8 PRELIMINARY PSC

8.1 INTRODUCTION

8.1.1 Purpose of section

A key element of the Business Case for Northern Link will be the production of a PSC. In accordance with the Queensland Government's VfM Framework, a PSC must be developed as part of the PPP Business Case Development for the purposes of:

- Determining the estimated whole of life cost of delivering the Project; and
- Providing a value for money benchmark against which the Partnership Model and private sector bids are assessed during the Business Case and Procurement Stages (e.g. setting the affordability benchmark to be bid under a PPP model).

However, the VfM Framework also requires that a project's commercial viability and affordability are to be assessed during the Preliminary Assessment Stage. Therefore as part of the Northern Link Preliminary Assessment, a 'Preliminary' PSC has been developed to calculate the estimated NPC of the Project.

This section outlines the approach to the development of the Preliminary PSC, including the:

- Components of the Preliminary PSC;
- Methodology for the Preliminary PSC Model Analysis;
- PSC Assumptions; and
- Analysis of Results.

8.1.2 PSC Scenarios

The Preliminary PSC is based on the Project options. These are described in Section 6 as Option A, which corresponds to the *TransApex Prefeasibility* analysis, and Option B, a direct driven tunnel. These scenarios provide a representation of the range of potential options that will be considered should the Project proceed to the Business Case stage. Further details of these scenarios are discussed in Section 6 and summarised below. For the purposes of the PSC analysis the report focuses on Option A, with Option B run as a sensitivity.

Table 12 Project Scenarios

Project Option	Mainline Tunnel Connection A	Mainline Tunnel Connection B	Additional Connectivity
Option A	Western Freeway near the Toowong roundabout	ICB at Kelvin Grove	Connectivity to Toowong and Kelvin Grove
Option B	Western Freeway near the Toowong roundabout	ICB east of Kelvin Grove Road	None

8.1.3 PSC Components

The main components of the PSC include:

- Preliminary whole of life costs for scenarios: Raw construction costs, operating costs, escalation and toll revenues. Raw costs exclude any allocation of value for risks and contingencies which may affect cash flows.

- Risk Adjustments: The cost of risk is a function of the probability and consequence of occurrence of the risk event. All material risks should be identified, costed and translated into cash flow. In broad terms, there are two classes of risk that impact on the estimated cash flows of an infrastructure project:

  - *Project Risk:* This refers to risks where there is no correlation between the value of the cashflow item and movements in the market (for example, economic conditions). Examples of such risks include construction risk and operating and maintenance risk. The VfM Framework recommends that the value of project risks that are not transferred to the private sector are to be reflected in the project cash flows. The risk adjustments made to the cash flows for the Preliminary PSC are based on the risks identified as part of the Risk Analysis (Section 7);

  - *Market risk or systematic risk:* These risks are due to changes in wider economic factors, which impact the overall investment climate and therefore impact projected cashflows. Examples include demand risk relating to the level of general economic activity and unexpected inflation. Quantifying this risk is relevant for the PSC as some of the systematic risks could be transferred to the private sector under the assessment of the alternative delivery options during the Business Case stage. As the VfM Framework does not recommend an approach for addressing systematic risk or market risk, other guidance material prepared by the Victorian and New South Wales Governments will be adopted.

    In the *Review of Partnerships Victoria Provided Infrastructure - Final Report to the Treasurer, January 2004* and the New South Wales Government's *Technical Paper: Determination of Appropriate Discount Rates for the Evaluation of Private Financing Proposals, February 2007*, it is concluded that systematic risk should be factored into the PSC by way of an adjustment to the discount rate.

8.2 METHODOLOGY

The Preliminary PSC has been constructed generally in accordance with the Queensland Government VfM Framework. The approach for the Northern Link Preliminary PSC is summarised below:

- For the purposes of the Preliminary PSC, the assumptions for Option A have been used to calculate the NPC of the PSC. The NPC of Option B and a range of other scenarios have also been calculated as sensitivities;

- The methodology is consistent with the approach adopted in the *TransApex Prefeasibility Report* and also recent precedent projects such as the NSBT and Airport Link Business Cases;

- The Preliminary PSC is based on the assumption that the Northern Link Project will be delivered under Council's best practise traditional procurement method, with Council retaining the majority of risk, reward and funding responsibility;

- The NPC of the PSC has been presented as at June 2006 to allow for a comparison against the *TransApex Prefeasibility Report*. It should be noted that at the Business Case stage, the PSC will represent the Project cost as at financial close (2012);

- The analysis is based on assumptions provided by the Project Team regarding timing, tolling, costs, risks and the discount rate;

- Council's additional costs of delivering the Project (e.g. land acquisitions, procurement costs, etc.) are presented separately as they would not be included in the scope of the Project presented to the market and so would be excluded from the final PSC developed for the Business Case. However in determining the total Project costs for Council for the purposes of a preliminary affordability analysis these costs need to be considered;

- The raw costs and revenues are modelled on a nominal cash flow basis. The qualitative risk analysis undertaken as part of the VfM Framework assesses the material risks to the Project. At this stage, confidence intervals for Project risk are determined to enable high, medium and low risk adjustments to be made to the raw Project costs, to allow a risk-adjusted assessment to be made (this approach is consistent with the Airport Link Corridor Assessment). These risks will be analysed in further detail, including specific risk identification, quantification and allocation, during the Business Case Stage; and

- The PSC is calculated in NPC terms by discounting the nominal, risk adjusted Project cashflows by the Project discount rate. The discount rate used is the rate used in the *TransApex* analysis. This rate was derived using a market based Weighted Average Cost of Capital (WACC) derived using the Capital Asset Pricing Model (CAPM) concepts (this methodology is consistent with the Business Cases for NSBT and Airport Link). This approach is also consistent with the Victorian and New South Wales guidance material.

This methodology produces the NPC of delivering the Project (assuming Option A) using a traditional delivery approach.

8.3 PSC ASSUMPTIONS

This section summarises the key assumptions that have been incorporated into the PSC and the sources of those assumptions. Full details of the assumptions adopted in the PSC are outlined in the Financial Model Assumptions Book (see Appendix 1).

