

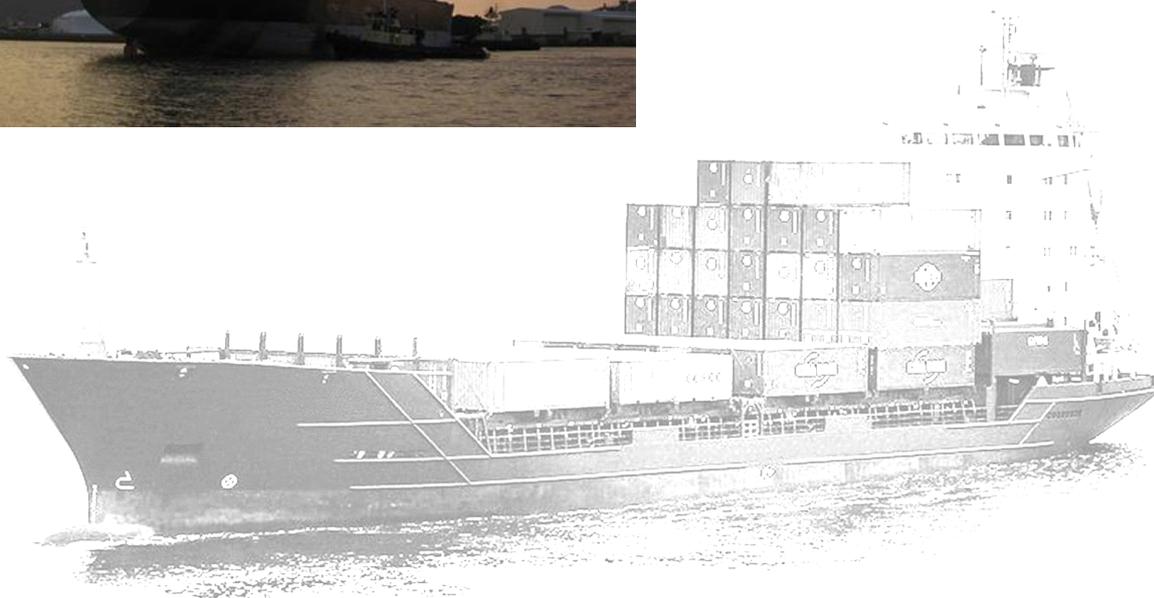


CAIRNS SHIPPING DEVELOPMENT PROJECT

Submission to the
Coordinator General

On behalf of
Friends of the Port of Cairns

1st June 2015



Cairns Shipping Development Project

Submission to the Coordinator General

From: Norman Whitney & Peter Senior

On behalf of: Friends of the Port of Cairns

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A. Summary

We strongly support the Cairns Shipping Development Project.

Further development of the Port of Cairns is critical to Cairns' future. Several Cairns' industries have declined or ceased in recent years; the remaining industries, in particular tourism, underpin jobs, business and investment for the FNQ region.

Many current cruise ships and most new cruise ships are too large to navigate the Trinity Inlet Channel and dock at Cairns cruise terminal. As well, the existing channel is inefficient for existing and potential future cargo vessels. Deepening the channel will also assist the future efficiency of Cairns' Naval Base.

The DRAFT Environmental Impact Assessment (EIS) for the Project presents scientific support for in-shore disposal of dredge spoil. But the Federal Minister of the Environment as well as the Queensland State Government have precluded this option.

The State Government decided against dredging without waiting for public submissions.

Ports North's draft EIS recommends placing all capital spoil off-shore, and presents options for spoil placement on-shore that are portrayed as uneconomical. However, the draft EIS does not include several different options that could be economical.

This submission proposes an alternative to the draft EIS report recommendation. This alternative presents a potential win-win-win for all stakeholders.

Our proposal presents a different approach to dredging and associated requirements:

- Placing a minimum amount of dredging spoil on one smaller Southern area of the State-owned 964 ha East Trinity property;
- Developing appropriate elevated land on this property starting as soon as possible to generate revenue. (The draft EIS proposes placing spoil over two areas totaling 518 ha, then waiting for the spoil to settle before developing only those two areas);
- Collaborating with local Aboriginal groups and environmentalists to develop eco-ventures in the mangroves near the Trinity Inlet shore;
- Benefit-cost estimates indicate such a project would have a significant positive value that could pay for most or all of the dredging and associated costs.

