

Investment in Toodah Harbour and Weinam Creek

**A report for the
CITY OF REDLAND**

**Prepared by the
National Institute of Economic and Industry Research (NIEIR)**

ABN: 72 006 234 626

416 Queens Parade, Clifton Hill, Victoria, 3068

Telephone: (03) 9488 8444; Facsimile: (03) 9482 3262

Email: admin@nieir.com.au

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1. Background

In December 2013 the City of Redland sought advice from NIEIR as to the application of input-output modelling in developing the project case for two major projects covering improvements to ferry wharves and related facilities at Toondah Harbour and Weinam Creek. A proposal was prepared in January 2014 and in February Dr Manning and Mr Marinopolous from NIEIR inspected the sites and conferred with Council personnel. The Council supplied a range of previous technical and financial studies and provided oversight for the study.

The main components of the investment program were isolated and it was shown that the projects comprised a mix of land development, marine facilities and car parking. While it would be possible to undertake the harbour and car parking developments as one project, and similarly for the residential/commercial developments, considerable cost savings are expected by combining these elements in a single package. Not only will this save costs; it is expected that the residential/commercial development will contribute substantially towards overall investment cost. In the event that residential/commercial developers are willing to cover the whole cost, either by cash contributions or by construction in kind, Council is faced with a simple decision: do we proceed on this basis, or do we postpone in the hope that a better deal will be available in the future. The present study shows that postponement will forgo a variety of benefits to the people of Redland, especially island residents, that postponement is not an attractive option.

However, it is possible that developers will not be forthcoming who are willing to cover the complete cost. In this report we assess the economic worth of the projects in this event. We also assume, from Council documentation, that there will be no more than partial cost recovery from the car-parking component. (We conclude that the narrowly-defined financial returns on the projects could be improved by charging more for parking and spending less on parking facilities, but this would be likely to reduce the overall benefit to the City since it would hinder expected developments on the islands.) If developers are not willing to cover the complete cost, Council will be faced with the need to raise loan finance, to invest its own funds or to seek other government funding.

Since the study involves the case for public investment, it was conducted according to the guidelines for such studies issued by such authorities as the World Bank, the European Union and the Queensland Treasury. A conservative financial outline was prepared to inform Council of the benefits of the projects should developers fail to cover costs. The direct economic effects of the investments on economic development in the islands served by the ferry wharves were then identified and the proposed investments were shown to yield adequate economic returns under a background scenario in which population and employment in South East Queensland grew at the rates currently projected by the Queensland government.

The cost-benefit analysis was extended, using input-output analysis, to Redland as a whole and this identified further benefits due to local procurement of inputs.

The central financial and economic assessment in this report was complemented by several further assessments on even more pessimistic assumptions, including a delay in developer interest and a halving of their contributions below the assumed conservative level. The first of these was assessed as benign but the latter seriously reduced project rates of return. However, such a severe failure of developer interest is likely to occur only in circumstances of economic recession, in which case a broader multiplier analysis becomes relevant. A recession implies that the full-employment assumption which underlies most of this report can be relaxed and increases in demand, such as

those occasioned by the projects, can be matched to otherwise-unemployed resources and so undertaken at little real cost. For this reason, despite the increased financial costs, the economic rates of return on the projects remained attractive in this alternative scenario.

2. The underlying geography

The City of Redland is divided between mainland and islands, the latter in turn divided into North Stradbroke Island, which lies between Moreton Bay and the ocean, and a number of islands surrounded by Moreton Bay. Five of these islands are inhabited: Coochiemudlo, Macleay, Lamb, Karragarra and Russell. The last four of these are collectively termed the Southern Moreton Bay islands.

This study covers proposed investments in improved harbour facilities at Toondah Harbour and Weinam Creek. The facilities at Toondah harbour are currently used mainly by ferries and vehicular barges serving North Stradbroke via Dunwich while those at Weinam Creek, also known as Redland Bay, are currently mainly used by ferries and vehicular barges serving Macleay, Lamb, Karragarra and Russell islands. The ferry timetable features alternating clockwise and anticlockwise round trips which facilitate travel between the islands. Ferry services for Coochiemudlo depart from Victoria Point, which means that that island is not relevant to the present study.

In 2011 Redland City had a population of 138666 including 2026 residents of North Stradbroke Island and 5632 living on the four Southern Moreton Bay islands.

The City as a whole depends quite heavily on incomes earned by commuters to other parts of South East Queensland. Most of the commuters live in mainland Redland but there is also commuter traffic between the islands, mainland Redland and the rest of SEQ. In addition the islands generate commuter traffic to and from education facilities (there are no secondary schools or tertiary education facilities on the islands) and for shopping and for health services. There is significant tourist traffic to North Stradbroke.

The key shopping centres in the City are Victoria Point, Cleveland and Capalaba while the key health facility is the Redlands hospital a little over 3 km from the Cleveland city centre. There are high schools in Victoria Point and Cleveland and a TAFE college in Alexandria Hills. All these destinations are short bus rides from the ferry wharves. To access university education it is, however, necessary to travel to Nathan, St Lucia or Brisbane City. Tourist traffic is primarily from SEQ but includes interstate and international visitors.

It would be possible, at significant cost, to replace the ferries by building bridges to connect the islands with the mainland. The most likely route would connect North Stradbroke Island with Steiglitz in Gold Coast City; further bridges could then be built to connect the Southern Islands with North Stradbroke. This would not only change the character of the islands but would also re-orient them away from Redland City and from the major employment and population centres of the Brisbane metropolitan area. Neither State nor Local government is currently considering this possibility and it will not be further analysed in the present study.

3. North Stradbroke Island

North Stradbroke Island measures around 38 km from north to south. Its main beach faces the Pacific Ocean and is approximately 32 km long. There are also more sheltered beaches facing north onto Moreton Bay. Most of the island comprises sand dunes or low-lying sandy swamps but there are rocky outcrops at Point Lookout.

Since 1949 much of the island has been mined for mineral sands but this activity is expected to cease by 2035. The mining leases will then revert to Crown land. In 2011 the native title of the Quandamooka people was recognised over most of the island. Freehold land zoned for residential living is limited to Dunwich, Amity Point and Point Lookout. Most of the rest of the island, and the whole of Peel Island, are zoned for rural enterprises, ecotourism and conservation. Two small areas are set aside as conservation areas and a national park.

At the 2011 Census a little over 2000 people lived on the island, nearly all of them in the three freehold townships. In population characteristics, there was a clear division between Amity and Point Lookout, on the one hand, and Dunwich on the other, each accounting for roughly half of the island's permanent population. Dunwich and the dispersed population on its outskirts had few vacant houses and a relatively high proportion of improvised dwellings. By contrast, more than half the dwellings in Point Lookout and Amity were vacant on Census night. Few were improvised and perhaps a quarter of those in Point Lookout were flats or semi-detached units.

The resident population of Dunwich was significantly younger than that of the rest of the island and 40 per cent were of Aboriginal descent. The population of Point Lookout and Amity was older and less than 4 per cent were of Aboriginal descent. The proportion of adult residents with current jobs was highest in Point Lookout (54 per cent) and lowest in Amity (40 per cent); the proportion receiving incomes at social security levels was highest in Dunwich (30 per cent) and about the same in Amity and Point Lookout (22 per cent). Average adult income was highest in Point Lookout (approximately \$700/week) and similar in Amity and Dunwich (\$640/week).

Nearly a quarter of the employed residents of Dunwich worked in the mining industry whereas the most common industry of employment in Point Lookout was hospitality (accommodation and food services) which occupied around a fifth of the employed residents.

In terms of resident population, Dunwich was the largest settlement (it housed 43 per cent of the population of the island) but rated by the number of dwellings Point Lookout was the largest, with nearly half the island total. A high proportion of dwellings in Point Lookout were presumably holiday homes and rental flats which were unoccupied in the off-season when the Census is taken. In summary, Dunwich is a worker's township while Amity and Point Lookout are oriented towards tourists and holiday housing.

The property market in Point Lookout is active with perhaps 8 per cent of all dwellings currently for sale at prices ranging from \$200k for a modest dwelling without views to \$2m or more for a spacious unit with ocean views; typical rental values are around \$250 a week. The property market in Dunwich is less active; the stock on offer is mainly detached houses and the price range starts around \$250k with few offerings above \$700k. Stock turnover in Amity is low and no real indication can be given as to price.