8.3.1 Assumption responsibilities

The assumptions for the PSC have been provided as follows:

Table 13 Assumption Responsibilities

Assumption	Responsibility
Construction Costs	SKM/CW
Operating and Maintenance Costs	SKM/CW
Cost Escalation Factors	Per Airport Link Business Case
Construction and O&M risk	SKM/CW / EY
Traffic Forecasts	SKM/CW
Toll Assumptions	Brisbane City Council
Discount Rate	Per *TransApex* Prefeasibility

8.3.2 Timing assumptions

The following table summarises the key timing assumptions that have been adopted for the PSC analysis:

Table 14 Timing Assumptions

Item	Assumption	Source
Financial Close Date (analysis start date)	30/06/2012	Per *TransApex* Prefeasibility
Discount Date for 2006 dollar data	30/06/2006	Per *TransApex* Prefeasibility
Discount Date for 2007 dollar data	30/06/2007	Brisbane City Council
Construction Period	45 months	SKM/CW
Operating Period	41.25 years	Brisbane City Council
Concession Period	45 years	Brisbane City Council
End Date	31/12/2050	N/A
Construction Period Cash Flow Analysis	Monthly	SKM/CW
Operating Period Cash Flow Analysis	Quarterly	SKM/CW

8.3.3 Raw construction costs

The raw construction cost assumptions (excluding any adjustments for risk) are outlined below. These items reflect the cost associated with Option A, excluding land and pre-construction costs as these costs are not included in the Preliminary PSC (however have been presented separately to reflect the total Project costs for affordability purposes).

Table 15 Raw Construction Costs

Item	Value at Base Date (Jan 2006)	Source
Construction Costs (including design, tunnelling, surface works, mechanical & electrical works and site & off-site overheads) ($'000)	1,123,648	SKM/CW
Construction Cost Escalation	4.5% to 5.5%	Brisbane City Council (Per Airport Link Business Case)

8.3.4 Raw operating and major maintenance costs

A summary of the raw operating costs and major maintenance cost assumptions associated with Option A are outlined below. The operating and maintenance cost estimates are based on a 41.25 year operating period.

Table 16 Raw operating costs

Item	Value at Base Date (Dec 2004)	Source
Total Operating Costs Years 1-41.25 (i.e. post 3.75 year construction period)	1,025,733	SKM/CW
Total Major Maintenance Costs Years 1-41.25 (i.e. post 3.75 year construction period)	211,589	SKM/CW

The spread of major maintenance expenditure over the 41.25 year operating period is shown in the graph below:

Figure 10 Raw major maintenance costs

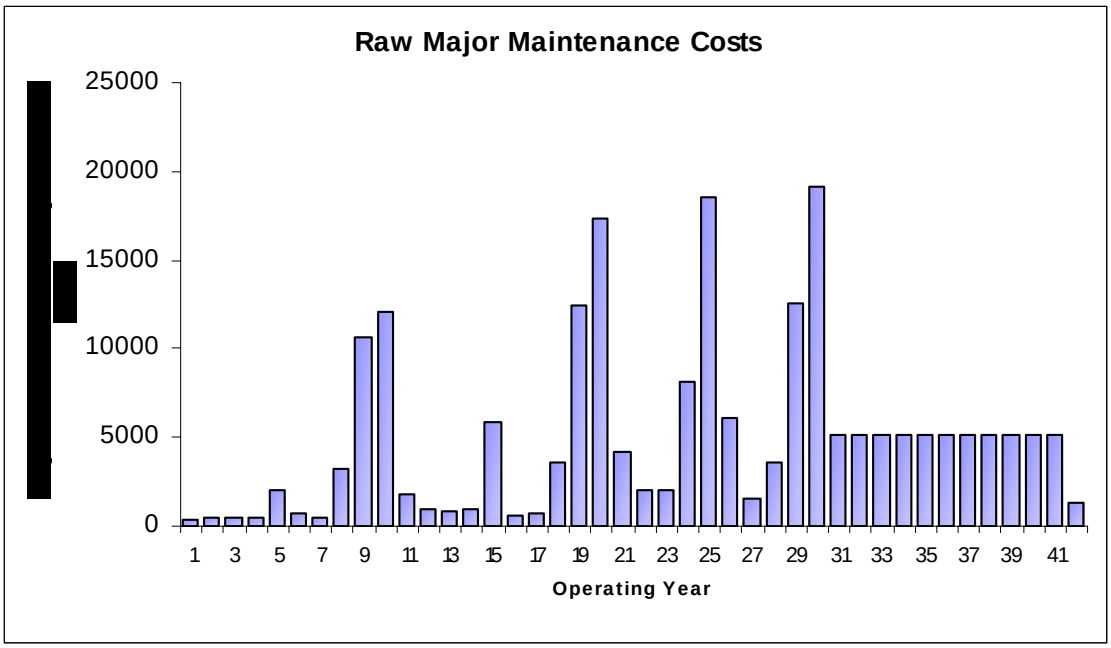


Table 17 O&M Cost Escalation Assumptions

O&M Cost Escalation Assumptions	Assumption	Source
O&M Cost Escalation Rate	2.50%	Per *TransApex Prefeasibility*
O&M Cost Escalation Base Date	01/12/2004	SKM/CW

8.3.5 Tolling and revenue assumptions

A summary of the toll and traffic assumptions is outlined below. These assumptions have been prepared by the SKM/CW to estimate the traffic flows through Northern Link as envisaged in Options A and B.

Table 18 Tolls

Toll Assumptions	Base Date ($ 2002)	$ 2006	$ 2007	Source
Motor Cycle Toll (excl. GST) (modelled free)	1.50	1.69	1.73	Brisbane City Council
Car Toll (excl. GST)	3.00	3.37[21]	3.46[22]	Brisbane City Council
LCV Toll (excl. GST) (modelled as car)	4.50	5.06	5.19	Brisbane City Council
HCV Toll (excl. GST)	7.95	8.94	9.17	Brisbane City Council
Bus Toll (excl. GST) (modelled free)	nil	nil	nil	Brisbane City Council
Motor Bike Toll Multiplier	0.50x	0.50x	0.50x	Brisbane City Council
LCV Toll Multiplier	1.50x	1.50x	1.50x	Brisbane City Council
HCV Toll Multiplier	2.65x	2.65x	2.65x	Brisbane City Council
Toll Level Escalation Base Date	30/06/2006	30/06/2006	30/06/2006	SKM/CW
Toll Escalation Periodicity	Quarterly	Quarterly	Quarterly	SKM/CW
Toll Level Escalation Rate	2.5%	2.5%	2.5%	Per *TransApex* Prefeasibility

The definitions of vehicle classifications references in the tolling assumptions are shown in the table below.

