economic impact analysis all clearly indicate that the attraction of charter and fishing vessels to Opotiki alone is not sufficient to justify the project, based on feedback received to date on the number of such vessels likely to base in Opotiki should the harbour development proceed. Put simply, without the mussel farm and the mussel processing plant, the project does not meet appropriate criteria to warrant progression.

Conclusions – Scenario 2

The development of the harbour should most likely proceed if it can attract the mussel farm, even without the processing plant. The combination of the attraction of charter and fishing vessels and the mussel farm is sufficient for the project to generate a benefit-cost ratio greater than 1 (BCR=1.28), although the development is still not financially feasible on a stand-alone commercial basis.

The combination of the financial feasibility analysis (NPV of -$12.9m) and the benefit-cost analysis (NPV of +$3.5m) suggests that the project will need to be funded in large part by Government, taking into consideration the wider issues identified in the benefit-cost analysis.

Scenario 2 increases turnover in the Opotiki economy by some $22.0m, adds $10.8m to the local GDP (around 7 per cent of the current GDP) and generates 189 full time jobs. These calculations are undertaken at the end of the evaluation period, where all infrastructure is operational.

However, the marginal BCR exposes the development to a number of risks as identified in the various sensitivity analyses. In the sensitivity analysis, the BCR for Scenario 2 fell, in one instance, to just 0.86 – insufficient to recommend proceeding with the project. While it may be possible to mitigate some of these risks, it may not be possible to mitigate them all.

URS recommends that a pre-commitment for the establishment of a mussel farm of an appropriate scale be sought from Eastern Seafarms prior to proceeding with the harbour development.

Conclusions – Scenario 3

The harbour development should definitely proceed if a mussel processing plant can be attracted to Opotiki, in addition to the attraction of a mussel farms and charter/fishing operators. The attraction of all three types of developments generates a BCR of 2.32. Moreover, the BCR never falls below 1.0 under any of the sensitivities tested.

Nevertheless, even Scenario 3 does not generate sufficient "capture-able" revenue streams for the project to meet financial feasibility hurdles on a stand-alone commercial basis. Once again, this suggests that the project will need to be funded in large part by Government, taking into consideration the wider issues identified in the benefit-cost analysis.

Scenario 3 increases turnover in the Opotiki economy by some $44.9m, adds $34.6m to the local GDP and generates 936 direct and indirect full time jobs. The attraction of charter/fishing vessels, the mussel farm and the processing plant will transform Opotiki in the following ways:

- unemployment will be reduced and population growth will be encouraged;
- Opotiki's performance on the Deprivation Index will improve considerably; and
- some of the social problems currently experienced by the district will be reduced.

Financial - Scenario 1

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	85	85	-	-	446	45	-	491	-406	85	491	-406
4	2010	86	86	-	-	446	45	-	491	-405	86	491	-405
5	2011	88	88	-	-	196	20	-	216	-128	88	216	-128
6	2012	89	89	-	-	196	20	-	216	-127	89	216	-127
7	2013	92	92	-	-	196	20	-	216	-123	92	216	-123
8	2014	95	95	-	-	196	20	-	216	-121	95	216	-121
9	2015	96	96	-	-	196	20	-	216	-119	96	216	-119
10	2016	98	98	-	-	196	20	-	216	-118	98	216	-118
11	2017	101	101	-	-	196	20	-	216	-114	101	216	-114
12	2018	103	103	-	-	196	20	-	216	-113	103	216	-113
13	2019	105	105	-	-	196	20	-	216	-111	105	216	-111
14	2020	107	107	-	-	196	20	-	216	-108	107	216	-108
15	2021	111	111	-	-	196	20	-	216	-105	111	216	-105
16	2022	113	113	-	-	196	20	-	216	-103	113	216	-103
17	2023	114	114	-	-	196	20	-	216	-101	114	216	-101
18	2024	116	116	-	-	196	20	-	216	-99	116	216	-99
19	2025	120	120	-	-	196	20	-	216	-96	120	216	-96
20	2026	123	123	-	-	196	20	-	216	-93	123	216	-93
21	2027	125	125	-	-	196	20	-	216	-91	125	216	-91
22	2028	127	127	-	-	196	20	-	216	-89	127	216	-89
23	2029	131	131	-	-	196	20	-	216	-85	131	216	-85
24	2030	133	133	-	-	196	20	-	216	-83	133	216	-83
Total		2,357	2,357	12,925	-	4,812	481	-	18,218	-15,861	2,357	18,218	-15,861
NPV	8%	877	877	11,591	-	2,096	210	-	13,897	-13,020	877	13,897	-13,020

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-13,547	-13,007	-12,529
PV of Benefits	1,059	856	704
PV of Costs	14,606	13,863	13,233
BCR	0.07	**0.06**	0.05
IRR		**Not Applicable**	

Financial Scenario 2

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	85	85	-	-	446	45	-	491	-406	85	491	-406
4	2010	96	96	-	-	446	45	-	491	-394	96	491	-394
5	2011	98	98	-	-	196	20	-	216	-118	98	216	-118
6	2012	100	100	-	-	196	20	-	216	-115	100	216	-115
7	2013	105	105	-	-	196	20	-	216	-111	105	216	-111
8	2014	109	109	-	-	196	20	-	216	-107	109	216	-107
9	2015	111	111	-	-	196	20	-	216	-105	111	216	-105
10	2016	113	113	-	-	196	20	-	216	-103	113	216	-103
11	2017	116	116	-	-	196	20	-	216	-99	116	216	-99
12	2018	120	120	-	-	196	20	-	216	-96	120	216	-96
13	2019	124	124	-	-	196	20	-	216	-92	124	216	-92
14	2020	128	128	-	-	196	20	-	216	-88	128	216	-88
15	2021	132	132	-	-	196	20	-	216	-84	132	216	-84
16	2022	135	135	-	-	196	20	-	216	-80	135	216	-80
17	2023	139	139	-	-	196	20	-	216	-77	139	216	-77
18	2024	141	141	-	-	196	20	-	216	-74	141	216	-74
19	2025	145	145	-	-	196	20	-	216	-70	145	216	-70
20	2026	150	150	-	-	196	20	-	216	-66	150	216	-66
21	2027	154	154	-	-	196	20	-	216	-62	154	216	-62
22	2028	158	158	-	-	196	20	-	216	-58	158	216	-58
23	2029	162	162	-	-	196	20	-	216	-53	162	216	-53
24	2030	165	165	-	-	196	20	-	216	-51	165	216	-51
Total		2,783	2,783	12,925	-	4,812	481	-	18,218	-15,435	2,783	18,218	-15,435
NPV	8%	1,014	1,014	11,591	-	2,096	210	-	13,897	-12,883	1,014	13,897	-12,883

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-13,378	-12,875	-12,425
PV of Benefits	1,228	988	808
PV of Costs	14,606	13,863	13,233
BCR	0.08	**0.07**	0.06
IRR		**Not Applicable**	

Financial Scenario 3

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	85	85	-	-	446	45	-	491	-406	85	491	-406
4	2010	96	96	-	-	446	45	-	491	-394	96	491	-394
5	2011	98	98	-	-	196	20	-	216	-118	98	216	-118
6	2012	100	100	-	-	196	20	-	216	-115	100	216	-115
7	2013	105	105	-	-	196	20	-	216	-111	105	216	-111
8	2014	109	109	-	-	196	20	-	216	-107	109	216	-107
9	2015	111	111	-	-	196	20	-	216	-105	111	216	-105
10	2016	113	113	-	-	196	20	-	216	-103	113	216	-103
11	2017	116	116	-	-	196	20	-	216	-99	116	216	-99
12	2018	120	120	-	-	196	20	-	216	-96	120	216	-96
13	2019	124	124	-	-	196	20	-	216	-92	124	216	-92
14	2020	143	143	-	-	196	20	-	216	-73	143	216	-73
15	2021	147	147	-	-	196	20	-	216	-68	147	216	-68
16	2022	151	151	-	-	196	20	-	216	-65	151	216	-65
17	2023	155	155	-	-	196	20	-	216	-61	155	216	-61
18	2024	158	158	-	-	196	20	-	216	-58	158	216	-58
19	2025	162	162	-	-	196	20	-	216	-53	162	216	-53
20	2026	167	167	-	-	196	20	-	216	-49	167	216	-49
21	2027	172	172	-	-	196	20	-	216	-44	172	216	-44
22	2028	176	176	-	-	196	20	-	216	-40	176	216	-40
23	2029	181	181	-	-	196	20	-	216	-35	181	216	-35
24	2030	184	184	-	-	196	20	-	216	-32	184	216	-32
Total		2,971	2,971	12,925	-	4,812	481	-	18,218	-15,248	2,971	18,218	-15,248
NPV	8%	1,058	1,058	11,591	-	2,096	210	-	13,897	-12,839	1,058	13,897	-12,839

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-13,321	-12,834	-12,396
PV of Benefits	1,285	1,029	837
PV of Costs	14,606	13,863	13,233
BCR	0.09	**0.07**	0.06
IRR		**Not Applicable**	

