



Contents

15. Economics	15-1
15.1 Net State Benefit Assessment	15-1
15.1.1 Background	15-1
15.1.2 Net State Benefit assessment methodology	15-1
15.1.3 Options considered	15-2
15.1.4 Conclusions from the quantitative CBA	15-3
15.1.5 Sensitivity analysis	15-4
15.2 Responses to submissions	15-6
15.2.1 Consistency with Policy 2.8.1 of the State Coastal Management Plan	15-6
15.2.2 Economic impact due to sterilisation of mineral resources	15-6
15.2.3 Alternative land use	15-6
15.2.4 Future residential, commercial and tourism growth	15-7
15.2.5 General concerns with methodology used for economic modelling	15-7
15.2.6 Employment benefits	15-8
15.2.7 Tourism benefits	15-8
15.2.8 Existing tourism	15-9
15.2.9 Loss of natural resources	15-10
15.2.10 Value to the rural economy	15-11
15.2.11 Delay costs	15-11



Tables

- Table 15-1 Summary of the economic analysis results (2007/08 dollars over 30 years) 15-4
- Table 15-2: Sensitivity Analysis Summary 15-5



15. Economics

15.1 Net State Benefit Assessment

15.1.1 Background

The HHI Development is a tourism based community designed to provide a high quality tourism destination for local, national and international visitors. HHI Development will be constructed in a carefully designed tourism and residential setting, with associated recreational facilities.

The Department of Environment and Resource Management (DERM) (previously EPA) submitted a response to the EIS which raised a number of issues in regards to the economic assessment. In addition to specific comments about the methodology applied to the economic assessment, DERM noted that the coastal sand dunes on the proposed site are considered an 'area of state significance' which triggers Policy 2.8.1 of the State Coastal Management Plan. The Policy requires that '*if a use or activity that has adverse effects is to occur within "areas of state significance", it must have a demonstrated net benefit for the state as a whole*'. It remains the view of the Proponent that the dune systems do not satisfy the criteria set out by the SCMP.

A stand alone report has been prepared, assessing the economic impacts of the project at a state level. This 'Net State Benefit' report is provided in **Appendix B2** and is structured in a way that addresses concerns raised by the DERM in response to Section 17 of the EIS.

The economic assessment demonstrates that the HHI Development, will provide a net benefit to the State of Queensland. Further, the report demonstrates that the development planned for the coastal sand dune area provides a net benefit to the State of Queensland.

The assessment of this net benefit assessment is based on a robust methodology that meets Queensland Treasury's Cost Benefit Guidelines (2006) and addresses the concerns raised in the DERM's submission.

More detail on the methodology is provided below.

15.1.2 Net State Benefit assessment methodology

A Cost Benefit Analysis (CBA) framework was applied to assess and quantify the costs and benefits associated with the proposed project at a state level.

CBA is an accepted methodology for assessing the net benefits accruing to society as a whole as a result of a project. It identifies (and where possible quantifies) the financial, economic, social and environmental costs and benefits of project options relative to a do nothing option (referred to as the base case). A CBA also attempts to quantify environmental assets, which are classified as 'non-market goods'. In cases where it is not possible to quantify an identified impact in dollar terms, the impact will be considered in a qualitative assessment framework.



The key outputs from a CBA include:

- Benefit cost ratio (BCR) - a ratio of all the quantified direct benefits and costs associated with each option assessed. A ratio greater than one indicates that the benefits are greater than the costs and that the project provides a net benefit to the state. BCR's provide decision makers with a tool to compare the 'value for money' from different options of varying investment costs - i.e. it provides a tool to assess how many dollars of benefit an option provides for every dollar of cost; and
- Net Present Value (NPV) - the present value net benefits associated with a project (i.e. present value benefits less present value costs). Unlike the BCR, a NPV comparison may be biased towards larger projects.

The economic CBA model has been developed with the objective of determining the net benefit associated with the full development as proposed in the master plan, and the net benefit associated with that part of the HHI Development that is located in the area mapped as significant coastal dunes by the DERM. This is the area of land protected by Policy 2.8.1 of the Coastal Plan.