The major inflows of income to the island come from mining and tourism. The tourism component includes hospitality and the construction of tourist accommodation, holiday houses and retirement housing. Additional jobs are generated by local expenditure (chiefly retail) and government services (a school, a small amount of supported accommodation). The ageing population is supported by social security and superannuation.

Among resident households, 45 per cent had one car and 41 per cent two or more cars; most of these cars would have been garaged on the island but some would have been garaged at Toondah Harbour. Two-thirds of employed island residents travelled to work by car with 15 per cent walking and 16 per cent utilising public transport, many in combination with car travel. Though most public transport patrons used the ferry, it would appear from Census data that in 2011 the ferry carried only moderate flows of commuters, with the island substantially self-contained for employment. This would be true even if some of those who said they travelled by car forgot to report that for part of their journey they were on a ferry. It would appear that the bus between Point Lookout and Dunwich

and the buses which connect with the ferries at Toondah Harbour are used mainly by students, retirees, other low-income residents and tourists.

The mining industry barges its product to the Port of Brisbane but uses the vehicular ferry between Toondah Harbour and Dunwich to transfer trucks and other equipment. The tourism industry depends on the passenger and vehicular ferries between Toondah Harbour and Dunwich.

The mining industry is in process of winding down due partly to resource depletion but also, more controversially, due to environmental restrictions. The exact timetable is not particularly relevant to present purposes; let us simply assume that the industry winds down over the next twenty years. Its most likely replacement from an employment point of view is tourism, though this will not be an easy transition, since the skills required for mining, while readily transferable to construction, are not so easily transferred to service industries like tourism.

The growth of tourism on North Stradbroke has been constrained by several factors.

- ❖ Competition from the Gold Coast and the Sunshine Coast, both of which boomed from the 1970s onwards with investment in roads and the development of air transport.
- ❖ Lack of road access. There is scope now to make a virtue of this; it differentiates North Stradbroke from mainland resorts though not from Moreton Island.
- ❖ The limited supply of freehold land. Coupled with the demands of the mining industry and of conservationists seeking to reserve land for national parks, this has restrained tourism development, though there is still some room for residential and resort development within the existing residential areas. Major developments are likely to require land currently zoned for ecotourism etc.

As the mining industry declines it will relinquish land with tourism potential, though this potential will be affected by the quality of the industry's site rehabilitation practices. Actualisation of this potential will depend in part on decisions by the Quandamooka Yoolooburrabee Aboriginal Corporation. There are two basic options – extension of the three existing townships and construction on new sites. Several markets may be identified.

- ❖ The day-trip market from SEQ. North Stradbroke is currently differentiated from other beach destinations in the region in that it requires a ferry ride and is less developed than the Gold or Sunshine Coasts, though Bribie Island couples road connection with a somewhat similar atmosphere. This market also includes day-trips made by visitors from overseas and interstate who are accommodated in Brisbane or the Gold Coast.
- ❖ The existing overnight market served by Point Lookout and Amity, with its emphasis on holiday rentals and on weekenders which are owner-occupied during the holiday season. Presumably much of this market is from Brisbane residents but it would include visitors from further afield.
- ❖ The resort market as already partly served by Tangalooma resort on nearby Moreton Island. The essence of a resort is that it packages accommodation and entertainment. The packaging may be more or less up-market; may be differently balanced between environment and amusement and may be variously priced. The potential clientele includes holiday-makers from Brisbane and the rest of Queensland but also includes people from interstate and overseas. The proximity of Brisbane airport is an advantage in this context.
- ❖ The retiree market has been responsible for much construction along the Queensland and NSW coasts. Compared to some other beach townships along the East Coast of Australia, Point Lookout and Amity have not been heavily involved in this market, but their elderly populations indicate that retirement supports their real estate values.
- ❖ There may also be a fly-in fly-out residential market, for which the combination of beach access and proximity to Brisbane Airport is important.

From a local employment point of view, gradual development which gives steady employment to a local construction workforce would be preferable to bursts of employment separated by periods of low construction activity on the island.

4. The Southern Moreton Bay islands

The Southern Islands lack the high dunes of North Stradbroke and none of them has access to the ocean beach. The Islands were subdivided decades ago but many of the allotments thus created are too low-lying to receive permission to build; these allotments are vulnerable even to the small rises in sea level and increases in storm surges projected from climate change over the next three decades.

Russell Island is the largest of the four, being eight km long. However, the most populous is still Macleay Island, with a population in 2011 of 2572, just ahead of Russell Island with 2473 people. Lamb Island is smaller with 427 people and Karragarra is the smallest with 160. The number of dwellings on the islands was recorded as 3679, nearly all being detached houses. Approximately 27 per cent of these dwellings were unoccupied on Census night. Many of these would have been second homes for people who conduct their working lives elsewhere.

Only around 3 per cent of residents claimed Aboriginal or Torres Strait Islander descent. On all four islands the largest age group was that aged 60-64 and the median age was over 50, with a notable under-representation of people aged 15-29. Among the population aged 15 and over in 2011, 15 per cent were employed full-time, 15 per cent were employed part-time, 6 per cent reported themselves unemployed and looking for work, 43 per cent were aged 55 or more and were out of the labour force and the remaining 20 per cent were aged less than 55 and out of the labour force. The exact proportions are not reported, but these figures mean that around a third of households living in the islands receive work incomes and around two-thirds depend on cash benefits and property incomes such as superannuation.

Among island residents with jobs, 16 per cent worked at home or used active transport to get to work and the remainder were more or less equally divided between those who reported travelling to work by car only and those who reported using the ferry. Taken literally, this would mean that 43 per cent worked on their home island and 42 per cent either on the mainland or another island; however these are self-reported numbers and it is quite likely that they under-report off-island employment. This implies commuter patronage on the ferry of 400-450 round trips a weekday, the exact number depending on the number of days per week worked by part-time employees and the number of jobs on the islands taken by mainlanders. In addition, education enrolments imply around 250 round trips per school-term weekday, again depending on the number of trips per week by part-timers and the overlap between work and student trips.

The most commonly reported industries of employment were construction and building maintenance, retail, education and residential care.

Though Macleay Island has a golf club and Russell Island has various wetlands which might be developed through boardwalks, the Southern Islands are primarily residential and have little tourist trade.

The lack of roads connecting the islands with the mainland, coupled with the lack of any connection to the ocean beach across North Stradbroke Island, has kept land values on the Islands relatively low. These have proven attractive to people of limited means. The islands also offer low-key bushland living combined with low levels of motor traffic – though with journey lengths of up to 7 km from the wharf the islands rely on motor vehicles for internal transport. Advertised dwelling prices on the islands start a little below \$200k and range up to \$400k with a few outliers beyond. Serviced lots are

readily available at around \$40k on Macleay and down to \$25k on Russell, with larger or waterside lots commanding higher prices.

Car ownership is a little below North Stradbroke, and again we do not know how many cars are garaged on the islands and how many on the mainland – though judging by car ownership on Karragarra, which is too small to be worth driving on, this would account for many of the vehicles owned. The journey to work was split roughly half and half between car-only and public transport, mainly ferry plus car. Census data thus indicate that the proportion of commuters among Southern Islands ferry passengers is higher than on the North Stradbroke ferries, with a balancing lower proportion of tourists.

It is likely that the islands will remain much as they are, apart from construction on currently vacant blocks, though it is possible that increasing construction will be accompanied by gentrification.

5. The Priority Development Areas

Toondah Harbour and Weinam Creek have been declared Priority Development Areas (PDAs). Current transport facilities within each PDA include:

- ❖ dredged channels;
- ❖ wharves for ferries and water taxis with ticket booths and waiting shelters;
- ❖ a bus stop with fairly minimal passenger shelter;
- ❖ ramps for barges and for unloading vessels from trailers;
- ❖ standing areas for vehicles awaiting barge transport;
- ❖ car parks, including gated areas (all car parks are unroofed and at ground level);
- ❖ foreshore landscaping and parks; and
- ❖ limited building development.

In addition, Weinam Creek has a slipway, a coast guard station, a small marina and a wharf for the police barge. The Redland Bay police station is located in the PDA though not by the police wharf.

The harbour facilities, streets and parks are administered by the Redland City Council but much of the developable land within the PDAs is owned by the Queensland Government, with some privately owned.

The projects for assessment will be defined as the PDAs and investments therein. However, it will be necessary to take complementary activities into account, particularly the ferries.

6. Development proposals

The following developments are proposed.

