



Report 97

THE TUGUN BYPASS PROJECT

December 2007

PUBLIC WORKS COMMITTEE

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Recommendations and conclusions

Recommendations

1. The committee recommends that DMR seek to have more detailed ground water and soil test results included in the next six monthly construction compliance report.
2. The committee recommends that the government, through DMR and the Department of Public Works, explore the broader application of project alliancing and the development of project alliancing guidelines.

Conclusions

1. The work will be suitable for its purpose.
2. The work is necessary and advisable.
3. On the information available, the project will provide reasonable value for money.
4. The cost and recurrent costs of the work are reasonable.
5. The work will have a positive impact on the community and the economy.

The measures taken to minimise the environmental impact of the project have been satisfactory though some impacts of the project will not be known until after construction has been completed and the bypass becomes operational.

6. The procurement method for the work is suitable.
7. The committee is satisfied with the balance of public and private sector involvement in the work and that the various roles and responsibilities for the project have been allocated to the parties in the best position to undertake them.
8. The work is being completed according to specifications, is on-time, under the current budget and contractual obligations are being met.

Background and scope of the inquiry

1. This is a report from the committee's inquiry into the Tugun Bypass Project. The terms of reference for the inquiry were to examine and report on the project with particular reference to:
 - a) the purpose of the work
 - b) the suitability of the work for its purpose
 - c) the necessity for, and the advisability of, the work
 - d) value for money likely to be achieved by the work
 - e) the cost and recurrent costs of the work
 - f) the public value of the work, including the impact of the work on the community, economy and environment
 - g) procurement methods for the work
 - h) the balance of public and private sector involvement in the work
 - i) the performance of the constructing authority and the consultants and contractors for the work

The Public Works Committee

2. The Public Works Committee is established under the *Parliament of Queensland Act 2001*.¹ The committee consists of seven members of parliament: four government and three non-government.
3. The committee's role is to scrutinise the government's capital works program. This can occur at any stage from planning to post completion and can include works by government departments and major works by government owned corporations. The committee may decide to conduct a particular inquiry or the parliament may refer specific works for investigation.
4. The committee tries to review projects from as wide a selection of departments and other constructing authorities as is practicable, in a variety of locations throughout Queensland, of differing cost and scale and at various stages of implementation.
5. When investigating public works the committee believes it is essential to listen to the views of end users as well as those held by people and organisations either affected by or with an interest in a particular project. One of its roles in facilitating this process is to provide a public forum in which the community can express an opinion, whether it is a suggestion, praise or criticism.
6. The focus of all government capital works projects must be on maximising the benefits to the community. The committee is determined to ensure Queensland gets best value for money

1 The *Parliament of Queensland Act* commenced on 6 June 2001. It replaced the *Parliamentary Committees Act 1995*.

from the development of capital assets by both public and private agencies, and that the agencies manage the assets to provide the best possible outcomes for Queenslanders.

Conduct of the inquiry

7. The committee advertised the inquiry and called for submissions in *The Courier-Mail* and *The Gold Coast Bulletin* on Saturday, 24 February 2007. It also released a media statement and wrote to a variety of interested persons and organisations advising them of the inquiry and inviting them to make a submission.
8. On Friday, 20 April 2007 the Department of Main Roads (DMR) briefed the committee on the project. The committee then inspected the project site and conducted a public hearing at Tugun Surf Lifesaving Club.
9. Copies of the submissions and transcript of evidence are available from the committee secretariat.

Responsibility of Ministers

10. This report makes recommendations for action by the government. Section 107 of the *Parliament of Queensland Act* requires responsible Ministers to table a response to the report in Parliament within three months.
11. The response must set out—
 - a) any recommendations to be adopted, and the way and time within which they will be carried out; and
 - b) any recommendations not to be adopted and the reasons for not adopting them.
12. A full extract of s.107 of the *Parliament of Queensland Act* is set out in Appendix 3.

Project Background

13. The seven kilometre Tugun Bypass project will provide a motorway standard traffic link between the Pacific Motorway in Queensland and the Pacific Highway in New South Wales.
14. DMR is the proponent for the project within Queensland, and the NSW Roads and Traffic Authority (RTA) is the proponent for the project located within NSW.
15. PacificLink Alliance, which comprises DMR, Abigroup Contractors Pty Ltd and SMEC Australia Pty Ltd, is designing and constructing the Tugun Bypass.
16. The Tugun Bypass project has a long history. An alternative transport corridor between Currumbin and Tweed Heads was the subject of community discussion and planning for many years. The identification of alternatives to the Gold Coast Highway at Tugun extends back to the closure of the original Gold Coast railway line in 1961.²
17. A possible bypass route west of Gold Coast Airport was identified by Queensland and NSW authorities in 1982. Subsequently, the DMR acquired selected parcels of land in Queensland for road purposes. In 1987, the *Tweed Local Environmental Plan* (Tweed Shire Council 1987) identified a reserve to be used for a road to bypass Tugun. The former *Albert Shire Planning Scheme* (Albert Shire Council 1995) identified both a road bypass corridor and an extension of the Gold Coast rail line from Robina to the Gold Coast Airport.³
18. In 1998 Queensland Transport commissioned the *Southern Gold Coast – Tweed Corridor Study*. The aim of the study was to identify potential solutions to the transport issues facing the Southern Gold Coast and Tweed area. The study revealed a strong community preference for a route to the west of the airport.⁴ Following the completion of the study, DMR commissioned a route selection study to further investigate options and recommend a route for a transport corridor in the area around Tugun. The report, the *Pacific Highway at Tugun Route Selection Report*, recommended that the C4 (western) alignment extending from Stewart Road in Currumbin to Kennedy Drive in Tweed Heads, and passing to the west of Gold Coast Airport, be adopted by the Commonwealth, NSW and Queensland governments as the preferred route.⁵
19. The Queensland government selected the C4 route as its preferred alignment in 1999. In March 2000, the Queensland and NSW governments and the Gold Coast Airport Limited (GCAL) were joint signatories to a Heads of Agreement to fully investigate the C4 option, secure the necessary government planning approvals and complete the preliminary design phase to enable a future road and rail bypass.⁶
20. In recognition of the complex planning and environmental issues involved, a working party of senior Queensland, NSW and Commonwealth government transport officials was formed in mid 2002 to investigate and report to their relevant ministers on options to resolve the traffic problems at Tugun within the earliest possible timeframe.⁷

2 DMR and RTA (2004) *Tugun Bypass: Stewart Road to Kennedy Drive* (Environmental Impact Statement): (Nerang Qld: Dept. of Main Roads). p 1-3

3 ibid

4 ibid

5 DMR submission p 11

6 Ibid p 7

7 ibid p 7

21. In January 2003, the working party agreed to Queensland progressing with C4 corridor planning studies and an approvals process for stage 1 which would use Boyd Street as an interim connection. It also agreed that the B routes east of the Airport be considered as 'fall back' options if C4 was unable to proceed.⁸
22. A Commonwealth pledge of \$120 million in March 2003 meant the project did not need to be staged, and Queensland advised that the project would proceed as one project. The NSW government withdrew its support for the C4 option in November 2003, but in May 2004 its Roads Minister announced the government was now confident the option was viable and both governments agreed to progress the environmental and planning approvals for the Tugun Bypass on the western C4 alignment. Final approval from all government agencies was obtained by February 2006.⁹ The PacificLink Alliance was announced as successful contractor in the same month and work began at the tunnel site in April 2006.¹⁰

Scope of the project¹¹

Route alignment

23. A map of the bypass route is on the following page. From the north, the seven kilometre route begins at the Stewart Road Interchange at Currumbin, passes to the west of the Gold Coast Airport and to the east of the Cobaki wetlands, and joins the Pacific Highway at Tweed Heads West, just north of Kennedy Drive.
24. The road will be a restricted access motorway. Initially there will be two lanes in each direction, with a central median wide enough to enable a further lane to be added in each direction.

Bridges

25. The project includes the construction of the following bridges:
 - Twin launched bridges (southbound and northbound) across Hidden Valley.
 - A single lane access bridge at Tugun Hill to enable neighbouring owners to maintain vehicular access to their property.
 - An access bridge over the section of the bypass on Gold Coast Airport land to replace an existing access track to Airport land west of the alignment.
 - An overbridge as part of the interchange at the southern end of the project.

8 DMR submission p 7

9 The Department of Environment and Heritage (DEH) and Department of Transport and Regional Services (DoTaRS) approved the project's Environmental Impact Statement (EIS) and Major Development Plan (MDP), as required under environmental and the airport legislation. The NSW Government had previously given its planning approval in December 2005.

10 DMR submission p 7

11 An associated work, the Boyd Street overpass, is being built by the PacificLink Alliance to enable the connection of Boyd Street in Queensland to the Cobaki Parkway in New South Wales. A commercial agreement has been executed between Tweed Shire Council, Gold Coast City Council and Main Roads to design, construct and maintain the overpass. The construction is to be largely funded by the Tweed Shire Council through developer contributions. While the overpass did not form part of the Tugun Bypass proposal it was considered as a cumulative impact in the Tugun Bypass EIS. Planning and environmental approvals to construct the overpass were obtained separately.

Figure 1: Tugun Bypass route alignment



Figure 2: Construction of Hidden Valley bridges



Source: DMR

Figure 3: Tugun Hill Bridge looking south



Source: DMR

Tunnel

26. A 334 metre long tunnel at the southern area of the alignment where the road crosses an area covered by the Gold Coast Airport's obstacle limitation surface (OLS). Provision has also been made for a future rail tunnel adjacent to the road tunnel, as part of a proposed extension of the track from Robina to the Gold Coast Airport.

Figure 3: Completing blinding layer for concrete floor in the tunnel



Source: DMR

Interchanges

27. There are two interchanges as part of the project. The first, the Stewart Road Interchange at the northern end of the bypass was opened to traffic in December 2004 and allows for connection to the bypass. The second, a new diamond shaped interchange is being constructed at the southern end of the bypass. It includes an overpass and two – lane service roads which will connect to the existing Kennedy Drive roundabouts. Both interchanges will be grade-separated to allow for all traffic movements and connections to the existing local road network.

Utilities and lighting

28. Lighting will be installed at all interchange ramps and intersections, although not along the remainder of the bypass. Lighting is required in the tunnel for both day and night operation as the length involved does not allow enough time for motorists' eyes to adjust to the dimmer conditions.

Figure 5: The Stewart Rd Interchange looking north



Source: DMR

Visual, landscape and urban design

29. The Urban and Landscape Design Concept Plan developed for the project seeks to provide a balance between the desire for attractive landscaping and the need for functional aspects including noise barriers, setbacks from the highway, and the Airport OLS. Elements of the Plan include landscape treatments such as native plantings to provide visual and headlight screening and erosion control; and urban elements such as noise barriers and retaining walls to meet safety and design considerations.

30. The project's Environmental Impact Assessment (EIA) publicly displayed in 2004-05 included preliminary concept designs for the works, and the final designs adopted by the PacificLink Alliance closely reflected these.

Project time-frames

1982	Bypass route west of Gold Coast Airport identified by Qld and NSW authorities.
Mid-1980s	Queensland section of corridor acquired.
1998	Queensland Transport commissions Southern Gold Coast – Tweed Corridor Study.
1999	The <i>Pacific Highway at Tugun Route Selection Report</i> prepared by Connell Wagner investigates the various route alignments and recommends the C4 option be adopted as the preferred bypass route.
March 2000	The Queensland and NSW Governments and GCAL were joint signatories to a Heads of Agreement to fully investigate the C4 option, secure the necessary government planning approvals and complete the preliminary design phase to enable a future road and rail bypass.
Mid 2002	A Working Party of senior Queensland, NSW and federal transport officials is formed to facilitate the planning and approvals process. The Working Party agrees to progress the western (C4) option, with several eastern (B) options as 'fallback' routes.
July 2002	A draft Environment Impact Statement (EIS) is finalised.
November 2002	In order to progress the northern (Qld) portion of the route whilst the EIS process is underway, the Queensland government announces a temporary connection along Boyd Street.
March 2003	The Federal government announces a \$120 million funding commitment to match Queensland's commitment. Traffic modelling shows Boyd Street interchange not needed in the future.
July 2003	A revised EIS is finalised.
4 November 2003	The NSW government withdraws support for the C4 alignment on environmental, funding and planning grounds. The EIS is withdrawn and Queensland reconsiders the fallback 'B' alignment options east of the Airport.
February 2004	The Queensland government announces a further \$120 million and announces that the B4 (Adina Avenue) route will proceed if it is re-elected. It will, however, continue to lobby the NSW and federal governments on the merits of C4. Following the 2004 state election, talks recommence between DMR and the NSW RTA to resolve environmental, funding and planning issues.
May 2004	The Queensland and NSW governments announce agreement to progress the environmental and planning approvals for the Tugun Bypass on the western C4 alignment. Under the agreement, Queensland would design, construct and maintain the road for ten years before handing the NSW portion over to the RTA. Further work on the previous B4 (Adina Avenue) route is halted. The C4 route was now fully funded and had the support of the Qld, NSW and Commonwealth governments to proceed to environmental and planning approvals.
May – Dec 2004	Preparation of EIS and related documents.
10 December 2004	Practical completion of Stewart Road Interchange.
13 December 2004	EIS and related documents released and placed on public display for three months.
March - Sept 2005	Submissions assessed; additional geotechnical, environmental and cultural heritage studies undertaken.

July - August 2005	Request for Proposals (RFPs) sought from consortia (all work conditional on environmental and planning approvals). Deeds of Agreement prepared to ensure land title for the bypass.
15 September 2005	Two interim consortia entered into competitive Interim Alliance Agreements for the design and construction of the bypass: CoastConnect, comprising Thiess Pty Ltd and Sinclair Knight Mertz (SKM) and PacificLink, comprising Abigroup Contractors and SMEC.
October 2005	Final approval documents lodged with agencies.
13 December 2005	Major Development Plan (MDP) for the section of the bypass on Airport land lodged by GCAL with DoTaRS.
23 December 2005	NSW Government announces planning approval for C4 route under its <i>Environmental Planning and Assessment Act 1979</i> .
23 December 2005	DEH Minister accepts the final EIS and approves its publication under the <i>Environmental Protection and Biodiversity Conservation Act 1999</i> .
23 February 2006	DoTaRS Minister's approval granted under <i>Airports Act 1996</i> .
23 February 2006	DEH Minister's approval granted under the <i>Environmental Protection and Biodiversity Conservation Act 1999</i> .
23 February 2006	PacificLink Alliance announced as successful contractor.
April 2006	Preparation works begin at tunnel site.
May 2006	Project site office and community information centre fully established.
June 2006	Tunnel works proper commence.
July 2006	Bridge work commenced at Tugun Hill.
August 2006	Bridge work commenced at Hidden Valley.
7 November 2006	Essential road tunnel works completed under the Airport runway extension.
February 2007	Tugun Hill Bridge complete.
May 2007	Hidden Valley bridges complete.
October 2007	Southern interchange and airport access bridges complete.
April 2008	Tunnel and ramps structure complete.
June 2008	Project complete; 10 year maintenance period begins.
Mid 2018	Ten year maintenance period ends; handover of NSW portion to RTA.

Terms of reference

a) *The purpose of the work*

31. The proposed bypass aims to satisfy two primary objectives. The two objectives are:¹²

- A road corridor to separate interstate freight traffic and other interstate traffic from local and tourist traffic along the coast; and
- A road with a 100 km/h posted speed to align with the existing Pacific Motorway 110 km/h speed limit from Brisbane to Nerang, and with the planned upgrade of the Pacific Highway south to Sydney.

¹² In addition, the alignment has been designed to accommodate a future rail extension from Robina to the Gold Coast Airport, which is subject to a separate approvals process. (DMR submission p 16.)

b) The suitability of the work for its purpose

32. The committee is satisfied that the work will be suitable for its purpose in terms of its route alignment, carrying capacity, travel efficiency, safety, durability, and maintainability.

Route alignment

33. The area where the bypass is being built has a number of natural and artificial constraints including the Gold Coast Airport, the Cobaki Broadwater and existing urban development.¹³
34. The selected route allows for:
- Separation of interstate through traffic (including most heavy vehicles) from local and tourist traffic
 - Reduced travel times
 - Reduced accident rate and accident severity along the Gold Coast Highway
 - Better public transport along the Gold Coast Highway
 - Improved amenity and accessibility along the Gold Coast Highway
 - The preservation of a corridor to allow future rail extension from Robina to Gold Coast Airport.
35. Route selection was complex. Such decisions invariably involve trade-offs between cost, efficiency and effectiveness and impacts on the community, the economy and the environment. The committee is satisfied that the selected option was the best available. Other alignments investigated as part of the project met only some of these objectives, were impractical, or were too expensive. The various route options are discussed in greater detail in the following section on the need for the work.