The CBA methodology only considers the direct costs and benefits and therefore does not allow the use of multipliers. This is consistent with the Queensland Treasury Cost Benefit Guidelines (2006). Further, the CBA methodology considers the effect of real resource costs and benefits, and excludes, for example, taxes and subsidies, which are regarded as transfer payments from one part of the economy to another.

15.1.3 Options considered

DERM has suggested that the estimate of net benefit to the state contained in Section 17 of the EIS does not meet Queensland Treasury Guidelines and that the proposal is inconsistent with Policy 2.8.1 of the State Coastal Management Plan.

Policy 2.8.1 of the State Coastal Management Plan requires that development within an 'area of State significance (natural resources)' must demonstrate net benefit to the State.

To enable this assessment, the Net State Benefit Assessment considers the following options:

- **Base Case (do nothing option)** - this option assumes that if this development does not take place, then the HHI Development area will remain as it is today - with no further development. The coastal sand dunes identified as being of state significance will remain in the same condition, with no further maintenance or rehabilitation works. There will be no increased access to the site, and no development of tourist or residential accommodation. Given the restricted access to the site, it is assumed that tourism numbers to Hummock Hill Island will not increase over time as there is no council plan to increase access to the site. It is therefore assumed that Hummock Hill Island will largely remain uninhabited. Whilst the



coastal sand dunes will maintain their current ecological value, their recreational and/or use value will remain practically non-existent;

- **Option A** - Full proposed development as detailed in the Master Plan;
- **Option B** - Identical to Option A, but excludes any development on the coastal sand dunes; and
- **Option C** - Whilst not a discreet option, the difference between Option A and Option B is referred to as Option C. Option C includes the marginal net benefit only associated with the development located on the dunes. The BCR from Option C therefore determines whether the development within the coastal sand dune area (which has been assessed by the DERM as being of state significance) provides a net benefit to the State of Queensland.

Given that the coastal sand dunes have been assessed by the DERM as triggering Policy 2.8.1 of the State Coastal Management Plan, the CBA seeks to isolate the costs and benefits directly attributable to the part of the HHI Development located on the coastal dune system and to demonstrate that the benefits outweigh the costs.

Option C -provides the most robust estimate of the net state benefit associated with the HHI Development undertaken on the coastal dunes area. This approach takes into consideration the fact that it is not a feasible, practical or realistic option to only develop the area on the sand dunes given the distance from the sand dunes to the bridge entry to Hummock Hill Island. Rather, the analysis seeks to answer the DERM's key questions - being whether the proposed HHI Development on the sand dunes is a critical component of the overall feasibility, and whether the development on the dunes provides a net benefit to the State.

15.1.4 Conclusions from the quantitative CBA

The CBA considers the costs and benefits of each option (Option A, Option B, and Option C) relative to the base case¹. The costs and benefits considered in the CBA are classified into the following categories:

- land development and building development costs;
- environmental costs (which factor in the value of the affected sand dunes);
- operating expenditure (maintenance and operation);
- land and building development revenue; and
- tourism revenue (which includes tourism accommodation expenditure and non-accommodation expenditure).

¹ CBA is an analytical tool to aid decision-makers in the efficient allocation of resources. It identifies (and where possible quantifies) the financial, economic, social and environmental costs and benefits of project options relative to a do nothing option (referred to as the base case).



The majority of the cost and benefits related to the above categories were identified and quantified in a CBA. The impacts (both costs and benefits) which are difficult to quantify in dollar terms, are discussed as part of the qualitative assessment in **Appendix B2**.

The CBA concludes that the HHI Development tourist community, as detailed in the Master Plan will provide a net benefit to the State. For every dollar of state cost, the HHI Development will deliver \$1.60 of State benefit.

The BCR remains at 1.6 when only the costs and benefits that are directly attributable to the development proposed for the sand dunes are considered. Therefore, the HHI Development is compliant with the requirements set out in Policy 2.8.1 of the State Coastal Management Plan.