6.1 Transport

The key attribute of the two PDAs is that they are both transport interchanges. From a transport point of view, the main requirements for the areas to work effectively are as follows.

- ❖ Dredged channels sufficient to carry the water traffic offering.
- ❖ Streets and footpaths sufficient to carry the land-based traffic offering.

- ❖ Sufficient wharf facilities to serve ferry and water taxi services to and from the islands.
- ❖ Sufficient barge ramps to serve vehicular traffic to and from the islands.
- ❖ Bus and taxi interchange facilities.
- ❖ Parking for vehicles whose drivers are visiting the islands and for island-owned vehicles used on the mainland.

In addition, at Weinam Creek facilities are required for the police barge.

The transport investment proposals are for improvements to these facilities to increase capacity across the board and also to improve the appearance and functionality of the facilities. Investment in transport facilities at island destinations may be required if the proposed investments are to be fully utilised, but are not included in the project proposals.

Demand

Demand for the facilities arises as follows.

- ❖ Demand from island residents travelling to and from the mainland, either as regular commuters or occasionally.
- ❖ Demand from mainland residents travelling to and from the islands more or less regularly.
- ❖ Demand from tourist visitors to the islands, including day-trippers and patrons of tourist resorts.
- ❖ Demand related to island businesses, which for the most part comprise small retail and construction businesses. In addition, North Stradbroke Island has a number of small resorts plus sand-mining, which uses the barges to transport vehicles to and from the mainland (the sand itself being carried by other barges to the Port of Brisbane).

Limitations to the channels, wharves and ramps have potential to limit the frequency and capacity of ferry and water taxi services, while limitations to the land-side interchange and parking facilities have potential to limit the convenience of travel between the islands and the mainland. Even if capacity constraints are not an issue, convenient and attractive facilities can enhance the travel experience, including reducing the burden of waiting time by providing convenient connections and pleasant places in which to wait.

The major consequence of failure to meet the above demands would be a reduction in the rate of development on the islands. In that the mainland is much less dependent on ferry transport than the islands, consequences for this area will be less direct, but mainland businesses which serve the islands will be adversely affected. Assessment of the returns to improved transport facilities at Toondah Harbour and Weinam Creek thus depend on prospects for the islands.

It is likely that Dunwich will remain the primary destination for ferries from Toondah Harbour, though it is possible that additional destinations may arise if and as tourist resorts develop on Peel Island, North Stradbroke Island and Moreton Island. (Moreton Island is currently served from the Holt St Wharf in Pinkenba. If upgraded, Toondah Harbour may be competitive with Holt St, alternatively, if Toondah Harbour is not upgraded it is possible that developments on North Stradbroke could be served from Holt St.)

It is likely that the Southern Islands will remain the primary destination for ferries out of Weinam Creek, though it is possible that additional destinations may be added if tourist resorts develop on the southern part of North Stradbroke Island.

Facilities for the police barge and launches are included in the investment program for Weinam Creek.

Costs and funding

The City has provided preliminary costs for works to improve the capacity and amenity of the transport interchanges at Toondah Harbour and Weinam Creek but has indicated that the works may be variously phased. Scenarios for assessment have been based on these costs (remembering that this is neither an engineering nor a financing study, but is directed towards broad strategy, and can therefore be built on approximate costs).

Potential sources of funding for the works include the following.

- ❖ Sale of strata-titled parking lots.
- ❖ Loans to be serviced from parking revenues.
- ❖ User charges, which may justify loans to be serviced from user charges. It is believed that the vehicular ferries and water taxis cover operating and vessel capital costs from user charges but that there is limited scope for extending these charges to cover harbour costs. The passenger ferries are integrated into the TransLink fare arrangements and it is unlikely that these will provide any surplus to service wharf capital costs.
- ❖ Developer contributions transferred from the more commercial aspects of the PDA sites.
- ❖ Council funds, including rates, grants, loans and Roads to Recovery grants.
- ❖ State funds.
- ❖ Commonwealth grants. (Though the current Commonwealth government has indicated its aversion to investing in urban public transport, it is possible that the works might be brought under another heading and also possible that the Commonwealth may change its priorities, particularly if faced with a deep recession).

The study develops scenarios for each of these sources of finance.

6.2 Recreation

Both PDAs include opportunities for passive recreation (which will be a Council responsibility, perhaps with finance from commercial development) and also for marina development, which at both sites will be related to the transport works, particularly if it shares some of the dredging and some of the transport interchange facilities. The Toondah Harbour marina will be new development while at Weinam Creek marina construction will augment the small marina currently occupying the creek. It is expected that marina development will be commercial. Though the marina is expected to be self-funding, various financial options are available, involving staging, the extent to which the marina developer would contribute to common facilities (especially dredging) and the question of Council equity and division of management responsibility.

Closely related to marina demand is the demand for marine services. The plans for Toondah Harbour set aside a wharf and apron for marine services.

The demand for marina facilities on Moreton Bay has expanded over the past few decades in response to increased numbers of high-income households coupled with the pleasures to be derived from yachting and its value as a status symbol. The risks in marina development are accordingly as follows.

- ❖ Demand could collapse in the event of a severe recession, particularly one which affected high-income groups.
- ❖ Demand may be drawn away by competing developments. Around the shores of Moreton Bay, yachts may be moored at various non-marina locations (including the canal developments at Cleveland) as well as at existing commercial marinas. The most obvious competitor for

Toondah Harbour and Weinam Creek is the marina at Manly, which currently has high occupancy and is being further extended. There are also new marinas in Gold Coast City, including Jacobs Well, Horizon Shores and Ephraim Island.

For the purposes of this study it is assumed that the market for marinas in Moreton Bay is competitive, which means that marina development will not yield a surplus to help finance the transport-related developments. Accordingly both the costs and the revenues of marina development are excluded from the study.

6.3 Residential

Both PDAs include opportunities for residential development. These are complementary with the transport developments in that joint construction will reduce overall costs by allowing the package of projects to be managed as a whole. The transport developments will also increase the accessibility of the residential sites and enhance the view. The reclamation and consolidation of residential sites also provides a use for the sand and silt which will be dredged up in the course of harbour development.

The chief advantage of the PDAs as residential sites is that they will permit multi-storey development along a coastline where such development is otherwise prohibited and in most cases is also undesirable from an environmental point of view. These residential developments should therefore sell at premium prices, which should translate back into the unimproved value of the developed lots including the value of planning permission. Since most of the land is currently in state or council ownership (including some to be created through reclamation), it is expected that it will be possible to sell it for residential development at prices which generate funds for investment in the transport facilities in each PDA. The problem with this calculation is that the UCVs of the sites are very difficult to estimate. Two sources of evidence may be sought.

- ❖ The UCV of broadly-comparable nearby lots, the problem being that no nearby lots are really comparable in site characteristics.
- ❖ Deduction of building construction costs from the estimated sale value of the developed blocks of apartments. This is uncertain if only because the lack of detailed information on foundation characteristics raises questions about building costs. The residential apartment market adds uncertainties and there are also different options as to phasing.

The modelling aims to develop scenarios in which these uncertainties are taken into account.

6.4 Commercial

Demand from new local residents, from the passing trade using the transport interchange and from marina users is expected to support retail development at both Toondah Harbour and Weinam Creek. However, the City does not wish to promote such development to the extent that it captures trade from Cleveland CBD, Victoria Point key centre or Redland Bay shopping centre. This is likely to limit the extent to which retail development can provide funds for the transport facilities – not to speak of a generally lacklustre market for new retail space following the glut of developments over the past two decades. Over this period retail sales were supported by bank lending but this is no longer a guaranteed source of demand due to high consumer indebtedness.

Similar remarks apply to the hospitality industry in the two PDAs. Both will offer attractive sites for hospitality development, but in neither case is it likely to be large-scale – resort development is likely to be confined to the islands while business-oriented facilities are more likely to remain closer to the Brisbane CBD or the airport, or indeed to be sited within Cleveland CBD. The possibility that the PDAs will offer attractive locations for private health-related facilities may, however, be worth exploring.

It is also expected that there will be a demand for office space, more at Toondah Harbour than at Weinam Creek due to superior accessibility from the rest of SEQ. However there are many competing sites with better accessibility – though few with such amenity.

Assumptions will be made of all of these sources of revenue.

7. Methodology

This report addresses the project case in three steps.