Carrying capacity

36. An assessment of traffic and strategic modelling was undertaken in the EIS. The study took into account: projected peak traffic figures using the overall Gold Coast EMME/2 Transport model; traffic forecasts based on projections developed and agreed by state and local government; and traffic forecasts which allow for future growth in the area, new transport links, and airport expansion.^{14,15}
37. Three design years were used for the traffic modelling – an opening year of 2007, 2017 and 2027. The principal comparisons used in the EIS are with and without a four-lane Tugun Bypass in 2007, and with and without a four- or six-lane bypass in 2017.¹⁶

13 DMR submission p 17 - 18

14 EMME/2 is a commonly used transportation planning software package.

15 DMR and RTA (2004) op. cit. p 12-11

16 The assessment has been based on the morning and afternoon 2-hour peak period. Queensland Government Department of Main Roads and RTA [Roads and Traffic Authority of NSW] (2004) *Tugun Bypass : Stewart Road to Kennedy Drive* (Environmental Impact Statement): (Nerang Qld: Dept. of Main Roads).p 12-11

38. The number of vehicles estimated to use the proposed bypass, between Stewart Road and the Tweed Heads Bypass, for 2007, 2017 and 2027, and the standard level of service is summarised in Table 1. This summary also includes estimated volumes along the Gold Coast Highway, with the bypass in place.¹⁷

Table 1: Estimated traffic volumes and levels of service

Section	2007	2017	2027
	(Level of Service)	(Level of Service)	(Level of Service)
Tugun Bypass	46,000	59,600	79,900
Level of service (A–F)	C	C	E
Gold Coast Highway	38,900	48,100	64,500
Level of service (A–F)	C	E	F

Source: DMR and RTA (2004) *Tugun Bypass : Stewart Road to Kennedy Drive* (Environmental Impact Statement): (Nerang Qld: DMR) p 12-11

Traffic volumes

39. The estimated traffic volume for the proposed Tugun Bypass in 2017 was 59,600 vehicles per day. This represents a traffic split of 55 percent on the Tugun Bypass and 45 percent on the Gold Coast Highway. In 2027, the corridor will be at or near capacity. At this time, the EIS estimated that about 80,000 vehicles per day would use the Tugun Bypass, with around 64,500 vehicles per day using the Gold Coast Highway. In this scenario, both the Tugun Bypass and the Gold Coast Highway are expected to be at or near capacity.¹⁸

Standard level of service

40. Standard level of service (LOS) describes operating conditions in a traffic stream. The conditions include speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety. The LOS provided varies depending on the type of road for the same traffic volumes. There are six LOS, A to F, with A representing the best operating conditions (free flow) and F the worst (forced or break-down flow). LOS D represents reasonable flow, approaching unstable flow, while LOS E represents traffic volumes at or close to the capacity of the road system with unstable flow (variable speeds) on occasions.¹⁹

17 DMR and RTA (2004) op. cit. p 12-11

18 ibid

19 ibid

41. As outlined in Table 1, the proposed four-lane bypass would operate at a LOS C (good with some delays) in 2007 at opening to traffic. The level of service would decrease to a LOS of D (satisfactory with occasional delays) over about 20 years. By about 2027, it is anticipated the bypass would be at or near LOS E (operating near capacity, with frequent delays) with Gold Coast Highway operating at LOS F.²⁰
42. If the Tugun Bypass was not constructed, by 2007, a number of the key intersections on the Gold Coast Highway are forecast to be operating at a very poor level of service with extremely high average delays forecast at many locations in both the morning and evening peak periods.^{21, 22}

Travel efficiency

43. The Tugun Bypass has been designed and is being constructed to motorway standards with a 110km/hr design speed. The road's cross-section, horizontal and vertical geometry all support safe efficient travel at the design speed.²³
44. Modelling of predicted travel speeds found that traffic conditions would improve on the Gold Coast Highway and surrounding roads following the opening of the bypass, resulting in improved travel times and fuel efficiencies. In the absence of the bypass, conditions would deteriorate to a level of severe congestion and long delays by 2017. Demand would significantly exceed supply and travel speeds would be low.²⁴

Safety

45. The bypass will allow the physical separation of most heavy interstate vehicles from local and tourist traffic, resulting in safety gains for all users. To ensure there were no safety shortcomings in the detailed design, each element subject to a safety audit on design finalisation. The Stage 3 (at 100 per cent design stage) Road Safety Audit was undertaken by an accredited road safety auditor from SMECs Canberra office who was independent of the design process.²⁵
46. One submission expressed concern that the tunnel and the approaches pose a risk to aircraft with landing problems.²⁶ There was extensive consultation with the various regulatory authorities, particularly the Federal Department of Transport and Regional Services' (DOTARS) aviation division and the Civil Aviation Safety Authority (CASA), to determine the clearances that the road alignment to the tunnel need to achieve, relative to the runway. The clearances required by DOTARS and CASA to achieve the required level of safety have been achieved.

20 DMR and RTA (2004) op. cit. p 12-11

21 DMR submission p 18

22 At the request of the RTA, the Tweed Interchange was subsequently varied from the concept design to cater for one way service roads adjacent to the Tweed Bypass rather than the two-way service roads included in the concept design. Traffic carrying capacity analysis of the new interchange was carried out to demonstrate that the required levels of service (LOS) will be met in the design year 2027. Traffic modelling shows that the revised interchange is comfortably capable of carrying predicted traffic levels. (DMR and RTA (2004) loc. cit.)

23 DMR submission p 18

24 ibid

25 ibid

26 Tweed Heads Environment Group submission 1, p 2-3

Durability

47. Each structural element of the design for the Tugun Bypass is subject to durability requirements in terms of an appropriate design life. Such design lives vary to suit economics and existing technology. For example, the structural elements of the tunnel have a 100 year design life while mechanical components such as the jet fans for air quality have a far shorter design life. Where there were any differences between DMR and RTA standards, the higher standard was adopted.²⁷

Maintainability

48. The Scope of Works and Technical Criteria (SWTC) to which the Tugun Bypass is designed stipulate a high level of maintainability. In addition, the delivery process includes a 10 year lump sum maintenance contract for which the contractor is the constructor of the Tugun Bypass. The maintenance contract, which was set in place in conjunction with the design and construct alliance contract, is designed to encourage the constructor to focus on quality workmanship to minimise their future maintenance costs.²⁸

Future development

49. The design for the Tugun Bypass caters for future widening from four lanes to six lanes by widening towards the median. All structures have also been designed and constructed to either cater for this increased width either initially or at minimal cost in the future. For example, the tunnel is of sufficient width to carry six lanes while the substructure (but not the deck) of the Hidden Valley bridges has been constructed to cater for six lanes in future.²⁹

Conclusion 1:

The work will be suitable for its purpose.

27 DMR submission p 18-19

28 Ibid p 19

29 Ibid

c) The necessity for, and the advisability of, the work

50. The committee is satisfied that the work is necessary and advisable. The Gold Coast Highway at Tugun is operating at unacceptable levels in peak periods with significant congestion and delays. Without a viable alternative route this congestion will only increase as demand increases which would severely impair mobility for both local and regional traffic and directly impact on the region's economic activity.³⁰ The EIS for the project summarised the factors that necessitate the work.³¹ These are outlined below.

Traffic volumes

- 51. Significant development has occurred along the coastal strip between the Gold Coast and Tweed Shire in the last three decades. As a result the urban area stretches from north of the Gold Coast to south of Tweed Heads. Traffic demand has increased with the rises in the number and density of the population.
- 52. The Gold Coast Highway functions as a major cross-border route for interstate traffic, including heavy vehicles. This results in a conflict between providing a fast, efficient highway for interstate traffic, and supplying the high level of access required for the local community. This conflict causes congestion at peak hours, and during holiday periods, with delays of up to an hour or more.
- 53. A number of indicators of travel efficiency and reliability were used to determine the condition of the road network in the Tugun area. All showed a deteriorating situation that would significantly worsen as traffic increases. Consequential changes include increases in travel times and a continuing decline of the road network's level of service. Table 2 details the indicators of travel efficiency and reliability.

Table 2: Indicators of travel efficiency and reliability

Intersection Performance	Levels of service provide an indication of intersection performance, with level A indicating free-flowing conditions and level F a breakdown of flows. Traffic modelling shows that intersections in the Tugun area will be operating at levels of service from E to F by 2007. This indicates that the traffic issues need immediate resolution.		
Travel speeds	Modelling has shown that average travel speeds along the Gold Coast Highway in 2007 will range from 10 to 66 km/h, while in 2017 they will decrease to a range of 10 to 46 km/h. The slowest speeds will occur during the morning and evening peaks.		
Travel Times	Travel times from Stewart Road to Kennedy Drive via the Gold Coast Highway are currently 9 to 12 minutes during the morning and afternoon peaks. Times will increase rapidly without the bypass.		
	Travel times from Stewart Road to Kennedy Drive		
		2002	2017
	Morning Peak	9-11 min	>30 min
	Evening Peak	12 min	>30 min

30 DMR submission p 21

31 DMR and RTA (2004) op. cit. p 4-4-6

Population growth

54. The population of the Gold Coast – Tweed Heads region is forecast to increase to around 620,000 by 2011. This is expected to lead to a 60 percent increase in travel demand along the Gold Coast Highway at Tugun: from the current average of 72,000 vehicles per weekday to 120,000 by 2017. Without the bypass, all this traffic would have to use the existing route along the Gold Coast Highway and Tweed Heads Bypass.
55. The Gold Coast is an important employment centre in south-east Queensland and is expected to account for 121,000 jobs by 2011, or 20 percent of the total expected employment growth in the area. The major employment node on the southern Gold Coast is Coolangatta, and most employment growth in the next 10 years is expected to be in Tweed Heads, Coolangatta and around Elanora. Employment growth would be hindered by a non-functioning road network. Population growth in the areas to the south and west of Coolangatta, and the possible failure to achieve complementary growth in jobs in those areas, may result in the demand for local trips growing at a rate that is much faster than the growth in the resident population of the area.

Safety

56. There were 286 road accidents between the Pacific Motorway and the Tweed Heads Bypass from 1994 to 2004. Injury rates were higher than for a typical four-lane divided road, reflecting the high traffic volumes, a large number of uncontrolled access points, and the difference in speed expectations of through-traffic and local traffic.
57. There are also areas where pedestrian and cycle movements conflict with traffic on the highway. These cross-movements are generally associated with trips between residential areas of Tugun to the west of the Gold Coast Highway and the shops and beaches to the east.

Amenity

58. The Gold Coast Highway runs through the middle of the Tugun and Bilinga communities. The movement of 72,000 vehicles per day (including B-doubles and other heavy vehicles) along the corridor significantly affects the amenity of the area. The most significant effect is the severance of the residential areas to the west from amenity areas, such as the shops and beaches in the east. This means that residents are faced with a barrier formed by four lanes of traffic when they are trying to reach the amenity areas.
59. Road traffic noise levels (daytime and night-time) along the Gold Coast Highway and the Tweed Heads Bypass currently exceed the respective Queensland and NSW road traffic authorities' acceptable noise levels. As traffic volumes and the percentage of heavy vehicles increase along the Gold Coast Highway and the Tweed Heads Bypass, road traffic noise levels will also increase. The night-time noise levels will increase significantly with the increase in heavy vehicles during off-peak travel times.

Options considered

60. A series of studies, route selection reports, meetings and workshops involving key stakeholders over several years defined the need for the bypass and refined the available options to the current alignment. There are a number of bypass studies dating back to 1982, when a route west of the Gold Coast Airport was identified by Queensland and New South Wales road authorities and some land was subsequently acquired.

Southern Gold Coast - Tweed Corridor Study

61. In 1997 Queensland Transport commissioned the *Southern Gold Coast - Tweed Corridor Study*. The investigation included broad transport planning, engineering and environmental

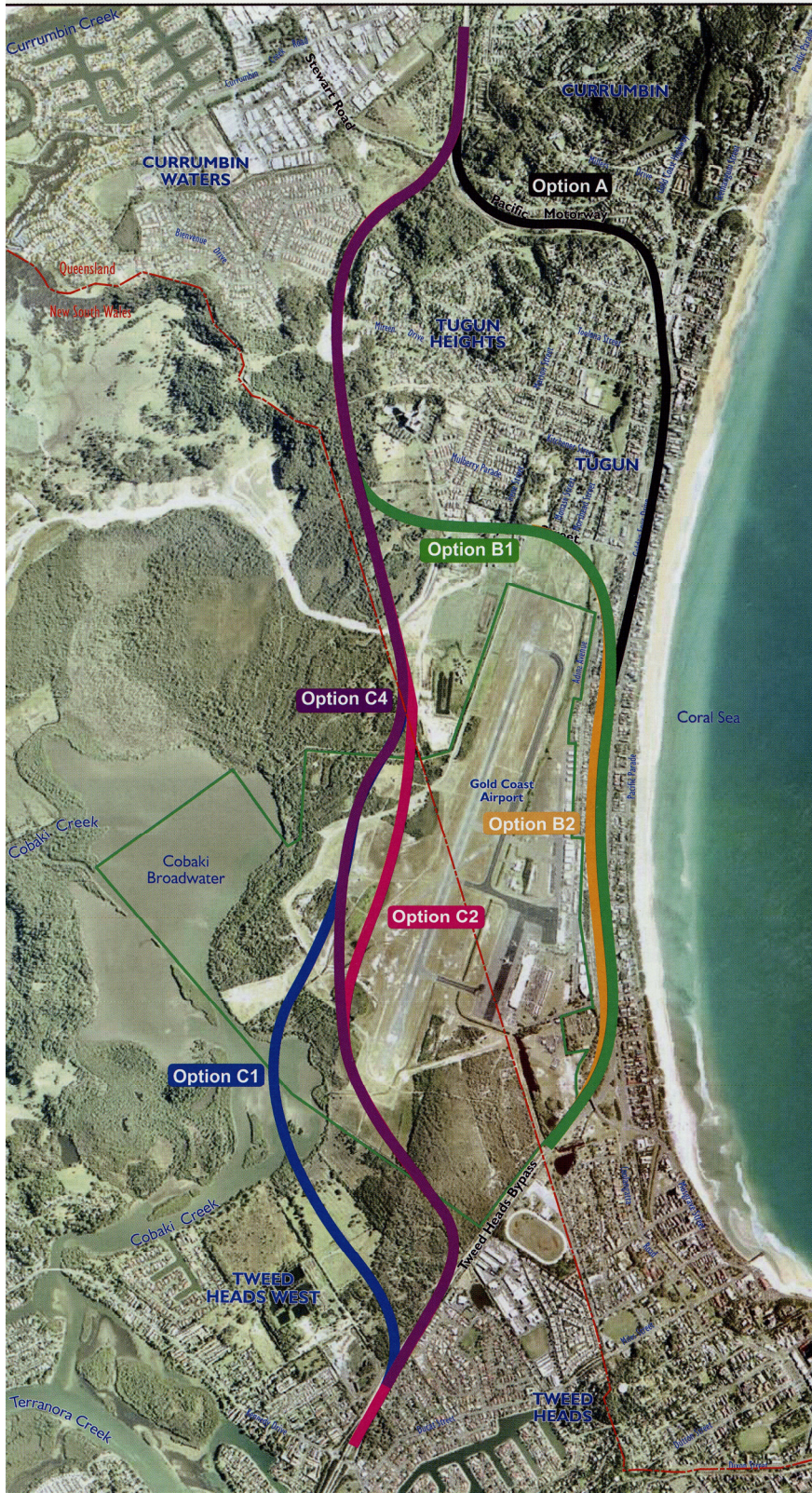
studies to identify potential solutions to the transport issues facing the southern Gold Coast and Tweed area.

62. Three broad corridor options (A, B and C) were identified. The options were:
- Option A — upgrade of the existing Pacific Motorway – Gold Coast Highway alignment with two sub-options A1 and A2
 - Option B — partial bypass running along the western side of Tugun Hill to near Boyd Street and eastwards to join the Gold Coast Highway with three sub-options B1, B2 and B3
 - Option C — full bypass of the Gold Coast Highway with three sub-options C1, C2 and C3. C1 was located to the west of Gold Coast Airport. C2 was largely within the airport boundary, crossing the line of the airport runway just beyond its southern end. C3 crossed the existing airport runway approximately midway along its current alignment.
63. The study included community consultation over three phases to identify community attitudes and issues associated with transport options. A newsletter was distributed to over 50,000 households. There were 1,105 responses. Of these 83 percent were in favour of the C options to the west of the airport.

Pacific Highway at Tugun, Route Selection Study

64. Following the completion of the Southern Gold Coast – Tweed Corridor Study, DMR commissioned Connell Wagner to undertake further environmental and engineering studies of the corridors identified in the study.
65. Two principal sets of options were available for a transport corridor through the study area, plus a number of hybrids that shared features with each of the main options. These options are shown on Figure 6 on the following page.
66. Preliminary engineering design work and environmental studies were undertaken for each of the options resulting in three potential solutions with various sub-options. Preliminary cost estimates for each of the options were also calculated. The options resulting from this work were:
- Option A — upgrade of the existing Pacific Motorway – Gold Coast Highway alignment with two sub-options A1 and A2
 - Option B — partial bypass running along the western side of Tugun Hill to near Boyd Street and eastwards to join the Gold Coast Highway with three sub-options B1, B2 and B3
 - Option C — full bypass of the Gold Coast Highway with three sub-options C1, C2 and C3. C1 was located to the west of Gold Coast Airport. C2 was largely within the airport boundary, crossing the line of the airport runway just beyond its southern end. C3 crossed the existing airport runway approximately midway along its current alignment.
67. The process undertaken to identify the preferred options considered both the road and rail alignments. The C3 option was discarded at this stage due to the major impacts it would have on the airport. A new option called C4 was introduced that was a hybrid of options C1 and C2. The A1 option was also discarded as it became impractical to consider the large number of elevated structures that would be required.

Figure 6: Tugun Bypass Options



Source: DMR and RTA (2004) *Tugun Bypass : Stewart Road to Kennedy Drive* (Environmental Impact Statement): (Nerang Qld: DMR). p 5-7

68. Following completion of the engineering and environmental investigations a Value Management Workshop was undertaken. The workshop considered three possible route corridors and six sub-options – A, B1, B2, C1, C2, and C4. The characteristics of the options are described below.