To deny Cairns the opportunity to dredge its channel will be a major setback for the city. The economic impact and demand studies in the EIS indicate that over the forecast period, the city will fore-go of the order of \$1.35B in NPV earnings.

We request the Coordinator General recommend to the Government that a more comprehensive study be undertaken of placement options in consultation with the Cairns community with a view to developing a lower cost and environmentally acceptable solution to enable the project to proceed as soon as possible.

B. Issues

This section presents a range of issues that have been taken into consideration for this submission's proposal. The issues of primary concern in this submission are described in the draft EIS sections:

- Executive Summary;
 - Chapter A2 Dredge Material Placement Options; and
 - Appendix E.2 Ports North - Development Options for Land at East Trinity, RPS, 2014.
- a. The State Government has announced a decision against proceeding with the project before its own process has been completed.**
- i. For reference: EIS Terms of Reference 3.6.3. Submissions. Inform the reader how and when properly made public submissions on the EIS will be addressed and taken into account in the decision-making process.
 - ii. Also, 3.6.2 Objectives of the EIS:The purpose of the EIS is to provide public information on the need for the project, alternatives to it, assess options and make informed decisions for its implementation.
- b. We support the draft EIS recommendation for placement of the project capital dredging spoil in an appropriate location off-shore.**
- i. This view is based on the several authoritative scientific reports that have demonstrated such placement would not cause harm to the Great Barrier Reef or nearby environment.
 - ii. However, both the Federal and the Queensland State Governments have ruled against such off-shore disposal.
 - iii. As such, if the Cairns Shipping Development Project is to eventuate, dredging spoil must be placed on-shore.
- c. Further development of the Port of Cairns is critical to Cairns' future.**
- i. Many Cairns industries have declined or ceased in recent years; the few remaining industries, in particular tourism, underpin jobs, business and investment for the FNQ region.
 - ii. Most new, and several current cruise ships such as the QE II, are too large to navigate the Trinity Inlet Channel and dock at Cairns cruise terminal. As well, future naval and commercial ships will require a deeper channel.
 - iii. To deny Cairns the opportunity to dredge its channel is to deliberately sign Cairn's slow-death warrant.
- d. The draft EIS precludes several different options that could be economical.**
- i. The draft EIS responds to the EIS Terms of Reference (TOR) in a narrow manner.
 - ii. A broader interpretation of the TOR could result in a very different recommendation.
 - iii. Consider two requirements of the TOR:
 - 1. 'Provide descriptions of all feasible alternative land-based spoil disposal.' And:

2. ‘Sufficient baseline economic data to underpin a comprehensive assessment of the direct, indirect, cumulative, costs and impacts of the project.’
 - iv. The draft EIS assesses only the areas totalling 518 ha at East Trinity deemed necessary to place the spoil. This area is then assessed for development of residential housing.
 - v. The spoil placement area is part of a State-owned 944 ha property at East Trinity.
 - vi. The residual 416 ha of the State-owned property is at elevated levels, some with outstanding views over the inlet and CBD to the hills beyond Cairns, could potentially be developed for residential purposes.
 - vii. However, this residual 416 ha was not included in the draft EIS assessment.
 - viii. It could be argued that such development is outside the EIS TOR, and in any case, Ports North’s business is port management, not property development.
 - ix. However, it is clear that if the residual 416 ha was included in a development option, the draft EIS assessment would have been significantly different.
- e. *(App e2: Option 2 – Development for Urban Purposes.... We have also been advised that this would necessitate the import of an additional 5.26 million cubic metres of fill onto the site, additional to the fill sourced via dredging operations.)*
Assessing the development options for the 518 ha as noted above required increasing the amount of spoil to be dredged from the minimum 4.4M by an additional 5.26M cubic metres, with attendant costs.
- i. This increase in spoil volume was required to raise the level of settled spoil to the minimum level required for development.
 - ii. However, if this 518 ha was not developed, at least in the shorter term (5 – 10 years, or until there is market demand), then only the minimum volume would need to be accommodated.
 - iii. This minimum volume could most likely be accommodated in a smaller area than the 518 ha.
 - iv. As well, it is likely that only one of the two separate areas comprising the 518 ha would be required.
 - v. Local residents who have been familiar with, and worked on, this property for several decades have described only minor pockets of the Northern area may require remediation – certainly not the large Northern area as proposed in the draft EIS.
 - vi. Further, if only one placement area is required, then the 22 Km of raised or new bund wall would be significantly less.
- f. **The draft EIS proposes using a large Dutch dredge for all options, both off-shore and on-shore. The dredging time, 24 hours a day, is calculated as 30.1 weeks for East Trinity. A smaller dredge and dredging system, pumping spoil at a slower rate, could be more economical.**
- i. The pumped spoil has about 60% water content.
 - ii. Dredging over 30.1 weeks results does not allow time for significant de-watering (significant sediment settling out).
 - iii. This results in the draft EIS calculation that about 12 million cubic metres of spoil must be accommodated on land.
 - iv. If the spoil was dredged and pumped more slowly, the spoil would have more time to settle, and so require a smaller holding capacity.