1. A basic financial model is constructed for the investment in each PDA. The purpose of this model is to flesh out conditions under which the investment fails to cover its financial costs, whatever its more general economic justification. These financial models should not be mistaken for the more detailed financial modelling required for purposes of project finance.
2. The financial model is extended into a limited cost-benefit assessment by expanding project definition to include the island hinterlands of the projects as well as the PDAs. The net additions to island production and income which result directly from the proposed investments are taken into account and the economic rate of return calculated.
3. The area of interest is further expanded to include the City of Redland as a whole. Input-output analysis is used to generate multipliers which are then applied to estimate the effect of the projects in generating additional income and output in the City as a whole.

The methodology involves the construction and comparison of a business-as-usual scenario without the proposed investments and several investment scenarios. Separate scenarios are calibrated for Toondah Harbour and Weinam Creek, though they share common background assumptions. The scenarios are kept as simple as possible consistent with proper representation of the drivers of development, to allow the easy preparation of variant cases such as alternative phasing of developments. Comparisons with the business-as-usual scenario include financial viability, though it is emphasised that this is not a financial feasibility study but rather an exploration of options. Separate and more detailed studies will be required for the financing of chosen options. The prime purpose of the study is the calculation of economic returns. The conventional measure of economic return is the effect of the project on gross regional product, but in this preliminary study we narrow our focus to wage and salary income plus the mixed income of owner-operated businesses. The main reason for this is that corporate profits generated as a result of the projects go into pool which is widely distributed outside the local region and hence contribute little to local incomes.

A further possible measure would be the effect on land values, for example as estimated for rating purposes. The proposed investments will improve the accessibility of the islands and accessibility is a major determinant of land values. However, financial conditions also affect land values and the general inflation of land values over the past 20 years has made it difficult to estimate the extent to which improved ferry services are likely to increase land values.

Income can be aggregated over various geographic areas. In this study we distinguish North Stradbroke, the Southern Islands, mainland Redland and the state as a whole. Initially we focus on North Stradbroke and the Southern Islands and therefore exclude two effects:

- ❖ **incomes generated off the islands due to the improved ferry services.** These will include incomes arising from mainland expenditures by tourists bound for the islands, mainland expenditures by island businesses and mainland retail expenditures by island residents; and
- ❖ **incomes transferred from the mainland to the islands.** If a business transfers from the mainland to the islands while still serving the same demand, the increase in island income generation will be balanced by a reduction in mainland income generation. For this purpose the 'mainland' could mean anywhere in Australia – most likely in mainland Redland but

possibly elsewhere in Queensland or interstate. (For example, an artist or professional service provider who decides to live in Point Lookout rather than Byron Bay will transfer income from NSW to Queensland.) The extent of this effect depends, firstly, on geography (the effect is the larger the wider the definition of 'mainland') and secondly on the productivity differential between an island or 'mainland' location.

In this study we concentrate on 'export' incomes generated on the islands due to expenditures on the islands financed from outside Redland. The main body of the study is confined to effects on the islands, but we also include discussion of effects in Redland more generally.

Even with this narrowing of geographic focus, there are two options:

- ❖ incomes can be assessed on a job-location basis, including only incomes generated in jobs located on the islands. This measure will be closely related to the gross regional product of the islands; and
- ❖ incomes can be assessed on a residential basis. Given that the islands generate a net flow of commuters who earn their incomes on the mainland and also have a significant retired population dependent on social security and superannuation, this figure is larger than the job-based estimate. Along with inherited wealth and stage of the life cycle, income determines the capacity to buy housing and is therefore likely to be related to long-run land values.

All costs and incomes are estimated in constant dollars.

The costs and benefits of the projects accumulate through time and their present net value can therefore only be calculated by applying a discount rate. Queensland Treasury guidance on cost benefit analysis refers to three discount rates:

- ❖ the rate of return on Queensland Treasury bonds, currently around 4 per cent in nominal terms and therefore 1 per cent in real terms;
- ❖ the long-run rate of economic growth adjusted upwards for risk. Measured by GRP, the economic growth rate of Redland since 2000 has been about 4 per cent a year. There is no market estimate of the upwards adjustment which should be applied for risk; and
- ❖ relevant private sector rates are difficult to document, but would be well above 4 per cent.

In this study we report in terms of discounted rates of return, which can then be compared whatever discount rate is preferred. It is suggested that a rate of 10 per cent per annum would compare reasonably well with alternative uses of government investment funds; however, it is recognised that in periods of fiscal stringency governments may wish to ration funds using a higher discount rate, and similarly during periods when governments deem fiscal stimulus to be desirable a lower rate may be acceptable.

The methodology is conventional in that it compares a business-as-usual case, in which the proposed investments are not made, with various investment cases. Two choices arise in the selection of the business-as-usual scenario.

- ❖ Assumptions as to investment in the business-as-usual case: either no investment takes place in the PDAs, or no public investment takes place but privately-owned land within the PDAs is developed to the maximum extent permitted existing (non-PDA) zoning. We choose the simpler no-investment case. In any case, this choice is likely to make little difference to the results, for two reasons. First, the direct income benefits of investment in the PDAs are likely to accrue on the mainland and hence be out of scope, and second, developer charges paid in respect of private developments in the PDAs are likely to balance against Council costs and hence not affect the overall result, or not very much.

- ❖ Assumptions as to macroeconomic background. The Queensland government currently has a set of macroeconomic and population projections for SEQ and these form the background scenario. The question is whether, in view of current economic uncertainties, variant background scenario should be included in the study. In NIEIR's view the downside risks facing the Australian economy at the moment are such that it would be sensible to include a scenario which includes higher levels of unemployment, lower disposable incomes and a significantly lower Australian dollar exchange rate than current official projections. Under such a projection demand for commercial development may be at least temporarily less, balanced by increased government willingness to invest. These possibilities are covered briefly below.

We thus arrive at a business-as-usual case, to be compared with conservative investment scenarios for each site.

7.1 Business-as-usual case: Toondah Harbour

The business-as-usual scenario for Toondah Harbour runs from 2015 to 2035 and is built on the following assumptions.

Financial assumptions (Toondah Harbour PDA)

The following cover Council marine-related costs and revenues in a business-as-usual scenario.

- ❖ Costs of maintenance dredging, car park maintenance and maintenance of the existing park, assumed at \$0.5m a year.
- ❖ Operating revenue. From Council accounts it appears that wharfage charges more or less balance against costs. A small increase is allowed on the assumption that existing facilities will be used more intensively in future and hence will yield more revenue at constant prices – \$0.5m in 2014 rising to \$0.6m in 2035.

Income generation assumptions (North Stradbroke)

- ❖ Jobs in mining: currently 160, falling to 0 in 2035.
- ❖ Tourism-related and other jobs earning income from outside the region (e.g. arts and crafts, professional services): 170, growing by 2 per cent p a to 2035.
- ❖ Construction jobs: currently 90, maintained at this level to 2035.
- ❖ It is assumed (from the 2011 Census Journey to Work data) that there is currently no net commuting to and from North Stradbroke (i.e. as many persons commute to the island as commute from it), but that as mining declines net outbound commuting will increase, reaching 75 in 2035. (This replaces around half the mining jobs.)
- ❖ These jobs (mining, tourism and construction and commuting) were assumed to receive average pay of \$54,000 p.a. This is well below average weekly full-time earnings (around \$75,000), the main cause of difference being part-time work (from Census 2011).
- ❖ Jobs financed directly or indirectly by government, chiefly in education, health services and administration (indirect finance can be through tax benefits as well as through grants, the point being that they are not financed by user charges): currently 260, growing at 2 per cent a year to 2035. These jobs were assumed to pay \$62,000 a year on average, this rate being higher than the jobs in mining, tourism etc due to a higher proportion of full-time and professional personnel.

- ❖ Persons whose main source of income was social security or superannuation, currently 500 and growing at 2.5 per cent a year to 2035. These people were assumed to receive an average of \$20,800 a year each – somewhat above prevailing social security rates due to the presence of superannuated retirees, particularly in Point Lookout.
- ❖ Jobs generated on the island by the expenditure of island incomes (chiefly retail but also various other services): currently 120 and increasing proportionately to island incomes, reaching 157 in 2035. As with the mining, tourism etc. jobs, these were assumed to pay \$54,000 a year each.
- ❖ This leaves 220 residents aged 15 and over who are not in receipt of significant income. This was left constant to 2035.