Table 19 Vehicle Definitions

Vehicle Classification	Definition
Motor Cycle	A 2-wheeled Motor Vehicle, even if such a motor vehicle has a trailer, fore car or side car attached.
Car	A Motor Vehicle, other than a Motor Cycle or Commercial vehicle, even if such a Motor Vehicle is towing a trailer or caravan.
Light Commercial Vehicle	A Motor Vehicle that is a 2 axle rigid truck, or load carrying van or utility, having a gross vehicle mass greater than 1.5 tonnes but not exceeding 4.5 tonnes; or such other spatial dimension criteria utilised in the Tolling System which is substantially consistent with the abovementioned axle and mass criteria.
Heavy Commercial Vehicle	A Motor Vehicle that is a rigid truck with 3 or more axles; an articulated truck; a 2 axle rigid truck having a gross vehicle mass greater than 4.5 tonnes; any Motor Vehicle having a gross vehicle mass greater than 30 tonnes; or such other spatial dimension criteria utilised in the Tolling System which is substantially consistent with one or more of the abovementioned criteria.
Bus	A Motor Vehicle having more than 12 seating positions, including that of the driver.

[21] The 2006 car toll of $3.37 is derived from the $3.00 toll as at 2002, escalated at the actual Brisbane CPI from June 2002 to June 2006.

[22] The 2007 car toll of $3.46 is derived from the $3.00 toll as at 2002, escalated at the actual Brisbane CPI from June 2002 to June 2007.

User charges

At this stage of the Project development, user charges (i.e. charges relating to the management of e-tag and casual user accounts) have not been included in the analysis. At a later date, the PSC will have to be updated to reflect these costs, but the impact is unlikely to be material, based on experience on NSBT and Airport Link.

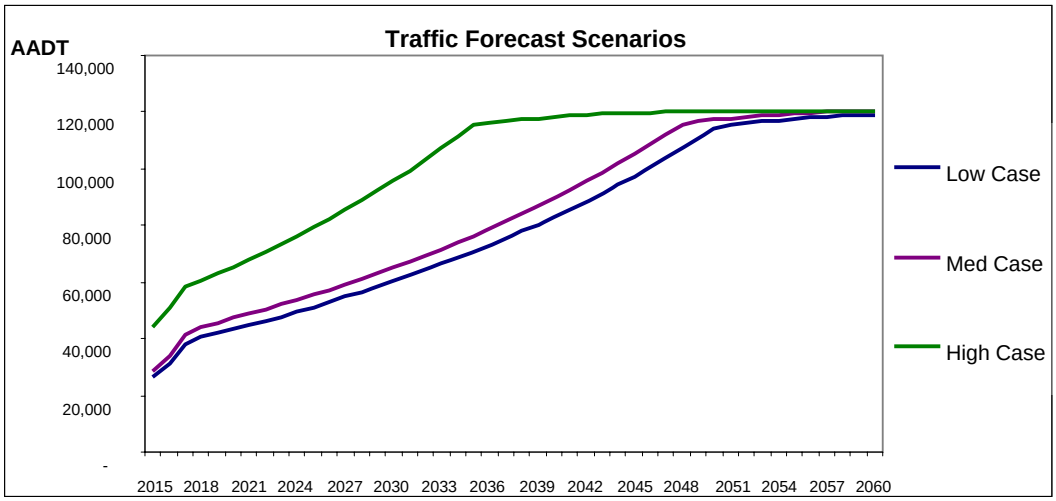
Traffic forecast

Three Preliminary PSC traffic scenarios have been modelled by the SKM/CW for Option A - a Low Case, Medium Case and High Case. These traffic cases have been run using the tolling assumptions in Section 8.3.5 as well as the following assumptions:

- Low Case - ABS Medium demographic assumptions with enhanced mode share;
- Medium Case - ABS Medium demographic assumptions with trend mode share; and
- High Case - ABS High demographic and increased traffic growth assumptions.

Each of these traffic scenarios assumes that T3 lanes will be present on Coronation Drive and Milton Road.

Figure 11 Traffic Forecast Scenarios



Risk adjustments

In order to reflect the fully risk-adjusted cost of delivering the Project using traditional delivery methods in the Preliminary PSC, the cash flows have been adjusted for Project risks.

The risk analysis process is covered in more detail in Chapter 6: Preliminary Risk Analysis. A summary of the risk values that have been added to the raw Preliminary PSC for Option A are outlined below in January 2006 dollars:

Table 20 Summary of Risk Values

Item	Percentile	Base Date	Value at Base Date	Risk Adjustment[23] ($'000 June 2006)	Risk Adjustment[24] ($'000 June 2007)	Source
Construction Costs	10th Percentile	1 Jan 2006	145,000	148,988	157,182	
	50th Percentile	1 Jan 2006	242,000	248,655	262,331	SKM/CW
	90th Percentile	1 Jan 2006	350,000	359,625	379,404	
O&M Costs	10th Percentile	1 Dec 2004	13,000	13,517	13,854	
	50th Percentile	1 Dec 2004	20,000	20,795	21,315	SKM/CW
	90th Percentile	1 Dec 2004	56,000	58,225	59,681	

Economic and financial assumptions

The following are the key economic and financial assumptions that have been applied to the PSC.

Table 21 Key Economic and Financial Assumptions

Item	Units (%)	Source
Long Term Inflation Rate	2.5%	Brisbane City Council
Nominal Discount Rate Used to Calculate NPC of PSC	9.6%[25]	Per *TransApex* Prefeasibility

GST

In accordance with the VfM Framework, GST has been excluded from the Preliminary PSC analysis.

Non-PSC costs

The components included in the Preliminary PSC are limited to those that would be included in the scope of services for the private sector to include in its tender response.

However, there are costs that would be incurred by Council regardless of the delivery model adopted. Consequently, they are excluded from the Preliminary PSC but are included in the assessment to show the total cost of the Project to Council. These are shown for Option A in the following table:

[23] At this stage, the risk adjustment represents both retained and transferred risks. An additional risk allocation process will be undertaken at the Business Case stage.

[24] At this stage, the risk adjustment represents both retained and transferred risks. An additional risk allocation process will be undertaken at the Business Case stage.

[25] The nominal discount rate was developed using a weighted average cost of capital approach.

Table 22 Non-PSC Costs

Non-PSC Cost Assumptions	Assumption	Source
Land Costs ($'000's 2007)	50,000	Brisbane City Council
Land Cost Escalation	2.50%	Brisbane City Council
Land Escalation Base Date	01/04/2007	SKM/CW
Pre-Construction Costs ($'000's 2007)	40,000	SKM/CW
Pre-Construction Cost Escalation	2.50%	SKM/CW
Pre-Construction Escalation Base Date	01/04/2007	SKM/CW
Non-Construction Costs ($'000's 2007)	32,750	SKM/CW
Non-Construction Cost Escalation	2.50%	SKM/CW
Non-Construction Escalation Base Date	01/04/2007	SKM/CW

The key cost inputs for Option A have been summarised in the below table. These inputs have also been shown in 2002 dollar amounts to be comparable with inputs used in the *TransApex Prefeasibility Report*.