Financial – Boat Ramp Revenue set at zero – Scenario 1

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	12	12	-	-	446	45	-	491	-479	12	491	-479
4	2010	12	12	-	-	446	45	-	491	-479	12	491	-479
5	2011	12	12	-	-	196	20	-	216	-204	12	216	-204
6	2012	12	12	-	-	196	20	-	216	-204	12	216	-204
7	2013	13	13	-	-	196	20	-	216	-202	13	216	-202
8	2014	14	14	-	-	196	20	-	216	-202	14	216	-202
9	2015	14	14	-	-	196	20	-	216	-202	14	216	-202
10	2016	14	14	-	-	196	20	-	216	-202	14	216	-202
11	2017	16	16	-	-	196	20	-	216	-200	16	216	-200
12	2018	16	16	-	-	196	20	-	216	-200	16	216	-200
13	2019	16	16	-	-	196	20	-	216	-200	16	216	-200
14	2020	17	17	-	-	196	20	-	216	-199	17	216	-199
15	2021	18	18	-	-	196	20	-	216	-197	18	216	-197
16	2022	18	18	-	-	196	20	-	216	-197	18	216	-197
17	2023	18	18	-	-	196	20	-	216	-197	18	216	-197
18	2024	18	18	-	-	196	20	-	216	-197	18	216	-197
19	2025	20	20	-	-	196	20	-	216	-196	20	216	-196
20	2026	21	21	-	-	196	20	-	216	-195	21	216	-195
21	2027	21	21	-	-	196	20	-	216	-195	21	216	-195
22	2028	21	21	-	-	196	20	-	216	-195	21	216	-195
23	2029	22	22	-	-	196	20	-	216	-193	22	216	-193
24	2030	22	22	-	-	196	20	-	216	-193	22	216	-193
Total		365	365	12,925	-	4,812	481	-	18,218	-17,854	365	18,218	-17,854
NPV	8%	131	131	11,591	-	2,096	210	-	13,897	-13,766	131	13,897	-13,766

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-14,447	-13,736	-13,129
PV of Benefits	159	127	104
PV of Costs	14,606	13,863	13,233
BCR	0.01	**0.01**	0.01
IRR		**Not Applicable**	

Financial – Boat Ramp Revenue set at zero – Scenario 2

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	12	12	-	-	446	45	-	491	-479	12	491	-479
4	2010	22	22	-	-	446	45	-	491	-469	22	491	-469
5	2011	22	22	-	-	196	20	-	216	-194	22	216	-194
6	2012	23	23	-	-	196	20	-	216	-193	23	216	-193
7	2013	26	26	-	-	196	20	-	216	-190	26	216	-190
8	2014	28	28	-	-	196	20	-	216	-188	28	216	-188
9	2015	28	28	-	-	196	20	-	216	-187	28	216	-187
10	2016	29	29	-	-	196	20	-	216	-187	29	216	-187
11	2017	31	31	-	-	196	20	-	216	-185	31	216	-185
12	2018	33	33	-	-	196	20	-	216	-183	33	216	-183
13	2019	35	35	-	-	196	20	-	216	-181	35	216	-181
14	2020	37	37	-	-	196	20	-	216	-179	37	216	-179
15	2021	39	39	-	-	196	20	-	216	-176	39	216	-176
16	2022	41	41	-	-	196	20	-	216	-175	41	216	-175
17	2023	42	42	-	-	196	20	-	216	-173	42	216	-173
18	2024	43	43	-	-	196	20	-	216	-173	43	216	-173
19	2025	45	45	-	-	196	20	-	216	-170	45	216	-170
20	2026	47	47	-	-	196	20	-	216	-168	47	216	-168
21	2027	50	50	-	-	196	20	-	216	-166	50	216	-166
22	2028	51	51	-	-	196	20	-	216	-164	51	216	-164
23	2029	54	54	-	-	196	20	-	216	-162	54	216	-162
24	2030	54	54	-	-	196	20	-	216	-162	54	216	-162
Total		791	791	12,925	-	4,812	481	-	18,218	-17,428	791	18,218	-17,428
NPV	8%	268	268	11,591	-	2,096	210	-	13,897	-13,629	268	13,897	-13,629

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-14,278	-13,604	-13,025
PV of Benefits	328	259	208
PV of Costs	14,606	13,863	13,233
BCR	0.02	**0.02**	0.02
IRR		**Not Applicable**	

Financial – Boat Ramp Revenue set at zero – Scenario 3

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	12	12	-	-	446	45	-	491	-479	12	491	-479
4	2010	22	22	-	-	446	45	-	491	-469	22	491	-469
5	2011	22	22	-	-	196	20	-	216	-194	22	216	-194
6	2012	23	23	-	-	196	20	-	216	-193	23	216	-193
7	2013	26	26	-	-	196	20	-	216	-190	26	216	-190
8	2014	28	28	-	-	196	20	-	216	-188	28	216	-188
9	2015	28	28	-	-	196	20	-	216	-187	28	216	-187
10	2016	29	29	-	-	196	20	-	216	-187	29	216	-187
11	2017	31	31	-	-	196	20	-	216	-185	31	216	-185
12	2018	33	33	-	-	196	20	-	216	-183	33	216	-183
13	2019	35	35	-	-	196	20	-	216	-181	35	216	-181
14	2020	52	52	-	-	196	20	-	216	-164	52	216	-164
15	2021	55	55	-	-	196	20	-	216	-161	55	216	-161
16	2022	57	57	-	-	196	20	-	216	-159	57	216	-159
17	2023	59	59	-	-	196	20	-	216	-157	59	216	-157
18	2024	60	60	-	-	196	20	-	216	-156	60	216	-156
19	2025	62	62	-	-	196	20	-	216	-154	62	216	-154
20	2026	65	65	-	-	196	20	-	216	-151	65	216	-151
21	2027	67	67	-	-	196	20	-	216	-148	67	216	-148
22	2028	70	70	-	-	196	20	-	216	-146	70	216	-146
23	2029	72	72	-	-	196	20	-	216	-143	72	216	-143
24	2030	73	73	-	-	196	20	-	216	-142	73	216	-142
Total		978	978	12,925	-	4,812	481	-	18,218	-17,240	978	18,218	-17,240
NPV	8%	312	312	11,591	-	2,096	210	-	13,897	-13,586	312	13,897	-13,586

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-14,221	-13,563	-12,995
PV of Benefits	385	300	238
PV of Costs	14,606	13,863	13,233
BCR	0.03	**0.02**	0.02
IRR		**Not Applicable**	

Financial – Harbour Use Volume Increase 20% - Scenario 1

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	99	99	-	-	446	45	-	491	-391	99	491	-391
4	2010	101	101	-	-	446	45	-	491	-390	101	491	-390
5	2011	103	103	-	-	196	20	-	216	-113	103	216	-113
6	2012	105	105	-	-	196	20	-	216	-111	105	216	-111
7	2013	108	108	-	-	196	20	-	216	-108	108	216	-108
8	2014	111	111	-	-	196	20	-	216	-105	111	216	-105
9	2015	113	113	-	-	196	20	-	216	-103	113	216	-103
10	2016	115	115	-	-	196	20	-	216	-101	115	216	-101
11	2017	118	118	-	-	196	20	-	216	-97	118	216	-97
12	2018	120	120	-	-	196	20	-	216	-95	120	216	-95
13	2019	123	123	-	-	196	20	-	216	-93	123	216	-93
14	2020	125	125	-	-	196	20	-	216	-90	125	216	-90
15	2021	129	129	-	-	196	20	-	216	-86	129	216	-86
16	2022	131	131	-	-	196	20	-	216	-84	131	216	-84
17	2023	134	134	-	-	196	20	-	216	-82	134	216	-82
18	2024	136	136	-	-	196	20	-	216	-80	136	216	-80
19	2025	140	140	-	-	196	20	-	216	-75	140	216	-75
20	2026	143	143	-	-	196	20	-	216	-72	143	216	-72
21	2027	146	146	-	-	196	20	-	216	-70	146	216	-70
22	2028	148	148	-	-	196	20	-	216	-67	148	216	-67
23	2029	152	152	-	-	196	20	-	216	-63	152	216	-63
24	2030	155	155	-	-	196	20	-	216	-61	155	216	-61
Total		2,756	2,756	12,925	-	4,812	481	-	18,218	-15,462	2,756	18,218	-15,462
NPV	8%	1,027	1,027	11,591	-	2,096	210	-	13,897	-12,871	1,027	13,897	-12,871

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-13,367	-12,861	-12,409
PV of Benefits	1,239	1,002	823
PV of Costs	14,606	13,863	13,233
BCR	0.08	**0.07**	0.06
IRR		**Not Applicable**	

Financial – Harbour Use Volume Increase 20% - Scenario 2

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	99	99	-	-	446	45	-	491	-391	99	491	-391
4	2010	111	111	-	-	446	45	-	491	-379	111	491	-379
5	2011	113	113	-	-	196	20	-	216	-102	113	216	-102
6	2012	116	116	-	-	196	20	-	216	-100	116	216	-100
7	2013	121	121	-	-	196	20	-	216	-95	121	216	-95
8	2014	125	125	-	-	196	20	-	216	-91	125	216	-91
9	2015	127	127	-	-	196	20	-	216	-88	127	216	-88
10	2016	130	130	-	-	196	20	-	216	-86	130	216	-86
11	2017	133	133	-	-	196	20	-	216	-82	133	216	-82
12	2018	138	138	-	-	196	20	-	216	-78	138	216	-78
13	2019	142	142	-	-	196	20	-	216	-74	142	216	-74
14	2020	146	146	-	-	196	20	-	216	-69	146	216	-69
15	2021	151	151	-	-	196	20	-	216	-65	151	216	-65
16	2022	154	154	-	-	196	20	-	216	-61	154	216	-61
17	2023	158	158	-	-	196	20	-	216	-57	158	216	-57
18	2024	161	161	-	-	196	20	-	216	-54	161	216	-54
19	2025	166	166	-	-	196	20	-	216	-50	166	216	-50
20	2026	171	171	-	-	196	20	-	216	-45	171	216	-45
21	2027	175	175	-	-	196	20	-	216	-40	175	216	-40
22	2028	179	179	-	-	196	20	-	216	-36	179	216	-36
23	2029	184	184	-	-	196	20	-	216	-31	184	216	-31
24	2030	187	187	-	-	196	20	-	216	-28	187	216	-28
Total		3,189	3,189	12,925	-	4,812	481	-	18,218	-15,030	3,189	18,218	-15,030
NPV	8%	1,165	1,165	11,591	-	2,096	210	-	13,897	-12,732	1,165	13,897	-12,732