The implied rate of growth of the adult population in this scenario is 1.2 per cent a year, somewhat below the rate of population growth of Redland as a whole from 1993 to 2013 of 1.6 per cent a year and a little short of Queensland government expectations of growth at 1.4 per cent a year. Total resident income is estimated at \$56m in 2015 rising to \$73m in 2035 (a constant dollar growth rate of 1.3 per cent a year) while income generated by jobs on the island rises from \$45m a year to \$51m, a growth rate of 0.6 per cent a year. This is well below the resident rate due to the abandonment of mining and increase in outbound commuting. It will be noted that the growth rate of residential income of 1.3 per cent a year is similar to the population growth rate. This deliberately conservative assumption is matched by the assumption of similar wage rates in the policy case. Together these wage-rate assumptions remove the influence of general economic growth from the assessment in order to concentrate on growth in employment on North Stradbroke.

The base year variables derive from an interpretation of the 2011 Census, most elements of which are discussed above. Growth rates are projected on a business as usual basis.

7.2 Business-as-usual case: Weinam Creek (Redland Bay)

The business-as-usual scenario for Weinam Creek runs from 2015 to 2035 and assumes the following.

Financial assumptions (Weinam Creek PDA)

- ❖ Operating costs, chiefly maintenance including dredging, are assumed to be the same as at Toondah Harbour, \$0.5m p a.
- ❖ Revenues are different from Toondah Harbour, in that:
 - (a) ferry wharfage is likely to be lower, due to lower vehicular ferry activity. Allowance is also made for the passenger ferry to be subsidised by Council by waiving wharfage: there is some indication of this in the Council budget; and
 - (b) Weinam Creek includes a small marina, which is likely to be generating a flow of berth fees.

It is projected that business-as-usual revenues will increase as traffic to and from the Southern Islands increases from \$0.45m in 2014 to \$0.6m in 2035.

Income generation assumptions (Southern Moreton Bay Islands)

- ❖ Tourism-related and other jobs earning income from outside the region (e.g. arts and crafts, professional services): 20 and constant to 2035. These jobs were assumed to pay \$52,000 a year on average, reflecting 2011 Census earnings.

- ❖ Construction jobs: currently 90 and constant to 2031, thence 100. These jobs were assumed to pay \$52,000 a year on average, reflecting 2011 Census earnings.
- ❖ Net commuting from the islands to the mainland, estimated at 650 people in 2015, increasing by 1.5 per cent a year to 721 in 2022 and thence constant due to limitations to the capacity and convenience of the ferry service. These jobs were assumed to have a high part-time component and pay \$50,000 a year on average. It will be noted that the jobs held by Southern Islanders tend to pay a little less than those held by residents of North Stradbroke.
- ❖ Jobs financed directly or indirectly by government, chiefly in education, health services and administration (indirect finance can be through tax benefits as well as through grants, the point being that they are not financed by user charges): currently 300, growing at 2.5 per cent a year to 2022, thence 1 per cent a year to 2035. These jobs were assumed to pay \$62,000 a year on average, reflecting the higher professional and full-time proportions than other jobs held by island residents.
- ❖ Persons whose main source of income was social security or superannuation, 2,700 in 2015 and growing at 2 per cent a year to 2035. These people were assumed to receive an average of \$1,800 a year each, not much above social security average, as indicated by 2011 Census returns. These incomes are less than in North Stradbroke due to a lower proportion of superannuitants.
- ❖ Jobs generated on the islands by the expenditure of island incomes (chiefly retail but also various other services): currently 257 and increasing proportionately to island incomes, reaching 241 in 2035 and earning \$52,000 a year, again reflected in the 2011 Census.
- ❖ This leaves 700 residents aged 15 and over who are not in receipt of significant income. This number was left constant to 2035.

The implied rate of growth of the adult population in this business-as-usual case is 1.6 per cent a year, similar to the rate of population growth of Redland as a whole from 1993 to 2013 but short of Queensland government expectations, which are for growth at 2 per cent a year. Total resident income is estimated at \$119m in 2015 rising to \$158m in 2035 – the implied rate of growth of 1.4 per cent a year is slower than the rate of growth of adult population due to population ageing. Income generated by jobs on the island also grows at 1.4 per cent a year, rising from \$38m a year to \$49m.

The base year variables derive from an interpretation of the 2011 Census, most elements of which are discussed above.

7.3 Investment case: Toondah Harbour

Investment cases were prepared for both projects. Since the purpose of this report is not to assess financial viability, a single financial case was prepared for each project. In both cases assumptions were made which rendered the projects sub-commercial and hence requiring additional justification if funds are to be committed. This justification took the form of estimation of additional income generation on the islands resulting from improved ferry service made possible by the projects.

Financial assumptions – Toondah Harbour PDA

The following capital costs are confined to public-sector investments in the PDA. In line with the conservative approach adopted for this study, it was assumed that developers will privately arrange and bear the investment cost of all residential and commercial developments and the planned marina and in addition contribute to the remaining costs.

Expenditures

- ❖ Council overheads and general construction, \$22m spread over 2015-18 from Council estimates.
- ❖ Dredging – \$4.6m in 2016, from Council estimates.
- ❖ Open car park, \$2.5m in 2016 and again in 2019, from council estimates. This is the ‘free’ car park, from which no revenue is projected. It is assumed that this cost covers incidental road works.
- ❖ Vehicular ferry facilities, \$15m in 2016-17. This covers land-side works for the vehicular ferries, from Council estimates.
- ❖ Passenger ferry facilities, \$6.5m in 2017. This covers land-side works for the passenger ferries including improved bus stops, from Council estimates.
- ❖ Boardwalk, \$8m spread over 2015-17, from Council estimates. It is assumed that this covers all other landscaping works.
- ❖ Enclosed car park, \$25m in 2016-17 and \$22m in 2022, from Council estimates. It is assumed that the first stage will provide 500 spaces.
- ❖ Site preparation for construction on land owned by council, \$3.5m in 2015, \$2.2m in 2018 and \$4.6m in 2022. These estimates are not from Council estimates and cover works required to yield build-ready construction sites; the sort of works usually financed by developer charges or provided in kind by the developer; e.g. hydraulic connections, electricity connections, telecommunications connections, footpaths and street reconstruction. They are calculated, by assumption, at \$1m/ha. Three bursts of activity are assumed; the first covers land currently in Council or Queensland government ownership, the second covers the site near the ferry terminal which is not yet fully reclaimed and will need some time to consolidate, and the third the outer site to be created from dredging spoil and not available for some years till it has consolidated. The hectares available for release were measured from the land budget in the draft structure plan report.
- ❖ The same, for land currently in private ownership or owned by the Commonwealth government. These comprise areas 10 and 11 in the draft structure plan report – \$3.6m over 2015-16.
- ❖ Maintenance, the same as in the base case.

Revenues

- ❖ Operational revenue, chiefly wharfage, rising gradually to \$0.8m p.a. in 2035. It is assumed that the ferries continue to pay wharfage and that this revenue increases compared to the base case due to increased usage of the improved facilities.
- ❖ Revenue from car parking begins in 2017 and rises to \$2.5m p.a. by 2035. For simplicity it has been assumed that revenue from the multi-storey car parks is received as rentals rather than through sales of car park spaces. Revenue from Jones Lang LaSalle assumptions, with allowance for gradual take-up.
- ❖ It was assumed that developers make the following contributions to project costs, either in cash or in kind: First tranche, 3.6 ha @ \$5.5m/ha (Jones Lang LaSalle estimate up to \$5m/ha for quality development sites; \$0.5m/ha value increase has been added due to the sale being ex-developer charges) yielding \$19.8m in 2016; second tranche, 2 ha @ \$6.5m/ha (Jones Lang LaSalle estimate \$6m/ha for prime sites like these; \$0.5m/ha has again been added) yielding \$13m in 2019; and the third tranche, 5 ha @ \$6.5m/ha yielding \$32.5m in 2023. Under these

assumptions, Council benefits only from contributions and does not participate in the profits of subsequent construction, which go to the developer. It is possible that some kind of joint venture could be negotiated which would give council access to such profits, but the Jones Lang LaSalle calculations show that they are by no means guaranteed.

- ❖ Further developer contributions, \$7m in 2015-16, calculated at the rate of \$2m/ha on the 3.5 ha of non-council owned land available for development within the PDA.
- ❖ Revenue from sale/lease of land in the marine services precinct is not estimated in any of the documentation. However at least some revenue can be expected. We have allowed \$2m on completion of the major harbour works in 2018.
- ❖ It is here assumed that the marina development, whether or not it proceeds, does not yield any surplus which can be transferred to the finance of the marine facilities, also that the dredging for the ferries is irrelevant to the dredging required for the marina.