Table 23 Summary of Inputs

Input	Base Date	Value at Base Date	$'000 (June 2006)	$'000 (June 2007)
Construction Expenditure	1 January 2006	1,123,648	1,154,548	1,218,048
Construction Risk	1 January 2006	242,000	248,655	262,331
Land Costs	1 April 2007	50,000	49,085	50,313
Pre-Construction Costs	1 April 2007	40,000	39,268	40,250
Non-Construction Costs	1 April 2007	32,750	32,151	32,955
Total			**1,523,707**	**1,603,897**

8.4 ANALYSIS OF RESULTS

8.4.1 Summary of Results

The results of the analysis are summarised in the table below:

Options	Most Likely PSC – T3 Lanes on Milton/Coro (2006 $'000's NPC[26])	Most Likely PSC – No T3 Lanes on Milton/Coro (2006 $'000's NPC[27])
TransApex Prefeasibility	596	N/A
Option A	762	861
Option B	672	756

[26] Discounted at the nominal PSC discount rate of 9.6% as at a base date of 30 June 2006. This makes the analysis consistent with the results of the *TransApex Prefeasibility Report* and allows a like for like comparison.

[27] Discounted at the nominal PSC discount rate of 9.6% as at a base date of 30 June 2006. This makes the analysis consistent with the results of the *TransApex Prefeasibility Report* and allows a like for like comparison.

Options	Most Likely PSC – T3 Lanes on Milton/Coro (2007 $'000's NPC[28])	Most Likely PSC – No T3 Lanes on Milton/Coro (2007 $'000's NPC[29])
TransApex Prefeasibility	653	N/A
Option A	836	944
Option B	736	828

The above analysis shows that based on the technical option selected, the range of the most likely project costs is from $672 million to $861 million. Further details of the cost impacts are included in the following sections.

8.4.2 Option A

The Option A PSC model adopts the assumptions identified in this section. The PSC results have been presented as a range of potential NPC outcomes, reflecting the inherent uncertainty in the expected final costs and traffic forecasts. The table below shows three different cases, namely:

- *Worst Case*. This is based on Option A costs with the ninety percentile risk assumptions and the low case traffic assumptions;
- *Most Likely Case*. This is based on Option A costs with the fifty percentile risk assumptions and the medium case traffic assumptions; and
- *Best Case*. This is based on Option A costs with the ten percentile risk assumptions and the high case traffic assumptions.

Each of the abovementioned traffic scenarios assumes that T3 lanes will be present on Coronation Drive and Milton Road.

The following table contains a breakdown of the range of NPC of PSC results, based on the Best, Most Likely and Worst Case assumptions for both risk and traffic assumptions. In addition, it shows the impact of the non-PSC costs associated with the Project (land, pre-construction costs and non-construction costs) on the total Project costs.

[28] Discounted at the nominal PSC discount rate of 9.6% as at a base date of 30 June 2007.

[29] Discounted at the nominal PSC discount rate of 9.6% as at a base date of 30 June 2007.

Table 24 Breakdown of NPC and PSC Results

PSC 2006 $'000's NPC[30]	Worst Case	Most Likely	Best Case
Toll Revenue	(565,815)	(603,808)	(825,754)
Construction Cost	872,218	872,218	872,218
Operating Costs	192,614	192,614	192,614
Major Maintenance	29,063	29,063	29,063
Net Cost / (Revenue)	**528,079**	**490,086**	**268,140**
Risk Adjustment	279,241	190,549	114,309
Total NPC of PSC	**807,320**	**680,635**	**382,449**
Land Costs	35,539	35,539	35,539
Pre-Construction Costs	26,703	26,703	26,703
Non-Construction Costs	19,495	19,495	19,495
NPC of Total Project	**889,056**	**762,371**	**464,185**

PSC 2007 $'000's NPC[31]	Worst Case	Most Likely	Best Case
Toll Revenue	(620,133)	(661,773)	(905,027)
Construction Cost	955,951	955,951	955,951
Operating Costs	211,105	211,105	211,105
Major Maintenance	31,853	31,853	31,853
Net Cost / (Revenue)	**578,775**	**537,135**	**293,881**
Risk Adjustment	306,048	208,841	125,283
Total NPC of PSC	**884,823**	**745,976**	**419,164**
Land Costs	38,950	38,950	38,950
Pre-Construction Costs	29,266	29,266	29,266
Non-Construction Costs	21,366	21,366	21,366
NPC of Total Project	**974,405**	**835,559**	**508,746**

The NPC of the PSC has been presented above as at June 2006, using a discount rate of 9.6%, to allow for a comparison against the *TransApex Prefeasibility Report* (refer to Section 8.4.4).

These results show that the PSC for Option A ranges from $382 million to $807 million in NPC ($2006) terms. This reflects the estimated cost of traditional delivery of Option A and the benchmark to be used in the value for money assessment process.

The 'NPC of Option A' range of $464 million to $889 million reflects the estimated cost outcomes that under traditional procurement as a result of all Project-related costs, revenues and risks retained by Council. This range would be expected to reduce prior to contractual close as some of the Project risks are mitigated.

[30] Discounted at the nominal PSC discount rate of 9.6% as at a base date of 30 June 2006. This makes the analysis consistent with the results of the *TransApex Prefeasibility Report* and allows a like for like comparison.

[31] Discounted at the nominal PSC discount rate of 9.6% as at a base date of 30 June 2007.

8.4.3 Comparison to TransApex Prefeasibility

Project Option A has been compared to the NPC of the Most Likely PSC presented in the *TransApex Prefeasibility Report*. The results were presented differently in the *TransApex Prefeasibility Report* so the Option A results have been adjusted to allow an 'apples with apples' comparison. The key differences are:

- Construction Costs are presented in the *TransApex Prefeasibility Report* inclusive of construction risk adjustments and the 'Non-PSC Costs (e.g. land)'; and
- Operating Costs are presented in the *TransApex Prefeasibility Report* inclusive of maintenance costs.

To show the respective impacts of the changes in assumptions between *TransApex* and Project Option A, the following reconciliation has been undertaken.