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-13,196	-12,728	-12,304
PV of Benefits	1,410	1,136	929
PV of Costs	14,606	13,863	13,233
BCR	0.10	**0.08**	0.07
IRR		**Not Applicable**	

Financial – Harbour Use Volume Increase 20% - Scenario 3

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	99	99	-	-	446	45	-	491	-391	99	491	-391
4	2010	111	111	-	-	446	45	-	491	-379	111	491	-379
5	2011	113	113	-	-	196	20	-	216	-102	113	216	-102
6	2012	116	116	-	-	196	20	-	216	-100	116	216	-100
7	2013	121	121	-	-	196	20	-	216	-95	121	216	-95
8	2014	125	125	-	-	196	20	-	216	-91	125	216	-91
9	2015	127	127	-	-	196	20	-	216	-88	127	216	-88
10	2016	130	130	-	-	196	20	-	216	-86	130	216	-86
11	2017	133	133	-	-	196	20	-	216	-82	133	216	-82
12	2018	138	138	-	-	196	20	-	216	-78	138	216	-78
13	2019	142	142	-	-	196	20	-	216	-74	142	216	-74
14	2020	161	161	-	-	196	20	-	216	-54	161	216	-54
15	2021	166	166	-	-	196	20	-	216	-49	166	216	-49
16	2022	170	170	-	-	196	20	-	216	-45	170	216	-45
17	2023	175	175	-	-	196	20	-	216	-41	175	216	-41
18	2024	178	178	-	-	196	20	-	216	-38	178	216	-38
19	2025	183	183	-	-	196	20	-	216	-33	183	216	-33
20	2026	188	188	-	-	196	20	-	216	-28	188	216	-28
21	2027	193	193	-	-	196	20	-	216	-23	193	216	-23
22	2028	198	198	-	-	196	20	-	216	-18	198	216	-18
23	2029	203	203	-	-	196	20	-	216	-12	203	216	-12
24	2030	207	207	-	-	196	20	-	216	-9	207	216	-9
Total		3,376	3,376	12,925	-	4,812	481	-	18,218	-14,842	3,376	18,218	-14,842
NPV	8%	1,209	1,209	11,591	-	2,096	210	-	13,897	-12,688	1,209	13,897	-12,688

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-13,138	-12,687	-12,274
PV of Benefits	1,467	1,177	958
PV of Costs	14,606	13,863	13,233
BCR	0.10	**0.08**	0.07
IRR		**Not Applicable**	

Financial – Harbour Use Volume Decrease 20% - Scenario 1

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	70	70	-	-	446	45	-	491	-421	70	491	-421
4	2010	71	71	-	-	446	45	-	491	-419	71	491	-419
5	2011	72	72	-	-	196	20	-	216	-143	72	216	-143
6	2012	74	74	-	-	196	20	-	216	-142	74	216	-142
7	2013	76	76	-	-	196	20	-	216	-139	76	216	-139
8	2014	79	79	-	-	196	20	-	216	-137	79	216	-137
9	2015	80	80	-	-	196	20	-	216	-136	80	216	-136
10	2016	81	81	-	-	196	20	-	216	-134	81	216	-134
11	2017	84	84	-	-	196	20	-	216	-131	84	216	-131
12	2018	86	86	-	-	196	20	-	216	-130	86	216	-130
13	2019	87	87	-	-	196	20	-	216	-129	87	216	-129
14	2020	89	89	-	-	196	20	-	216	-126	89	216	-126
15	2021	92	92	-	-	196	20	-	216	-123	92	216	-123
16	2022	94	94	-	-	196	20	-	216	-122	94	216	-122
17	2023	95	95	-	-	196	20	-	216	-120	95	216	-120
18	2024	97	97	-	-	196	20	-	216	-119	97	216	-119
19	2025	100	100	-	-	196	20	-	216	-116	100	216	-116
20	2026	102	102	-	-	196	20	-	216	-113	102	216	-113
21	2027	104	104	-	-	196	20	-	216	-112	104	216	-112
22	2028	106	106	-	-	196	20	-	216	-110	106	216	-110
23	2029	109	109	-	-	196	20	-	216	-107	109	216	-107
24	2030	111	111	-	-	196	20	-	216	-105	111	216	-105
Total		1,959	1,959	12,925	-	4,812	481	-	18,218	-16,259	1,959	18,218	-16,259
NPV	8%	728	728	11,591	-	2,096	210	-	13,897	-13,169	728	13,897	-13,169

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-13,727	-13,153	-12,649
PV of Benefits	879	711	584
PV of Costs	14,606	13,863	13,233
BCR	0.06	**0.05**	0.04
IRR		**Not Applicable**	

Financial – Harbour Use Volume Decrease 20% - Scenario 2

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	70	70	-	-	446	45	-	491	-421	70	491	-421
4	2010	81	81	-	-	446	45	-	491	-409	81	491	-409
5	2011	83	83	-	-	196	20	-	216	-133	83	216	-133
6	2012	85	85	-	-	196	20	-	216	-131	85	216	-131
7	2013	89	89	-	-	196	20	-	216	-127	89	216	-127
8	2014	92	92	-	-	196	20	-	216	-123	92	216	-123
9	2015	94	94	-	-	196	20	-	216	-121	94	216	-121
10	2016	96	96	-	-	196	20	-	216	-120	96	216	-120
11	2017	99	99	-	-	196	20	-	216	-117	99	216	-117
12	2018	102	102	-	-	196	20	-	216	-113	102	216	-113
13	2019	106	106	-	-	196	20	-	216	-110	106	216	-110
14	2020	109	109	-	-	196	20	-	216	-106	109	216	-106
15	2021	113	113	-	-	196	20	-	216	-103	113	216	-103
16	2022	116	116	-	-	196	20	-	216	-100	116	216	-100
17	2023	119	119	-	-	196	20	-	216	-97	119	216	-97
18	2024	121	121	-	-	196	20	-	216	-94	121	216	-94
19	2025	125	125	-	-	196	20	-	216	-91	125	216	-91
20	2026	129	129	-	-	196	20	-	216	-87	129	216	-87
21	2027	132	132	-	-	196	20	-	216	-83	132	216	-83
22	2028	136	136	-	-	196	20	-	216	-80	136	216	-80
23	2029	140	140	-	-	196	20	-	216	-76	140	216	-76
24	2030	142	142	-	-	196	20	-	216	-74	142	216	-74
Total		2,378	2,378	12,925	-	4,812	481	-	18,218	-15,840	2,378	18,218	-15,840
NPV	8%	863	863	11,591	-	2,096	210	-	13,897	-13,034	863	13,897	-13,034

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-13,560	-13,022	-12,546
PV of Benefits	1,046	841	687
PV of Costs	14,606	13,863	13,233
BCR	0.07	**0.06**	0.05
IRR		**Not Applicable**	

Financial – Harbour Use Volume Decrease 20% - Scenario 3

Incremental Financial Case ($'000s)				Develoment Option									
				Harbour Development Financial Cost and Net Profit							NET RESULTS		
Period	Year	Harbour Revenues	Total Revenues	Harbour Capital Costs	Harbour Labour Costs	Harbour Maintenance Costs	Harbour Overhead Costs	Harbour Tax Costs	Harbour Total Cost	Harbour Net Profit	Total Project Revenues	Total Project Costs	Total Project Net Profit
0	2006	-	-	475	-	-	-	-	475	-475	-	475	-475
1	2007	-	-	6,450	-	-	-	-	6,450	-6,450	-	6,450	-6,450
2	2008	-	-	6,000	-	-	-	-	6,000	-6,000	-	6,000	-6,000
3	2009	70	70	-	-	446	45	-	491	-421	70	491	-421
4	2010	81	81	-	-	446	45	-	491	-409	81	491	-409
5	2011	83	83	-	-	196	20	-	216	-133	83	216	-133
6	2012	85	85	-	-	196	20	-	216	-131	85	216	-131
7	2013	89	89	-	-	196	20	-	216	-127	89	216	-127
8	2014	92	92	-	-	196	20	-	216	-123	92	216	-123
9	2015	94	94	-	-	196	20	-	216	-121	94	216	-121
10	2016	96	96	-	-	196	20	-	216	-120	96	216	-120
11	2017	99	99	-	-	196	20	-	216	-117	99	216	-117
12	2018	102	102	-	-	196	20	-	216	-113	102	216	-113
13	2019	106	106	-	-	196	20	-	216	-110	106	216	-110
14	2020	124	124	-	-	196	20	-	216	-91	124	216	-91
15	2021	128	128	-	-	196	20	-	216	-87	128	216	-87
16	2022	132	132	-	-	196	20	-	216	-84	132	216	-84
17	2023	135	135	-	-	196	20	-	216	-80	135	216	-80
18	2024	138	138	-	-	196	20	-	216	-78	138	216	-78
19	2025	142	142	-	-	196	20	-	216	-74	142	216	-74
20	2026	146	146	-	-	196	20	-	216	-70	146	216	-70
21	2027	150	150	-	-	196	20	-	216	-65	150	216	-65
22	2028	154	154	-	-	196	20	-	216	-62	154	216	-62
23	2029	159	159	-	-	196	20	-	216	-57	159	216	-57
24	2030	161	161	-	-	196	20	-	216	-54	161	216	-54
Total		2,566	2,566	12,925	-	4,812	481	-	18,218	-15,653	2,566	18,218	-15,653
NPV	8%	907	907	11,591	-	2,096	210	-	13,897	-12,990	907	13,897	-12,990