A summary of the results from the CBA is provided in **Table 15-1**. For detailed analysis and results refer to **Appendix B2**.

■ **Table 15-1 Summary of the economic analysis results (2007/08 dollars over 30 years)**

Present Value (2007/08 dollars), discounted over a 30 year period	Option A	Option B	Option C (Option A-Option B)
Land Development costs	\$120.8 m	\$ 84.2m	\$ 36.6 m
Building Development Costs	\$804.1 m	\$ 553.2 m	\$ 250.9 m
Environmental Costs	\$1.2 m	\$ 0m	\$ 1.2 m
Operational Expenditure	\$32.6 m	\$ 22.8 m	\$ 9.8 m
Total Cost	\$958.6m	\$ 660.2 m	\$ 298.4 m
Sale Revenue - Land	\$351.2m	\$ 241.7m	\$ 109.5 m
Sale Revenue - Building	\$997.3 m	\$ 686.0m	\$ 311.2 m
Total Tourism Benefits	\$151.2 m	\$ 92.4m	\$ 58.8 m
Total Benefits	\$1,499.7 m	\$1,020.2 m	\$ 479.5 m
Net Present Value (Net Benefits)	\$ 541.1m	\$360.0 m	\$ 181.1
BCR	1.6	1.5	1.6

15.1.5 Sensitivity analysis

The CBA also tested the sensitivity of key assumptions affecting the costs and benefits of the assessment. Under all sensitivity tests, the BCR remains greater than one. The sensitive analysis confirms the position that the HHI Development provides a net benefit to the state, and that the development which is planned for sand dunes provides a net state benefit in its own right. The sensitivity analysis also addresses many of the concerns raised in the public consultation process. A summary of the results from the sensitivity analysis is provided in **Table 15-2**.

■ **Table 15-2: Sensitivity Analysis Summary**

Sensitive Test #	Sensitivity Test	Option A BCR	Option B BCR	Option C BCR
0	No Sensitivity	1.6	1.5	1.6
1	Construction revenue is indexed at CPI	1.4	1.4	1.4
2	Discount rate is 5 % (real)	1.6	1.6	1.6
3	Discount rate is 7% (real)	1.6	1.6	1.6
4	Option B's share of the infrastructure in the Master Plan is 50%	1.6	1.6	1.5
5	WTP calculation assumes a 25% increase in annual tourist	1.6	1.5	1.6
6	WTP value applied to Total Queensland population and total Queensland tourists (i.e. \$6.089/Ha for 100 ha)	1.4	1.6	1.1
7	Residents' WTP value adjusted to 80 per cent of Pitt (1992) WTP value	1.6	1.6	1.6
8	Tourists' WTP value adjusted to 50 per cent of Pitt (1992) WTP value	1.6	1.6	1.6
Combined 7 and 8	Combined impact of above	1.6	1.6	1.6
9	Land and building revenue is reduced by 25%	1.2	1.2	1.3
10	Tourism occupancy rate is 50 per cent	1.5	1.5	1.6
11	Percentage of tourist expenditure spent on accommodation is 60%	1.5	1.5	1.6
12	Percentage of tourist expenditure spent on accommodation is 40%	1.6	1.6	1.7
13	Diversion of interstate tourists is 50%	1.6	1.5	1.6
14	Diversion of interstate tourists is 70%	1.5	1.5	1.5
15	Tourism profit margin is 10%	1.6	1.5	1.6
16	Tourism profit margin is 20%	1.6	1.6	1.6
Combines 13 and 15	Diversion is 50% and margin is 10%	1.5	1.5	1.6



15.2 Responses to submissions

Submissions on the EIS were called for by the Coordinator General on 8 December 2007.

Some of the issues raised in these submissions related to the economic assessment included in Section 17 of the EIS and are addressed in this chapter. Many of the concerns raised have been addressed through the methodology adopted for the Net State Benefit Assessment in **Appendix B2**.