Table 25 Reconciliation

Item	NPC ($'000 2006)	NPC ($'000 2007)	Comments
TransApex Prefeasibility Financial Report			
Toll Revenue	(488,335)	(535,215)	
Construction Cost	964,721	1,057,334	
Operating & Maintenance Costs	119,731	131,225	
NPC of Total TransApex Project	**596,117**	**653,344**	
Reconciliation to Option A NPC			
Toll Revenue	(29,619)	(32,462)	Traffic usage figures have increased due to changes in demographics, Stated Preference study update and remodelling.
Construction Costs, Risk, Land, etc.	177,082	194,082	Construction Cost estimates and cost escalation factors have increased due to increase in tunnelling costs and land cost.
Operating & Maintenance Costs	86,758	95,087	Operating and maintenance cost estimates have increased in real dollar terms.
Concession Term to 45yrs (per NSBT, AL)	(67,967)	(74,492)	Concession term has increased in length from 34 years at *TransApex* to 45 years to ensure consistency with Airport Link and NSBT. This causes further increase in revenue which is partially offset by increases in operating and maintenance costs
NPC of Total Project Option A	**762,371**	**835,559**	

8.4.4 Project Scenario Analysis

As part of the Preliminary PSC Analysis, two Project technical options (Options A and B) were assessed to give a representation of the range of technical option that will be considered should the Project progress to the Business Case stage. Further details of these options can be found in Section 6.

In addition to technical options (A and B), E&C have also requested that two alternative options be run to determine the impact of:

- Varying toll levels (i.e. the impact of a reduced toll of $2 for cars); and
- The tolling period to be set for a period of no greater than 35 years.

The results of the Project options and E&C options analysis (including the E&C options assuming a 45 year concession) are illustrated in the table below.

Table 26 Project Scenario Analysis

PSC NPC ($million 2006) [32]	T3 lanes	No T3 Lanes
TransApex Prefeasibility Report *Direct driven tunnel, connectivity to Toowong and Kelvin Grove*	596	N/A
Option A *Direct driven tunnel, connectivity to Toowong and Kelvin Grove*	762	861
Option B *Direct driven tunnel*	672	756
E&C Motion 1 *2002 $2 toll (incl. GST) over a 35 year operating period*	N/A	1,036
E&C Motion 2 *2002 $3.30 toll (incl. GST) over a 35 year operating period*	N/A	892

PSC NPC ($million 2007) [33]	T3 lanes	No T3 Lanes
TransApex Prefeasibility Report *Direct driven tunnel, connectivity to Toowong and Kelvin Grove*	653	N/A
Option A *Direct driven tunnel, connectivity to Toowong and Kelvin Grove*	836	944
Option B *Direct driven tunnel*	736	828
E&C Motion 1 *2002 $2 toll (incl. GST) over a 35 year operating period*	N/A	1,135
E&C Motion 2 *2002 $3.30 toll (incl. GST) over a 35 year operating period*	N/A	978

[32] Discounted at the nominal PSC discount rate of 9.6% as at a base date of 30 June 2006.

[33] Discounted at the nominal PSC discount rate of 9.6% as at a base date of 30 June 2007.

8.4.5 Sensitivity Analysis

To determine the impact on the NPC of the key assumptions of the Project, a set of high-level sensitivities were run on the Most Likely Option A PSC. The assumptions that were tested in the sensitivity analysis included:

- All inflation indices (including BPI);
- Discount rate;
- Construction costs; and
- BPI in isolation.

The results of these are illustrated in the table below:

Table 27 Sensitivity Analysis

PSC NPC ($million 2006) [34]	NPC (Most Likely Case)	Diff. to Option A
Option A (Most Likely)	762	
All inflation +1% (applied to escalation rates on all cost categories and toll revenue)	748	-14
All inflation -1% (applied to escalation rates on all cost categories and toll revenue)	755	-7
Discount Rate +1%	769	+7
Discount Rate -1%	734	-28
Capital Costs +10%	849	+87
Capital Costs -10%	674	-88
BPI - Sensitivity 1 ^	1,059	+297
BPI - Sensitivity 2^	841	+79

^ BPI Sensitivity assumptions are shown in Table 28 BPI Forecast Assumptions.

PSC NPC ($million 2007) [35]	NPC (Most Likely Case)	Diff. to Option A
Option A (Most Likely)	836	
All inflation +1% (applied to escalation rates on all cost categories and toll revenue)	820	-16
All inflation -1% (applied to escalation rates on all cost categories and toll revenue)	828	-8
Discount Rate +1%	850	+14
Discount Rate -1%	797	-39
Capital Costs +10%	931	+95
Capital Costs -10%	740	-96
BPI - Sensitivity 1 ^	1,162	+326
BPI - Sensitivity 2^	923	+87

^ BPI Sensitivity assumptions are shown in Table 28 BPI Forecast Assumptions.

[34] Discounted at the nominal PSC discount rate of 9.6% as at a base date of 30 June 2006.

[35] Discounted at the nominal PSC discount rate of 9.6% as at a base date of 30 June 2007.

The sensitivity results show a limited sensitivity to inflation and discounts rate movements, however the BPI and capital cost sensitivities show that movements in these factors will have a material impact on the Project costs.

Table 28 BPI Forecast Assumptions

BPI Ranges / Years	Base Case Escalation Assumptions	Escalation Sensitivity 1	Escalation Sensitivity 2
2005 / 06	5.5%	8.0%	7.6%
2006 / 07	5.5%	8.0%	7.6%
2007 / 08	5.5%	8.0%	7.0%
2008 / 09	5.5%	8.0%	6.0%
2009 / 10	5.0%	8.0%	6.0%
2010 / 11	5.0%	8.0%	5.0%
2011 / 12	4.5%	8.0%	5.0%
2012 / 13	4.5%	8.0%	4.5%
2013 / 14	4.5%	8.0%	4.5%
2014 / 15	4.5%	8.0%	4.5%

8.5 Summary of Preliminary PSC Analysis

The key findings of the preliminary PSC analysis are as follows:

- Depending on the technical option selected (i.e. Option A or option B), the range of the most likely project costs is from $672 million to $861 million;
- The range of total Project cost of Option A (i.e. the PSC plus land and procurement costs, etc.) is from $464 million to $889 million, with a Most Likely Case of $762 million (in NPC terms as at 30 June 2006). This includes a PSC range for Option A of $382 million to $807 million, with a Most Likely Case of $681 million (in NPC terms as at 30 June 2006);
- The total capital expenditure of the Option A (including construction expenditure and risk, land costs, pre-construction costs and non construction costs) is $1,484 million (in real dollars as at 1 January 2006);
- The Option A Most Likely Project cost is $166 million higher (in NPC terms as at 30 June 2006) than the value calculated for the *TransApex Prefeasibility Report* due primarily to an increase in capital expenditure and operating and maintenance costs; and
- Option B reduces the NPC of the Most Likely Case by $90 million.