Option	Physical Characteristics
A	<p data-bbox="405 461 544 495">Alignment</p> <p data-bbox="405 510 1433 663">The only option where road and rail would be located in different corridors. There is insufficient space to accommodate the rail line in parallel with the road from Stewart Road to the intersection with Gold Coast Highway and maintain acceptable horizontal radii. Alternatively, major earthworks, tunnelling and land acquisition would be necessary.</p> <p data-bbox="405 678 1433 768">Horizontal radii along the existing Pacific Motorway alignment north of Tugun Hill would limit posted speed to 80 km/h. Alternatively, additional earthworks and land acquisition would be required.</p> <p data-bbox="405 784 1433 965">Longitudinal profile of the existing highway would be lowered by a maximum of 2.5 metres. North of Boyd Street, the service roads (Golden Four Drive and Coolangatta Road) would be widened to two lanes northbound and two lanes southbound respectively, to accommodate local traffic. South of Boyd Street, the highway would be widened to six lanes with the existing service roads performing their current function.</p> <p data-bbox="405 981 1433 1070">Southbound traffic on the Gold Coast Highway would join via parallel access roads to a large roundabout at Boyd Street. There would be no right-hand turn from the north as at present.</p> <p data-bbox="405 1086 576 1120">Interchanges</p> <p data-bbox="405 1135 1369 1169">Grade-separated interchange at Stewart Road replacing the existing traffic lights.</p> <p data-bbox="405 1184 1433 1245">Large grade-separated interchange at Boyd Street. The highway would be elevated above the roundabout at this location.</p> <p data-bbox="405 1261 1433 1321">Major upgrade of the Kirra–Bilinga interchange to accommodate local movements and revised access arrangements at Gold Coast Airport.</p> <p data-bbox="405 1337 491 1370">Traffic</p> <p data-bbox="405 1386 1433 1447">Design speed would be restricted to 80 km/h on the northern section around Tugun Hill, with a consequent impact on transport efficiency</p> <p data-bbox="405 1462 612 1496">Constructability</p> <p data-bbox="405 1512 1433 1572">The whole route would have to be built while maintaining existing traffic movement on the highway, leading to congestion and delays.</p>

Option	Physical Characteristics
B1	<p>Alignment</p> <p>Road and rail line would share the same corridor. The road alignment is 400 metres longer than Option A.</p> <p>Horizontal radii where the alignment curves to the east adjacent to Boyd Street are likely to limit posted speed to 90 km/h.</p> <p>Vertical alignment would be below the natural ground level where the road passes to the north of the airport. This would avoid the obstacle limitation surface at the northern end of the runway. As a result, it may be necessary to lower the Gold Coast Highway to achieve the necessary vertical clearance to the elevated bypass.</p> <p>An initial four-lane configuration would be provided north of Boyd Street. The cross-section and configuration to the south would be similar to that for Option A.</p> <p>Boyd Street would be extended to an intersection with Gold Coast Highway.</p> <p>Ramps would be provided to allow access to and from the Gold Coast Highway adjacent to the north-east corner of the airport.</p> <p>Interchanges</p> <p>Major grade-separated interchange at Stewart Road replacing the existing traffic lights.</p> <p>Grade-separated dumb-bell configuration to provide an interchange between Boyd Street and the bypass is proposed adjacent to Tugun Landfill.</p> <p>The Kirra–Bilinga interchange would be the same as for Option A.</p> <p>Traffic</p> <p>The 90 km/h posted speed through the Boyd Street area would have some impact on transport efficiency.</p> <p>Constructability</p> <p>That section of the route to the south of Boyd Street would have to be built while maintaining existing traffic movement on the highway, leading to congestion and delays.</p> <p>Traffic management would cause disruption during construction with subsequent effects on costs.</p>

Option	Physical Characteristics
B2	<p>Alignment</p> <p>Option B2 would share the same alignment as B1 from Stewart Road to Boyd Street. It would then curve through the north-east corridor of the airport to follow an alignment to the west of the Gold Coast Highway forming a new corridor.</p> <p>Maximum design speed of 90 km/h could be achieved in the vicinity of Boyd Street.</p> <p>Once clear of the obstacle limitation surface at the northern end of the runway, the road alignment would rise to ground level to run parallel to this Gold Coast Highway.</p> <p>Connections between the Gold Coast Highway and the bypass would require overpasses for both northbound and southbound traffic. Configuration of the road cross-section would be similar to that of Option B1.</p>

Interchanges

Interchanges would be similar to those proposed for Option B1.

Traffic

The 90 km/h posted speed through the Boyd Street area would have some impact on transport efficiency.

Constructability

That section of the route to the south of Boyd Street would have to be built while maintaining existing traffic movement on the highway, leading to congestion and delays.

Traffic management would cause disruption during construction with subsequent effects on costs.

Option	Physical Characteristics
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C1	Alignment
----	------------------

Road and rail line would share the same corridor. The road option is marginally longer than Option C4.

Option C1 would share the same alignment as Option B as far as Boyd Street, and a similar alignment to C4 until adjacent to the National Estate area. It would then curve to the west to provide sufficient space to pass to the south of the airport runway and join the Tweed Heads Bypass adjacent to Honeysuckle Street, Tweed Heads West.

Approximately 800 metres of the route would be located on a bridge structure passing over part of Cobaki Broadwater and its accompanying wetlands.

Immediately to the south of the wetlands, the vertical alignment would either fall to avoid penetrating the obstacle limitation surface at the southern end of the runway. Any lowered section would require extensive flood protection.

Horizontal radii would restrict design speed to 90 km/h in the area from the Cobaki Broadwater bridge to Tweed Heads Bypass.

Interchanges

A standard diamond configuration with traffic light control would be provided at Stewart Road.

The Tweed Heads Bypass interchange would incorporate a full diamond, grade-separated configuration with two signalised intersections at-grade allowing traffic from both directions on the Tweed Heads Bypass to connect to the Tugun Bypass

Existing eastern ramps at Kennedy Drive would be replaced by a two-lane service road.

The Kirra Bilinga interchange would be similar to Options A and B.

Traffic

The 90 km/h posted speed in the southern section of the route would have some impact on transport efficiency.

Constructability

Construction would be difficult in the environmentally sensitive areas of Cobaki Broadwater and close to the runway where restrictions would apply.

Option	Physical Characteristics
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C2	Alignment
----	------------------

Road and rail line would share the same corridor.

Option C2 shares the same alignment as Options B and C1 as far as Boyd Street then diverges to the west to run parallel to the existing runway at Gold Coast Airport without infringement of the obstacle limitation surface before curving to the east to pass under the obstacle limitation surface at the southern end of the runway in a tunnel. It would then join the Tweed Heads Bypass some 200 metres to the north of the interchange included in Option C1.

Horizontal and vertical alignment would achieve a design speed of 100 km/h.

Interchanges

All interchanges would be of similar configuration to those included in Option C1. The Tweed Heads Bypass interchange would be located approximately 200 metres further north.

Traffic

The alignment would allow a design speed of 100 km/h along the full length of the option.

Constructability

Construction would be difficult close to the operating runway and in particular in relation to the cover and cut tunnel located in the proximity of the runway threshold where restrictions would apply.

Option	Physical Characteristics
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C4	Alignment
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Road and rail line would share the same corridor.

Option C4 shares the same alignment as Options B, C1 and C2 as far as Boyd Street and a similar alignment as C1 until adjacent to the National Estate area. It would then curve to the east to pass under the obstacle limitation surface at the southern end of the runway in a tunnel following the same alignment as Option C2.

Horizontal and vertical radii would achieve a design speed of 100 km/h.

Interchanges

All interchanges would be of a similar configuration to those included in Options C1 and C2.

Traffic

The alignment would allow a posted speed of 100 km/h to be achieved along the full length of the option.

Constructability

Construction would be difficult, particularly in relation to the cut and cover tunnel located close to the runway where restrictions would apply.

69. The outcome of the Value Management Workshop was the Option C4 was the highest ranking option in terms of agreed evaluation criteria and the weightings assigned by the workshop participants. The report recommended that Option C4 be adopted by the Commonwealth, NSW and Queensland governments as the preferred option for the route of the Pacific Motorway/Highway at Tugun. Further, it was recommended that formal impact assessment of the C4 option commence under a joint process to satisfy the impact assessment requirements of the Commonwealth, NSW and Queensland.³²
70. The 'do nothing' option was considered but rejected. The existing situation already failed to deliver the necessary level of service. Indications were that the situation would significantly worsen with increases in traffic over the next few years and further declines would not be acceptable to the community.

EIS for C4 route

71. The Queensland government selected the C4 route as its preferred alignment in 1999. In March 2000, the Queensland and NSW governments and the GCAL were joint signatories to a Heads of Agreement to fully investigate the C4 option, secure the necessary government planning approvals and complete the preliminary design phase to enable a future road and rail bypass.
72. Detailed environmental studies were subsequently commissioned. These studies identified a number of areas of ecological importance and changes to the alignment were made to avoid or minimise impacts on these areas. These included:
- refining the alignment through Hidden Valley from the original concept of importing fill to the development of a launched bridge design to minimise the impact on regionally significant plants and ecosystems
 - alterations of the alignment to avoid populations of Swamp Orchids
 - optimising the alignment to reduce the impact of the road corridor on habitat for the Wallum Froglet, Wallum Sedge Frog and Long-nosed Potoroo

Intergovernmental working party

73. In recognition of the complex planning and environmental issues, a Working Party of senior Queensland, NSW and Commonwealth government transport officials was formed in mid 2002 to investigate and report to their relevant ministers on options to resolve the traffic problems at Tugun within the earliest possible timeframe.
74. While the scope of Option C4 had undergone considerable refinement since the route selection process in 1999, comparable refinement of the rejected options had not been undertaken. The working party felt that the lack of refinement could lead to the view that the options assessment process was biased towards the western options. To address this, the working party undertook a review of the options.
75. The working party adopted a phased approach to the review of options. The first stage determined the better of the eastern routes by comparing the A options to the B options. A number of revised or refined options were also considered where appropriate.

32 Connell Wagner (1999) *Pacific Highway at Tugun Route Selection Report* (unpub).

76. The 'A' route options examined modifications to the existing Pacific Motorway - Gold Coast Highway corridor. The Working Party eliminated the A options for a variety of reasons, including: cost, lack of separation of local and through traffic; and noise, visual and pollution impacts, the requirement for a massive upgrade of the existing infrastructure to provide the required capacity, community dislocation, no provision for rail along the northern section, and no capacity for future upgrades.
77. After ruling out the A options, the Working Party's technical sub-group compared the B and C options and found that options B1, B3 (as described below) and C4 (as described previously) were viable.^{33; 34}
78. The B1 option comprised a four-lane partial bypass (eventually widened to six lanes) joining the Gold Coast Highway north of the airport, followed by six-lane at-grade widening of the highway from Boyd Street (eventually widened to 10 lanes) with 100 km/h north of Boyd Street, 80 km/h south and grade-separated interchanges. (Cost \$280 million).
79. The B3 option was similar to B2 but with the through-lanes along the Gold Coast Highway, south from Boyd Street within a separate corridor, alongside the highway. The option incorporated a 100 km/h speed limit and grade-separated interchanges. (Similar to the B2 alignment in the Route Selection Report (DMR 1999b). (Cost \$360 million).
80. The remaining options (B1, B3 and C4) differed mainly in relation to costs and their impacts on the human and natural environments. The working party concluded that the C4 option was the best and endorsed the earlier decision to proceed with obtaining planning and environmental approvals for the preferred C4 option for the Tugun Bypass.³⁵
81. It's decision was based on the following considerations:
- Option B1 would be limited to 80 km/h to the south of Boyd Street and provided no opportunity for future upgrade for conditions beyond a 20-year horizon
 - Option B3 costs would be higher than Option C4 and would require the acquisition and demolition of more than 150 houses and businesses
 - Community severance issues would affect both B options in the area south of Boyd Street
 - There was extensive community support for a western route.
82. The C options remove the negative impacts from the communities of Tugun and Bilinga and provide a number of significant benefits. These include improved levels of amenity and safety as the interstate traffic will be removed from the coastal corridor.

33 Some 'hybrid' proposals put forward during public consultation prior to and during the EIA period were deemed impractical, too expensive or unable to meet the project objectives. For example, a proposal for an alternative inland alignment much further west was rejected on the grounds of cost (more than \$1 b), limited predicted usage, and large environmental and social impacts.

34 Other C options were discarded as their level of impact on the natural environment was too high.

35 The Queensland government briefly decided to proceed with a new B option (B4) in February 2004. This option followed the northern sections of the other B options until south of Boyd Street where it entered a new corridor inside the boundary of the Gold Coast Airport to the western side of Adina Avenue. It included grade-separated interchanges at Stewart Road and the entrance to the Gold Coast Airport and an overpass at Boyd Street. It only adopted this option because NSW had withdrawn its support for the C4 option at that point, and it felt it had little choice but to consider options entirely within Queensland. Even then, B4 remained a distant and flawed second option and the government continued to engage the NSW government on the superior merits of the C4 alignment.

83. The significant social benefits are balanced against the C options having the largest impact on the natural environment. The C4 option was chosen as the option with the least impact on the environmental values surrounding the Cobaki Broadwater. Other C options were discarded as their level of impact on the natural environment was too high. The environmental impacts associated with the C4 option have been reduced by the alteration of the alignment to avoid areas of high environmental value.
84. The cost of the C4 option is approximately equivalent to the median cost for the B options but has the significant advantage that it can be upgraded to accommodate six lanes in the future.

The advisability of the work

85. The committee believes that the project is advisable. The construction of the bypass will provide a more appropriate link for the interstate highway between Brisbane and Sydney and an alternative corridor for heavy vehicles and take them away from the residential areas of Tugun and Bilinga. Improvements in amenity, including reduced noise levels, improvements in access and better air quality will result.
86. The bypass will separate interstate traffic from local traffic resulting in lower traffic volumes on local roads and improved levels of amenity and safety. Conflicts between local and through traffic, as is currently the case, should be removed.
87. Travel times from the border to Stewart Road will reduce. With the bypass, travel times from the border to Stewart Road will be reduced to around 5 minutes. Without the bypass delays of greater than 30 minutes would be commonplace by 2017.
88. An economic assessment of the Tugun Bypass suggests that the project will produce savings to the community of \$59 million through avoided accidents and \$1.861 billion in reduced travel times.

Conclusion 2:

The work is necessary and advisable.

d) Value for money likely to be achieved by the work

89. Assessment of value for money is difficult and invariably involves a number of value judgments. Within the context of the Queensland State Purchasing Policy, value for money includes consideration of a number of factors. These include cost, non-cost factors, such as fitness for purpose and quality, and the contribution of the project to the advancement of Government priorities.

Cost factors

90. The department has taken a number of steps to achieve value for money with the project. The selection of a competitive alliance delivery method should ensure that, in the current climate, the final competitive cost represents value for money.³⁶

91. DMR negotiated a move away from the standard arrangement of equal sharing of risks for variations to actual direct costs from the target cost estimates to a 75:25 split. Under the arrangement DMR will receive 75 per cent of any cost underruns for the first \$18 million and bear 75 percent of the burden of any cost overruns for the first \$18 million. The share arrangements revert to a 50/50 split after the first \$18 million. This step was taken after detailed analysis including the use of statistical risk analysis programs of the submitted TCE.³⁷

92. The SWTC for the project was developed around the minimisation of whole-of-life costs, which are reflected in the durability requirements (design life) for each element. The costs of the maintenance contract tender which had to be submitted by each of the proponents concurrently with their design and TCE was taken into consideration in the selection of the preferred proponent.³⁸

93. Under the competitive interim alliance process DMR paid approximately \$5 million for each of the two proposal developments, only one of which was ultimately used. The cost for the proposal from the unsuccessful proponent should be recouped through the transfer of intellectual property to the successful proponent and as a result of the competitive environment in which the TCE was developed. The major design changes, in addition to many design improvements from the unsuccessful proponent that are minor and/or are difficult to quantify, include:³⁹

- eliminating a retaining wall immediately south of the Stewart Road Interchange by changing alignment and bettering into Gold Coast City Council land (an approximate saving of \$1million).
- reconfiguring the new Tweed Interchange including ramp realignments (approximate saving of \$2 million).
- tightening the airport tunnel vertical alignment and shortening tunnel approach ramps (approximate saving of \$4 million).

36 See the section on procurement for a more detailed discussion.

37 DMR submission p 25

38 ibid

39 DMR Correspondence, 28 May 2007

Benchmarking of costs

94. Benchmarking of construction and development costs can provide an indication of the value for money of a work. Unfortunately, the uniqueness of the Tugun Bypass project means that reasonable 'like for like' comparison with other road projects is difficult.
95. The Tugun Bypass is a unique project in terms of inclusion of a large tunnel through saturated sand. While there are other projects which include tunnels, the majority of these are either through favourable tunnelling materials such as Sydney sandstone or are constructed by a cut and cover methodology where stability of the surrounding ground is not an issue.
96. Factors increasing the cost of the Tugun Bypass project compared with other projects on the Pacific Highway in northern New South Wales include:
- Severe environmental constraints and controls/cultural heritage management;
 - The inability to balance the earthworks resulting in the need for the import of a significant proportion of the fill;
 - The fill material obtained from the tunnel excavation is all potential acid sulphate soil requiring treatment to neutralise the chemistry;
 - Significant costs for the removal of contaminated land both within the Airport and through the GCCC Tugun landfill;
 - Significant costs associated with working through the airport site in terms of meeting aviation safety requirements; and
 - Access to the site has been severely restricted, increasing the costs of imported materials.⁴⁰
97. These factors make it difficult to produce valid benchmark costs for the \$200 million cost of the tunnel. The costs of the balance of the bypass is \$27 million per kilometre (excluding planning, land acquisition and compensation costs but including bridging and interchanges).⁴¹ As a rough comparison, DMR advised the committee that the Brunswick Heads to Yelgun section of the Pacific Highway in New South Wales with similar features cost \$23 million per kilometre in January 2005. Inflation to a similar contract award period as the PacificLink Alliance would increase that amount to \$28.75 million per kilometre.⁴²

Non-cost factors

98. Non-cost factors include fitness for purpose and quality. On the evidence available to date, as described earlier in this report, the committee is satisfied that the work will be suitable for its purpose and of a high quality. Both the Project Alliance Agreement (PAA) and the SWTC stipulate fitness for purpose of the design and construction. In addition the non-owner participants of the alliance are provided with incentives under the terms of the PAA by achieving results in terms of early completion (and hence availability of the bypass to the travelling public) and performance in key result areas including quality, environmental performance, key stakeholder relationships, community relations and urban design.⁴³

The advancement of government priorities

99. The State Purchasing Policy uses a wide definition of 'value for money' and requires government agencies to undertake their purchasing functions in a way that supports the achievement of government priorities.