- v. Further, if the required capacity is smaller, and the holding area is not required (at least in the shorter term) for residential development, then the bund walls could be lower, requiring less material. As well, different designs for the bund wall may be more cost-effective.
- vi. It is not clear in the draft EIS where the material for the 22 Km of bund walls comes from. However several adjacent properties are derelict and could provide this material at minimal cost. Alternatively much of the material for the retaining walls can be obtained on site from the previously cultivated and farmed areas. On-site material could also cover some of the potentially acid sulphate sub-soil as well as the dredged material (as proposed by CSIRO, ASS Soils in East Trinity Inlet presentation, May 1999).
- vii. The draft EIS does not describe potential technical solutions to improve the cost-effectiveness of dredging.
 - 1. For instance, Dr Bowman, CSIRO, 1999, described a centrifuge approach to separating spoil from the water. In addition centrifuging is used in similar situations to remove harmful chemicals and materials.
 - 2. This process reduces the amount of spoil to be de-watered and settled over time and so reduces the holding capacity required. This centrifuge process is commonly used in dredging operations.
 - 3. Also, it may be appropriate to use new technologies that enable better uniform mixing to inject lime into the spoil as it is pumped.

g. The Cairns region used to have many industries including the list below.

- i. Sugar
- ii. Timber and plywood manufacturing
- iii. Logging
- iv. Railway workshops
- v. Brewery (on the site of Harvey Norman, with the two grain silos)
- vi. Ship building and maintenance including new navy vessels
- vii. Cattle and other animal processing works
- viii. Export various goods through Port of Cairn
- ix. Queensland's largest fleet of fishing vessels
- x. Regional mining of metals, copper and tin.

h. Most of these industries listed above have either closed or substantially diminished. Any further diminution will endanger Cairns' economy, and force even greater reliance on the tourism industry.

- i. The cruise ship industry is a major part of Cairns tourism business. Most new cruise liners are too large to navigate the Trinity Inlet until the proposed dredging has been completed.
- ii. The Cairns region sugar industry is marginal. Mills have been closed, and processing relies on maintaining current cane farm stock. If more valuable cane growing land is taken for residential development, this will further erode the future outlook for the region's sugar industry.
- iii. All sugar from the remaining FNQ mills is trucked into the Cairns Bulk Sugar facility from where it is shipped for export from the adjacent wharf. Additionally, nearly all fertiliser used in FNQ is shipped into the bulk fertiliser depot at their own wharf. Should the harbor dredging not be

maintained and expanded for future larger vessels, these bulk handling export and import facilities will no longer be viable.

- iv. The requirement for port expansion to allow continuation of supplies of petroleum fuels and LGP is a major concern. Increasing demands for aviation fuel, especially with the expansion of international flights through Cairns International Airport, must be catered for. Cairns bulk fuel storage is the base-distributing depot for the whole of Cape York Peninsula and west to the Gulf; as well, strategic fuel supplies are required for the Australian Navy base and the Army 51st Battalion. New international fuel tanker ships servicing Cairns Port are larger, with similar requirements to the new larger cruise ships.

i. The Northern area allocated for spoil placement includes mangroves potentially suitable for eco-ventures.