9 PRELIMINARY AFFORDABILITY ANALYSIS

9.1 BACKGROUND

This section outlines the affordability impact of the Northern Link Project for Council. The financial analysis in Section 8 considers the impacts of the Project in NPC terms, however Council must consider the impact the Project funding requirements will have on its annual operations.

This section considers:

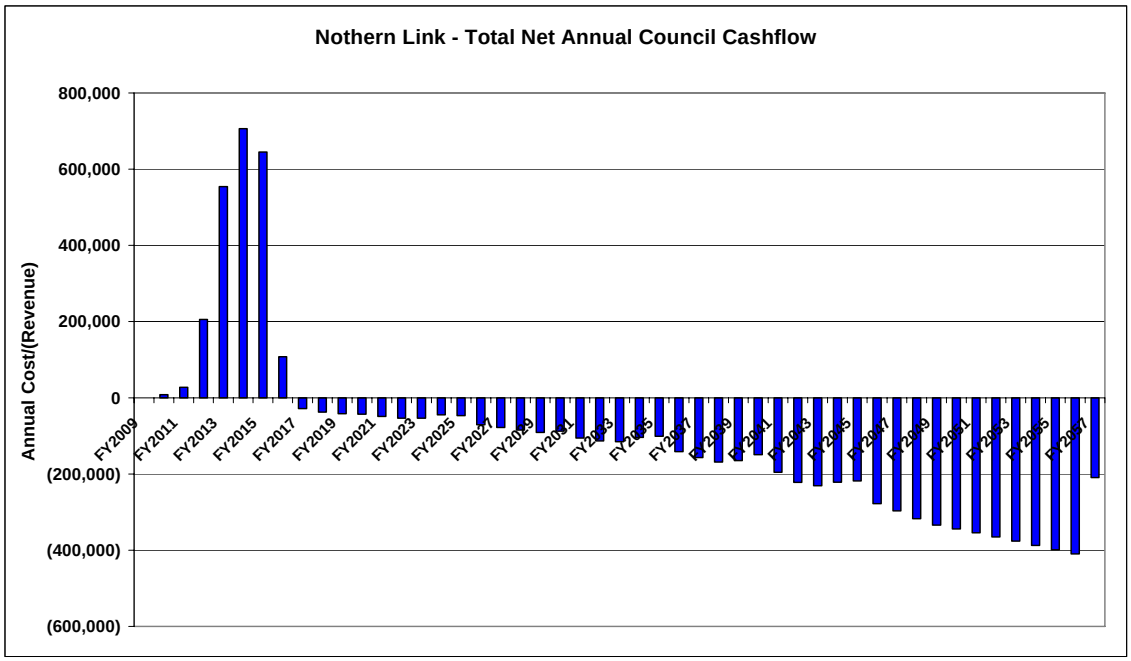
- The affordability impacts for Council assuming Option A; and
- The affordability impact for Council of some alternative delivery models, namely the BOOT model.

9.2 THE AFFORDABILITY IMPACTS FOR COUNCIL ASSUMING TRADITIONAL PROCUREMENT

The analysis undertaken in Section 8 assumes Council procures the Project under a traditional delivery method. As such they are responsible for funding all of the costs associated with the Project as they are incurred. Given the size and scale of the Project Council must consider the impact it will have on its operations as a whole in terms of annual budgets and cash flows.

The graph below shows the net Project cash flows to Council over the life of the Project, assuming Option A:

Figure 12 Total Net Annual Council Cashflow



The graph shows the cash flow impacts of the Project for Council, which can be summarised as:

- Minor funding required for land and pre-construction costs;
- A significant funding requirement over the construction period for construction costs. These costs have been risk adjusted; and
- Net cash in flows for the remainder of the concession term, which represents the net of toll revenue and risk adjusted operating and maintenance costs.

It is important to note that the revenue in flows during the operating period are subject to traffic demand risk so are not guaranteed. In addition, Council must make significant funding available for the Project before the road generates any toll revenue.

Based on this preliminary affordability analysis, it is relevant to explore the potential for alternative funding options to be explored in an effort to reduce the contribution required by Council. This is consistent with the conclusion of the *TransApex Prefeasibility Report*[36] which stated that it was not feasible for the financing of Northern Link to be wholly sourced from the Council due to the scale of the Project and that private sector involvement would be necessary.

The potential impact of private sector involvement on Council affordability is outlined in Section 9.4.

9.3 Impact of External Grants

As part of the *TransApex Prefeasibility Report* the impact of external grants on Council affordability was assessed. This report assumed that a total of $800 million (2002 $) of funding would be received from the State and Federal governments. This was assumed to be split between Airport Link ($250 million) and Northern Link ($550million).

Since the *TransApex Prefeasibility Report,* the following has happened to the TransApex projects:

- Council has funded the North-South Bypass Tunnel by way of a $503m (Nominal 2010$) contribution;
- Council has signed a contract committing it to fund the Hale Street Link construction costs (value to be determined); and
- The State has taken funding responsibility for Airport Link, the value of the contribution will be determined by bids to be received from the private sector.

Any contribution to be granted from external sources (i.e. State or Federal Government) will reduce the Council's funding requirement for the project.

[36] TransApex Prefeasibility Report, *Page 110, Section 13.4.3* - "the likely way forward for Council to deliver the Northern Link is for the private sector to be involved due to the scale of the link".