40 DMR submission p 27

41 *ibid* p 26

42 *ibid* p 27

43 *ibid* p 26

100. Current government objectives include: improving health care and strengthening services to the community; realising the Smart State through education, skills and innovation; protecting our children and enhancing community safety; managing urban growth and building Queensland's regions; delivering responsive government; growing a diverse economy and creating jobs; and protecting the environment for a sustainable future.
101. As a major piece of infrastructure development the Tugun Bypass supports 'Priority 4: 'Managing urban growth and building Queensland's regions'' and Priority 6 'Growing a diverse economy and creating jobs'. The project will provide both direct and indirect employment benefits for the local and regional economies. It will also help to manage growth in South East Queensland in an integrated and coordinated manner and, once operational, will help link Queensland through efficient and integrated transport options. The project also supports Government Priority 7: 'Delivering responsive government' with the engagement of the community in government decisions and processes.

Conclusion 3:

On the information available, the project will provide reasonable value for money.

e) The cost and recurrent costs of the work

Capital cost

102. The budget for the project is \$543 million. A budget breakdown is in Table 3 below.

Table 3: Tugun Bypass project budget

ITEM	COST \$M (2005)
Planning, Preliminary and Detailed Design	45
Roads (incl. Stewart Rd Interchange)	113
Tunnel	198
Bridges	18
Environmental treatments	52
Land acquisition & GCAL compensation	45
Contract administration & project insurance	43
Risk & Contingency Reserve	29
Total	543

Source: Derived from DMR submission, Appendix 17

103. Capital costs will be met over a number of years as outlined below.

< 2006-07	2006-07	2007-08	2008-09
\$113,261m	\$202,739m	\$180,000m	\$47,000m

104. The Queensland government is providing the vast bulk of funding for the project - \$423 million, 78 percent of the total cost. The remainder, \$120 million, will be met by the federal government.⁴⁴

105. The estimated cost of the Tugun Bypass increased from \$360 million to \$543 million between 2004 and 2006. A large reason for this increase was due to construction costs, which rose at a rate significantly higher than the Consumer Price Index. Increases in labour and material costs during this period included:⁴⁵

- General labour – 35 percent increase
- Asphalt - from \$90 to \$110/tonne (20 percent increase)
- Concrete – from \$105 to \$120/m³ (15 percent increase)
- Paving material - from \$13 to \$18/tonne (35 percent increase)
- Reinforcing steel - from \$900 to \$1200/tonne (33 percent increase)
- Bitumen - 40 percent increase
- Diesel fuel - increase in the order of 50 percent.

106. A further reason for the cost increase was the stringent environmental controls the NSW and federal governments attached to the planning consent. Project costs reflect this:⁴⁶

44 ibid p 28

45 ibid p 28

46 ibid p 29

- Additional planning and environmental studies - \$25 million.
- Environmental treatments - \$22 million (comprising \$14 million for noise treatment and \$8 million for environmental monitoring/acid sulphate soils).
- Additional cultural heritage studies.

107. Other areas to record cost increases included land acquisition, compensation to GCAL and contract administration costs (including project verification, project insurance and legal agreements between RTA, GCAL and DMR).⁴⁷

108. Table 4 below summarises the reasons for the capital cost increases between 2004 and 2006.

Table 4: Tugun Bypass project cost comparison (\$2005)

	Construction Costs as at 2004 (\$m)	Construction costs as at 2006 (\$m)	Reasons for Increases (\$2005)
Planning, Preliminary & Detailed Design	23	45	\$25m increase for planning and environmental studies
Roads (incl. Stewart Rd Interchange)	80 (\$39m: interchanges + \$41m 4-lane roadway)	113	<ul style="list-style-type: none"> • \$133m increase resulting from steep rise in construction costs for labour, raw materials: • \$36m general labour (increase from \$35 to \$55 per man hour) • \$24m for 12 percent increase in costs for concrete, steel, plant and subcontract • \$40m for specialised tunnel construction equipment • \$23m for road-making materials • \$10m for tunnel fire and life safety
Tunnel	110	198	
Bridges	6	18	
Environmental treatments	23	52	
Land acquisition & GCAL compensation	22	45	\$14m increase in noise treatment \$8m environmental monitoring & special treatments (e.g. Acid sulphate soils)
Contract administration & project insurance	30	43	\$22m additional compensation for GCAL including \$13m for loss of revenue and \$9m DOTARS for airport lease variations
Risk & Contingency Reserve	46	29	\$8m increase for independent project verification \$2m increase for project insurance \$2m for preparation of various legal agreements between RTA, GCAL & MR
Total	340	543	

Source: DMR submission, Appendix 17

47 ibid p 29

109. Expenditure on a number of elements of the project was queried in submissions to the inquiry including the rail tunnel and the access bridge at Tugun Hill.
110. As part of the project a concrete slab has been constructed to provide for the future construction of a rail tunnel underneath the now completed runway extension. The rail line would be part of the Coolangatta extension proposed by Queensland Transport and includes a station at Tugun and a southern terminus at the Gold Coast Airport. No timeframe has been allocated at this stage for development of the rail link.
111. The submission from the Tweed Heads Environment Group suggests that if the rail system to the Airport does not proceed then the expenditure on infrastructure for rail would be wasted.⁴⁸ The committee agrees. However, it believes that the decision to expend the additional money now is reasonable risk management. If the project is approved, the existence of the slab would make construction of the rail tunnel cheaper, faster and avoid disruption to the airport's operations. Failure to make provision for the rail tunnel now could effectively rule the option out.
112. Construction of the bypass severed an access road for two properties west of the proposed alignment, which ran from Admiral Crescent, along the northern boundary of the John Flynn Hospital and Medical Centre. To ensure that access to the properties was maintained a new one-lane access bridge was constructed at a cost of approximately \$2 million. Unfortunately, there were no viable alternatives and acquisition of the properties would have cost more than the new bridge.⁴⁹

Recurrent costs

113. Estimated recurrent costs for the project are \$3.7 million per year - \$2.2 million for maintenance and \$1.5 million in operating costs. The DMR's Roads Implementation Program makes funding provision for the 10 year maintenance period prior to handover of the portion of the bypass within NSW (including the tunnel) to the NSW RTA.⁵⁰
114. The vast majority of the operating costs for the Tugun Bypass are associated with the lighting, electrical, mechanical and intelligent transport systems included in the tunnel. Of the \$1.5 million annual operating costs some \$900,000 will be spent on electricity for lighting. Compared with longer road tunnels as used in Sydney, the Tugun tunnel is brightly lit due to the full length of the tunnel being traversed in the period that it takes the human eye to adjust to dimmer conditions. On a per length basis, the Tugun tunnel is therefore more expensive to light.⁵¹
115. The tunnel also includes a full deluge system to cater for any fire and a very large pumping system that must cater for Queensland intensity rain events over the full length of the approach ramps which necessarily drain into the tunnel in conjunction with the deluge system being activated.⁵²

Conclusion 4:

The cost and recurrent costs of the work are reasonable.

48 Tweed Heads Environment Group Submission 1, p 2
49 Transcript of public hearing, Friday, 20 April 2007, p 5
50 DMR submission p 28
51 ibid p 27
52 ibid p 27

f) The public value of the work, including the impact of the work on the community, economy and environment

The Community

116. The Department and the Alliance partners have a detailed Community Engagement Strategy for the project. The community, local authorities and elected representatives have been kept informed and invited to participate at key project stages. A detailed description of the community consultation as part of the project is at Appendix 3.
117. The bypass does not affect any proposals included in local statutory planning documents nor inhibit development strategies in place in Gold Coast City or Tweed Shire local government areas prior to the time of the EIS.⁵³
118. Construction on the chosen alignment only required the resumption of two 'six pack' unit blocks, which were already owned by DMR. Residents were kept informed of the project status during the approval phase and given sufficient opportunity to make other accommodation arrangements once approvals were received.⁵⁴
119. The work has impacted the community in terms of traffic and transport, noise and air quality. During construction there have been temporary impacts on the general amenity of residents adjacent to the construction works and, more intermittently, those adjacent to the access routes to the site. Traffic, construction and community engagement plans have been put in place to manage these issues. Once the project is complete all existing properties will retain access.⁵⁵
120. When complete the bypass will move a large percentage of traffic away from the Gold Coast Highway which should improve amenity for most members of the community. The bypass will separate interstate traffic from local traffic resulting in lower traffic volumes on local roads and improved levels of amenity and safety for motorised vehicles as well as cyclists and pedestrians. Conflicts between local and through traffic would be largely removed.
121. The change of traffic flows will alter the distribution of road noise. At the northern end of the bypass the route passes residential areas not currently affected by noise from traffic. At the southern end residential areas close to the Tweed Heads Bypass are affected by existing traffic noise. The noise likely to be generated by the bypass and its impacts on surrounding properties was assessed as part of the assessment process. The results of the modelling showed that the standards required for noise at properties could be met in most cases by a combination of low noise road surface and noise barriers.⁵⁶
122. Construction of the Tugun Bypass will create both direct and indirect employment benefits for the local and regional economies. The greater accessibility created by the project will stimulate economic activity in the area with broader benefits stemming from the reduced costs of distribution resulting from the journey time savings. Impacts on the economy are discussed in greater in the following section.

53 DMR and RTA (2004), p 11

54 DMR submission p 32

55 ibid p 32

56 DMR and RTA (2004), op.cit p 11

Cultural heritage

123. Indigenous cultural heritage has been a complex, controversial, time-consuming and expensive issue for the project.⁵⁷
124. A cultural heritage study of the proposed route was undertaken in 2000/2001 and was included in the draft EIS. DMR funded additional studies in consultation with local indigenous bodies, including Eastern Yugambah Limited, Tweed Byron Local Aboriginal Land Council, Ngarang-Wal, Ngarak-Wal and Kombumerri people.
125. Two Cultural Heritage Management Plans (CHMP) were prepared for the Tugun Bypass Project:⁵⁸
 - One CHMP was prepared for the sections of the bypass within Commonwealth and NSW land as part of the NSW Department of Planning Ministers/DEH Condition No. 28; and
 - the second CHMP for sections of the bypass within Queensland, for SoC No. 23 and the Tugun Bypass Major Development Plan prepared under the *Airports Act 1996*, by DMR, in consultation with the RTA.
126. The CHMP for the sections of the bypass within Commonwealth and NSW land were adopted. The CHMP for sections of the bypass within Queensland was disputed.
127. The Gold Coast Native Title Group argues that there has been no value in the work done and the money spent on cultural heritage has been wasted. A number of community members and external specialists in collaboration with the Tweed Byron Local Aboriginal Land Council proposed a cultural heritage process to DMR involving additional studies but this was rejected. As a consequence, the Gold Coast Native Title Group claim that the CHMP was made without a specific understanding of the cultural heritage significance of the area, was not manageable and not supported by the vast majority of Aboriginal Parties endorsed by DMR.⁵⁹
128. The various interest groups held disparate views and consensus could not be reached on the adoption of the CHMP. In January 2006 DMR referred the matter to the Land and Resources Tribunal with an application under sections 113(2) and 117(2) of the *Aboriginal Cultural Heritage Act 2003* (the Act) for the Tribunal to recommend that the Minister for Natural Resources, Mines and Water approve the cultural heritage management plan for the bypass.
129. Some of the respondents supported the plan and others opposed it. Opposition to the approval of the plan by the tribunal was based on arguments that archaeological studies were inadequate, there was no social history report, and the consultation process was flawed. The tribunal rejected these objections and recommend that the Minister approve the plan as submitted with a minor amendment suggested by the Department.

57 Total 'cultural heritage' expenditure between 1999 and May 2007 was \$464,877.66. This amount included cultural heritage surveys; archaeological and geomorphological assessments and excavations; cultural heritage advice and coordination; and on-site monitoring. (DMR correspondence. 28 May 2007.)

58 DMR and RTA (2004) op. cit. p 219

59 This claim should be treated with some caution. Under Part 7, divisions 3 and 4, of the *Aboriginal Cultural Heritage Act 2003* any Aboriginal party who responds in an appropriate manner to a public notice notifying development of a CHMP must be endorsed to participate in the management of the plan. According to DMR, in the Tugun Bypass CHMP process there was a considerable number of people from one group who nominated as endorsed parties and that group claim to represent that number almost on a preferential voting basis. (Transcript of public hearing, Friday, 20 April 2007, p 9.)

130. It is unfortunate that agreement could not be reached on the management of cultural heritage as part of the project and that the matter ended up in the Land and Resources Tribunal. Nevertheless the Committee supports the Tribunal's decision and is satisfied that the CHMP is satisfactory.
131. The arguments opposing the adoption of the CHMP and analysis of the argument as set out in the Tribunal's decision is reproduced below:
- [1] *Inadequate archaeological studies:* It was submitted that an expert cultural heritage significance study had not been done. That submission cannot be sustained, given that the material reveals that there have been 5 cultural heritage studies of the area since 1990 and 3 of them dealt with the proposed Tugun bypass route. Indeed, archaeologist Dr Jodie Benton said, of those reports, that: [emphasis added]

“[t]he cumulative result of these studies has been the *detailed identification of the cultural heritage resource* within the impact footprint and vicinity of option C4 for the proposed Tugun bypass.”
 - [2] Other complaints were made about limited Indigenous and ethnographic impact and factual inaccuracies. However the studies above demonstrate extensive Indigenous and ethnographic input and the alleged factual inaccuracies were raised by assertion from the Bar table without supporting evidence. These complaints cannot be sustained.
 - [3] *No social history report:* It was submitted that a social history report should have been obtained. That would identify all appropriate Aboriginal parties with cultural interests in the project area. Two points should be noted: first, the Act does not require such a report; secondly, it is almost fanciful to suggest, given the extensive consultation process and public advertising which has occurred, that any Aboriginal person or group with a cultural interest in the project area has not already been involved in the process or at least become aware of the proposal and of how to become involved in it if desired.
 - [4] *Flawed consultation process:* The argument here was that the consultation process was flawed, the Aboriginal parties were not fully briefed about the proposed plan “contract” and they should have had the opportunity of legal advice. This submission, again made without supporting evidence, should be rejected. The material reveals detailed, lengthy and on-going consultation and discussion (about the plan) between the project proponent and the Indigenous people for the area. The proposition that the plan, if approved by the Minister, would somehow constitute an enforceable contract between the State and various named Aboriginal people is misconceived because it has not been, and will not be, signed by the Aboriginal people concerned. It is a *plan* for the project area for the protection of Aboriginal cultural heritage—not a contract between parties. The reason it is before the Tribunal is because the parties could not agree about it. The complaint about legal advice is also patently wrong because the sixth-named respondent was legally represented at earlier Tribunal hearings and obviously had the opportunity of legal advice.
 - [5] Other parties had previously been unable to agree with the State on the need for (a) a large scale social history report, (b) further archaeological excavation in a number of zones (zones 1, 4 and 5) in the project area, and (c) the use of ground-penetrating radar in one of those zones (zone 5) to locate burial sites. These points were not pressed at the hearing, perhaps in light of Dr Benton's comprehensive report which (for the reasons set out on pages 7-10) concludes that those additional steps or procedures are not necessary in this case.
132. The CHMP seeks to avoid harm to Aboriginal objects, and where harm cannot reasonably be avoided, to minimise potential impacts within the road works area by:⁶⁰
- ensuring the direct involvement of the stakeholder groups in the development and implementation of this CHMP;

60 DMR and RTA (2004), op. cit. p.191

- maximising the Stakeholder group's direct management of and involvement in all management actions deemed necessary to cause the least amount of impact possible to Aboriginal cultural heritage in the road works area;
 - demonstrating respect for Aboriginal culture and Aboriginal cultural heritage and by ensuring that all involved in the implementation of this CHMP and implementation of the road construction demonstrate such respect; and
 - developing a process should Aboriginal objects or skeletal remains be identified during construction.
133. To avoid or minimise the impact on cultural heritage, a three stage management strategy was developed. This included:⁶¹
- Stage 1: the collection of isolated and low density artefact scatters;
 - Stage 2: augering as part of a geomorphological investigation; and
 - Stage 3: a program of cultural heritage monitoring.
134. To date there have been some 1600 artefacts found ranging from waste flakes to tools. From an archaeological perspective, some are more significant than others.⁶² Consultation with Aboriginal stakeholders is continuing to determine the appropriate long term storage or relocation of all artefacts recovered along the alignment.⁶³

The Economy

135. Impacts of the work on the economy will occur through the construction phase of the project and through the operation of the bypass.
136. As most work is occurring away from the existing traffic, direct negative economic impacts during the construction phase in terms of large scale disruption of commuter, tourist and freight movements is minimal. Construction has been scheduled to ensure that the commercial operations at the Gold Coast Airport have not been adversely affected by the construction of the tunnel works. Work on the Stewart Road Interchange began as a separate package in November 2003 and was finished in December 2004. Building the interchange at this time avoided the potential for further disruption to freight, commuter and tourist traffic during the building of the bypass.⁶⁴
137. The project has directly and indirectly generated a range of significant economic 'spin offs', through creation of jobs on site and the procurement of goods and services. The bypass resulted in the creation of 570 jobs at the peak of construction, including 300 sub contractors. Numbers dropped to around 400 after the essential tunnel and design works were largely completed.⁶⁵

Local Industry

138. The Queensland Government is committed to providing local industry with full, fair and reasonable opportunities to tender for major project work. In this respect the Tugun bypass project must comply with the Queensland Local Industry Policy.^{66, 67}

61 *ibid*

62 Transcript of public hearing, Friday, 20 April 2007, p 10

63 DMR and RTA (2004) *loc. cit.*

64 DMR submission p 36

65 *ibid*

66 Queensland Government (2003) *Queensland Local Industry Policy, A Fair Go For Local Industry* (Department of State Development; Brisbane).