On these assumptions and going out to 2035, the revenue from the transfer of public land to developers is insufficient to cover investment costs and the project delivers a financial rate of return of -2 per cent a year for the period to 2035 – a marginal result, leading to a negative net present value of -\$32m at a 10 per cent discount rate. Due to the pattern of returns, the net present value rises no more than marginally with reductions in the discount rate. The economic rate of return, however, depends on developments on North Stradbroke resulting from the improved ferry service.

For the purpose of these calculations it is assumed that the ferry services continue to cover their capital and operational costs from user charges, as now. It is also assumed that ferry facilities at Dunwich are adequate without need for further investment, and that the capital costs of any new facilities to serve additional tourist facilities are absorbed into the capital cost of those facilities.

Income generation assumptions: North Stradbroke

The improved facilities at Toondah Harbour, and consequent improvements to ferry services, are expected to have the following effects on income-generation on North Stradbroke.

- ❖ Mining declines as before.
- ❖ Tourism and other jobs earning income from outside the region are expected to increase as a result of the improved ferry service, especially in the years immediately following the commissioning of the new terminal. We assume that the rate of growth of employment from this source is accelerated from 2 per cent a year to 3 per cent a year 2017-2025, then falls back to 2.2 per cent, at unchanged wage rates.
- ❖ Construction: confidence in the future of the island is likely to improve as a result of the new terminal and to be expressed in construction. We assume an increase of 20 jobs for all years 2017 onwards at unchanged wage rates.
- ❖ Commuting to the mainland is likely to increase if the ferry service improves, and particularly if transport connections at Toondah Harbour are improved (including car garaging). We assume a fairly modest increase to 30 additional commuters by 2035, at unchanged wage rates.
- ❖ Government-financed jobs essentially follow population growth. We assume that the rate of growth in this type of employment accelerates from 2 per cent a year to 3 per cent, at unchanged wage rates.
- ❖ Persons receiving transfer incomes: improved accessibility will make the island more attractive as a retirement location. We assume that rate of growth accelerates from 2.5 per cent a year to 3 per cent at unchanged levels of income.
- ❖ We assume job generation from on-island incomes, as before.

On these assumptions, investment at Toondah Harbour may be expected to increase the rate of growth of the adult population of North Stradbroke from 1.2 per cent a year to 2.1 per cent. The current Queensland government projection for the island is total population growth at an average rate of 1.4 per cent a year, equivalent of an adult population growth rate of around 1.5 per cent; our two scenarios lie either side of this estimate. The implication is that improved ferry service is likely to be required if current population growth expectations are to be met, but that the projected rate of growth resulting from the Toondah Harbour investment is not so far ahead of current expectations that it is likely to be throttled by lack of capacity on the island.

Taking income growth in North Stradbroke into account along with the net financial cost of investment at Toondah Harbour we calculate that the investment is likely to raise the rate of growth of resident income from 1.3 per cent a year to 2.4 per cent and the rate of growth of job-location income from 0.6 per cent a year to 1.8 per cent. The internal rate of return of the project reaches 13 per cent judged by resident income generation though it is only 11 per cent judged by job-location income generation. Discounted at 10 per cent, the net present value of the project becomes \$15m judged by resident income and \$4m judged by job-location income.

Addition of a new resort, bearing all its own capital costs and employing 100 people, raises the internal rate of return on a residential basis to 19 per cent and on a job-location basis to 18 per cent. This addition would require land release by the Quandamooka Corporation and also satisfaction of the environmental conditions imposed by the Council and the Queensland Government. The benefits considered here are only those from employment; any payments to Quandamooka and any environmental benefits provided in cash or kind would add to the returns. This is perhaps the crux of the matter: improved facilities at Toondah Harbour offer the prospect of incremental change on North Stradbroke but also offer a chance of a step change.

As pointed out in the introduction, some of the additional growth which is projected for North Stradbroke may be transferred from mainland Redland. However, it should be remembered that additions to tourist expenditure in mainland Redland resulting from the improved facilities at Toondah Harbour – the boardwalk, landscaping, restaurants and the like – have not been taken into account in the above calculations. The effect on Redland as a whole is further discussed below.

7.4 Investment case: Weinam Creek

The investment case for Weinam Creek follows the same methodology as that for Toondah Harbour.

Financial assumptions – Weinam Creek PDA

Expenditures

- ❖ Council overheads and general construction, \$17m spread over 2015-17, from Council estimates.
- ❖ Dredging, \$4.6m in 2016, from Council estimates.
- ❖ Car parking, \$2.5m in 2016 and again in 2019, from Council estimates. This covers the transfer of the 'free' car park onto less valuable land. It is assumed to include incidental road works.
- ❖ Passenger facilities, \$5m spread over 2015-17, from Council estimates. It is assumed that present land-side facilities for the vehicular ferry are sufficient. It is also assumed that the present passenger ferry will be improved and integrated with a new bus terminal. It is noted that two ferry berths are currently available and both are required by the current timetable, but that more intensive use would require additional dredging to create an off-wharf standby area.

- ❖ Boardwalk, \$12m in 2016-17 and \$12m in 2022, from Council estimates. It is assumed that this covers all beautification requirements.
- ❖ Enclosed car park, \$2m in 2017 and \$3.8m in 2019-20, from Council estimates. It is assumed that the first stage creates 250 spaces.
- ❖ Site preparation for buildings on land owned by Council or the Queensland government, \$8.3m in 2017-22. As for Toondah Harbour this is based on costs of \$1m/ha. By the land budget in the draft Weinam Ck structure plan the Council and Queensland government own around 3.5 ha suitable for conversion to residential/commercial use; however some of this comprises a car park which will not be available for sale till a replacement has been built and the rest is already in low-density use, e.g. as club rooms. Allowance has been made for deferred sale and \$1m for the construction of alternative facilities.
- ❖ Site preparation by Council for buildings to be owned by the private sector, \$8.3m. According to the land budget, approximately 8.3 ha of private land will be re-zoned to higher density. At \$1m/ha (see Toondah above) this will require expenditure of \$8.3m on ancillary works, spread (by assumption) over six years.
- ❖ Maintenance, \$0.8m per year onwards from the completion of major works in 2018. As for Toondah harbour, save that it has been assumed that maintenance will not be required in the three years during which the major dredging takes place.

Revenues

- ❖ Operational revenue, chiefly wharfage, rising gradually to \$0.6m p a in 2035. It is assumed that the ferries will continue to pay wharfage at about current rates.
- ❖ Additional revenue from marina berths, beginning in 2017 and rising to \$1.25m p a by 2035. Though additional marina development has been foreshadowed, neither the costs nor the revenues of such development are included in the present study. The additional revenue allowed arises from a possible increase in berth fees as the surrounding facilities are improved due to the project. This line is mere conjecture as to revenue likely to result.
- ❖ Rental of car park spaces estimated as for Toondah Harbour, allowing that the multi-storey car park is to be only half the size of the one there.
- ❖ Contribution from developers at \$5.3m/ha, in exchange for land and the rights to develop the land. Revenue/ha is estimated to be a little below Toondah because of the less convenient location and less spectacular views. Revenue estimated at \$18.6m in two bursts, one in 2018 and the other in 2021 after the car parks currently occupying the site have been shifted.
- ❖ Developer contributions of \$2m/ha from the 8.3 ha of privately-owned land re-zoned for redevelopment. Charges have been spread over time as per site preparation costs.
- ❖ Rent of marine service site, \$0.4m most years to 2035, as for the equivalent line for Toondah Harbour.

Once again, on these assumptions and going out to 2035 the project generates an internal rate of return of -2 per cent and its net present value at a 10 per cent discount rate is -\$26m. The economic rate of return, however, depends on developments on the Southern Moreton Bay Islands resulting from the improved ferry service.

Income assumptions – Southern Moreton Bay islands

It is assumed that the ferry service is subsidised under the TransLink arrangements. The amount is not published, but bus services receive approximately 12 cents per passenger km. A subsidy of this order for the ferry services would cost approximately \$0.8m p a. On this basis, the increase in subsidy due to increased patronage would accrue gradually, reaching \$0.35m by 2035.

The following changes to income generation are projected to result from the improved facilities at Weinam Creek.