Key issues raised in the consultation process are discussed in the following sections.

15.2.1 Consistency with Policy 2.8.1 of the State Coastal Management Plan

The DERM, as well as some other public submissions raised the issues that the conclusions drawn in relation to 'net benefit' are not consistent with the requirements' set out Policy 2.8.1 of the State Coastal Management Plan. Policy 2.8.1 of the State Coastal Management Plan requires that development within an 'area of state significance (natural resources)' must demonstrate net benefit to the State.

A stand alone Net State Benefit Assessment Report, which isolates the state costs and benefits from the development proposed to occur on the area of state significance, has been prepared (See **Appendix B2**). The findings from this report conclude that the benefits directly attributable to this section of the development outweigh the costs at a ratio - resulting in a BCR of 1.6.

15.2.2 Economic impact due to sterilisation of mineral resources

A submission raised the issue that the economic impact due to the loss of mineral resources has not been considered in the economic analysis. An Exploration Permit - Minerals (EPM) has existed over Hummock Hill Island since the early 1980's to investigate identified mineral sand resources in the coastal sand deposits of which approximately 12% occur on the Special Lease area. Further, there is concern that the coexistence of a tourism and residential community and commercial sand mine is not possible (or at the very least socially unacceptable).

Whilst it is agreed that there may be economic impacts associated with a loss of access to mineral resources, it is not appropriate to consider these impacts in a cost benefit analysis framework. There is currently no commitment by the private sector, nor approval by the government to pursue mineral mining at commercial scale on Hummock Hill Island. Therefore, the costs and benefits associated with such a large and environmentally intrusive investment are not part of the base case (i.e. the do nothing option). If the private sector expresses interest in investing in commercial mineral mining on the HHI Development area, this would need to be considered by government as an alternative land-use option. Further, given the likely environmental impacts associated with such a proposal, it is expected that approval would be subject to a separate and comprehensive EIS.

15.2.3 Alternative land use

A few of the respondents referred to the potential of using the HHI Development area for other purposes including:

- sand mining (see discussion above); and
- cattle production.

In regards to cattle production, the respondent refers to the historical use of the land to produce beef cattle and suggests that it may be necessary to value the opportunity costs associated with any loss in land productivity. The CBA methodology compares the costs and benefits of different options relative to the base case. Given that the pastoral lease was rescinded in 1980, and there has been no government commitment to re-issue the lease, there is no reason to include future grazing activities in the base case. As per the response to the 'sterilisation of mineral responses' above, if the private sector expresses interest in using the area for grazing purposes, this would need to be considered by government as an alternative land-use option and potentially be subject to a separate EIS.

15.2.4 Future residential, commercial and tourism growth

Some submissions suggested that the future residential, commercial and tourism growth has been considered and adequately planned for locally and across the region.

The qualitative economic assessment in the Net State Benefit Assessment (Section 11 of **Appendix B2**) concludes that the HHI Development will lead to the following benefits:

- potential to delay public investment in regional housing and supporting infrastructure; and
- delayed public investment in tourism infrastructure.

The above-mentioned benefits are associated with reducing pressure on state funding. Recognising benefits from private investment in public services and infrastructure - including housing, tourism infrastructure and social services - does not in any way imply that existing government or council plans are inadequate. On the contrary the suggested benefits imply the proposed development goes some way in fulfilling planned government investment, and therefore reduced pressure on public funding.

15.2.5 General concerns with methodology used for economic modelling

Several submissions raised concerns about the methodology used for the economic modelling. These concerns include:

- multipliers should not be used in CBAs - this is consistent with the Queensland Treasury Cost Benefit Guidelines;
- assumptions are not always transparent;
- the conclusions confusion between direct and indirect effects; and
- the timeframes are not always consistent.

The revised Net State Benefit Assessment is consistent with the Queensland Treasury Cost Benefit Guidelines and does not use multipliers in its analysis. CBA methodology requires that only the direct impacts, at a whole of society level, be considered. In this case, the 'society' is equivalent to



the State of Queensland. The revised model assesses the costs and benefits over a 30 year period, and clearly states (and tests as part of the sensitivity analysis) all of the assumptions.