139. The Local Industry Policy applies to all Government infrastructure and resource projects valued at more than \$5 million. Under the policy, project proponents are required to demonstrate a commitment to the local workforce through the development of local industry plans. These plans ensure that project proponents and agencies have sought, wherever possible, to provide products and services locally.
140. A local industry plan was prepared in accordance with state government policy and issued in March 2006 as an appendix of the SWTC. The local industry plan is one of a suite of project plans that fall within the Alliance Project Management Plan. Under the local industry plan the PacificLink Alliance:
- Utilises the resources of the Industry Capability Network to identify Queensland companies that are able to supply goods or services commensurate with the quality, safety, reliability and delivery standards and objectives of the Project;
 - Supports the use of Australian Standards in the Project SWTCs;
 - Provides timely information and facilitate project information briefings to local industry so that local suppliers have adequate time to identify potential opportunities and to establish their competitive position;
 - Facilitates PacificLink Alliance and subcontractor alignment with the local industry policy, including: inclusion of the core policy statement in all contracts and purchase orders; a requirement that is reflected down to all secondary subcontractors and sub-orders;
 - Evaluates tenders on a “full life cycle cost basis” whilst taking into account all environmental, quality, safety, reliability, delivery and on-going operational support considerations;
 - Gives local industry full, fair and reasonable opportunity to pre-qualify in the tendering process; and
 - Maximises local content in items that are imported.
141. The project has provided substantial benefits to Queensland and regional NSW businesses. Of total Subcontracts and Supply Agreements committed up to the end of August 2007, 67.51 percent by value (\$121.2 million) had been procured through Queensland, with a further 7.39 percent (\$13.3 million) sourced from regional NSW. Those items that had not been procured locally were proprietary items that are not available from Australian sources (e.g. tunnel fans and tunnel waterproofing materials).⁶⁸

Training

142. The Queensland Government has a 10 percent training policy. The policy is designed to maximise the potential of Queensland Government capital works projects to address skills shortages and create additional employment opportunities for apprentices, trainees and cadets in the building and construction industry.
143. Under the policy a minimum of 10 percent of the total labour hours on any Queensland Government building or civil construction project (over \$250 000 for building or \$500 000 for Civil Construction) be undertaken by apprentices, trainees or cadets and through the training of existing workers to a maximum of 25 percent of the deemed hours. They must be engaged

67 New South Wales also has a local industry policy which is included in the Policy Statement, NSW Government Procurement, A whole-of-government initiative, NSW Government White Paper 1999. As NSW is not procuring the Tugun Bypass Project, the Queensland Policy applies. Nevertheless the definition of local with respect to the Queensland Policy includes Australia and New Zealand and therefore NSW.

68 DMR correspondence 1 October 2007

in structured training that has been approved and leads to a nationally recognised building and construction qualification or a statement of attainment. Contractors are required to provide evidence of compliance with the policy.

144. As a civil construction project with a value over \$500,000 the 10 percent Training Policy applies to the Tugun Bypass project. For these projects, deemed training hours are calculated on the basis of the Contract Price multiplied by 0.04 percent and expressed as hours. The deemed hours must be expended in employment of apprentices, trainees or cadets; or training of other workers.⁶⁹
145. The training target is 60,000 hours. There have been over 100,000 training hours provided over the past 12 months, well in excess of the minimum specified for the entire project.

Long term economic impacts

146. The bypass' main long term economic contribution will be in the reduction in travelling times between the border and the Stewart Rd interchange. Modelling of future traffic flows show that significant delays of more than 30 minutes would be commonplace by 2017 without the bypass; with the bypass travel time between Stewart Road and the border will be reduced to 5 minutes. The economic assessment of the bypass conducted as part of the EIS found this equated to a \$59 million saving to the community in avoided accidents and \$1.86 billion in savings in reduced travel times over the next 30 years (based on net present values). If the bypass were not built, then these savings become the potential costs of not proceeding with the proposal.⁷⁰

The Environment

147. Like cultural heritage, management of the impacts of the project on the natural environment have been contentious, challenging and expensive. During the inquiry a range of groups and individuals made submissions expressing concern about the environmental impacts of the work.
148. As discussed earlier in this report, the C route options avoid the negative impacts from the communities of Tugun and Bilinga and provide a number of significant benefits such as improved levels of amenity and safety. However, these benefits are balanced against the C options having the largest impact on the natural environment.
149. Of the C route options, the C4 route had the least impact on the environment surrounding the Cobaki Broadwater. It has not been possible, however, to avoid all impacts - the project has resulted in the removal of around 45 hectares of native vegetation and an additional 26 hectares of edge-affected habitat. In sum environmental impacts include:⁷¹
 - Direct disturbance of vegetation with associated fragmentation and edge effects;
 - Direct disturbance of fauna habitat;
 - Disturbance and alternation of surface and ground water;
 - Disturbance of sodic and acid sulphate soils;
 - Disturbance of contaminated land;

69 Pacific Link Alliance, *Project Training Plan For The Tugun Bypass Project*. Subject to this item being a maximum of 25 percent of the deemed hours and the training having been approved and leading to a nationally recognised building and construction qualification.

70 Refer to DMR and RTA (2004) op.cit p 21-2

71 DMR submission p 33

- Increase in background noise;
 - Landscape modification;
 - Resumption of land; and
 - Reduction in air pollution due to relief of congestion.
150. Consideration of the environmental impacts of the works has been extensive. The proposal was subject to an EIA and reported in an EIS and species impact statement (SIS).⁷² The environmental assessment was conducted in accordance with the NSW *Environmental Planning and Assessment Act 1979*, the *Commonwealth the Environment Protection and Biodiversity Conservation Act 1999*, and *Queensland Transport Infrastructure Act 1994*. The proposal was also referred to the Commonwealth government as required by the *Environment Protection and Biodiversity Conservation Act 1999*.
151. Following the EIA process, fifteen additional studies on matters such as geotechnical, environmental, groundwater, frogs and compensatory habitat issues were undertaken to gain additional data and respond to submissions. The results of the studies were incorporated in the Submissions Report prepared by the RTA and considered by the relevant approval agencies prior to them giving consent for the project.⁷³
152. A Construction Environmental Management Plan (CEMP) was required to be prepared by DMR to the satisfaction of the RTA and the relevant approval agencies prior to the start of any construction work. The CEMP defines the procedures to be carried out prior to, during and post-construction to manage potential environmental impacts. It incorporates all mitigation measures from the EIS, environmental safeguards developed during the detailed design stage and conditions imposed by the approval agencies.⁷⁴
153. The Department of Environment and Heritage approval conditions mandated the development and implementation of conservation plans for the Long-nosed Potoroo and the Wallum Sedge Frog; the appointment of an environmental management representative; the submission of a pre-operation compliance report prior to work commencing, regular construction compliance reports during construction and an environmental impact audit report within three months of project completion.⁷⁵
154. The standard of environmental management during construction is regularly assessed by internal and external bodies. Members of local environment groups are represented on both of the Community Liaison Groups established to ensure regular and effective communication between the project team and the community.⁷⁶
155. This following section outlines the measures taken to minimise, mitigate and compensate for impacts in four key environmental areas:
- flora and fauna
 - water quality and flooding
 - groundwater
 - acid sulphate soils.

72 In accordance with the *Airports Act 1996* Gold Coast Airport Ltd submitted a Major Development Plan (MDP) for the section of the bypass passing through the airport.

73 DMR submission p 37

74 *ibid* p 37-38

75 *ibid* p 38-39

76 *ibid* p 39

156. Overall the committee is satisfied that the measures taken to minimise the environmental impact of the project have been satisfactory though some impacts of the project will not be known until some after-construction work has been completed and the road becomes operational. A number of environmental controls have been implemented during construction. Many are tried and tested but some are innovative and unproven.
157. There have been two verified environmental incidents on-site. The first concerned the accidental access of Crown land during the construction of groundwater recharge wells. The second concerned the management of groundwater and compliance with regulatory guidelines.

Flora and fauna

158. The Tugun Bypass traverses an area that accommodates significant flora and fauna species and a high diversity of vegetation communities and important mammal, bird, amphibian and bat species.
159. Surveys undertaken for the EIS recorded 586 plant species in the area together with 247 species of vertebrate fauna, consisting of 179 species of bird, 31 species of mammal, 20 reptile species and 17 amphibians. Notable values of the study area include:⁷⁷
- the occurrence of populations of threatened plant species
 - small isolated populations of Common Planigales and Long-nosed Potoroos
 - significant populations of the Wallum Sedge Frog, Wallum Froglet and the Eastern Long-eared Bat
 - a high diversity of vegetation communities
 - a high diversity of bird, amphibian and bat species
 - the occurrence of habitat for a range of threatened and significant flora and fauna species and important habitat for use by a number of bird species protected under migratory agreements
 - proximity to Cobaki Broadwater, an important breeding ground for commercially and recreationally important fish in the Tweed Estuary.
160. The original C4 alignment was altered a number of times to avoid, as far as possible, ecologically sensitive areas such as swamp orchid habitat, Long-nosed Potoroo habitat, and Wallum Sedge Frog breeding ponds. Unfortunately, it has not been possible to avoid all impacts on areas of native vegetation and their associated ecosystems. The bypass has resulted in the removal of around 45 hectares of native vegetation communities and the creation of an additional 26 hectares of edge-affected habitat.⁷⁸
161. The project's Flora and Fauna Management Plan includes a series of management measures to mitigate against potential impacts of the Bypass on local flora and fauna. Major controls include: integrated work method statement; delineation of limits; sensitive area drawings; compensatory measures; plant translocation; fauna relocation; and two-stage clearing process.⁷⁹

77 DMR and RTA (2004a) *Tugun Bypass Environmental Impact Statement Summary booklet*, (Nerang: DMR) pp 14-15

78 When a new road crosses through areas of native vegetation and important habitat, it creates what is known as an edge effect. Degradation of habitat quality occurs as a result of weed invasion, increased predation, disturbance, and changes in moisture regimes (Tugun Bypass Environmental Impact Statement Summary booklet, p 15).

79 DMR and RTA (2004), op.cit p 53

Compensatory habitat package

162. A compensatory habitat package to minimise, mitigate and compensate the impacts of the road was developed and approved for the project. The package includes land and other undertakings such as the construction of artificial frog ponds, the installation of nest boxes, and the development of an integrated plan of management for the Long-nosed Potoroo.⁸⁰
163. The original land package consisted of four parcels with a combined area of 82.3ha, exceeding the direct road footprint and edge effects allowance by 11ha. They were:⁸¹
- Block A 64.1ha - Lot 3 DP837715 (a large block west of Cobaki Broadwater)
 - Block E 6.2ha – Lot 18 DP583263 (an old farm block west of Cobaki Broadwater)
 - Block F 11ha – Lot 22 DP1058759 (a segment of larger block in northern NSW adjacent to the Cudgen nature Reserve)
 - Block P 1ha – Lot 6 DP855719 (Long-nosed Potoroo habitat - remnant area of land adjacent to Bypass in Queensland)
164. Management of the blocks to retain or improve their conservation value in the long term is required. Blocks A, E and F were secured for simple land transfers to NSW Department of Environment and Conservation (DEC). Block P has been retained by DMR.⁸²
165. DEC advised that they could not accept Block F based on park management principles. A number of alternative blocks were considered but they were not suitable to all stakeholders. Negotiations are currently proceeding with the appropriate NSW and commonwealth agencies for the management and rehabilitation of threatened species habitat, rather than acquisition of Block F.⁸³

Other compensatory measures

166. Four artificial frog ponds were completed in late August 2006. The ponds are being surveyed for frogs, are being checked to ensure that the vegetation is establishing and that they are functioning correctly. The latest six monthly construction compliance report notes that the Wallum froglet has been recorded in all four ponds, whilst the Wallum Sedge Frog has been recorded in one pond.⁸⁴ A monitoring report notes that whilst all compensatory ponds will need sufficient time for vegetative rehabilitation and subsequent frog colonisation, pH, salinity, hydroperiod and invasion by exotic fish (*G. affinis*) will need to be addressed. Future monitoring will determine the suitability of the compensatory ponds for breeding and reproduction for the acid frog.⁸⁵
167. Forty-three nest boxes have been installed through the alignment corridor and compensatory habitats to mitigate against the loss of hollow bearing trees. An additional seven hollows were rescued during the clearing process and reinstated into adjacent habitat. Initial monitoring indicates the use of a number of the boxes by native fauna.⁸⁶

80 *ibid*, p 55

81 Main Roads Correspondence, 1 October 2007

82 *ibid*

83 *ibid*

84 PacificLink Alliance (2007) *Six Monthly Construction Compliance Report Tugun Bypass Project* (8 December 2006 to 7 June 2007), p 57

85 Jean-Marc Hero, Clay Simpkins, Steve Lamb and Camilla Freestone (2007) *Frog monitoring during the first phase of construction for the Tugun Bypass Project (April 2006-May 2007)* monitoring report. Prepared for PacificLink Alliance by The Centre for Innovative Construction Practices, Griffith University.

86 PacificLink Alliance (2007) *op.cit* p 59

168. An Integrated Plan of Management for the Long-nosed Potoroo at Cobaki has been developed and submitted to Department of Environment and Water Resources. The plan details the monitoring, and additional management measures, to be implemented for this endangered population. To date, a fauna culvert associated with the Boyd Street Overpass has been constructed and will be re-vegetated. Other management measures will be implemented following the approval of the plan, in late 2007 or early 2008.⁸⁷

Plant Translocation

169. A Translocation Plan for threatened species was developed. Ameliorative translocation of threatened and rare species aims to minimise losses to population number and habitat incurred during construction. Translocation consists of:⁸⁸
- salvage transplanting of impacted individuals of threatened and regionally significant species to relocation site(s) within the Project area;
 - population enhancement by propagation and introduction of additional individuals; and
 - restoration of quality habitat at the relocation sites.
170. The translocation plan lists individual rare and threatened plants identified during the pre-clearing surveys. It also details their current location, where they will be translocated to and any necessary treatments.⁸⁹
171. Twenty one flora species were translocated to one of three sites; Rainforest Site Compensatory Habitat Block A, Sandplain Translocation Site and retained Swamp Sclerophyll Forest (near the Southern Interchange). Monitoring results from the first annual monitoring report are promising with high success rates for all translocated plants.⁹⁰

Fauna Relocation

172. Prior to clearing of the alignment a number of pre-clearing surveys/relocations were undertaken, focusing on the threatened fauna species known to occur within the vicinity of the alignment, specifically the two Wallum Frog species and the Common Planigale. Since then fauna relocated has been limited to a small number of snake relocations.⁹¹
173. An assessment of the species impacted that exist in viable populations will only really be possible once construction is completed and the bypass operational. The committee notes, however, that the latest six monthly construction compliance report states that there has been no known loss of threatened species or HBTs outside of the construction boundary, there has been successful translocation/relocation of those individuals within the footprint and prompt rehabilitation of disturbed areas where required.⁹²

Water quality and flooding

174. The Tugun Bypass presents a potential risk to water quality, primarily through the exposure of soils during earthworks when suspended sediment and associated pollutants can be washed into downstream watercourses. This can cause siltation of waterways and damage to ecosystems.