Incremental Analysis			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-13,503	-12,982	-12,517
PV of Benefits	1,103	882	716
PV of Costs	14,606	13,863	13,233
BCR	0.08	**0.06**	0.05
IRR		Not Applicable	

Benefit Cost Analysis – Scenario 1

Incremental Financial Case ($'000s) Develoment Option Harbour Development - No Mussel Farming

Period	Year	Harbour Construction Cost	Operating Costs Harbour	Crime Costs	Flood Costs	Unemployment Costs	Government Services Cost	Safety Costs	Industry Costs	Total Costs	Revenue Harbour	Tourism Benefits	Total Benefits	Net Result	Annual Discount Result
0	2006	475	-	-	-	-	-	-	-	**475**	-	-	**-**	**-475**	**-475**
1	2007	6,450	-	-	-	-	-	-	-	**6,450**	-	-	**-**	**-6,450**	**-5,972**
2	2008	6,000	-	-	-	-	-	-	-	**6,000**	-	-	**-**	**-6,000**	**-5,144**
3	2009	-	446	-	-259	-102	-	-	-	**85**	85	302	**386**	**302**	**239**
4	2010	-	446	-365	-259	-102	-	-63	-	**-343**	86	302	**388**	**731**	**537**
5	2011	-	196	-365	-259	-102	-	-63	-	**-593**	88	302	**389**	**983**	**669**
6	2012	-	196	-365	-259	-102	-	-63	-	**-593**	89	302	**391**	**984**	**620**
7	2013	-	196	-365	-259	-123	-	-63	-	**-614**	92	452	**545**	**1,159**	**676**
8	2014	-	196	-365	-259	-153	-	-63	-	**-645**	95	452	**547**	**1,192**	**644**
9	2015	-	196	-365	-259	-153	-	-63	-	**-645**	96	452	**549**	**1,193**	**597**
10	2016	-	196	-365	-259	-153	-	-63	-	**-645**	98	452	**550**	**1,195**	**553**
11	2017	-	196	-365	-259	-174	-	-63	-	**-665**	101	603	**705**	**1,370**	**587**
12	2018	-	196	-365	-259	-174	-	-63	-	**-665**	103	603	**706**	**1,371**	**545**
13	2019	-	196	-365	-259	-174	-	-63	-	**-665**	105	603	**708**	**1,373**	**505**
14	2020	-	196	-365	-259	-204	-	-63	-	**-696**	107	603	**711**	**1,406**	**479**
15	2021	-	196	-365	-259	-225	-	-63	-	**-716**	111	754	**865**	**1,581**	**498**
16	2022	-	196	-365	-259	-225	-	-63	-	**-716**	113	754	**867**	**1,583**	**462**
17	2023	-	196	-365	-259	-225	-	-63	-	**-716**	114	754	**869**	**1,585**	**428**
18	2024	-	196	-365	-259	-225	-	-63	-	**-716**	116	754	**871**	**1,587**	**397**
19	2025	-	196	-365	-259	-245	-	-63	-	**-737**	120	905	**1,025**	**1,762**	**408**
20	2026	-	196	-365	-259	-276	-	-63	-	**-767**	123	905	**1,028**	**1,795**	**385**
21	2027	-	196	-365	-259	-276	-	-63	-	**-767**	125	905	**1,030**	**1,797**	**357**
22	2028	-	196	-365	-259	-276	-	-63	-	**-767**	127	905	**1,032**	**1,799**	**331**
23	2029	-	196	-365	-259	-296	-	-63	-	**-788**	131	1,056	**1,186**	**1,974**	**336**
24	2030	-	196	-365	-259	-296	-	-63	-	**-788**	133	1,056	**1,189**	**1,976**	**312**
Total		**12,925**	**4,812**	**-7,663**	**-5,702**	**-4,282**	**-**	**-1,327**	**-**	**-1,238**	**2,357**	**14,177**	**16,534**	**17,771**	
NPV	**8%**	**11,591**	**2,096**	**-2,901**	**-2,267**	**-1,442**	**-**	**-503**	**-**	**6,575**	**877**	**4,673**	**5,550**	**-1,025**	**-1,025**

Incremental Analysis - Summary Results

$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	1,035	-1,336	-3,042
PV of Benefits	6,792	5,363	4,304
PV of Costs	5,757	6,699	7,346
BCR	0.97	0.89	0.83
NPV/I	0.08	-0.10	-0.24
IRR		**7%**	

Benefit Cost Analysis – Scenario 2

Incremental Financial Case ($'000s) Develoment Option Harbour Development - Mussel Farming but No Local Processing

Period	Year	Harbour Construction Cost	Operating Costs Harbour	Crime Costs	Flood Costs	Unemployment Costs	Government Services Cost	Safety Costs	Industry Costs	Total Costs	Revenue Harbour	Tourism Benefits	Total Benefits	Net Result	Annual Discount Result
0	2006	475	-	-	-	-	-	-	-	**475**	-	-	**-**	**-475**	**-475**
1	2007	6,450	-	-	-	-	-	-	-	**6,450**	-	-	**-**	**-6,450**	**-5,972**
2	2008	6,000	-	-	-	-	-	-	-	**6,000**	-	-	**-**	**-6,000**	**-5,144**
3	2009	-	446	-	-259	-102	-	-	-	**85**	85	302	**386**	**302**	**239**
4	2010	-	446	-730	-259	-174	50	-63	-	**-730**	96	302	**398**	**1,128**	**829**
5	2011	-	196	-730	-259	-194	50	-63	-	**-1,000**	98	302	**400**	**1,400**	**953**
6	2012	-	196	-730	-259	-225	50	-63	-	**-1,031**	100	302	**402**	**1,433**	**903**
7	2013	-	196	-730	-259	-317	50	-63	-	**-1,123**	105	452	**557**	**1,680**	**980**
8	2014	-	196	-730	-259	-368	50	-63	-	**-1,174**	109	452	**561**	**1,735**	**937**
9	2015	-	196	-730	-259	-327	50	-63	-	**-1,133**	111	452	**563**	**1,696**	**849**
10	2016	-	196	-730	-259	-419	50	-63	-	**-1,225**	113	452	**565**	**1,790**	**829**
11	2017	-	196	-730	-259	-378	50	-63	-	**-1,184**	116	603	**720**	**1,904**	**817**
12	2018	-	196	-730	-259	-583	50	-63	-	**-1,389**	120	603	**723**	**2,112**	**839**
13	2019	-	196	-730	-259	-460	50	-63	-	**-1,266**	124	603	**727**	**1,993**	**733**
14	2020	-	196	-730	-259	-542	50	-63	-	**-1,348**	128	603	**731**	**2,079**	**708**
15	2021	-	196	-730	-259	-777	50	-63	-	**-1,583**	132	754	**886**	**2,469**	**778**
16	2022	-	196	-730	-259	-818	50	-63	-	**-1,624**	135	754	**889**	**2,513**	**734**
17	2023	-	196	-730	-259	-879	50	-63	-	**-1,685**	139	754	**893**	**2,578**	**697**
18	2024	-	196	-730	-259	-583	50	-63	-	**-1,389**	141	754	**895**	**2,284**	**572**
19	2025	-	196	-730	-259	-715	50	-63	-	**-1,522**	145	905	**1,050**	**2,572**	**596**
20	2026	-	196	-730	-259	-910	50	-63	-	**-1,716**	150	905	**1,054**	**2,770**	**594**
21	2027	-	196	-730	-259	-950	50	-63	-	**-1,757**	154	905	**1,059**	**2,815**	**559**
22	2028	-	196	-730	-259	-899	50	-63	-	**-1,706**	158	905	**1,062**	**2,768**	**509**
23	2029	-	196	-730	-259	-807	50	-63	-	**-1,614**	162	1,056	**1,218**	**2,831**	**482**
24	2030	-	196	-730	-259	-807	50	-63	-	**-1,614**	165	1,056	**1,220**	**2,834**	**447**
Total		**12,925**	**4,812**	**-15,325**	**-5,702**	**-12,234**	**1,050**	**-1,327**	**-**	**-15,802**	**2,783**	**14,177**	**16,960**	**32,762**	
NPV	**8%**	**11,591**	**2,096**	**-5,803**	**-2,267**	**-3,818**	**398**	**-503**	**-**	**1,695**	**1,014**	**4,673**	**5,687**	**3,992**	**3,992**

Incremental Analysis - Summary Results

$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	7,247	3,545	852
PV of Benefits	6,961	5,495	4,408
PV of Costs	-286	1,949	3,557
BCR	1.45	1.28	1.15
NPV/I	0.56	0.27	0.07
IRR		**11%**	