9.4 IMPACT OF THE POTENTIAL PPP MODELS ON COUNCIL AFFORDABILITY

The preliminary financial analysis in Section 8 has been undertaken assuming Council's traditional procurement. However, it is important to consider the potential impacts on affordability under a PPP Option such as the BOOT model which was used on the NSBT Project. As discussed above this approach is consistent with conclusions of the *TransApex Prefeasibility Report.*

A full Partnership Model analysis will be undertaken as part of the Northern Link Business Case, which will calculate the likely cost to Council of procuring the Project as a PPP. However at this preliminary stage the likely impacts on Council's affordability will include:

- In broad terms, the key cash flow impact on Council in relation to this delivery model would be an up-front payment from or to Council. The preliminary financial analysis outlined in Section 8 indicates that it is likely to involve a payment from Council. Whilst the level of this payment would not be known until the bids are received from the market place, it is likely that Northern Link will require a significant payment;

- Assuming a payment from Council, the profile of this payment could take various forms including a one-off payment at financial close, a set of fixed payments during the construction period, a one-off payment at completion or a combination of these. The overall objective should be to design a profile that balances any affordability constraints Council may have whilst maximising the incentive for the private sector to complete the Project on time. Given the likely size of any payment for Northern Link under this model, Council may consider structuring the payment over a longer period of time (i.e. during the operating period) to ease any affordability issues;

- The total payment from Council is likely to be significantly lower than the up-front borrowing requirement under traditional procurement. This is because the private sector will be responsible for funding the capital costs and recouping its return based on net cash flows produced by the Project; and

- Consideration could also be given to providing the private sector with the opportunity to bid the tolling structure (including toll levels, vehicle categories, toll multipliers, toll indexation, etc.), as this may further reduce the up-front payment. Clearly this will need to be balanced against Council's wider tolling objectives and any political issues relating to amending the tolls. The Council contribution required for the NSBT Project was reduced as a result of bidders proposing alternative tolling structures in relation to toll categories, toll multipliers and toll indexation.

To illustrate how the use of alternative delivery models such as the BOOT model can impact on the affordability requirements for Council on a project such as Northern Link, the outcomes from the NSBT procurement process are summarised in the table below:

Public Sector Comparator (PSC)	Value For Money (VFM)	Affordability
■ The original PSC developed based on the reference project to determine the Net Present Cost (NPC) of delivering the project through traditional procurement process. ■ The PSC was later refined to reflect the variation in specification received from bidders to allow for a like-for-like comparison. ■ The final estimated risk adjusted NPC to Brisbane City Council was **$551 million**	■ VFM objective is achieved ■ Project NPC to Council as at financial close is **$393 million** compares to the PSC cost of **$551 million** (Approx. **reduction of 30%** in cost)	■ Affordability requirement is met. ■ Present value of council contribution as at financial close is **$393 million**, well within the maximum affordable amount of **$450 million** (as per EOI Document)

The NSBT summary above highlights that the affordability outcomes for Council under a BOOT should be considered in the context of the NPC of the PSC rather than the cost of construction as is the case under a traditional procurement approach.

9.5 SUMMARY

Consistent with conclusions reached in the *TransApex Prefeasibility Report*, alternative funding options should be considered, including:

- Considering alternative delivery models, whereby the private sector funds the upfront construction costs (e.g. the BOOT model) consistent with the *TransApex Prefeasibility Report*; and
- The requirement for external funding from the Federal and/or State Government for the Project to proceed.

These options will be considered in greater detail at the Business Case Stage.

10 DELIVERY MODEL ANALYSIS

10.1 OVERVIEW

10.1.1 Purpose of this Section

This section outlines a number of possible project delivery options for Northern Link, including a range of:

- Traditional, publicly funded models; and
- Privately financed or PPP models.

The detailed assessment and recommendation of a preferred procurement model will occur during the Business Case stage.

The Business Case will undertake a value for money assessment between Council's;

- Preferred traditional procurement model (which will form the basis of the PSC); and
- Preferred, alternative or PPP model involving some form of private financing.

10.1.2 Context

The identification of potential delivery options has been undertaken within the following context:

TransApex Prefeasibility

The *TransApex Prefeasibility Report* considered the financial impact of the delivery of the Project under traditional and privately financed models.

The conclusion of the *TransApex Prefeasibility Report* was that it was not feasible for the financing of Northern Link to be wholly sourced from the Council due to the scale of the Project and that private sector involvement would be necessary.

Queensland and Australian Government Guidance Requirements

At the Business Case stage Council will undertake a comprehensive assessment of the potential of a PPP model for the Project to deliver a better value for money outcome for Council in accordance with the principles of the VfM Framework[37].

The Australian Government issued the NGTSM for project development and analysis for projects being considered under the AusLink Program. The guidance requires an assessment of private sector participation in project development and the approach adopted to assess potential delivery models as part of the Preliminary Assessment is consistent with the Federal guidance material.

Stakeholder Objectives

The key stakeholders' likely financial and commercial objectives for Northern Link, based on similar recent projects, are outlined in Section 10.1.3.

[37] *Public Private Partnerships Guidance Material - Framework*, Queensland Department for State Development, August 2002.

10.1.3 Stakeholder Objectives

Council Objectives

Based on experiences gained from NSBT and Airport Link, Council's objectives may include:

- Allocating risks to produce a value for money outcome for ratepayers;
- Sharing financial up-side benefits generated by the Project;
- Delivering the Project in a way that is affordable to Council; and
- Long-term ownership of the asset must revert to the Council.

State Objectives

The Queensland Government VfM Framework explores a number of financial and commercial objectives that the State has for all projects. These include;

- To deliver improved services and better value for money through appropriate risk sharing between public and private sector parties;
- Encouraging private sector innovation;
- Optimising asset utilisation; and
- Ensuring whole-of-life management of public infrastructure.

Federal Objectives

Federal funding support for projects, such as Northern Link, is sourced from the AusLink program. This program involves the cooperation of Federal and State jurisdictions in the improvement in transport infrastructure in key national corridors. The Brisbane Urban Corridor forms one such section with the Northern Link connection crucial to the corridor. Overall objectives may include;

- Increasing infrastructure handling capacity and efficiency;
- Improving safety and security;
- Improve transport productivity on its nationally strategic freight corridors;
- Improve the reliability of travel on interregional corridors; and
- Support long term economic and social growth trends.