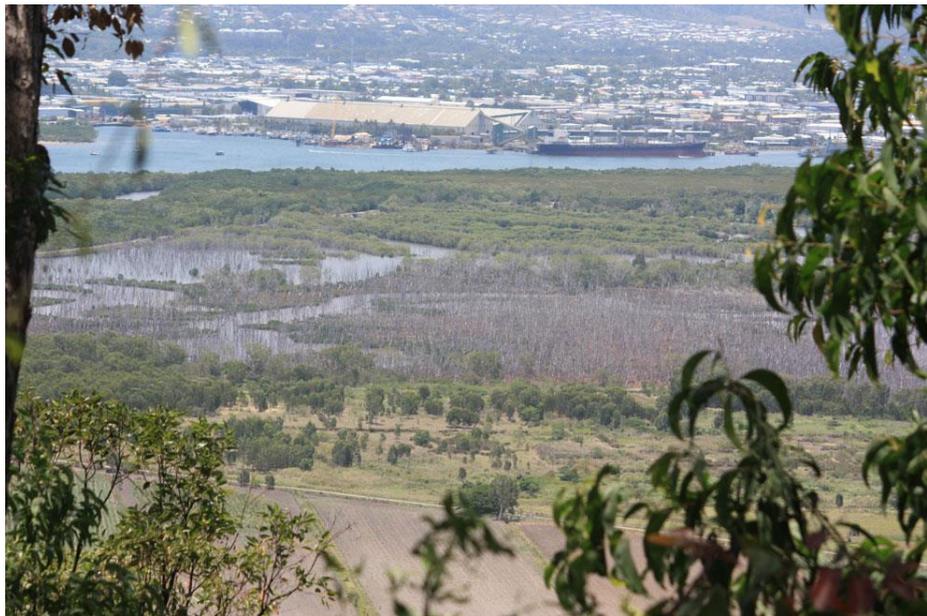
- i. Mangroves on the North Western areas of the 944 ha site, and between the site and Trinity Inlet, comprise old mangroves and a small area of freshwater wetland with an old melaleuca forest.
- ii. These Northern and shore-line areas would be well suited to developing into eco-tourism ventures.
- iii. If the residual areas on the 944 ha site is developed, this could provide funding to enable eco-tourism; for instance to pay for boardwalks, information centre, ferry services across from the Pier marina. A ferry service would also be a major benefit for people with residences in East Trinity residential developments.

j. It is important to understand the background to the current issues surrounding the East Trinity site. The following summarises the main events and issues:

- i. Alternative proposals for over 20 years have demanded that much of the East Trinity site, in particular the Southern area, be ‘restored’, or ‘rehabilitated’ to wetlands. However, photographic evidence, as well as descriptions from local elders, confirms this area never was wetland. The area originally comprised salt pans and grasslands, similar to Portsmith prior to reclamation using dredged spoil. After this area was used for grazing cattle, it was levelled and converted to cane farming.
- ii. After cane farming became uneconomical, the area was planned for development of an international-standard Royal Reef Resort. Plans and schematics of the resort can be viewed at <http://better-management.org/dredging/cairns-shipping-development-project/>. The resort development included resolving all degradation issues on the property.
- iii. After initial approval, pressure from anti-development ‘greens’ strong-armed the Labor government under Peter Beattie’s premiership into withdrawing the approval, resulting in the developer going into receivership. National Westminster bank prepared legal action against the Beattie State Government, resulting in an out-of-court settlement, understood to have been \$10m. The draft EIS A2.8.4 East Trinity presents a somewhat different version: *In the early 1990s a proposal to develop a*

satellite city on the site attracted community attention, but failed to gain approval. In 2000, the Queensland Government purchased the site with the intent of preserving the scenic rim of Cairns and for remediating the acid sulphate problems.

- iv. Having prevented the solution to fix the severe degradation, as the new owners of the property the State has been spending some \$500,000 each year attempting, unsuccessfully, to fix the pollution issues.
- v. CSIRO assessed the pollution as severe and made recommendations to resolve the pollution (May 1999). These recommendations were not applied, as evidenced by the current state of degradation (see photo below) Such degradation would not be allowed if the property had private owners.
- vi. This issue is important to consider in terms of development of the property, as well as ongoing maintenance costs until the issue is resolved.