Benefit Cost Analysis – Scenario 3

Incremental Financial Case ($'000s)		Develoment Option		Harbour Development - Mussel Farming and Local Processing											
Period	Year	Harbour Construction Cost	Operating Costs Harbour	Crime Costs	Flood Costs	Unemployment Costs	Government Services Cost	Safety Costs	Industry Costs	Total Costs	Revenue Harbour	Tourism Benefits	Total Benefits	Net Result	Annual Discount Result
0	2006	475	-	-	-	-	-	-	-	**475**	-	-	**-**	**-475**	**-475**
1	2007	6,450	-	-	-	-	-	-	-	**6,450**	-	-	**-**	**-6,450**	**-5,972**
2	2008	6,000	-	-	-	-	-	-	-	**6,000**	-	-	**-**	**-6,000**	**-5,144**
3	2009	-	446	-	-259	-102	-	-	-	**85**	85	302	**386**	**302**	**239**
4	2010	-	446	-1,460	-259	-174	200	-63	-	**-1,310**	96	302	**398**	**1,708**	**1,255**
5	2011	-	196	-1,460	-259	-194	200	-63	-	**-1,580**	98	302	**400**	**1,980**	**1,347**
6	2012	-	196	-1,460	-259	-225	200	-63	-	**-1,611**	100	302	**402**	**2,013**	**1,268**
7	2013	-	196	-1,460	-259	-317	200	-63	-	**-1,703**	105	452	**557**	**2,260**	**1,319**
8	2014	-	196	-1,460	-259	-368	200	-63	-	**-1,754**	109	452	**561**	**2,315**	**1,251**
9	2015	-	196	-1,460	-259	-327	200	-63	-	**-1,713**	111	452	**563**	**2,276**	**1,139**
10	2016	-	196	-1,460	-259	-419	200	-63	-	**-1,805**	113	452	**565**	**2,370**	**1,098**
11	2017	-	196	-1,460	-259	-378	200	-63	-	**-1,764**	116	603	**720**	**2,484**	**1,065**
12	2018	-	196	-1,460	-259	-583	200	-63	-	**-1,969**	120	603	**723**	**2,692**	**1,069**
13	2019	-	196	-1,460	-259	-460	200	-63	-	**-1,846**	124	603	**727**	**2,573**	**946**
14	2020	-	196	-1,460	-259	-2,606	200	-63	-	**-3,992**	143	603	**746**	**4,738**	**1,613**
15	2021	-	196	-1,460	-259	-3,199	200	-63	-	**-4,585**	147	754	**901**	**5,486**	**1,729**
16	2022	-	196	-1,460	-259	-3,240	200	-63	-	**-4,626**	151	754	**905**	**5,531**	**1,614**
17	2023	-	196	-1,460	-259	-3,843	200	-63	-	**-5,229**	155	754	**909**	**6,138**	**1,659**
18	2024	-	196	-1,460	-259	-3,853	200	-63	-	**-5,239**	158	754	**912**	**6,151**	**1,539**
19	2025	-	196	-1,460	-259	-3,986	200	-63	-	**-5,372**	162	905	**1,067**	**6,439**	**1,492**
20	2026	-	196	-1,460	-259	-4,180	200	-63	-	**-5,566**	167	905	**1,072**	**6,638**	**1,424**
21	2027	-	196	-1,460	-259	-4,763	200	-63	-	**-6,149**	172	905	**1,077**	**7,225**	**1,435**
22	2028	-	196	-1,460	-259	-5,253	200	-63	-	**-6,639**	176	905	**1,081**	**7,720**	**1,420**
23	2029	-	196	-1,460	-259	-5,519	200	-63	-	**-6,905**	181	1,056	**1,237**	**8,141**	**1,387**
24	2030	-	196	-1,460	-259	-5,519	200	-63	-	**-6,905**	184	1,056	**1,240**	**8,145**	**1,284**
Total		**12,925**	**4,812**	**-30,651**	**-5,702**	**-49,507**	**4,200**	**-1,327**	**-**	**-65,250**	**2,971**	**14,177**	**17,147**	**82,398**	
NPV	**8%**	**11,591**	**2,096**	**-11,606**	**-2,267**	**-12,174**	**1,590**	**-503**	**-**	**-11,271**	**1,058**	**4,673**	**5,731**	**17,002**	**17,002**

Incremental Analysis - Summary Results			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	23,676	15,718	10,012
PV of Benefits	7,019	5,536	4,438
PV of Costs	-16,657	-10,182	-5,574
BCR	2.78	2.32	1.97
NPV/I	1.83	1.22	0.77
IRR		**17%**	

Benefit Cost Analysis – No Flood Savings - Scenario 1

Incremental Financial Case ($'000s) Develoment Option Harbour Development - No Mussel Farming

Period	Year	Harbour Construction Cost	Operating Costs Harbour	Crime Costs	Flood Costs	Unemployment Costs	Government Services Cost	Safety Costs	Industry Costs	Total Costs	Revenue Harbour	Tourism Benefits	Total Benefits	Net Result	Annual Discount Result
0	2006	475	-	-	-	-	-	-	-	475	-	-	-	-475	-475
1	2007	6,450	-	-	-	-	-	-	-	6,450	-	-	-	-6,450	-5,972
2	2008	6,000	-	-	-	-	-	-	-	6,000	-	-	-	-6,000	-5,144
3	2009	-	446	-	-	-102	-	-	-	344	85	302	386	42	34
4	2010	-	446	-365	-	-102	-	-63	-	-84	86	302	388	472	347
5	2011	-	196	-365	-	-102	-	-63	-	-334	88	302	389	723	492
6	2012	-	196	-365	-	-102	-	-63	-	-334	89	302	391	725	457
7	2013	-	196	-365	-	-123	-	-63	-	-355	92	452	545	899	525
8	2014	-	196	-365	-	-153	-	-63	-	-385	95	452	547	932	504
9	2015	-	196	-365	-	-153	-	-63	-	-385	96	452	549	934	467
10	2016	-	196	-365	-	-153	-	-63	-	-385	98	452	550	936	433
11	2017	-	196	-365	-	-174	-	-63	-	-406	101	603	705	1,110	476
12	2018	-	196	-365	-	-174	-	-63	-	-406	103	603	706	1,112	442
13	2019	-	196	-365	-	-174	-	-63	-	-406	105	603	708	1,114	410
14	2020	-	196	-365	-	-204	-	-63	-	-436	107	603	711	1,147	391
15	2021	-	196	-365	-	-225	-	-63	-	-457	111	754	865	1,322	417
16	2022	-	196	-365	-	-225	-	-63	-	-457	113	754	867	1,324	386
17	2023	-	196	-365	-	-225	-	-63	-	-457	114	754	869	1,326	358
18	2024	-	196	-365	-	-225	-	-63	-	-457	116	754	871	1,327	332
19	2025	-	196	-365	-	-245	-	-63	-	-477	120	905	1,025	1,502	348
20	2026	-	196	-365	-	-276	-	-63	-	-508	123	905	1,028	1,536	329
21	2027	-	196	-365	-	-276	-	-63	-	-508	125	905	1,030	1,538	305
22	2028	-	196	-365	-	-276	-	-63	-	-508	127	905	1,032	1,540	283
23	2029	-	196	-365	-	-296	-	-63	-	-528	131	1,056	1,186	1,715	292
24	2030	-	196	-365	-	-296	-	-63	-	-528	133	1,056	1,189	1,717	271
Total		**12,925**	**4,812**	**-7,663**	**-**	**-4,282**	**-**	**-1,327**	**-**	**4,465**	**2,357**	**14,177**	**16,534**	**12,069**	
NPV	**8%**	**11,591**	**2,096**	**-2,901**	**-**	**-1,442**	**-**	**-503**	**-**	**8,842**	**877**	**4,673**	**5,550**	**-3,292**	**-3,292**

Incremental Analysis - Summary Results

$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	-1,679	-3,562	-4,895
PV of Benefits	6,792	5,363	4,304
PV of Costs	8,471	8,925	9,199
BCR	0.78	0.72	0.68
NPV/I	-0.13	-0.28	-0.38
IRR		**5%**	

Benefit Cost Analysis – No Flood Savings - Scenario 2

Incremental Financial Case ($'000s)		Develoment Option		Harbour Development - Mussel Farming but No Local Processing											
Period	Year	Harbour Construction Cost	Operating Costs Harbour	Crime Costs	Flood Costs	Unemployment Costs	Government Services Cost	Safety Costs	Industry Costs	Total Costs	Revenue Harbour	Tourism Benefits	Total Benefits	Net Result	Annual Discount Result
0	2006	475	-	-	-	-	-	-	-	475	-	-	-	-475	-475
1	2007	6,450	-	-	-	-	-	-	-	6,450	-	-	-	-6,450	-5,972
2	2008	6,000	-	-	-	-	-	-	-	6,000	-	-	-	-6,000	-5,144
3	2009	-	446	-	-	-102	-	-	-	344	85	302	386	42	34
4	2010	-	446	-730	-	-174	50	-63	-	-471	96	302	398	869	638
5	2011	-	196	-730	-	-194	50	-63	-	-741	98	302	400	1,141	776
6	2012	-	196	-730	-	-225	50	-63	-	-772	100	302	402	1,174	740
7	2013	-	196	-730	-	-317	50	-63	-	-864	105	452	557	1,421	829
8	2014	-	196	-730	-	-368	50	-63	-	-915	109	452	561	1,476	797
9	2015	-	196	-730	-	-327	50	-63	-	-874	111	452	563	1,437	719
10	2016	-	196	-730	-	-419	50	-63	-	-966	113	452	565	1,531	709
11	2017	-	196	-730	-	-378	50	-63	-	-925	116	603	720	1,645	705
12	2018	-	196	-730	-	-583	50	-63	-	-1,130	120	603	723	1,853	736
13	2019	-	196	-730	-	-460	50	-63	-	-1,007	124	603	727	1,734	637
14	2020	-	196	-730	-	-542	50	-63	-	-1,089	128	603	731	1,820	620
15	2021	-	196	-730	-	-777	50	-63	-	-1,324	132	754	886	2,210	697
16	2022	-	196	-730	-	-818	50	-63	-	-1,365	135	754	889	2,254	658
17	2023	-	196	-730	-	-879	50	-63	-	-1,426	139	754	893	2,319	627
18	2024	-	196	-730	-	-583	50	-63	-	-1,130	141	754	895	2,025	507
19	2025	-	196	-730	-	-715	50	-63	-	-1,262	145	905	1,050	2,313	536
20	2026	-	196	-730	-	-910	50	-63	-	-1,457	150	905	1,054	2,511	539
21	2027	-	196	-730	-	-950	50	-63	-	-1,497	154	905	1,059	2,556	508
22	2028	-	196	-730	-	-899	50	-63	-	-1,446	158	905	1,062	2,509	461
23	2029	-	196	-730	-	-807	50	-63	-	-1,354	162	1,056	1,218	2,572	438
24	2030	-	196	-730	-	-807	50	-63	-	-1,354	165	1,056	1,220	2,575	406
Total		**12,925**	**4,812**	**-15,325**	**-**	**-12,234**	**1,050**	**-1,327**	**-**	**-10,099**	**2,783**	**14,177**	**16,960**	**27,059**	
NPV	**8%**	**11,591**	**2,096**	**-5,803**	**-**	**-3,818**	**398**	**-503**	**-**	**3,962**	**1,014**	**4,673**	**5,687**	**1,725**	**1,725**