- ❖ Tourism and other jobs earning income from outside the region: an additional 5 jobs from 2018 onwards at unchanged wage rates.
- ❖ Construction: increase of 20 jobs for all years 2017 onwards at unchanged wage rates, reflecting increased population growth.
- ❖ Commuting to the mainland – rate of growth accelerated from 1.5 to 2.5 per cent a year at unchanged wage rates.
- ❖ Government-financed jobs – rate of growth accelerated from 2 per cent a year to 3 per cent, at unchanged wage rates.
- ❖ Persons receiving transfer incomes: rate of growth accelerated from 2 per cent a year to 3 per cent for the four years 2018-21 at unchanged levels of income.
- ❖ Job generation from on-island incomes, as before.

The result of these changes is that adult population growth rises from 1.6 per cent a year to 1.9 per cent, not far short of Queensland government expectations of 2 per cent a year. The internal rate of return of the project reaches 35 per cent judged by resident income generation but remains negative if judged by the level of economic activity on the islands alone – a consequence of their high dependence on commuter incomes. One may conclude that the works are required to allow the Southern Islands to achieve their population growth potential.

8. Components of the investment program

The proposed investment program comprises four main segments, port facilities proper (dredging, wharves, associated buildings), car parking (divided into free parking and enclosed parking), boardwalks and other beautification and the costs of preparation of sites for sale for commercial or residential development. The projects can be split into these portions and the capital costs allocated to each. It is noticeable that port facilities and car parking are of roughly equal significance at around 40 per cent of each project, with site preparation and beautification absorbing the remaining 20 per cent.

	Toondah \$m	Per cent	Weinam Ck \$m	Per cent
Port facilities	48.1	38	26.6	36
Car parking	55	44	29	39
Boardwalk	8	6	5	7
Site preparation	14.3	11	14.1	19

Offsetting costs and revenues, an internal rate of return calculated for each segment. The results are as follows.

- ❖ Boardwalk, no revenue, no direct cash return.
- ❖ Site sales, small cash cost and positive return if the raw land is regarded as costless. (If the boardwalks are regarded as part of site preparation, the return on investment is still very large for Toondah Harbour though not at Weinam Creek.)
- ❖ Car parking yields mildly negative returns and
- ❖ Port facilities yields strongly negative returns.

These returns are documented in the following table.

Table 2 Internal rates of return on components of the investment program, per cent a year, 2015 to 2035		
	Toondah Harbour	Weinam Creek
Overheads, site preparation, boardwalks and beautification	955	-1
Car parking including free car parking	-5	-5
Car parking – enclosed parking only	-4	-3
Marine facilities	-16	-6

Though the contribution of each segment to the total investment program is similar in the two projects, and though the overall internal rate of return is -2 per cent in both cases, the expected pattern of returns is different: on our assumptions, developers are projected to contribute a greater surplus over the costs of overheads, site preparation, boardwalks and beautification in Toondah Harbour than they are in Weinam Creek, counterbalanced by relatively high cost recovery from the marine sector in Weinam Creek. In both cases the investment in car parking produces similar negative returns. The fundamental investment strategy is to use the profits of land sales to invest in marine service improvements, but in Weinam creek these barely cover overheads and beautification while in Toondah Harbour they contribute substantially to the cost of marine facilities.

The negative returns to the investments in car parking are noticeable in this context. The general context is that of cost recovery from road transport Australia-wide – a highly contested topic. Road transport interests argue that Commonwealth fuel excise and local rates more than recover costs, hence there should be no attempt to impose direct user charges such as parking fees. The contrary case argues that road transport is subsidised, mainly by under-recovery of capital costs, and user charges should be increased, particularly car parking fees which are more established as charges than congestion tolls. The particular context is that it is likely that much of the demand for investment in the PDAs arises from the perception that current provisions for car parking are inadequate. The effect of the car parking proposals was considered by including their deletion from the projects as a variant case study reported in the next section.

9. Summary of cost-benefit model results

The results of the assessments so far described are summarised in Table 3.

Assumption	Rate of return, % financial	Resident incomes, % growth	Island product, % growth	NPV @ 10%, \$m, financial	Resident incomes	Island product
Toondah H						
Base case	-2	13	11	-32	15	4
Delete parking	1	20	17	-11	29	19
Sales delay	-2	10	8	-46	1	-9
Price halved	-6	9	7	-52	-4	-15
Add tourism	-2	19	18	-32	49	38
Weinam Ck						
Base case	-2	17	8	-26	35	-7
(after ferry)		17	8		34	-8
Delete parking	2	20	13	-5	27	7
Sales delay	-2	16	7	-29	31	-11
Price halved	-4	16	7	-31	29	-13

Note: Financial = financial aspects only; Resident incomes = project plus effects on the incomes of island residents, growth per cent p.a. from 2014 to 2031. Base case: base investment case.
Island product = project plus effects on the incomes earned on the islands. After ferry = taking into account additional Translink subsidies.

9.1 Base investment case

The base case results derive from the assumptions listed above. The financial rate of return and NPV refer to the projects as strictly defined while the economic rate of return and NPV are calculated by two measures: the incomes of island residents and the value of island output, the difference between the two being net commuter incomes. Of these two, the resident income measure provides the better indicator of benefits to residents. For benefits to Redland as a whole see the further analysis below.

Two measures are given for the Southern Islands, one excluding and one including the effect of increased commuting on the estimated Translink subsidy to the ferry service. As expected, inclusion dampens the rate of return, but not by much.

9.2 Delete car parking

Given the negative returns to investment in car parking, the question arises: what would be the effect on project finance if car parking charges were raised towards full cost recovery? Such a measure would reduce the number of cars parked, which would allow a reduction in investment in car parking. However, it would also reduce passenger ferry patronage. The ferry patrons least affected would be those who use public transport to and from the wharves, chiefly schoolchildren, pensioners and those interstate and overseas visitors who do not hire cars at the airport, while those most affected would be commuters, who are not likely to have the option of transferring to the vehicular ferry due to cost and limited peak load capacity. Tourists arriving in Cleveland by car have a

relatively open option of transferring to the vehicular ferry, given that they are more likely to travel off-peak, but may be put off by the cost. It is difficult to predict how these forces will play out.

It should also be remembered that the market for car-park space at Weinam Creek is likely to be quite different from that at Toondah Harbour. At Weinam Creek most spaces are likely to be taken by commuters living on the islands whereas at Toondah Harbour relatively few island-based commuters are expected and the parking is mainly for tourists visiting North Stradbroke and also for people visiting the harbourside restaurants. In both sites there will be demand from visitors to the residential developments within the PDA, but these are likely to be more numerous in Toondah Harbour. Tourist demand is likely to exhibit greater seasonality than commuter demand, so the Toondah Harbour facilities are likely to experience lower load factors, but it should be possible to take this into account in pricing.

For analytical purposes we have made the drastic, but simple, assumption of deleting car parking from both the investment costs and revenues. The elimination of a loss-making part of the investment program improves the financial rate of return. The effect on the economic rate of return depends on the effect on ferry patronage, which is difficult to estimate. For present purposes we reduced the increase in tourism employment to roughly half way between the no-investment and base case estimates, and similarly for commuting. On these calculations, the deletion of car parking raised the economic rate of return on the Toondah Harbour project above base case, but reduced it in Weinam Creek at least as judged by resident incomes. These results reflect the importance of car parking to the development of commuting through Weinam Creek and its (assumed) smaller significance for tourism in North Stradbroke (see Table 3).

It should be noted that these assumptions are extremely tentative, but point to the possibility that the economics of the projects could be improved by a more robust approach to car park cost recovery. In summary, it is likely that the financial rate of return to the proposed projects could be improved by reducing car parking and raising its price but the consequent reduction in ferry patronage could reduce income growth on the islands and so threaten the overall returns from the projects.

9.3 A slump in the land market

Given that the underlying strategy of the projects is to use revenue from developer contributions to finance investments in transport and beautification, the projects are exposed to the levels of developer contribution. Two sensitivity studies were prepared with this in mind. The first merely postponed the receipt of developer revenue. This had a negative effect on the financial rate of return of both projects and also depressed the economic rate of return (see Table 3). A halving of developer contributions had similar effects. In both cases the effect on rates of return was much more serious for Toondah Harbour than for Weinam Creek, since in the base investment case developer revenue is much more significant for the former than for the latter.

This said, developer contributions are only likely to fall short to this degree if S E Queensland is subject to a serious recession. This case will be discussed further below.