C. Suggested solutions

This section describes an approach that is significantly different to the draft EIS, and includes several other aspects that are not included in the draft EIS. In particular, this proposal is focused on creating a win-win-win solution for all stakeholders.

a. Extend consideration of East Trinity to include the full 944 ha State-owned property.

- i. This would take into account all significant costs and benefits for all potential stakeholders.
- ii. It is proposed that this development would comprise:
 - 1. Pump the minimum amount of spoil onto only one Southern area of the property.
 - 2. Pump spoil at a slower rate, using the most cost-effective technologies to minimise the quantity of partly-dewatered spoil, and thus minimise the required holding volume.

3. Only develop the spoil-covered area when market demand has been established. At this stage, review any requirements to increase the land level, and include such costs in a new development program.
4. The draft EIS considers a four-lane road from the residential areas, and a bridge over Admiralty Island to join Aumuller Street into the CBD. Both these options would be ideal, but unlikely to be economic until a major residential area is being developed.
5. Support Aboriginal and environmental groups developing eco-tourism or similar ventures on mangrove and semi-wetland areas to the North West of the property and adjacent to the Trinity Inlet.
6. Develop appropriate parts of the residual of the property not required for eco-tourism or spoil placement in a manner that optimises both cash flow, complies with all relevant regulations and can fund most or all of the dredging and associated costs.
7. This proposal could accommodate maintenance dredging spoil if this is required in future (recent Federal laws prevent capital spoil being placed at sea, but allow maintenance spoil).
8. As well, this proposal could accommodate additional dredging spoil to deepen and widen the Trinity Channel and basin to enable larger cruise and other ships to navigate the channel. Note: the currently proposed 4.4M cubic metres is a minimum, but will not enable, for instance, the Queen Mary cruise ship to dock at the cruise terminal.
9. The appendix below forms part of this submission. This indicates that a project as described above is likely to have a positive benefit-cost.

b. Take into account the many benefits to Cairns that would be associated with this proposal.

- i. The proposed development would provide considerable work for people from Yarrabah and other communities near the site. As development proceeds and road networks and related services are improved, this will assist the Yarrabah community and their Council to progress their own plans for sustainability and provide more employment opportunities.
- ii. East Trinity has up to 5,000 ha potentially available for residential development – that is, 50 square kilometres. Much of this area could be available and provide a major proportion of the land required for future development as Cairns population grows. Cummings Economics submission notes: ‘...on a continuation of long-term trends, we are looking at a regional population in the range of 550,000 to 600,000 by 2050 and for Cairns as the main regional city and hub servicing port, a population in the range of 400,000 to 460,000.’
- iii. Another benefit, as noted above, is that this residential development could enable eco-tourism ventures to progress by providing funding of areas well-separated from any residential areas.

c. Indicative estimates suggest this alternative proposal could be completed at far lower cost than the \$365M presented in the draft EIS.

- i. The primary reason for the much lower net cost of this alternative proposal is these estimates are based on a different set of assumptions to those presented in the draft EIS (see Appendix).
- ii. The current degraded state of this State-owned property, together with the current annual maintenance cost of some \$500,000.
- iii. There are no plans for a development, which indicates the property currently may have a negative value.
- iv. It may be in the State's interest, and in tax-payers interests, to pass ownership of this 944 ha property to private developers for a nominal amount, including conditions that require paying for, and completing, the minimum amount of dredging and all associated costs, and complying with all relevant regulations.
- v. We propose it is feasible to dispose of the dredge spoil at the southern end of East Trinity. The 340 Ha of degraded land is shown in the Map below.



- The dredging spoil cost options are shown in the Appendix and based on the EIS design a conservative cost is \$198M for 340 Ha of land. The experts have also recommended an alternative approach and the costs are \$145M.
- The experts have reported that the \$96M (and \$88M in the recommended cost schedule) for the dredging includes provision of the best dredging technology available to de-water and treat the spoil enabling all 4.5M cubic metres of dredge material to be contained in the 340Ha.
- A total estimated net alternative project cost is \$33M (see Appendix). However, it is important to note this figure is indicative only, based on a different set of assumption from the draft EIS, and provided to support our recommendation that the Cairns Shipping Development Project should be re-assessed.