Incremental Analysis - Summary Results			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	4,534	1,319	-1,001
PV of Benefits	6,961	5,495	4,408
PV of Costs	2,428	4,175	5,409
BCR	1.26	1.12	1.01
NPV/I	0.35	0.10	-0.08
IRR		**9%**	

Benefit Cost Analysis – No Flood Savings - Scenario 3

Incremental Financial Case ($'000s)		Develoment Option		Harbour Development - Mussel Farming and Local Processing											
Period	Year	Harbour Construction Cost	Operating Costs Harbour	Crime Costs	Flood Costs	Unemployment Costs	Government Services Cost	Safety Costs	Industry Costs	Total Costs	Revenue Harbour	Tourism Benefits	Total Benefits	Net Result	Annual Discount Result
0	2006	475	-	-	-	-	-	-	-	475	-	-	-	-475	-475
1	2007	6,450	-	-	-	-	-	-	-	6,450	-	-	-	-6,450	-5,972
2	2008	6,000	-	-	-	-	-	-	-	6,000	-	-	-	-6,000	-5,144
3	2009	-	446	-	-	-102	-	-	-	344	85	302	386	42	34
4	2010	-	446	-1,460	-	-174	200	-63	-	-1,050	96	302	398	1,448	1,065
5	2011	-	196	-1,460	-	-194	200	-63	-	-1,321	98	302	400	1,721	1,171
6	2012	-	196	-1,460	-	-225	200	-63	-	-1,352	100	302	402	1,753	1,105
7	2013	-	196	-1,460	-	-317	200	-63	-	-1,444	105	452	557	2,001	1,167
8	2014	-	196	-1,460	-	-368	200	-63	-	-1,495	109	452	561	2,056	1,111
9	2015	-	196	-1,460	-	-327	200	-63	-	-1,454	111	452	563	2,017	1,009
10	2016	-	196	-1,460	-	-419	200	-63	-	-1,546	113	452	565	2,111	978
11	2017	-	196	-1,460	-	-378	200	-63	-	-1,505	116	603	720	2,224	954
12	2018	-	196	-1,460	-	-583	200	-63	-	-1,709	120	603	723	2,433	966
13	2019	-	196	-1,460	-	-460	200	-63	-	-1,587	124	603	727	2,314	851
14	2020	-	196	-1,460	-	-2,606	200	-63	-	-3,733	143	603	746	4,479	1,525
15	2021	-	196	-1,460	-	-3,199	200	-63	-	-4,326	147	754	901	5,227	1,648
16	2022	-	196	-1,460	-	-3,240	200	-63	-	-4,367	151	754	905	5,272	1,539
17	2023	-	196	-1,460	-	-3,843	200	-63	-	-4,970	155	754	909	5,879	1,589
18	2024	-	196	-1,460	-	-3,853	200	-63	-	-4,980	158	754	912	5,892	1,474
19	2025	-	196	-1,460	-	-3,986	200	-63	-	-5,113	162	905	1,067	6,180	1,432
20	2026	-	196	-1,460	-	-4,180	200	-63	-	-5,307	167	905	1,072	6,379	1,369
21	2027	-	196	-1,460	-	-4,763	200	-63	-	-5,889	172	905	1,077	6,966	1,384
22	2028	-	196	-1,460	-	-5,253	200	-63	-	-6,380	176	905	1,081	7,461	1,372
23	2029	-	196	-1,460	-	-5,519	200	-63	-	-6,646	181	1,056	1,237	7,882	1,342
24	2030	-	196	-1,460	-	-5,519	200	-63	-	-6,646	184	1,056	1,240	7,885	1,244
Total		**12,925**	**4,812**	**-30,651**	**-**	**-49,507**	**4,200**	**-1,327**	**-**	**-59,548**	**2,971**	**14,177**	**17,147**	**76,695**	
NPV	**8%**	**11,591**	**2,096**	**-11,606**	**-**	**-12,174**	**1,590**	**-503**	**-**	**-9,005**	**1,058**	**4,673**	**5,731**	**14,736**	**14,736**

Incremental Analysis - Summary Results			
$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	20,962	13,492	8,159
PV of Benefits	7,019	5,536	4,438
PV of Costs	-13,943	-7,956	-3,722
BCR	2.59	2.16	1.83
NPV/I	1.62	1.04	0.63
IRR		15%	

Benefit Cost Analysis – No Crime Savings - Scenario 1

Incremental Financial Case ($'000s) Develoment Option Harbour Development - No Mussel Farming

Period	Year	Harbour Construction Cost	Operating Costs Harbour	Crime Costs	Flood Costs	Unemployment Costs	Government Services Cost	Safety Costs	Industry Costs	Total Costs	Revenue Harbour	Tourism Benefits	Total Benefits	Net Result	Annual Discount Result
0	2006	475	-	-	-	-	-	-	-	**475**	-	-	**-**	**-475**	**-475**
1	2007	6,450	-	-	-	-	-	-	-	**6,450**	-	-	**-**	**-6,450**	**-5,972**
2	2008	6,000	-	-	-	-	-	-	-	**6,000**	-	-	**-**	**-6,000**	**-5,144**
3	2009	-	446	-	-259	-102	-	-	-	**85**	85	302	**386**	**302**	**239**
4	2010	-	446	-	-259	-102	-	-63	-	**21**	86	302	**388**	**366**	**269**
5	2011	-	196	-	-259	-102	-	-63	-	**-229**	88	302	**389**	**618**	**420**
6	2012	-	196	-	-259	-102	-	-63	-	**-229**	89	302	**391**	**619**	**390**
7	2013	-	196	-	-259	-123	-	-63	-	**-249**	92	452	**545**	**794**	**463**
8	2014	-	196	-	-259	-153	-	-63	-	**-280**	95	452	**547**	**827**	**447**
9	2015	-	196	-	-259	-153	-	-63	-	**-280**	96	452	**549**	**828**	**414**
10	2016	-	196	-	-259	-153	-	-63	-	**-280**	98	452	**550**	**830**	**384**
11	2017	-	196	-	-259	-174	-	-63	-	**-300**	101	603	**705**	**1,005**	**431**
12	2018	-	196	-	-259	-174	-	-63	-	**-300**	103	603	**706**	**1,006**	**400**
13	2019	-	196	-	-259	-174	-	-63	-	**-300**	105	603	**708**	**1,008**	**371**
14	2020	-	196	-	-259	-204	-	-63	-	**-331**	107	603	**711**	**1,041**	**355**
15	2021	-	196	-	-259	-225	-	-63	-	**-351**	111	754	**865**	**1,216**	**383**
16	2022	-	196	-	-259	-225	-	-63	-	**-351**	113	754	**867**	**1,218**	**356**
17	2023	-	196	-	-259	-225	-	-63	-	**-351**	114	754	**869**	**1,220**	**330**
18	2024	-	196	-	-259	-225	-	-63	-	**-351**	116	754	**871**	**1,222**	**306**
19	2025	-	196	-	-259	-245	-	-63	-	**-372**	120	905	**1,025**	**1,397**	**324**
20	2026	-	196	-	-259	-276	-	-63	-	**-402**	123	905	**1,028**	**1,430**	**307**
21	2027	-	196	-	-259	-276	-	-63	-	**-402**	125	905	**1,030**	**1,432**	**285**
22	2028	-	196	-	-259	-276	-	-63	-	**-402**	127	905	**1,032**	**1,434**	**264**
23	2029	-	196	-	-259	-296	-	-63	-	**-423**	131	1,056	**1,186**	**1,609**	**274**
24	2030	-	196	-	-259	-296	-	-63	-	**-423**	133	1,056	**1,189**	**1,611**	**254**
Total		**12,925**	**4,812**	**-**	**-5,702**	**-4,282**	**-**	**-1,327**	**-**	**6,425**	**2,357**	**14,177**	**16,534**	**10,109**	
NPV	**8%**	**11,591**	**2,096**	**-**	**-2,267**	**-1,442**	**-**	**-503**	**-**	**9,477**	**877**	**4,673**	**5,550**	**-3,926**	**-3,926**