87 *ibid*, p 94

88 *ibid*, p 55

89 *ibid*, p 55

90 *ibid*, p 59

91 *ibid*, p 55

92 *ibid*, p 59

175. A Soil and Water Management Plan has been developed to prevent erosion and sedimentation, contamination of soil and water and ensure compliance with all relevant legislation. Measures to manage the potential impacts include design and planning of the project, erosion prevention and sediment control, spill prevention/containment, treatment, inspections and education.⁹³
176. The road footprint and vegetation clearing has been kept to a minimum, reducing exposed soils. The natural hydrology and drainage of the area/region has been retained as much as practicable and many permanent structures including sediment ponds, retention basins and grass swales have been incorporated into the design. Management tools such as Integrated Work Method Statements are implemented in order to identify and mitigate possible impacts caused by specific works and give direction to site staff with regards to appropriate environmental protection measures.⁹⁴

Erosion Prevention and Sediment Control

177. The Pacific Link Alliance regularly sub-contracted a professional soil conservationist to give specific recommendations during the high risk phase of construction. Controls used on the project include filter fence, rock check dams, diversions, drop downs, batter chutes, mulch windrows, grass seeding of batters and geofabric.⁹⁵
178. A series of erosion and sediment control plans were produced to provide an effective mix of temporary and permanent controls. Significant resources are allocated to the maintenance of these controls, including the repair and removal of sediment from rock check dams, sediment fences and retention basins.⁹⁶
179. Clean water has been separated and diverted around the site by the use of drainage diversions, whilst water within the site has been directed to controls by grading of contours. As much runoff water as possible is retained on site through the use of grading and storage areas such as sediment basins.⁹⁷
180. Wherever possible water from the basins is then re-used for construction water on-site, otherwise it is treated prior to discharge. To ensure that discharged water is within the designated performance criteria an environmental officer tests the water prior to release. Natural waters are also tested up and downstream of the works to determine what effect, if any, the works have had on the surrounding environment. Performance criteria differ between jurisdictions.⁹⁸
181. On Commonwealth/Airport land the *Airports (Environment Protection) Regulations (1997)* is followed with regards to surface water criteria. The New South Wales section of the alignment is subject to a voluntary Environmental Protection licence. *The Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2000* (ANZECC) apply to all other surface waters associated with the site.⁹⁹

93 *ibid*, p 60

94 *ibid*, p 60

95 *ibid*, p 61

96 *ibid*, p 61

97 *ibid*, p 61

98 *ibid*, p 61

99 *ibid*, p 61

182. A variety of controls are put in place to reduce the risk of contamination through spillage. Re-fuelling is not carried out within 20m of a water body or drainage line with permanent water. Environmental risk is taken into account when selecting materials and an inert chemical is normally chosen over a highly reactive or toxic one.¹⁰⁰
183. Chemical containers over 20 litres are stored in bunded areas in case of rupture or spillage. Temporary bunds are constructed around various works and temporary booms are placed in waterways during higher risk works. Spill kits are in place along the alignment and in many of the vehicles.¹⁰¹
184. When treatment of water is necessary to meet discharge criteria, gypsum, lime and/or HCl are used to reduce turbidity and adjust pH. Treatment plants have been constructed for the purpose of adjusting the pH of extracted groundwater, inducing hydrolysis of dissolved metals.¹⁰²
185. Daily inspections and monitoring of erosion and sediment controls have been carried out by foremen, environmental officers and erosion and sediment control crews. Inspectors from the RTA and the EMR have conducted formal inspections weekly.¹⁰³
186. These inspections also covered spill prevention, chemical storage and other factors related to soil and water quality. Recommendations resulted from these inspections were implemented as soon as practicably possible.¹⁰⁴
187. In sum, erosion, sediment and pollution controls on the project have generally worked well with only a small number of instances where water quality has exceeded the set guidelines. There has been no long term deterioration in downstream water quality.¹⁰⁵ The committee refers readers to the latest *Six Monthly Construction Compliance Report* for details of exceedances and the performance of the controls employed.¹⁰⁶
188. During operation of the Bypass there is the potential for water pollution originating from the road to affect Cobaki Creek and the Broadwater. A system of filter strips and swales along with constructed wetlands will treat run off from the bypass once it is opened.¹⁰⁷

Flooding

189. In its submission the Tugun Cobaki Alliance, citing the Tweed flood study, suggested that flood levels would be significantly higher than predicted in the EIS.¹⁰⁸ DMR advised that the figures from the Tweed flood study and a considerable number of other flood studies were considered to determine the flood immunity that was needed. The Tweed flood study suggests flood heights of 2.19 metres AHD on a frequency of one in 20 years, 2.26 metres AHD on a frequency of one in 100 years, 2.93 metres AHD on a frequency of one in 500 years and 4.44 metres AHD in an 'extreme event'. The Tugun Bypass tunnel approaches of 2.7 metres will provide flood immunity for up to the one in 100 year flood level. According to

100 Ibid, p 61

101 Ibid, p 61

102 Ibid, p 61

103 Ibid, p 61

104 Ibid, p 61

105 Discharges to surface water from the extracted groundwater treatment system are discussed in the next section on groundwater management.

106 Ibid, p 62

107 DMR and RTA (2004a) op.cit, p 13

108 Tugun Cobaki Alliance submission, pp 4-5

the DMR 'the 4.4 metre figure that is quoted in the Tweed flood study can only be achieved by way of a massive flood with something like a tsunami on top of it.'

190. The primary impact of the Tugun Bypass proposal on the Tweed River floodplain would be the loss of storage capacity resulting from the filling required for the road embankments. Flood modelling has shown that the filling required for the proposal would result in increases in levels of less than five millimetres for up to the 100 year flood event. The magnitude of these impacts would be negligible. Any loss of floodplain storage capacity as a result of the proposal would be insignificant in the context of the Tweed River catchment as a whole and it would have little effect on the duration of flooding in the area.
191. The primary means of managing the potential impacts of the proposal on flooding is to include the necessary waterway openings across the alignment of the bypass and provide adequate drain rerouting where this is required. These structures would maintain future floods at acceptable levels.¹⁰⁹

Groundwater

192. Impacts on the groundwater are possible as a consequence of firstly, ground water extraction to allow construction of the tunnel and ramps, and secondly, the obstruction of groundwater movement following the positioning of the tunnel walls up to a depth of 20 metres within the aquifer.
193. Lowering of the groundwater around the tunnel during its construction has the potential to:¹¹⁰
- reduce levels and/or flows to Cobaki Broadwater and its associated wetlands
 - allow the intrusion of saline water from the estuary into the adjacent sand aquifer
 - result in the oxidation of sulphide materials in the soil, a process that generates acid which, on rewatering, could migrate as acidic groundwater.
194. A groundwater management for the project includes measures for groundwater treatment and recharge, groundwater cross drainage and remediation of pre-existing contaminated sites.¹¹¹
195. To avoid potentially significant and long term alteration to local groundwater quality, a recharge system was constructed to return water to the aquifer. Airlift pumps used for groundwater extraction preclude direct re-injection due to the potential for iron precipitation and subsequent reduction in capacity and eventual blockage of recharge wells. Treatment is required prior to re-injection. The treatment systems were designed to perform three functions:¹¹²
- raise the pH to speed up the rate of precipitation of iron;
 - allow the precipitate time to settle out of suspension; and
 - lower the pH of treated water to a level suitable for discharge.
196. The treatment system has undergone considerable development in both scope and design since the commencement of dewatering to accommodate site specific conditions and ensure

109 DMR and RTA (2004a) loc. cit

110 ibid

111 Remediation of pre-existing contaminated sites identified along the project corridor (Tugun landfill and former airport landfill sites) has occurred.

112 PacificLink Alliance (2007) ibid p 81

that discharge criteria are complied with. Diaphragm walls and sheet piles limit the water level drawdown resulting from the dewatering system by providing a horizontal confining barrier.¹¹³

197. Cross drainage to maintain the natural flow of water across the tunnel site has been installed. It consists of vertical interceptor bores at 20 metre spacing, connected the length of the tunnel by a geofabric-lined, gravel-filled trench, with cross drains placed over the tunnel connected to the top of the interceptor bores. The system has been designed to minimise contact with oxygen to avoid oxidisation of dissolved metal compounds (particularly iron) that may impede water flow through the system and necessitate on-going maintenance. A covering layer of cement stabilised fill (base material clean sand) was also put in place to replicate the naturally low exposure of the groundwater to oxygen.¹¹⁴
198. Groundwater levels have been regularly monitored at distances of 15 – 150 metres from the recharge system. Natural fluctuations in groundwater level occur as a result of rainfall events and, in areas immediately adjacent to Cobaki Broadwater, tidal influences. There has been some localised groundwater level decline, which was most pronounced in close proximity to the tunnel, a result of both low rainfall and Project works.¹¹⁵ Water levels at monitoring bores east of the tunnel stabilised in February 2007 (north) and March 2007 (south). Rainfall and tidal (west only) recharge resulted in temporary recovery of the water level. Initiatives to optimise the volume of water recharged have been implemented and include:¹¹⁶
- improved water delivery to wells buried under the airport extension on the western side;
 - a recharge well maintenance programme of increased frequency;
 - a program of flow testing throughout the reticulation system and subsequent implementation of measures to improve in water delivery. This consisted of the installation of pipes across the tunnel portals to increase the amount of water delivered to the eastern side of the tunnel and approach ramps and air lock valves; and
 - pump systems related to the header tank in System 2 in an effort to consistently maintain a full tank and ensure the system does not overflow during large rainfall events. Subsequent to significant damage incurred as a result of vandalism, additional measures were also designed, including the installation of a float valve to regulate flow and pressurise the system.
199. The December 2006 Six Monthly Construction Compliance report noted that there had been discharge of water which exceeded regulatory guidelines on quality. Notice was provided to the Commonwealth and State Regulatory agencies and corrective action taken.¹¹⁷ The June 2007 Six Monthly Construction Compliance report notes that no new environmental incidents were recorded. However groundwater management continues to pose a number of challenges. Small leakages of treated water off site have also occurred on some occasions.
200. Causes of exceedances of trigger values for pH, turbidity and iron were identified as follows:¹¹⁸

113 Ibid. p 81

114 Cross drainage under the ramps consisted of backfilling with clean sand between the temporary sheet piling and the concrete retaining wall. (ibid)

115 ibid, p 83

116 ibid

117 Ibid. p 8

118 Ibid. p 84

- difficulties in waterproofing the settlement tanks leading to a bypass of the settlement stage of the treatment train
- chemical supply – including running out of chemicals
- instrument error leading to over or under dosing of chemicals
- plant malfunction resulting from loss of power
- sabotage
- excess runoff generated by rainfall beyond the capacity of the automated system to treat
- operator error
- plant malfunction, resulting from loss of power.

201. The latest PacificLink six month construction compliance report suggests that '(a)lthough environmental effects are short in term, efforts to achieve continual improvement are being undertaken and in consultation with a number of industry and regulatory experts.'

202. A number of submitters expressed concern about the impacts of the work on the groundwater, especially around the area of the tunnel. Some have suggested that the work has resulted in acidification of groundwater, but the committee has not received hard evidence to back up these claims. To counter suspicions and uninformed speculation the committee recommends that seek to have more detailed ground water and soil test results included in the next six monthly construction compliance report.

Recommendation 1:

The committee recommends that DMR seek to have more detailed ground water and soil test results included in the next six monthly construction compliance report.

Acid sulphate soils

203. Acid sulphate soils contain sulphide minerals which on exposure to the atmosphere oxidise to form acid, metals in solution and sulphate. The acid and metals can cause environmental harm including killing aquatic organisms, corrosion of structures and stunting or killing vegetation. Acid sulphate soils (ASS) are either:

- actual acid sulphate soils (AASS), meaning that oxidation has already happened either by natural processes or by past disturbance; or
- potential acid sulphate soils (PASS), meaning that the soil materials contain sulphide minerals that would oxidise if exposed to the atmosphere by excavation or lowering of groundwater levels.

204. Control measures to limit any negative effect on the environment from the excavation and reuse of ASS material are: ¹¹⁹

- minimising the disturbance of ASS soils;
- the identification of ASS through sampling and analysis;
- placement of a guard lime layer prior to placement of ASS within the embankment;

119 Ibid. p 67

- treatment of identified ASS with lime, sampling and analytical testing of treated ASS in accordance with the management plan, and review on a PASS/FAIL basis;
- installing catch drains around ASS placement areas;
- consulting with stakeholders and regulatory authorities; and
- providing contingency procedures for unexpected ASS impacts and/or discovery.

205. Cut and fill ratios along the Tugun Bypass have been designed to minimise the need for additional natural resources. This has involved the treatment and re-use of ASSs excavated within the tunnel and approach ramps. During the period from Dec 06 to June 07, 45,989m³ of ASS was excavated, treated and placed along the alignment. Neutralisation of the material was undertaken with agricultural lime, and 70 verification tests were undertaken. All tests indicated that the net acidity PASSED verification (i.e. they were below 0.03 percent or <18 molH⁺/ton post treatment).¹²⁰

206. Monthly monitoring was undertaken at two groundwater monitoring bores upgradient and two monitoring bores downgradient of an ASS placement area. The monitoring data indicates that acidity leaching from the fill embankment does currently not occur at all or not at levels of concern. This may indicate that the current methods of treatment and reuse are effective in neutralising net acidity and do not present a significant risk to the environment. Excavated drains in ASS areas are also showing early signs of regrowth and stabilisation, further indicating that appropriate management practices were followed.¹²¹

Conclusion 5:

The work will have a positive impact on the community and the economy.

The measures taken to minimise the environmental impact of the project have been satisfactory though some impacts of the project will not be known until after construction has been completed and the bypass becomes operational.

120 ibid

121 Ibid. p 68

g) Procurement methods for the work

207. The Tugun Bypass Project is being delivered in two stages. The Design and Construction of the project is being delivered through a project alliance; the PacificLink Alliance - a commercial/legal framework between DMR, as 'owner'-participant and Abigroup Contractors Pty Ltd and SMEC Australia Pty Ltd as constructor participant (also known as non-owner participants and service providers).¹²² Maintenance of the project is through a separate 10 year lump sum maintenance contract simultaneously set in place with the constructor participant.

208. Project alliances are characterised by:¹²³

- collective sharing of (nearly) all project risks
- no fault, no blame and no dispute between the alliance participants (except in very limited cases of default)
- payment of private sector parties for their services under a '3-limb' compensation model comprising:
 - reimbursement of private sector parties' project costs on 100 per cent open book basis
 - fee to cover corporate overheads and normal profit, and
 - a gainshare/painshare regime where the rewards of outstanding performance and the pain of poor performance are shared equitably among all alliance participants;
 - unanimous principle-based decision-making on all key project issues; and
 - an integrated project team selected on the basis of best person for each position.

209. There are two broad approaches to establishing a project alliance, the single target outturn cost (TOC) approach and the competitive or multiple TOC approach, which was used for the Tugun bypass project. The following descriptions of these approaches are from the Victorian *Project Alliancing Practitioners' Guide*.¹²⁴

In the single TOC approach, a preferred proponent is selected on the basis of non-cost criteria, and, following a series of meetings and financial audits, the owner and the preferred proponent agree the commercial framework and primary parameters for the alliance.

The owner and the non-owner participants then work together as an integrated team through the project development phase to develop the target outturn cost (TOC) and other performance targets for the project. Once the targets are agreed, the alliance team works together to deliver the project with the aim of achieving or doing better than the agreed targets.

In the multiple TOC approach, the owner selects the two preferred proponents and negotiates separately with each to agree the commercial parameters for the alliance. The owner then enters into an interim project alliance agreement (IPAA) with each group to develop separate TOCs, and other performance targets. The owner then selects a preferred proponent on the

122 The alliance will also be responsible for rectification of defects during the liability period (2 years from completion) and latent defects (five years from completion) (Auditor General of Queensland (2007) *Report to Parliament No.5 for 2007* p 22).

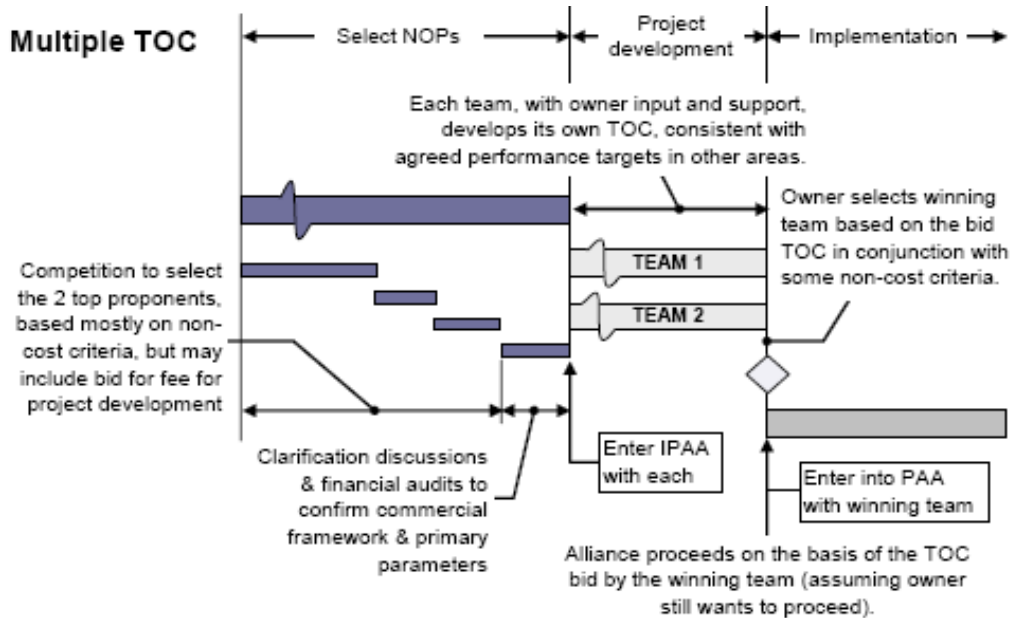
123 Victoria Dept. of Treasury and Finance (2006) *Project Alliancing Practitioners' Guide* (Melbourne: Dept. of Treasury and Finance), p 3

124 *ibid*

basis of the lowest or best TOC and some non-cost criteria, and enters into a project alliancing agreement (PAA) with that proponent to deliver the project.

210. Figure 7 below shows the typical multiple TOC process.

Figure 7 Multiple TOC process.



Source: Victoria Dept. of Treasury and Finance (2006) *Project Alliancing Practitioners' Guide* (Melbourne: Dept. of Treasury and Finance), p 16.