D. Recommendations

1. We suggest the Coordinator General recommend to the State Government that a more comprehensive study be undertaken of dredging spoil placement options in consultation with the Cairns community, with a view to developing lower cost and environmentally acceptable solutions to enable the Cairns Shipping Development project to proceed as soon as possible.
2. In particular, we recommend the draft EIS report be extended to include the alternative proposal, or similar, as outlined in this submission.
3. We recommend consideration be given to commissioning a different group of specialists to develop a full project plan for this alternative proposal, including benefit-cost analyses and implementation time-line. This recommendation is based on the difficulties invariably experienced when consultants are asked to change their previous assumptions, assessments and conclusions.
4. We recommend consideration be given to several development options including those noted below. However, it is recommended that a private project operating in a commercial environment, rather than a public or even private/public, would be more likely to achieve success.
 - a. One or a group of developers
 - b. Private/public partnership
 - c. Public development
5. We request that normal procedures for all Queensland State Environmental Impact Statement reports should be followed, including all submissions made regarding this draft EIS, as well as the Coordinator General's advice to the State, made public at the earliest time.
6. Please note: Our submission is presented in conjunction with *Friends of the Port of Cairns* (Facebook <https://www.facebook.com/PortofCairns>).
7. Please note: Our submission is also fully supportive of, and complementary to the Cummings Economics submission
8. Taken together these three submissions present an exciting way forward for Cairns:
 - a. Gain the major benefits that will accrue when the Trinity Inlet and basin dredging is completed, as demonstrated in the economic assessment of these benefits; and
 - b. Take a first step towards a visionary approach for Cairns' future – a city divided by water such as Brisbane and Sydney.

E. Signatories

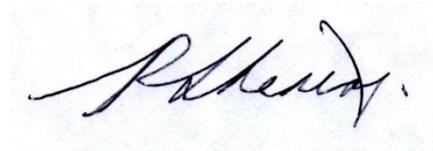
Norman (Norm) Whitney
29 Whitney Road, Glen Boughton, Cairns 4871
Telephone 07 4056 8154

Signature:

A handwritten signature in cursive script, appearing to read 'N Whitney', written in black ink on a light blue background.

Peter Senior
11 Abington Close, Redlynch, Cairns, 4870
Telephone 07 4039 2646

Signature:

A handwritten signature in cursive script, appearing to read 'P Senior', written in black ink on a light blue background.

Appendix

Alternative development revenue and dredging cost projections

This appendix provides:

1. The assumptions underpinning the development revenue and cost projections for our alternative proposal;
2. The calculations for the potential revenues; and
3. The calculations for the potential costs.

Note: None the several benefits have been assessed.

A final indicative net project cost is shown below both sets of calculations.

The following estimates are provided to demonstrate the potential revenues and costs to:

- Develop some of the elevated area of State-owned 944 ha property at East Trinity; and
- Place 4.4M cubic metres of dredged spoil on one Southern area of the property.

Assumptions

The estimates below are based on the following assumptions:

1. The lower 518 ha area at East Trinity will be not be developed until market conditions are suited to such development (the draft EIS proposes developing only the 518 ha).
2. No dredging spoil in addition to the proposed 4.4M cubic metres will be required pro tem (ie not the additional 5.26 million cubic metres of fill noted in the draft EIS).
3. A proportion of the elevated area of the State-owned 944 ha East Trinity property will be developed as soon possible (this area is not considered for development in the draft EIS).
4. Upgrading of the existing road network to Cairns will be minor (major upgrades will be required when future development occurs, eg the four-lane highway and bridge over Admiralty Island, as proposed in the draft EIS Development Options).
5. The State-owned land at East Trinity's designation will be changed to enable developments on appropriate parts. (Note: neither this site, nor neighbouring properties, are suited to agriculture, as has been proven over many decades).
6. Safety hazards such as storm surge, sea-level rises and flooding do not apply to the elevated areas of the 944 ha property.
7. The Draft EIS appendix e2 section 2.2 assumption will be applied: '*a theoretical yield of 10 residential lots per site hectare has been adopted.*'

8. Also from e2, these assumptions will be applied with adjustments for a smaller area:
 - a. *'Applying these figures to the total site area of 518 hectares reveals a total yield of 5,180 allotments. Average recorded detached housing occupancy rates for the Cairns region of 2.8 persons per dwelling (as per 2011 ABS Census data) indicates a likely total population yield under this scenario of 14,504 persons.'*
 - b. *Selling price per allotment: \$200,000*
 - c. *Selling period, 50 lots per month (considered generous)*
9. An infrastructure cost of \$70,000 per lot is assumed. This is an average figure over a range of recent developments in Queensland.
10. Selling commences in two years, ie 2017, following preparation and approvals. At that time, the market for real estate in Cairns is assumed suitable to accommodate this 5-year proposed project. (Note: this assumption is supported by several recent real estate market projections.)