Incremental Analysis - Summary Results			
$'000s			
Discount Rate	***6%***	***8%***	***10%***
NPV	-2,479	-4,180	-5,376
PV of Benefits	6,792	5,363	4,304
PV of Costs	9,271	9,543	9,680
BCR	0.72	0.68	0.64
NPV/I	-0.19	-0.32	-0.42
IRR		**4%**	

Benefit Cost Analysis – No Crime Savings - Scenario 2

Incremental Financial Case ($'000s) **Develoment Option** **Harbour Development - Mussel Farming but No Local Processing**

Period	Year	Harbour Construction Cost	Operating Costs Harbour	Crime Costs	Flood Costs	Unemployment Costs	Government Services Cost	Safety Costs	Industry Costs	Total Costs	Revenue Harbour	Tourism Benefits	Total Benefits	Net Result	Annual Discount Result
0	2006	475	-	-	-	-	-	-	-	**475**	-	-	**-**	**-475**	**-475**
1	2007	6,450	-	-	-	-	-	-	-	**6,450**	-	-	**-**	**-6,450**	**-5,972**
2	2008	6,000	-	-	-	-	-	-	-	**6,000**	-	-	**-**	**-6,000**	**-5,144**
3	2009	-	446	-	-259	-102	-	-	-	**85**	85	302	**386**	**302**	**239**
4	2010	-	446	-	-259	-174	50	-63	-	**-0**	96	302	**398**	**398**	**293**
5	2011	-	196	-	-259	-194	50	-63	-	**-271**	98	302	**400**	**670**	**456**
6	2012	-	196	-	-259	-225	50	-63	-	**-301**	100	302	**402**	**703**	**443**
7	2013	-	196	-	-259	-317	50	-63	-	**-393**	105	452	**557**	**950**	**555**
8	2014	-	196	-	-259	-368	50	-63	-	**-444**	109	452	**561**	**1,005**	**543**
9	2015	-	196	-	-259	-327	50	-63	-	**-403**	111	452	**563**	**967**	**484**
10	2016	-	196	-	-259	-419	50	-63	-	**-495**	113	452	**565**	**1,060**	**491**
11	2017	-	196	-	-259	-378	50	-63	-	**-455**	116	603	**720**	**1,174**	**504**
12	2018	-	196	-	-259	-583	50	-63	-	**-659**	120	603	**723**	**1,382**	**549**
13	2019	-	196	-	-259	-460	50	-63	-	**-536**	124	603	**727**	**1,263**	**464**
14	2020	-	196	-	-259	-542	50	-63	-	**-618**	128	603	**731**	**1,349**	**459**
15	2021	-	196	-	-259	-777	50	-63	-	**-853**	132	754	**886**	**1,739**	**548**
16	2022	-	196	-	-259	-818	50	-63	-	**-894**	135	754	**889**	**1,783**	**521**
17	2023	-	196	-	-259	-879	50	-63	-	**-955**	139	754	**893**	**1,848**	**499**
18	2024	-	196	-	-259	-583	50	-63	-	**-659**	141	754	**895**	**1,554**	**389**
19	2025	-	196	-	-259	-715	50	-63	-	**-792**	145	905	**1,050**	**1,842**	**427**
20	2026	-	196	-	-259	-910	50	-63	-	**-986**	150	905	**1,054**	**2,040**	**438**
21	2027	-	196	-	-259	-950	50	-63	-	**-1,027**	154	905	**1,059**	**2,086**	**414**
22	2028	-	196	-	-259	-899	50	-63	-	**-976**	158	905	**1,062**	**2,038**	**375**
23	2029	-	196	-	-259	-807	50	-63	-	**-884**	162	1,056	**1,218**	**2,102**	**358**
24	2030	-	196	-	-259	-807	50	-63	-	**-884**	165	1,056	**1,220**	**2,104**	**332**
Total		**12,925**	**4,812**	**-**	**-5,702**	**-12,234**	**1,050**	**-1,327**	**-**	**-476**	**2,783**	**14,177**	**16,960**	**17,436**	
NPV	**8%**	**11,591**	**2,096**	**-**	**-2,267**	**-3,818**	**398**	**-503**	**-**	**7,498**	**1,014**	**4,673**	**5,687**	**-1,811**	**-1,811**

Incremental Analysis - Summary Results			
$'000s			
Discount Rate	***6%***	***8%***	***10%***
NPV	219	-2,142	-3,816
PV of Benefits	6,961	5,495	4,408
PV of Costs	6,742	7,637	8,224
BCR	0.95	0.86	0.79
NPV/I	0.02	-0.17	-0.30
IRR		**6%**	

Benefit Cost Analysis – No Crime Savings - Scenario 3

Incremental Financial Case ($'000s) Develoment Option Harbour Development - Mussel Farming and Local Processing

Period	Year	Harbour Construction Cost	Operating Costs Harbour	Crime Costs	Flood Costs	Unemployment Costs	Government Services Cost	Safety Costs	Industry Costs	Total Costs	Revenue Harbour	Tourism Benefits	Total Benefits	Net Result	Annual Discount Result
0	2006	475	-	-	-	-	-	-	-	**475**	-	-	**-**	**-475**	**-475**
1	2007	6,450	-	-	-	-	-	-	-	**6,450**	-	-	**-**	**-6,450**	**-5,972**
2	2008	6,000	-	-	-	-	-	-	-	**6,000**	-	-	**-**	**-6,000**	**-5,144**
3	2009	-	446	-	-259	-102	-	-	-	**85**	85	302	**386**	**302**	**239**
4	2010	-	446	-	-259	-174	200	-63	-	**150**	96	302	**398**	**248**	**182**
5	2011	-	196	-	-259	-194	200	-63	-	**-121**	98	302	**400**	**520**	**354**
6	2012	-	196	-	-259	-225	200	-63	-	**-151**	100	302	**402**	**553**	**349**
7	2013	-	196	-	-259	-317	200	-63	-	**-243**	105	452	**557**	**800**	**467**
8	2014	-	196	-	-259	-368	200	-63	-	**-294**	109	452	**561**	**855**	**462**
9	2015	-	196	-	-259	-327	200	-63	-	**-253**	111	452	**563**	**817**	**408**
10	2016	-	196	-	-259	-419	200	-63	-	**-345**	113	452	**565**	**910**	**422**
11	2017	-	196	-	-259	-378	200	-63	-	**-305**	116	603	**720**	**1,024**	**439**
12	2018	-	196	-	-259	-583	200	-63	-	**-509**	120	603	**723**	**1,232**	**489**
13	2019	-	196	-	-259	-460	200	-63	-	**-386**	124	603	**727**	**1,113**	**409**
14	2020	-	196	-	-259	-2,606	200	-63	-	**-2,533**	143	603	**746**	**3,279**	**1,116**
15	2021	-	196	-	-259	-3,199	200	-63	-	**-3,125**	147	754	**901**	**4,027**	**1,269**
16	2022	-	196	-	-259	-3,240	200	-63	-	**-3,166**	151	754	**905**	**4,071**	**1,188**
17	2023	-	196	-	-259	-3,843	200	-63	-	**-3,769**	155	754	**909**	**4,678**	**1,264**
18	2024	-	196	-	-259	-3,853	200	-63	-	**-3,779**	158	754	**912**	**4,691**	**1,174**
19	2025	-	196	-	-259	-3,986	200	-63	-	**-3,912**	162	905	**1,067**	**4,980**	**1,154**
20	2026	-	196	-	-259	-4,180	200	-63	-	**-4,106**	167	905	**1,072**	**5,178**	**1,111**
21	2027	-	196	-	-259	-4,763	200	-63	-	**-4,689**	172	905	**1,077**	**5,766**	**1,145**
22	2028	-	196	-	-259	-5,253	200	-63	-	**-5,180**	176	905	**1,081**	**6,260**	**1,152**
23	2029	-	196	-	-259	-5,519	200	-63	-	**-5,445**	181	1,056	**1,237**	**6,682**	**1,138**
24	2030	-	196	-	-259	-5,519	200	-63	-	**-5,445**	184	1,056	**1,240**	**6,685**	**1,054**
Total		**12,925**	**4,812**	**-**	**-5,702**	**-49,507**	**4,200**	**-1,327**	**-**	**-34,600**	**2,971**	**14,177**	**17,147**	**51,747**	
NPV	**8%**	**11,591**	**2,096**	**-**	**-2,267**	**-12,174**	**1,590**	**-503**	**-**	**335**	**1,058**	**4,673**	**5,731**	**5,397**	**5,397**

Incremental Analysis - Summary Results

$'000s			
Discount Rate	*6%*	*8%*	*10%*
NPV	9,620	4,342	676
PV of Benefits	7,019	5,536	4,438
PV of Costs	-2,601	1,193	3,762
BCR	1.78	1.47	1.25
NPV/I	0.74	0.34	0.05
IRR		**10%**	

Bay of Plenty Charter Boat Owners
Economic Conditions Survey Notes

Introduction

URS Finance and Economics was commissioned by the Opotiki District Council to undertake the a survey of boat users in the Bay of Plenty region to determine demand for harbour facilities at Opotiki.

The URS Finance and Economics Group is a part of URS Australia Pty Ltd, a wholly owned subsidiary of the URS Corporation. URS Corp is one of the world's leading professional services firms, with over 26,000 employees, operating in more than 30 countries and in over 320 cities. The firm is headquartered in San Francisco and is listed on the New York and Pacific Stock Exchanges.

How do I complete the survey?