10. The total Redland effect

In the above financial analysis the projects were defined as the investments taking place in the Toondah Harbour and Weinam Creek PDAs while the economic rates of return were calculated by widening the definitions to include economic activity on North Stradbroke Island and the Southern Moreton Bay Islands respectively. This expansion of the geographic area under consideration reflected the assumption that the direct economic benefits of the projects mainly affected the islands. However, the projects may also have direct effects on the Redland mainland.

It is possible that tourists to and from the islands will stop off in mainland Redland before they reach the ferry terminals. In particular, Cleveland could benefit because it is the last substantial shopping centre before North Stradbroke. However, it is also possible that the retail developments at Toondah Harbour will attract trade from Cleveland CBD; similarly those at Weinam Creek could attract trade from Victoria Point.

The effects on patterns of retail trade in mainland Redland will depend on the retail developments in the PDAs. It is expected that these will be of two kinds: basic convenience shopping, mainly to serve customers in the proposed residential developments and also the passing trade, and restaurants to take advantage of the harbourside location. Neither of these uses competes directly with Cleveland CBD or Victoria Point, both of which are too far from the PDAs to cater to their convenience needs and neither of which has a harbourside location. The main competitors for such harbourside restaurants are likely to be located outside Redland, either elsewhere on the shores of Moreton Bay or in Gold Coast. In that they draw trade from out-of-city competitors, the proposed restaurants will add to incomes in Redland.

We now broaden the geographic area of interest further to include the whole of Redland City. Input-output tables have been estimated for Redland which allow the assessment of two types of local impact for increased export (out-of-city) earnings.

- ❖ Type 1 multipliers allow for the effect of local procurement of inputs to export activity.
- ❖ Type 2 multipliers further allow for the increase in demand as increased incomes are spent locally.

The relevance of multipliers has been challenged on the grounds that the increases in demand which they represent are likely to be met by transferring production from other customers. The background to this challenge is the belief that economies always and everywhere operate at full employment, so that output cannot be expanded without additional funds to expand capacity, for example by importing workers or by raising rates of pay to tempt people to work additional hours. Those who hold this belief are generally happy with the proposition that increases in export earnings cause increases in output, because the export earnings provide the means to expand capacity. This argument can be extended to cover Type 1 multipliers, but not so readily to Type 2 multipliers, which cover the secondary circulation of outside earnings within the community. For this reason, in this section we consider only Type 1 multipliers.

In more practical terms, the developments in the PDAs and the consequent developments on North Stradbroke and the Southern Moreton Bay islands will draw inputs from mainland Redland. By the use of input-output modelling, customised to Redland, we estimate employment increases in Redland generated by the increase in demand as it passes up the supply chain. The resulting (type 1) multipliers for hospitality are 1.21 and for construction 2.32, the latter industry being much more reliant on local suppliers than the former. Based solely on income generated from the increases in export demand, including these supply chain effects, the internal rates of return on the Toondah Harbour project increase to 37 per cent a year and on the Weinam Creek project to 45 per cent a year. These returns do not include the effect of commuting or additional transfer incomes.

11. Sensitivity to decline in land prices

The projects were first conceived during a period of rapidly rising land prices in South East Queensland. Over the decade to 2011 dwelling prices in Redland increased by 8.6 per cent a year in real terms; since then they have been drifting downwards. In line with these trends, the base investment case in this report explores the consequences of a failure of developer contributions to cover the whole cost of the projects. It goes without saying that, should developer contributions be available to cover the whole cost of each project, both projects become financially viable and the City gains further economic benefits to island residents at no cost other than the loss of ownership of some hectares of currently under-utilised waterfront land. This loss of ownership means that the City forgoes future alternative developments for the land in question. The present study makes no allowance for this cost, it being assumed that the boardwalks and beautification generate sufficient public benefit to compensate for the loss of alternative potential uses for the sites.

But what if the property market slumps further and developers become even more reluctant to make contributions? To assess the likelihood of this, we must first consider why the market turned in 2011. The underlying reason would be the high price of housing (and in particular of the land on which housing stands) in relation to earnings, coupled with high levels of household indebtedness. In the face of these factors, the financial sector has made loans available at low interest rates but has not been able to revive the market to anything like its 2000s buoyancy. The housing market has also been underpinned by investment demand, financed by negative gearing and predicated on returns from capital gains; if confidence that investment will be rewarded with capital gains evaporates, investor demand could disappear. Left to itself this is likely to be self-correcting; if reduced investor demand leads to reduced unimproved land values, home-owner demand is likely to revive and so limit the price fall.

A possible precedent for a major slump in the property market is the crisis which occurred in Australia in 1990, when difficulty in financing the balance of payments deficit sent interest rates soaring and caused a recession. Similarly the more recent GFC in North America and Europe, though primarily a financial crisis, sent unemployment up and land prices down. For present purposes, therefore, a scenario with slumping developer contributions will be one accompanied by high unemployment and slack demand.

As already noted, deferral of land sales revenue and a slump in developer willingness to contribute to site development would both reduce the financial and economic rates of returns on the projects. However, in assessing the ramifications of these changes, it is no longer appropriate to assume full employment in Redland or Australia generally. Given high unemployment, the investment projects will represent an increase in aggregate demand which can be met from currently unemployed resources. In these circumstances, Type 2 multipliers become relevant. If, as is most likely, the increase in unemployment is brought about by a balance of payments crisis, the Type 2 multiplier will be the larger the more the investment project contributes to the generation of overseas export earnings. The Toondah Harbour project with its overseas tourism possibilities is well placed in this regard.

On this basis, we may recalculate the case where sales revenue is halved without otherwise changing the time pattern of expenditures and receipts, using type 2 multipliers estimated by National Economics from input-output and household expenditure data. The relevant multipliers for Redland are 1.48 for hospitality and 3.46 for construction. On this basis, despite the shortfall in land sales revenue the internal rate of return improves to 9 per cent for Toondah Harbour and 18 per cent for Weinam Creek.

Type 2 multipliers can also be used to assess the effect of exogenous increases in demand on the general Queensland economy under conditions of less than full employment. Assuming the increase in construction and tourism to be exogenous and not merely transferred from elsewhere in Queensland, the relevant multipliers yield internal rates of return of 13 per cent for Toondah Harbour and 26 per cent for Weinam Creek. The lower rate for Toondah Harbour reflects the relatively high costs of the project, but the rate of return would increase if the multiplier were adjusted to allow for balance of payments effects. If the pattern of past Australian recessions is followed and the slump in land prices is triggered by a balance of payments crisis, the Toondah Harbour project, with its potential to generate export revenue from tourism, can be expected to have particularly favourable multiplier effects.

In passing, it may be remarked that developer willingness to contribute may be sustained, or increased, by demand sourced overseas. In this case it is possible that developer contributions may be sustained in the face of an Australian domestic recession. This would improve the prospects for the projects, since Type 2 multipliers become relevant even in the base investment case discussed above.

In summary, both projects are exposed to the risk of changes in developer contributions relative to the general price level. If the rate of growth of developer revenues returns to 2000s levels the projects will soon be self-financing at a 10 per cent discount rate, but if contributions slump they become marginal, even if all else remains constant. However, a major price slump is likely to be due to recession and to be accompanied by high unemployment. If this happens, the projects will provide a source of increased demand and will have favourable multiplier effects

12. Conclusion

The proposed investment projects at Toondah Harbour and Weinam Creek are similar in a number of ways. They both involve improved ferry facilities and increased car parking and it is expected that developers of the associated residential and commercial sites will contribute substantially to the overall cost. The present study explored the returns to the projects in the event that developer contributions fail to cover the complete investment costs.

An important part of the benefits of the projects is expected to accrue to the residents of the islands – North Stradbroke Island served from Toondah Harbour, and the Southern Moreton Bay islands served from Weinam Creek. The former depend mainly on tourist traffic; the latter on commuting to the mainland. Projections of the effect of the projects on incomes generated on the islands, and on incomes of island residents, indicate that, even at current land prices, the projects are both expected to yield internal rates of return in excess of 10 per cent and hence have positive net present value at a 10 per cent discount rate.

The chief risk attending the projects hinges on the level of developer contributions. If contributions cover a greater proportion of total investment cost as outlined in this report, well and good, but if they fall below this conservative level the calculated internal rates of return become marginal. However, such a fall is unlikely to occur except in the case of severe recession with high unemployment, in which case the real cost of the projects will be considerably reduced by the employment of otherwise-unemployed factors of production and returns will be enhanced through Type 2 multiplier effects.