211. The two stage selection process for the Tugun Bypass Project involved, firstly, the selection of two consortia with which to enter separate IPAAAs. Non-cost criteria included: relevant experience and track record of nominated team members (30 percent); understanding, ability and capacity to participate in the project (45 percent) and leadership and alliance affinity (25 percent).
212. The second stage included comparison of those proposals and TOCs against the selection criteria and SWTC requirements. The comparison was based on non-cost and cost criteria.
213. The non-cost criteria was: understanding, ability and capacity to participate in this Project [30 percent]; Leadership and alliance affinity [30 percent]; and technical proposal, certainty of outcomes and compliance with SWTC [40 percent]. Relevant experience and track record could be considered, but only if a material change occurred after the Stage 1 Initial Proposal.¹²⁵
214. The cost criteria was based on a total risk adjusted whole-of-life cost (net present value), which was calculated with consideration to the proposed TOC; risk and contingency allowances; commercial framework adjustments; risk transfer issues; maintenance costs; whole-of-life cost adjustments (net present value) calculation; and project verifier & Environmental Management Representative costs.¹²⁶

125 DMR submission p 42

126 ibid

- 215. In accordance with the process outlined above, formal Requests for Proposals (RFP) from industry were sought on 19 July 2005 and closed on 19 August 2005. Proposals were submitted from: PacificLink (Abigroup Contractors, SMEC); CoastConnect (Thiess, SKM); and No Borders (Leighton/Maunsell).¹²⁷
- 216. The Leighton/Maunsell proponent was eliminated in the first stage and not taken through the stage two or interim alliance process. CoastConnect and PacificLink entered into IPAAAs and submitted design and TOC reports. PacificLink was selected as the preferred proponent and a PAA was executed in February 2006. A summary of the tender evaluation is below.

	PacificLink	CoastConnect
Risk Adjusted Whole-Of-Life Cost (Net Present Value)	\$382m	\$376m
Non-Cost Criteria adjustment	-\$44m	-
Tender Score	338	376
(Lowest Score Wins)		

- 217. The committee is satisfied that the choice of a competitive alliance process was suitable in the circumstances. The Tugun Bypass project is complex and high-risk project where risks are unpredictable and best managed collectively. The Committee is satisfied that when selecting this procurement option DMR had an understanding of the project risk as well as an understanding and resources required to deliver projects through a project alliance.
- 218. As DMR noted at the committee’s public hearing however, the competitive alliance process is not a process that they would launch into again unless a particular set of circumstances compelled it to.
- 219. In the case of the Tugun Bypass Project there were two main drivers compelling the selection of a competitive alliance. Firstly, DMR had to guarantee that essential tunnel works under the airport runway were completed before 10 November 2006 to allow the GCAL to construct their runway extension within a timetable suitable to them.¹²⁸ Secondly, project approvals had to be gained from federal, state, and local government bodies, with up to nineteen approval agencies being involved.
- 220. Alternative delivery systems could have included AS 2124 or Design, Construct, Maintain (DCM) along RTA document lines, but each of these has drawbacks. In the case of AS 2124, there were no resources to document, no time to document; price escalation would drive a time dependant price up; and there was uncertainty about contract variations. In the case of DCM, DMR was not familiar with the document; there would be resistance from industry to price competitively against the document; and it was an uncertain risk model.¹²⁹
- 221. An alliance form of delivery provided for the earliest possible delivery date and offered the best prospects of managing the risks associated with the project’s delivery. The competitive alliance process was chosen because, in the limited and strict timeframe, it offered a guarantee of competitiveness of TOC and greater certainty in the market that a suitable

127 *ibid* p 42

128 The essential tunnel works were completed three days ahead of the 10 November deadline. The essential tunnel works included construction of dewatering systems, diaphragm walls, the roof slab and a protection slab for the future rail link tunnel.

129 DMR submission p 43

proponent team would be available. If negotiations under a single TOC process had failed it would have been very difficult to negotiate a value-for-money TOC with another proponent.¹³⁰

222. The interim alliances were very compressed with a period of only fourteen weeks allowed to develop a complete design and construct proposal including a fixed TOC.¹³¹ In the circumstances DMR offered both interim alliances reimbursement of their full cost including margin (up to a cap of \$6 million each) to carry out the interim alliance work. Without this incentive it is likely that the necessary interest from and strength of teams nominated would not have been achieved.¹³² The cost for the proposal from the unsuccessful proponent should be recouped through the transfer of intellectual property to the successful proponent and as a result of the competitive environment in which the target cost was developed.

223. To date, project alliances in Queensland have been centred on civil infrastructure projects.¹³³ While an alliance is not suitable for many projects there are potential benefits for its application to a broader range of complex and high-risk projects, especially in the current construction climate.

224. The Victorian Government has recently published the *Project Alliancing Practitioner's Guide*, which aims to ensure that:

- project alliancing is only used as a procurement method where it will provide optimum outcomes for government, and where the decision to use it is based on a rigorous assessment by appropriate people and stakeholders;
- all risks and opportunities resulting from the alliance procurement method itself are identified and managed effectively;
- departments and agencies are aware of the skills and expertise required to successfully deliver alliancing projects;
- projects delivered under alliances provide demonstrable value for money to government; and
- lessons learned from project alliancing are captured in continuously evolving and improving versions of the Guide.

225. The committee recommends that the government through DMR and the Department of Public Works explore the broader application of project alliancing and the development of project alliancing guidelines.

Recommendation 2:

The committee recommends that the government, through DMR and the Department of Public Works, explore the broader application of project alliancing and the development of project alliancing guidelines.

130 DMR submission p 41

131 Ibid. p 43

132 Ibid

133 Projects completed using alliances in Queensland have included: the Norman River Bridge (1999), Pacific Motorway Package 4 (2000), Awoonga Dam Raising (2001), Port of Brisbane Motorway (2001), Inner Northern Busway section 3 (2002); Brisbane ports Corporation Future Port Expansion (2002); Brisbane Water Enviro Alliance (2002); North Queensland Gas Pipeline (2003); Wivenhoe Dam Spillway Upgrade (2003); Burnett River Dam (2003); Cultural Centre Busway Centre (2004); Inner Northern Busway section 1 (2005); Boggo Road Bus Corridor (2005); Tugun Bypass (2005); and the Normanby Cycle Link (2005).

Conclusion 6:

The procurement method for the work is suitable.

h) The balance of public and private sector involvement in the work

226. Projects such as the Tugun Bypass project have the potential to generate large benefits to the local economy in terms of increased employment, value adding by the direct and indirect impacts of employment, increased government tax revenues and reduced government welfare payments.
227. The private sector is undertaking planning, design and construction work worth \$464.776 million; this equates to 85.6 percent of the total expenditure on the project. The Queensland Government is responsible for the balance \$78.226 million.¹³⁴ Work undertaken by the government includes the majority of the project funding, property acquisition (including purchase of compensatory habitat) and management administration of the various service agreements and contracts through both the planning and delivery stages of the project. In addition, a small number of DMR's resources have been incorporated into the delivery of the project alliance.¹³⁵
228. The determination of whether to use private sector versus public sector providers is generally based on the capacity of the provider to meet the project brief and operate within budget constraints. The committee is satisfied with the balance of public and private sector involvement in the work. The various roles and responsibilities for the project have been allocated to the parties in the best position to undertake them. DMR does not have either the capacity or the necessary levels of technical expertise to deliver the project with its own resources.¹³⁶

Conclusion 7:

The committee is satisfied with the balance of public and private sector involvement in the work and that the various roles and responsibilities for the project have been allocated to the parties in the best position to undertake them.

134 DMR correspondence, 10 July 2007

135 DMR submission p 44

136 ibid

i) The performance of the constructing authority, the consultants and contractors for the work

229. The Department advised the committee that it is satisfied with the work of each of the consultants and contractors to date.¹³⁷ The work is being completed according to specifications, is on-time, under budget and contractual obligations are being met.
230. **Specifications** - the work is being completed according to specifications. An independent verifier (Hyder Consulting) was appointed in accordance with the Interstate Project Agreement (IPA). The appointment is effected by way of a three way deed between the RTA, DMR and Hyder. The independent verifier has a dual role: To certify that the design meets the SWTC; and To certify that construction is carried out in accordance with the certified design.¹³⁸
231. The design certification process is carried out via a continuous review of the various design packages against the SWTC requirements. There are fortnightly design meetings and fortnightly project verifier meetings. There are more than 30 people on the peer review list for project design feedback.¹³⁹
232. The project verifier's approval is required before each design package is released for construction. In addition, RTA officers are continually involved in providing comment on each design package prior to approval by the independent verifier. The construction certification process is carried out by surveillance of all construction activities on site, through a group of inspectors.¹⁴⁰ All construction to date has been accepted as in accordance with the design.¹⁴¹
233. **Time** - A stretch program to allow significantly earlier project completion was developed by the Alliance.¹⁴² DMR advised that at the end of August, the Alliance was at least six months ahead of the November 2008 deadline.¹⁴³
234. **Budget** - The project budget includes a \$29 million risk and contingency reserve. (The Alliance is expected to meet the TOC).
235. **Contractual obligations** - The Project Control Group (PCG) administers the Interstate Project Agreement (IPA) and all of its contractual obligations to date have been met. The Alliance is governed by the Alliance Leadership Team (ALT), which includes senior DMR customer and delivery unit representatives.¹⁴⁴ DMR have advised that all work is being completed in accordance with contractual obligations.¹⁴⁵

Conclusion 8:

The work is being completed according to specifications, is on-time, under the current budget and contractual obligations are being met.

137 DMR submission p 45

138 Ibid

139 Ibid

140 Ibid

141 DMR correspondence, 1 October 2007

142 DMR submission p 45

143 DMR correspondence, 1 October 2007

144 DMR submission p 45

145 Main Roads correspondence, 1 October 2007


GLOSSARY OF TERMS

Alliance	Term for the consortium delivering the bypass project. The Alliance comprises Abigroup Contractors, SMEC Pty Ltd and DMR.
Alliance Leadership Team (ALT)	A team comprising officers from DMR, RTA and consultants Parsons Brinckerhoff formed to provide a management structure for the approvals and preliminary design phase.
Approval agencies	Collective term for the environmental and planning agencies from the three jurisdictions with a legislative interest in the bypass proposal. Representatives from these agencies met several times to plan, oversee and review the environmental and planning approvals process.
'A' route options	Collective term for the bypass alignment options which involved an upgrade of the existing Gold Coast Highway at Tugun.
'B' route option	Collective term for the bypass alignment options to the east of the Gold Coast Airport.
'C' route options	Collective term for the bypass alignment options to the west of the Gold Coast Airport.
Construction Environmental Management Plan (CEMP)	As one of the key approval conditions, a CEMP was required to be prepared by DMR to the satisfaction of the RTA and the relevant approval agencies prior to the start of any construction work. It includes a number of management sub plans.
Cultural Heritage Management Plans (CHMPs)	These were prepared for the project in accordance with NSW Department of Environment and Conservation community consultation guidelines and the Queensland <i>Aboriginal Cultural Heritage Act 2003</i> .
Department of Environment and Heritage (DEH)	The Commonwealth agency which administers the <i>Environmental Protection and Biodiversity Conservation (EPBC) Act 1999</i> .
Department of Planning (DoP)	The NSW agency which administers the <i>Environmental Planning and Assessment Act 1979</i> .
Department of Transport and Regional Services (DoTaRS)	The Commonwealth agency which administers the <i>Federal Airports Act 1996</i> .
Environmental Impact Assessment (EIA)	The term used to describe both the process and the suite of environmental and other planning documents which were released for public consultation between 13 December 2004 and 15 March 2005.
Environmental Impact Study (EIS)	The core of the EIA documents, it examines the need for the proposal, and assesses alternatives and potential impacts. The assessment is supported by 16 technical papers.
Gold Coast Airport Limited (GCAL)	The company which controls the operations of the Airport and lease the land from the Federal government. NB. GCAL's title was changed to Gold Coast Airport Propriety Limited (GCAPL) in 2006.
Heads of Agreement	In March 2000, the Queensland and NSW Governments and the Gold Coast Airport Limited (GCAL) were joint signatories to an agreement to fully investigate the C4 option, secure the necessary government planning approvals and complete the preliminary design phase to enable a future road and rail bypass.
Independent Verifier	Hyder Consulting was appointed as the project's independent verifier in accordance with the Interstate Project Agreement (IPA). The independent verifier's dual role is to certify that the design meets the Scope of Works and Technical Criteria (SWTC) and to certify that construction is carried out in accordance with the

	certified design.
Interstate Project Agreement (IPA)	The IPA details DMR' obligation to the NSW RTA to design, construct and maintain the section south of the state border for 10 years.
Major Development Plan (MDP)	The planning document prepared by GCAL and lodged with DoTaRS concerning the section of the route on GCAL land. The MDP was part of the suite of documents released for public consultation as part of the EIA process.
NSW Roads and Traffic Authority (RTA)	The proponent for the section of the bypass on NSW land, including the portion on the Gold Coast Airport lease.
Obstacle Limitation Surface (OLS)	The OLS defines the required level of vertical safety clearance for Airport operations. No structure is permitted to intrude above this surface.
PacificLink	The consortia comprising Abigroup Contactors and SMEC chosen to partner DMR in delivering the bypass project.
Parsons Brinckerhoff	The engineering and consulting firm who undertook the detailed work for the bypass EIS.
Request for Proposals (RFP)	The competitive tendering process by which expressions of interest were sought from consortia seeking to partner DMR in delivering the bypass project.
Submissions Report / Supplement to draft Environmental Impact Statement	A document prepared by the NSW RTA (with MR input) which responded to the almost 600 issues raised in the 88 formal submissions on the EIA, detailed the findings of additional environmental and geotechnical studies and outlined the statement of commitments. The report was considered by the approval agencies alongside the EIA documents.
Roads and Traffic Authority (RTA)	The NSW roads agency which is co-proponent for the Bypass project.
Scope of Works and Technical Criteria (SWTC)	The suite of documents released as part of the Request for Proposals (RFP) process and which set out the design specifications for the project.
Species Impact Statement (SIS)	A detailed, two volume study of the bypass' potential impacts on flora and fauna in the study area. The SIS was part of the suite of documents released during the Environmental Impact Assessment.
Species Impact Statement (SIS) Addendum	An addendum to the SIS necessitated by changes to NSW planning legislation. The Addendum was released on 15 February 2005 and was displayed concurrently with the other EIA documents for one month in accordance with the NSW legislation.
Steering Committee	A team formed for the planning and design phase which comprised senior representatives from DMR, the NSW RTA, DoTaRS and the Gold Coast Airport (when required). It convened on an as-needed basis to facilitate progression of the project's critical activities.
Stewart Road Interchange	An existing interchange at the northern end of the bypass which removed the last traffic signals between Brisbane and Tugun. Built to accommodate either the B or C route options, it was opened to traffic in December 2004.

Appendix 1 – Advertisement calling for submissions

Advertisement placed in *The Courier-Mail* and *The Gold Coast Bulletin*
on Saturday, 24 February 2007



Public Works Committee Call for Submissions

INQUIRIES:

- **THE TUGUN BYPASS PROJECT**
- **SUNCORP STADIUM PROJECT**

The Public Works Committee, an all-party committee of the Queensland Parliament, endeavours to ensure that Queenslanders receive value from the government's capital works program. To this end the committee routinely conducts inquiries into a range of projects throughout the state at different stages of construction, of various costs and in all portfolio areas.

The committee has determined to review the Tugun Bypass project and the Suncorp Stadium project.

The terms of reference for both inquiries is to examine and report to the parliament on:

- the purpose of the work
- the suitability of the work for its purpose
- the necessity for, and the advisability of, the work
- value for money achieved, or likely to be achieved, by the work
- the cost and recurrent costs of the work
- the public value of the work, including the impact of the work on the community, economy and environment
- procurement methods for the work
- the balance of public and private sector involvement in the work
- the performance of the constructing authority and the consultants and contractors for the work.

The committee invites written submissions from interested persons and organisations. It has published ***Inquiry Information Papers*** which give details on the inquiries, the projects, the committee and how to make submissions. To get copies of the papers visit our Internet site at <http://www.parliament.qld.gov.au/committees/> or phone the committee secretariat on 07 3406 7230.