Ideally, the survey should be completed electronically in Microsoft Word Format. The survey is presented in table format allowing the insertion of appropriate data. Space is also available for more detailed views or comments. But if it needs to be faxed, this would not be a problem.

Who do I send my completed survey to?

Once the survey form is completed please email to Paul Stanley of URS Finance and Economics to the email address below:

paul_g_stanley@urscorp.com

What is the time frame for the completion of the survey?

URS would appreciate that all survey forms be returned to Paul Stanley as soon as possible. If there are any problems in completing the survey or returning it by the due date please advise Paul by contacting him on the numbers below or via email.

Contact Points

If you have any queries regarding the survey or problems in completing the survey by the due date please contact:

Paul Stanley (URS Finance and Economics)

Phone: 61 2 8925 5697

Mobile: 0417 305 898

Fax: 61 2 8925 5555

Bay of Plenty Charter Boat Owners
Economic Conditions Survey

SECTION 1: YOUR CONTACT DETAILS

Please insert your contact details in the event we need to contact you regarding the data provided.

Name: _____

Contact Address: _____

Phone: _____

Email: _____

SECTION 1: BOAT DETAILS

(i) Please provide your details of your boat in the table below:

Boat Details	
Boat Name	
Registration Number	
Length (m)	
Weight (tonnes)	
Number of Crew	
Maximum of Passenger Load	

(ii) What services does your boat typically provide?(i.e Fishing, Scenic Tours etc)

_____

_____

_____

(iii) What is the cost of your operation per year?

Operating cost per year ($)

If you do not want to supply your operating costs, could you please provide cost factor splits in the table below:

Cost Factors	%
Fuel	
Crew	
Maintenance	
Harbour fees (mooring/docking etc)	
Administration	
Other	
Total	100%

If other costs, please specify_____

_____

_____

(iv) What costs do you currently face at Port?

Mooring ($)

Docking/Berthage ($)

Piloting/ Harbour fees ($)

If other costs, please specify_____

_____

SECTION 2: HARBOUR USE – DOCKING LOCATION

(i)Where do you currently dock and moor your boat? _____

_____

(ii)Why do you currently not dock or moor your boat at Opotiki?

Incorrect Infrastructure ☐ Access to Tourist Market ☐

Harbour Access ☐ Other ☐

Other Comments/Explanations _____

_____

_____

(iii) If Opotiki Harbour became an all weather port, would you move your operation to Opotiki?

No ☐ Yes ☐

Reasons for answer _____

_____

_____

(iv) With an all weather port at Opotiki, would you consider running a service out of Opotiki, as well as your current service?

Yes ☐ No ☐

Other Comments/Explanations _____

_____

_____

(v) If you are located at Whakatane, approximately how many days is it not possible to exit/enter the Harbour due to weather or tidal conditions?

_____

_____

SECTION 3: CUSTOMERS

(i) Where do the majority of your customers originate from?

Location	%
Domestic	
Auckland	
North Island (Not Auckland or BOP)	
South Island	
Bay of Plenty (BOP)	
International	
Total	**100%**

(ii)What is the average duration of charter services?

Less than half a day ☐

Half a day ☐

Full day ☐

Greater than 1 day ☐

If greater than one day please specify duration _____

_____

(iii) How many charter services,on average and weather permitting, will you operate per week?

None	☐	Four	☐
One	☐	Five	☐
Two	☐	Six	☐
Three	☐	Seven	☐

If greater than seven please specify number _____

(iv) Given the maximum occupancy of your boat, what is the average passenger load per charter?

Less than 25% full	☐	75% full	☐
25% - 50% full	☐	75% - 100% full	☐
50% full	☐	100% full	☐
50%-75% full	☐		

Other Comments _____

(v) Could you indicate the average price of charter service, either per passenger or per trip?

If per passenger:		*If per trip:*	
$0-50	☐	$250-300	☐
$50-100	☐	$300-350	☐
$100-150	☐	$350-400	☐
$150-200	☐	$400-450	☐
$200-250	☐	$450-500	☐

If another price structure or price please specify _____

_____

Bay of Plenty Commercial Fishing Boat Owners Economic Conditions Survey Notes

Introduction

URS Finance and Economics was commissioned by the Opotiki District Council to undertake a survey of boat users in the Bay of Plenty region to determine demand for harbour facilities at Opotiki.

The URS Finance and Economics Group is a part of URS Australia Pty Ltd, a wholly owned subsidiary of the URS Corporation. URS Corp is one of the world's leading professional services firms, with over 26,000 employees, operating in more than 30 countries and in over 320 cities. The firm is headquartered in San Francisco and is listed on the New York and Pacific Stock Exchanges.

How do I complete the survey?

Ideally, the survey should be completed electronically in Microsoft Word Format. The survey is presented in table format allowing the insertion of appropriate data. Space is also available for more detailed views or comments. But if it needs to be faxed, this would not be a problem. Alternatively, a Council staff member will meet with you to complete the questionnaire.

Who do I send my completed survey to?

Once the survey form is completed please email to Paul Stanley of URS Finance and Economics to the email address below or send to Opotiki District Council contact below.

What is the time frame for the completion of the survey?

URS would appreciate that all survey forms be returned as soon as possible (by the end of February). If there are any problems in completing the survey or returning it by the due date please advise Paul or Council by using the numbers below or via email.

Contact Points

If you have any queries regarding the survey or problems in completing the survey by the due date please contact one of the following:

Paul Stanley (URS Finance and Economics)	Vaughan Payne (Opotiki District Council)
Phone: 61 2 8925 5697	Phone: 07 315 6167; Fax: 07 315 7050
Mobile: 0417 305 898	Mobile: 029 255 7704
Fax: 61 2 8925 5555	vaughanp@odc.govt.nz

Bay of Plenty Commercial Fishing Owners Economic Conditions Survey

SECTION 1: YOUR CONTACT DETAILS

Please insert your contact details in the event we need to contact you regarding the data provided.

Name: _____

Contact Address: _____

Phone: _____

Email: _____

SECTION 1: BOAT DETAILS

(i) Please provide your details of your boat(s) in the tables below:

Boat Details	
Boat Name	
Registration Number	
Length (m)	
Weight (tonnes)	
Number of Crew	
Maximum of Fish Load (tonnes)	
Typical Species of Fish Sought	
Typical Fishing Location	

Boat Details	
Boat Name	
Registration Number	
Length (m)	

Weight (tonnes)	
Number of Crew	
Maximum of Fish Load (tonnes)	
Typical Species of Fish Sought	
Typical Fishing Location	

Boat Details	
Boat Name	
Registration Number	
Length (m)	
Weight (tonnes)	
Number of Crew	
Maximum of Fish Load (tonnes)	
Typical Species of Fish Sought	
Typical Fishing Location	

Boat Details	
Boat Name	
Registration Number	
Length (m)	
Weight (tonnes)	
Number of Crew	
Maximum of Fish Load (tonnes)	
Typical Species of Fish Sought	
Typical Fishing Location	

(ii) What is the cost of your operation per year?

Operating cost per year ($) [ ]

If you do not want to supply your operating costs, could you please provide cost factor splits in the table below:

Cost Factors	%
Fuel	
Crew	
Maintenance	
Harbour fees (mooring/docking etc)	
Administration	
Other	
Total	100%

If other costs, please specify_____

_____

_____

(iii) What costs do you currently face at Port?

Mooring ($) [ ]

Docking/Berthage ($) [ ]

Piloting/ Harbour fees ($) [ ]

If other costs, please specify_____

_____

SECTION 2: HARBOUR USE – DOCKING LOCATION

(i)Where do you currently dock and moor your boat? _____

_____

(ii)Why do you currently not dock or moor your boat at Opotiki?

Incorrect Infrastructure ☐ Access to Fish Market ☐

Harbour Access ☐ Other ☐

Other Comments/Explanations _____

_____

_____

(iii) If Opotiki Harbour became an all weather port, would you move your operation to Opotiki?

No ☐ Yes ☐

Reasons for answer _____

_____

_____

(iv) If Opotiki Harbour became an all weather port, what services and/or conditions would you require to move your operation to Opotiki?

_____

_____

(v) With an all weather port at Opotiki, would you consider running a boat out of Opotiki, as well as basing boats elsewhere?

Yes ☐ No ☐

Other Comments/Explanations _____

_____

(v) If you are located at Whakatane, approximately how many days is it not possible to exit/enter the Harbour due to weather or tidal conditions?

_____

_____

SECTION 3: CUSTOMERS

(i) Where are the majority of customers based?

Location	%
Domestic	
Auckland	
North Island (Not Auckland or BOP)	
South Island	
Bay of Plenty (BOP)	
International	
Total	**100%**

(ii)What is the average duration of fishing trips?

Less than half a day ☐

Half a day ☐

Full day ☐

Greater than 1 day ☐

If greater than one day please specify duration _____

_____

(iii) How many fishing trips, on average and weather permitting, will you undertake per week?

None	☐	Four	☐
One	☐	Five	☐
Two	☐	Six	☐
Three	☐	Seven	☐

URS Australia Pty Ltd (URS) has prepared this report for the use of Opotiki District Council in accordance with the usual care and thoroughness of the consulting profession. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Proposal dated 14th May 2004.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared between August 2004 and March 2005 and is based on the best information available at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

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The report and its attached appendices are based on estimates, assumptions and information sourced and referenced by URS. We present these estimates and assumptions as a basis for the reader's interpretation and analysis. With respect to forecasts and estimates, we do not present them as results that will actually be achieved. We rely upon the interpretation of the reader to judge for themselves the likelihood of whether any projections can be achieved or not.