15.2.6 Employment benefits

A submission questioned the employment benefits detailed in Section 17 of the EIS. The Net State Benefit does not include employment benefits as part of its qualitative assessment. The construction of the HHI Development will provide an average of 190 jobs over a 20 year period, with a peak employment of 350 people. The indirect employment from construction will include a further 70 people in the region and an additional 40 people at State level. Substantial employment opportunities will also arise from the tourism activity generated by the development of Hummock Hill Island. The number of jobs created is expected to rise steadily over the life of the HHI Development and is expected to peak at approximately 700 people in 2024.

15.2.7 Tourism benefits

Concerns were also raised about escalating oil prices reducing travel affordability, and subsequently reducing travel to the HHI Development. In 2006, Tourism Australia released a report assessing consumer behaviour and the impact on the Australian domestic tourism market. A section of the report considered whether domestic factors such as high petrol prices and drought affected consumer choice in holidays. In contrast to some research which suggests that tourism is price sensitive to rising petrol prices (e.g. travellers may adjust their spending or change their mode of travel in response to higher petrol prices), research undertaken by the Tourism Research Centre found that consumers have accustomed to high petrol prices and the drought:

Both facts were only mentioned in passing in this research and often as an afterthought. It seems likely that consumers have adapted to these factors in their decision making and in any case they only operate after travel is already in the consideration set for spending time or money. They might affect where in Australia someone travelled, rather than whether to travel within Australia. (Tourism Research Australia & Travel Research Centre 2007).

As discussed in Section 7.2 of the Net State benefit Analysis (**Appendix B2**), the tourism benefits included in the assessment only considers the additional revenue to the state relative to the do nothing option. These benefits include:

- 1) International tourists, who either choose to visit Queensland, with the HHI Development as their destination of choice; or choose to extend their stay in Queensland to visit the HHI Development;
- 2) Interstate tourist who either choose to visit Queensland, with the HHI Development as their primary destination of choice; or choose to extend their stay in Queensland to visit the HHI Development; and
- 3) Domestic tourists who choose to go to the HHI Development for their holiday rather than travelling interstate and/or overseas.

The impact of higher petrol prices at a state level is complex and difficult to predict. For example, higher petrol prices may result in a combination of the following:



- Increased attractiveness of cheaper flight deals - and therefore an increase in interstate travel;
- Reduced travel overall, with local resident placing a higher value on local day-trips to Hummock Hill Island; and
- Increased local travel rather than interstate or overseas travel. The HHI Development provides more opportunities for this to be a feasible option for families.

In addition to variable petrol prices, other external factors may impact the tourism sector - including exchange rates, political stability in overseas holiday destinations, strength of the resource boom, etc. When addressing these issues in an economic assessment, it is important to recognise that the model considers the expected costs and benefits relative to the base case over a 30 year period. Over the 30 year period, the tourism sector may experience peaks and troughs in tourist numbers and expenditure. However, the revenue assumptions are based on the expected longer term average. Given the uncertainty associated with some external factors, the sensitivity analysis (Section 8 in **Appendix B2**) tests assumption on the occupancy rates, tourism expenditure, diverted tourists, and tourism accommodation profit.

15.2.8 Existing tourism

Several submissions pointed to the fact that Hummock Hill Island is currently frequented by visitors that value the unspoilt nature and the biodiversity that Hummock Hill Island offers. Some of these submissions suggested that there is a risk that these visitors will be lost if the HHI Development proceeds. The current visitors are generally campers that do not pay for accommodation or services.