The following list compares the above assumptions with the assumptions listed in the draft EIS, Appendix e2:

- Site total area is 518 hectares based on Arup dredge spoil extent.
 - Only elevated areas will be developed initially.
- Assume all lots < 900 m² for purposes of water and sewer EP calculations.
 - Same assumption.
- The 100 year ARI flood level adopted is RL 2.8 m AHD.
 - This assumption does not apply for the elevated site areas.
- The cost estimates are for trunk infrastructure to the East Trinity site boundary.
 - Major upgrades and associated costs will not apply initially for the smaller elevated area for development.
 - Currently, Warner Road caters adequately for Yarrabah residents (population 2,409 in 2011 Census, and estimated 200 population in Glen Boughton area).
- The cost per lot for internal roads, drainage, water, power and sewerage is not included.
 - This will be taken into account in overall costing for the upper area development.
- Filling costs to include fill from RL 1.65 m to RL 2.8 m AHD plus surcharge and grading allowances.
 - This will not apply until the lower areas are developed some time in the future.

Development revenue projections

1. Land area to be developed: Assume 250 ha (most of this land is elevated, well above floodable areas, some of which has grand views over the inlet and CBD to the hills beyond. More than this 250 ha could be available for development).

2. 10 residential lots per ha x 250 ha = 2,500 residential lots
3. Sales price is a conservative 75% of the \$200,000 used in the draft EIS Option 2, ie \$150,000.
4. Infrastructure costs are \$70,000 per lot.
5. Roading costs between this development and State Highway will not be significant (until further major developments commence).
6. Net revenue per lot is \$150,000 - \$70,000 = \$80,000
7. Selling commences in two year, ie 2017, following preparation and approvals.
8. Selling period is a conservative 40 lots per month, ie 480 per year (draft EIS indicated 50 lots per month).
9. Total period of sales 2,500 lots / 480 lots pa = 5.2 years
10. Both dredging and associated costs, as well as land development costs and revenues, will be time-dependant. A full project cost will involve discounted cash flows and finance costs. However, this proposal and the information available are only indicative at this stage, so neither discounted cash flow nor a net present value a calculations are appropriate.
11. Total net revenue is 2,500 lots x \$80,000 revenue per lot = \$200m

Dredging spoil cost projections

Total costs for dredging and associated costs, including \$20M contingency: \$233M
(See following table)

Indicative net project cost

Total estimated costs for dredging and associated costs, including \$20M contingency: \$233M
Less
Total estimated net revenue: 2,500 lots x \$80,000 revenue per lot = \$200M

Total estimated net project cost: \$233M - \$200M = \$33M

Dredging spoil cost projections

Conservative costings based on the design in the draft EIS:

Submission Schedule Dredging Rates

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Item	Description	Unit	Quantity	Unit Rate	Amount (AUD)
<u>Port of Cairns Dredging</u>					
<u>Design of Bund</u>					
	Detailed survey of existing land	item	1.000	1,199,860.00	1,199,860
	Design of bund wall	item	1.000	599,930.00	599,930
	Design of all concrete structures required for dredging pumps	item	1.000	599,930.00	599,930
<u>Construction of Bund Wall 1 (9klm)</u>					
	Preliminaries including (Construction Plans, Insurances, other)		1.000	35,995,793.00	35,995,793
	Construction Survey		1.000	299,965.00	299,965
	Clear and Grub	m2	270,000.000	8.64	2,332,800
	Excavate and place high plastic fill	m3	32,400.000	106.63	3,454,812
	Supply and place general fill to construct bund	m3	243,000.000	60.77	14,767,110
	Trim Batters	m2	162,000.000	10.17	1,647,540
<u>Construction of Bund Wall 2 internal</u>					
	Construction Survey		1.000	299,965.00	299,965
	Clear and Grub	m2	270,000.000	8.64	2,332,800
	Excavate and place high plastic fill	m3	32,400.000	106.63	3,454,812
	Supply and place general fill to construct bund	m3	243,000.000	60.77	14,767,110
	Trim Batters	m2	162,000.000	10.17	1,647,540
<u>Construction of discharge ponds 200m X 200m X 2m deep</u>					
	Clear and grub areas	m2	360,000.000	2.40	864,000
	Excavation of material to form ponds and discharge points	each	4.000	354,437.00	1,417,748
	Rock protection works at outlets	each	4.000	1,439,832.00	5,759,328
	Concrete spillway	each	4.000	1,199,860.00	4,799,440
<u>Dredging of Port</u>					
	Dredging of the port and pumping onto land	item		96,000,000.00	Rate Only
	Dozers if required to push material	item	1.000	5,442,564.00	5,442,564
	Treatment of ASS/PASS material	item	1.000	13,768,391.00	13,768,391

Expert Estimation 2014 SP1
Expert Estimation © 1992 - 2015, Pronamics Pty Ltd

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Dredging Rates

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Item	Description	Unit	Quantity	Unit Rate	Amount (AUD)
<u>Clear of total area and placement of Capping Material</u>					
	Clear and Grubbing	m2	6,000,000.000	1.95	11,700,000
	Capping of Dredged material with suitable fill material allow 300mm	m3	1,800,000.000	28.39	51,102,000
<u>Unforeseen</u>					
	FUF	PSUM	1.000		20,000,000
Total for project					198,253,438

Expert Estimation 2014 SP1
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1. Experts recommended costings based on a different process and approach.

Submission Schedule Dredging Rates

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Item	Description	Unit	Quantity	Unit Rate	Amount (AUD)
<u>Port of Cairns Dredging</u>					
<u>Total Usable land 340ha</u>					
<u>Design of Bund</u>					
	Detailed survey of existing land	item	1.000	1,100,291.00	1,100,291
	Design of bund wall	item	1.000	550,145.00	550,145
	Design of all concrete structures required for dredging pumps	item	1.000	550,145.00	550,145
<u>Construction of Bund Wall 1 (9klm)</u>					
	Preliminaries including (Construction Plans, Insurances, other)		1.000	33,008,726.00	33,008,726
	Construction Survey		1.000	275,073.00	275,073
	Clear and Grub	m2	270,000.000	7.92	2,138,400
	Excavate and place high plastic fill	m3	32,400.000	97.78	3,168,072
	Supply and place general fill to construct bund	m3	243,000.000	30.97	7,525,710
	Trim Batters	m2	162,000.000	3.73	604,260
<u>Construction of Bund Wall 2 internal</u>					
	Construction Survey		1.000	275,073.00	275,073
	Clear and Grub	m2	270,000.000	7.92	2,138,400
	Excavate and place high plastic fill	m3	32,400.000	97.78	3,168,072
	Supply and place general fill to construct bund	m3	243,000.000	30.98	7,528,140
	Trim Batters	m2	162,000.000	9.32	1,509,840
<u>Construction of discharge ponds</u>					
<u>200m X 200m X 2m deep</u>					
	Clear and grub areas	m2	360,000.000	2.20	792,000
	Excavation of material to form ponds and discharge points	each	4.000	325,024.00	1,300,096
	Rock protection works at outlets	each	4.000	550,145.00	2,200,580
	Concrete spillway	each	4.000	550,145.00	2,200,580
<u>Dredging of Port</u>					
	Dredging of the port and pumping onto land	item		88,000,000.00	Rate Only
	Dozers if required to push material	item	1.000	4,990,919.00	4,990,919
	Treatment of ASS/PASS material	item	1.000	12,625,837.00	12,625,837

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Dredging Rates

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Item	Description	Unit	Quantity	Unit Rate	Amount (AUD)
<u>Clear of total area and placement of Capping Material</u>					
	Clear and Grubbing	m2	6,000,000.000	1.78	10,680,000
	Capping of Dredged material with suitable fill material allow 300mm	m3	1,800,000.000	26.03	46,854,000
Total for project					145,184,359

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