Please send your submissions by **Friday, 30 March 2007** to:

***The Research Director
Public Works Committee
Parliament House, George Street
Brisbane Qld 4000***

Barbara Stone MP, Chair

Appendix 2 – Witnesses

Public hearing held on Friday, 20 April 2007 at the Tugun Surf Lifesaving Club

Mr Les Ford
Deputy Director General,
Department of Main Roads

Mr Derek Skinner
General Manager
Major Projects Office
Department of Main Roads

Mr Trevor Los
Executive Director (Project Support Services)
Major Projects Office
Department of Main Roads

Mr Phil Clutterbuck
Project Director
Major Projects Office
Department of Main Roads

Mr Neil Wright
Project Manager
Major Projects Office
Department of Main Roads

Mr Darren Brighton
Environmental Officer
Major Projects Office
Department of Main Roads

Mr Miles Vass
District Director (South Coast Hinterland)
Main Roads
Department of Main Roads

Appendix 3 – Community Consultation

1. Community engagement activities undertaken prior to the completion of the EIS included:
 - Surveys of community and business attitudes to the bypass (January and February 2001);
 - Meetings and briefings with residents and property owners, community groups, indigenous representatives, government agencies and elected representatives;
 - The establishment of a Community Focus Group to represent community and interest groups (six meetings from September 2000 – December 2002);
 - The establishment of a project webpage and a toll free inquiry hotline;
 - Information Sheets to update the community about the route, maps, process and timetable (5 issues from August 2000 – November 2002); and
 - Staffed displays, e.g. Public Display of EIA for the northern part of the bypass (November – December 2002).¹⁴⁶
2. The project's scale and sensitivity meant that a large number of stakeholders actively participated in the consultation process on both sides of the border.¹⁴⁷
3. Feedback from these activities was incorporated into the project's planning and design processes, including the refinement of the alignment and the identification of mitigation strategies. Chapter 3, Volume 1 and Technical Paper 3 of the Environmental Impact Statement (EIS) both contain a detailed description of the community consultation process and issues raised by various stakeholders during this period.¹⁴⁸
4. The project's Engagement Strategy was reviewed and updated following the May 2004 agreement to progress the C4 route. This included reviewing engagement themes and objectives, updating the list of key stakeholders, proposing new engagement activities, identifying forthcoming project milestones and adding events to the project calendar.¹⁴⁹
5. DMR's policies, principles, standards and guidelines for public consultation and community engagement were also incorporated.¹⁵⁰
6. Key communication activities undertaken during the EIS period included:
 - Preparation and distribution of information sheets, fact sheets, posters and other public material relating to the EIS consultation process;
 - Organising key stakeholder briefings, presentations and public displays;
 - The project team held a number of stakeholder briefings, meetings and information sessions with various stakeholders, including parliamentary and Council representatives, private land owners, environmental and indigenous representatives, community and business associations, construction and transport groups;
 - The EIA documents were placed on static display at 20 Queensland and interstate locations, including transport agency offices, Councils and local libraries. The venues were chosen by DMR in consultation with the RTA and were selected based on their proximity to stakeholders;

146 DMR submission p 30

147 DMR submission p 30

148 DMR submission p 30

149 DMR submission p 30

150 DMR submission p 30

- In addition to the static displays, eight staffed public displays were held at local shopping centres, libraries and civic centres during February 2005. The venues were selected based on their proximity to stakeholders, experiences from previous displays and consultation with elected representatives. A spread of venues and days were chosen to enhance stakeholder access;
 - Preparation of advertisement in local, state, national and indigenous newspapers;
 - These advertised the EIS public consultation process; details of the staffed and static displays; sought expressions of interest from groups wishing to be involved in the development of a Cultural Heritage Management Plan (Qld) / Cultural Heritage Assessment Report (NSW); and advised the lodgement and display of the final project approval documents;
 - Receiving, documenting and distributing copies of the EIS submissions to the approval agencies; and
 - Maintenance of the project's toll free enquiry line and project webpage;¹⁵¹
7. A comprehensive Community Engagement Learnings Report reviewed all engagement activities undertaken during the planning and environmental approvals period. As well as assessing whether the objectives outlined in the project's Engagement Strategy had been met, the Report assessed the Strategy's outcomes against DMR's community engagement standards and concluded the Strategy had met departmental requirements;¹⁵²
8. A copy of the Learnings Report was provided to the two project consortia selected for the Interim Alliance phase, to assist them in their preparation of the Community Involvement Obligations section of the project tender documents.¹⁵³

Current community engagement

9. A Community Involvement Plan (CIP) outlines the approach to manage and coordinate community involvement and consultation in accordance with both DMR's and the RTAs community engagement standards, principles and guidelines.¹⁵⁴
10. The CIP:
- demonstrates how the community involvement requirements of the project deed will be delivered;
 - describes the overall approach that will be taken when dealing with the community and other stakeholders groups;
 - outlines the methods that will be used to inform the community about the project and upcoming works; and
 - identifies the timing of communication to the community.¹⁵⁵
11. Community engagement objectives include:
- Information: scope of works, timing of works, construction impacts and mitigation measure, project benefits;

151 DMR submission p 30-31

152 DMR submission p 31

153 DMR submission p 31

154 DMR submission p 31

155 DMR submission p 31

- Consultation: wider community engagement on negotiables, engagement of special interest groups on environment, access issues; and
- Active Participation: Affected property owners on access, noise treatments, traditional landowners, environmental groups on environmental issues, legacy and community events.¹⁵⁶

Community engagement mechanisms

12. The following table outlines the various community engagement mechanisms that have been implemented to ensure that the local community is kept informed of the progress of the bypass and notified of any work that may affect them.

Mechanism	Description	Results
1800 number	A 1800 number is maintained by the community relations team to handle enquiries and complaints.	All calls are handled directly by the team including urgent emergency after hours enquiries.
Complaint handling	Time lines have been implemented to respond to all calls within 24 hours. Complaints received during out of hours works are to be responded to within two hours.	The community relations team works closely with the construction and environment teams to resolve issues raised by local residents i.e. altering truck routes, additional dust and noise monitoring.
Database	A database records all enquiries and complaints. Call response time is recorded. Outcome of call and follow up is also recorded.	Over 330 records have been created since April 2006. The database records show that few complaints are being received (13.5 percent of total enquiries) and that issues are handled within 24 hours.
Letters to affected residents	Letters are sent to residents advising of construction activities that may affect them, letters have included details of after hours work and truck movements.	Many different notifications have been sent to residents since April 2006.
Door knocks	Door knocking has occurred in the areas immediately affected by the construction of the bypass.	Rose Street, Moolau Ave, Boyd Street, Coolangatta Road (from Kiewa Ave to Boyd St), Monash Street, Morshead Street, Tugun Street, Irene Street, Molly's Place, Chippendale Cres and Neeson Place.
Public Information	A community information centre, displays in shopping centres, newsletters and fact sheets have been prepared to keep the community informed of progress.	The team liaised with over 1,000 community members at local shopping centres during October and November 2006. Approx 25 people per month visit the community information centre. Displays will be held again in April and May 2007.
Audit process	A six monthly audit process has been implemented to gauge whether the local community is pleased with the information provided, the response	Audit performed in September 2006. The independent audit assessed: Enquiry/complaint recording and

156 DMR submission p 31-32

157 Note the timing of the report reflects the statement about the next audit in April 2007, which was made in March 2007 (DMR submission p 31-32).

Mechanism	Description	Results
	time and the complaint resolution process.	resolution. Community engagement. Team awareness and commitment. Next audit April 2007. ¹⁵⁷ This will include a wider sample of stakeholders which will include Community Liaison Group Members.
Traffic notices	Regular notification is provided in local newspapers advising of changes on local roads.	Advertisements appear in four local papers.
Community Liaison Groups (CLGs)	CLGs aim to facilitate involvement in the project by the community, community feedback, increase understanding about the project and enable a more effective response to arising issues and concerns from the project team.	Two CLGs have been formed. These groups meet monthly and consist of local residents, stakeholders and businesses. Meeting minutes are posted on the project webpage.

13. The community engagement process has also resulted in several 'wins' for the local community.
- For example, agreement has been reached with the GCCC for it and the project Alliance to jointly fund the construction of a walking track from the Tugun Conservation Park at the northern end of the project to Hidden Valley, and a combined walking track / bikeway under the Hidden Valley bridges. This will allow a continuous path way from the nature areas of Currumbin to the border highlands, as well as provide bicycle access between the residential areas east and west of the bypass. The basis for this initiative came from a public submission made during the bypass' EIA phase.
 - Similarly, feedback about vehicle safety and noise received from residents in Rose Street West Tweed resulted in changes to the access routes for heavy vehicles entering the bypass construction site from the Kennedy Drive service road.¹⁵⁸
14. Consultation is continuing well with body corporates, owners and residents of units in Clancy Court in relation to noise amelioration and architectural treatments.¹⁵⁹
15. The vast majority of contact which the project team has with the community and stakeholders is positive.¹⁶⁰

158 DMR submission p 35-36

159 DMR submission p 36

160 DMR submission p 36

Appendix 4 – Ministerial Responses –s.107 of the *Parliament of Queensland Act*

107 Ministerial response to committee report

- (1) This section applies if–
 - (a) a report of a committee, other than the Scrutiny of Legislation Committee, recommends the Government or a Minister should take particular action, or not take particular action, about an issue; or
 - (b) a report of the Members' Ethics and Parliamentary Privileges Committee recommends a motion be moved in the Assembly to implement a recommendation of the committee.
- (2) The following Minister must provide the Assembly with a response–
 - (a) for a report mentioned in subsection (1)(a)–the Minister who is responsible for the issue that is the subject of the report;
 - (b) for a report mentioned in subsection (1)(b)–the Premier or a Minister nominated by the Premier.
- (3) The response must set out–
 - (a) any recommendations to be adopted, and the way and time within which they will be carried out; and
 - (b) any recommendations not to be adopted and the reasons for not adopting them.
- (4) The Minister must table the response within 3 months after the report is tabled.
- (5) If a Minister can not comply with the subsection (4), the Minister must–
 - (a) within 3 months after the report is tabled, table an interim response and the Minister's reasons for not complying within 3 months; and
 - (b) within 6 months after the report is tabled, table the response.
- (6) If the Assembly is not sitting, the Minister must give the response, or interim response and reasons, to the Clerk.
- (7) The response, or interim response and reasons, is taken to have been tabled on the day they are received by the Clerk.
- (8) The receipt of the response, or interim response and reasons, by the Clerk, and the day of the receipt, must be recorded in the Assembly's Votes and Proceedings for the next sitting day after the day of receipt.
- (9) The response, or interim response and reasons, is a response, or interim response and reasons, tabled in the Assembly.
- (10) Subsection (1) does not prevent a Minister providing a response to a recommendation in a report of the Scrutiny of Legislation Committee if it is practicable for the Minister to provide the response having regard to the nature of the recommendation and the time when the report is made.

Example–

If the committee recommends that a Bill be amended because, in the committee's opinion, it does not have sufficient regard to fundamental legislative principles and the Bill has not been passed by the Assembly, it may be practicable for the Minister to provide a response.
- (11) Subsection (6) does not limit the Assembly's power by resolution or order to provide for the tabling of a response, or interim response and reasons, when the Assembly is not sitting.
- (12) This section does not apply to an annual report of a committee.

Appendix 5 – Reports of the Public Works Committee

No	Report	Date Tabled
1	Annual Report for the Period Ending 30 June 1989	6 July 1989
2	Inquiry into the Proposed Construction by the Brisbane and Area Water Board of a Dam on the Albert River at Wolffdene (September 1989)	28 September 1989
	Report for the Period 1 July to 19 October 1989	19 October 1989
3	No Public Works Committee Report No. 3 was issued	
4	Annual Report for the Period 6 March to 30 June 1990	23 August 1990
5	Bundaberg Hospital Redevelopment - Stage Two (October 1990)	24 October 1990
6	Aboriginal and Torres Strait Islander Housing - The Future (May 1991)	28 May 1991
7	Annual Report for the Period 1 July 1990 to 30 June 1991	18 July 1991
8	Building Another Mental Institution or Housing a New Mental Health Service? - A Report on Community Debate Concerning Construction of the New Kirwan Psychiatric Rehabilitation Unit (October 1991)	24 October 1991
9	Consultation and Planning for Schools and Colleges between State and Local Authorities (November 1991)	5 December 1991
10	The Proposal to Build a 33-Level Office Block at 111 George Street (November 1991)	5 December 1991
	Annual Report for Year 1991-1992	25 November 1992
11	Kirwan Psychiatric Rehabilitation Centre	2 March 1993
12	The Proposed Upgrade of the Townsville Correctional Centre	3 March 1993
13	Public Housing in Toowoomba	19 March 1993
14	The Development of the Sciencentre - the Old Government Printery	13 May 1993
15	Queensland Centre for Advanced Technologies	13 May 1993
16	Cairns Courthouse, Police Headquarters and Watchhouse Complex	20 May 1993
17	Replacement Schools for Herberton and Mission Beach	15 July 1993
	Annual Report for Year 1992-1993	1 September 1993
18	Brisbane Convention and Exhibition Centre	13 October 1993
19	The Construction of New Government Office Accommodation in Rockhampton	18 November 1993
20	Health Facilities in Far North Queensland - Preliminary Report	3 December 1993
21	Health Facilities in Far North Queensland - Final Report	25 February 1994
22	Cairns Convention Centre	28 April 1994
23	Landsborough Highway, Jessamine Creek, and University Road, Townsville	28 April 1994
	Annual Report for Year 1993-94	2 August 1994
24	The Development of Mountain Creek High School	31 August 1994
25	Nambour Hospital Block 6 and Associated Matters	9 September 1994
26	Queensland Cultural Centre - Stage Five	28 October 1994
27	Technology Facilities Toowoomba College of Technical and Further Education	23 February 1995
28	Development of the Teemurra Dam and Associated Irrigation Areas	24 March 1995
29	Development of the Mackay Small Craft Harbour	31 March 1995
30	Development of the Hervey Bay Courthouse	6 June 1995
31	Development of the Bundaberg Police Headquarters and Watchhouse	6 June 1995
	Annual Report 1994-95	19 October 1995
32	Redevelopment of the Cairns Base Hospital	23 July 1996
33	Expansion of the Lotus Glen Correctional Centre Farm	23 July 1996

No	Report	Date Tabled
	Annual Report 1995-96	8 October 1996
34	Construction of the new Woodford Correctional Centre	29 October 1996
35	Tilt Train Project	26 March 1997
36	The Expansion of the Dalrymple Bay Coal Terminal	8 May 1997
37	Redevelopment of the Princess Alexandra Hospital — interim report	27 May 1997
38	The provision of infrastructure in Cape York	27 June 1997
39	The South East Transit Project	22 July 1997
40	The Mareeba/Dimbulah Irrigation Area Project	19 August 1997
41	The Development of 75 William Street	19 August 1997
	Annual Report 1996-97	24 September 1997
42	A re-evaluation of the South East Transit Project	9 October 1997
43	The construction of a joint Emergency Services head office facility at Kedron Park	28 October 1997
44	The construction of a standard gauge rail line to Fisherman Islands	10 December 1997
45	The operations of Q-Build	17 March 1998
46	The construction of a replacement watchhouse and arrest courts in Brisbane	17 March 1998
47	Redevelopment of the Princess Alexandra Hospital — 2nd interim report	23 April 1998
48	Review of the construction of the Queensland Cultural Centre Stage V	16 September 1998
	Annual Report 1997-98	24 September 1998
49	The upgrading of the Townsville Correctional Centre	22 October 1998
50	Construction of a hot fire training facility by the Queensland Fire and Rescue Authority	22 October 1998
51	Heritage Train project (Great South Pacific Express)	12 November 1998
52	Townsville Hospital redevelopment	12 November 1998
53	Construction of 30 Citytrain carriages	17 December 1998
54	Construction of a new school and secondary department at Tin Can Bay	17 December 1998
55	Redevelopment of the Maryborough Hospital	17 December 1998
56	Construction of public housing for seniors in the Brisbane statistical division	29 April 1999
57	Construction of the Ron Camm Bridge and port infrastructure development by the Mackay Port Authority	8 June 1999
58	Construction of the Tarong-Blackwall power transmission line	8 June 1999
59	Robina and Noosa Hospital Projects	27 August 1999
60	St George Irrigation Area Project	27 August 1999
61	Public Sector Backflow Prevention Programs	30 November 1999
62	The Construction of Additional Female and Male Correctional Centres in South East Queensland	3 December 1999
63	Capital Maintenance Program for the Queensland Cultural Centre	3 December 1999
64	Maintenance of the State-controlled Road Network	23 March 2000
65	Building Refurbishment at the Gold Coast Institute of TAFE (Southport Campus)	30 May 2000
66	Norman River Bridge Project	30 May 2000
67	Cairns Seaport Development	20 June 2000
68	Bentley Park College	4 July 2000
69	Tweed River Sand Bypassing Project	25 July 2000
	Annual Report 1999/2000	5 September 2000

No	Report	Date Tabled
70	3 rd Interim Report on the Princess Alexandra Hospital Redevelopment	5 September 2000
71	QIMR – Comprehensive Cancer Research Centre	18 October 2000
72	Queensland Police Service – upgrade of the district headquarters and replacement of regional headquarters Rockhampton	14 November 2000
73	Rockhampton TAFE College Engineering Technology Facility	7 August 2001
	Annual Report 2000/2001	9 August 2001
74	Queensland Rail Rockhampton Workshops Redevelopment	13 September 2001
75	Cairns Convention Centre – Stage 2	13 December 2001
76	Construction of a New Government Office Building, Cairns	8 March 2002
	Annual Report 2001/2002	1 August 2002
77	The Redevelopment of the Tallebudgera Outdoor Recreation Centre	19 September 2002
78	Water – Engineering Solutions and Environmental Consequences	5 December 2002
79	The Burdekin River Project	1 May 2003
80	Maryborough Correctional Centre	15 May 2003
81	Coolooloa Sunshine Institute of TAFE redevelopment stage 2 (Mooloolaba)	21 August 2003
	Annual Report 2002/2003	11 September 2003
82	Inquiry into the upgrade of the Queensland Police Service district headquarters and watchhouse at Mount Isa	7 October 2003
83	The Brisbane Magistrates Court Project	13 November 2003
84	Construction of a new government office building at 33 Charlotte Street, Brisbane	20 May 2004
85	The Upper Coomera State College (Stage One)	19 August 2004
86	The Great Walks of Queensland Project	29 September 2004
	Annual Report 2003/2004	6 October 2004
87	Queensland Rail Coal Electric Locomotive Upgrade Project (Stage 1)	10 March 2005
88	The Ayr Hospital Redevelopment	9 June 2005
	Annual Report 2004/2005	23 August 2005
89	Redevelopment of the Mabuiag Island Primary Health Care Centre	24 November 2005
90	Redevelopment of the Iama (Yam) Island Primary Health Care Centre	24 November 2005
91	Redevelopment of the Moa Island (Kubin Community) Primary Health Care Centre	24 November 2005
92	Redevelopment of the Erub (Darnley) Island Primary Health Care Centre	1 December 2005
93	Redevelopment of the Warraber (Sue) Island Primary Health Care Centre	1 December 2005
94	Weipa Hospital Precinct	1 December 2005
	Annual Report 2005/2006	2 November 2006
95	Roma Street Fire and Ambulance Station	8 March 2007
96	Redevelopment of the Sir David Longland Correctional Centre	19 April 2007
	Annual Report 2006/2007	17 August 2007

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Information on the committee, copies of committee reports and the terms of reference for current inquiries are available on the committee's Internet site:

<http://www.parliament.qld.gov.au/committees/view/committees/>