Therefore, contrary to assertions made in some of these submissions, this potential loss of existing visitors does not reduce the tourism benefits discussed in Section 7.2 of the Net State Benefit Assessment. This is not to say that the loss of current 'nature driven' tourism should not be valued as part of the Net State Benefits Assessment. The Net State Benefit Assessment considered the total economic value (EV) of the dunes in great detail. The total economic value is based on the following equation:

$$\text{Total EV} = \text{direct-use value} + \text{indirect-use value} + \text{options value} + \text{existence value} + \text{bequest value}$$

Where:

- *Direct Use Values* refer to values arising from the consumptive and non-consumptive uses of the environmental - e.g. for recreation and tourism;
- *Indirect Use Values* refers to values arising from the environmental services - e.g. including habitat support, biodiversity value, physical protection and carbon capture;
- *Option Values* refers to the willingness to pay to conserve the option of using the environmental asset at a later date;
- *Existence Value* reflects the willingness to pay for the satisfaction of knowing that something exists even if one has no intention of visiting the site. The Amazon in South



America is a common example of an asset that people may be willing to pay for its preservation even if they know that they will never visit it; and

- *Bequest value* reflects the value gained through the ability to endow a natural resource on future generations.

These values have been considered for both residents and tourists in the Net State Benefit Assessment, and therefore capture the value of the potential loss of 'direct use value' by existing visitors. The process for obtaining these values is detailed in Section 4 and Section 6.3 in **Appendix B2**. Total EV predominantly applies to the value of the 100 ha of affected sand dunes and may not appear to capture the broader environmental value. However, it is important to note that the total EV allocated to the 100 ha of affected sand dunes is very conservative - i.e. the actual value is likely to be lower. For example:

- The Willingness to Pay (WTP)² value used to estimate the tourist component of the total EV of dunes is applied to the total number of tourists to the Gladstone region (i.e. 365,500 per year). Whilst the WTP is adjusted to represent the limited access to Hummock Hill Island (by 70%), the final value is equivalent to applying a tourist WTP to more than double the Gladstone region population; and
- Tourists WTP for the sand dunes are based on a study undertaken by Professor Pitt in Northern NSW. The Pitt Study surveyed tourists who on average stayed in the area for 16 days. In the Gladstone region, tourists' average length of stay is significantly lower - approximately 3.8 nights³. The Net State benefit Assessment does not adjust the WTP value based on this information, and therefore results in a higher total EV.

15.2.9 Loss of natural resources

Several submissions expressed concern around the potential economic costs associated with the loss of natural resources. This issue has been discussed above and considered in the Net State Benefit Report.

The DERM, as well as some other submissions questioned the use of preventative expenditure approach to estimate the environmental value of the affected sand dunes. Other submissions suggest that house prices as well as replacement costs be used to estimate the environmental value. A benefit transfer approach has been used in the Net State Benefit Assessment - consistent with the methodology recommended by the DERM. A discussion of all the valuation approaches and their appropriateness to this study are discussed at great length in Section 6.3 in **Appendix B2**.

² Environmental valuation is largely based on the assumption that individuals are willing to pay for the benefits from environmental goods and services, and, conversely to accept compensation for environmental losses. The willingness to pay (WTP) demonstrates a preference or choice - similar to the preference or choice demonstrated when purchasing goods and services in the market.

³ Gladstone regional Update Year Ended December 2006 - tourism Queensland (2006)



15.2.10 Value to the rural economy

A submission raised the issue that the HHI Development would be of limited value to the Australian rural economy. This issue was addressed in the Economic Assessment contained in the EIS and has been addressed further in **Appendix B2**. It is estimated that international tourism expenditure (excluding domestic and interstate tourists) alone would make a direct contribution to regional value-added of \$151.2 million (NPV) over a 30 year period from the date of the HHI Development's inception.

Estimates of total domestic, interstate and international expenditure predict that:

- \$65 million in tourism expenditure will result from the proposed HHI Development by 2016; and
- \$95 million in tourism expenditure will result from the proposed HHI Development by 2024.

These values represent predicted expenditure rates per year, and are effective from the dates stated.

15.2.11 Delay costs

One submission suggested that the benefits included in Section 17 of the EIS are likely to be lower due to the 'historic difficulty in getting these projects off the ground'.

The revised economic assessment includes site preparation costs as well as any statutory approval costs.