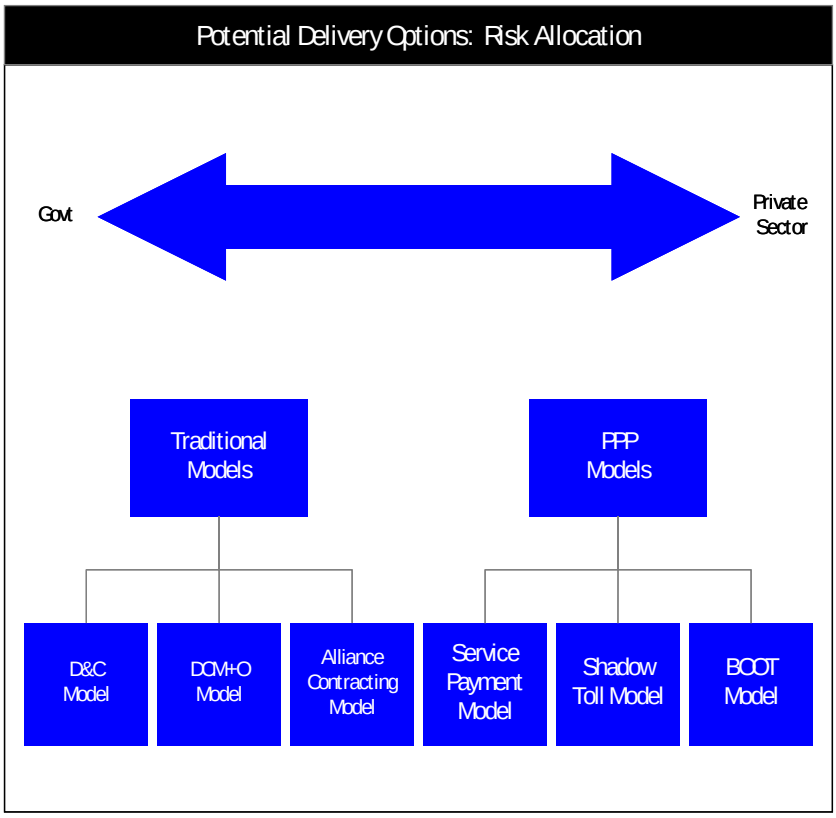
10.2 PROJECT DELIVERY OPTIONS

This section considers a range of potential project delivery options that could be adopted to procure Northern Link. As there is a significant amount of precedent, both in Australia and internationally, for toll road procurement, this section provides examples of recently implemented procurement models. Section 11, provides further information on the extensive precedent in the Australian toll road market and its influence on the selection of project delivery models.

As with other projects of a similar nature, there is a continuum of options involving the allocation of project risks between the public and private sectors, covering design, construction, maintenance, operations, finance and ownership.

Figure 13 summarises each of the potential delivery models discussed in this section and identifies where they sit in terms of risk allocation:

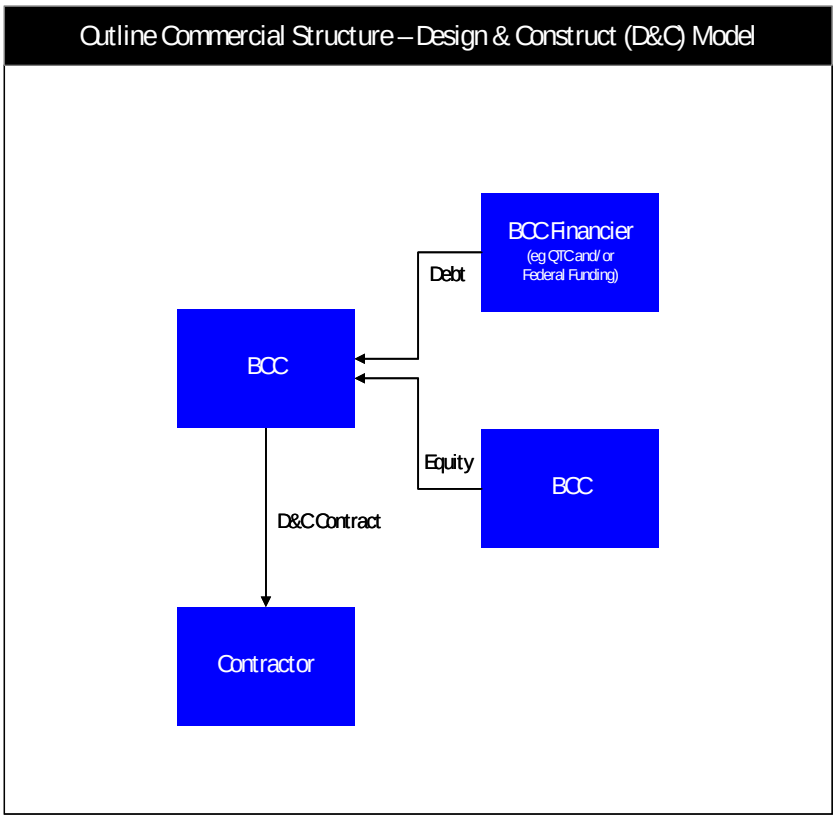
Figure 13 Potential Delivery Options: Risk Allocation



10.2.1 Traditional Models

Design and Construct (D&C) Model

Figure 14 D&C Model



Key Features

Under the D&C delivery model, the procurement process begins with the Council developing a performance and quality requirement specification. A single contract is then established for the preparation of detailed design followed by construction of the project. It should be noted that following construction of the toll road, Council would be responsible for the maintenance and operations of the toll road and tolling system. In the diagram above the boxes to the left show the additional sub-contracts Council would have to manage in order to operate the toll road.

A D&C contract usually involves bidders bidding a fixed time, fixed sum price. This can include a defects liability period (generally up to 2 years) to ensure the performance of the asset and to demonstrate the key operating variables following completion. Council is responsible for all future operating, traffic and maintenance issues.

Generally, D&C contracts are suitable for works where the public sector wishes to avoid more complex contractual interface issues. Other key features include:

- The D&C method is more likely to be driven by the contractor's capacity to accept risks in delivering civil works, rather than the long-term term operation and sustainability of the asset, which can impact on the asset's whole of life costs; and
- The D&C model is best suited to the achievement of minimum capital cost, because the delivery team is focussed on the facility capital price as the major component of the tender sum. However, this downward pressure on capital cost can drive up the operation and maintenance cost of the project. It is therefore suited to projects which have a relatively high capital cost compared to operation and maintenance costs.

Advantages

- Council can develop a performance and quality requirement specification;
- The majority of the design and construction risk is transferred to the private sector;
- Council retains control of the project;
- Council maintains access to toll revenue upside and downside; and
- There is an established contractual structure during the D&C phase.

Disadvantages

- Whilst there is some capacity for innovation the contractor is usually somewhat constrained by the preliminary design under which it must largely comply with;
- Council is responsible for funding capital costs, which are likely to be significant based on initial estimates (refer Section 8) and could create affordability constraints/issues for Council (refer Section 9);
- There is limited opportunity for risk transfer to the private sector;
- Long term performance risk following the defects liability period remains with Council;
- There is no opportunity for whole-of-life cost benefits due to de-linking of the operating and maintenance stage from the Design, Construct and Commissioning stages;
- The de-linking of these phases can also result in additional interface risk due to the number of sub-contracts which need to be managed by Council; and
- There are limited incentives for innovation in design due to lack of revenue risk transfer.

Precedent

Council has moved away from using the D&C model on recent projects due to the lack of private sector interest in the model. However, the D&C model has been used previously to procure road projects in Australia.

Figure 15 Case Study

Case Study: Geelong Ring Road

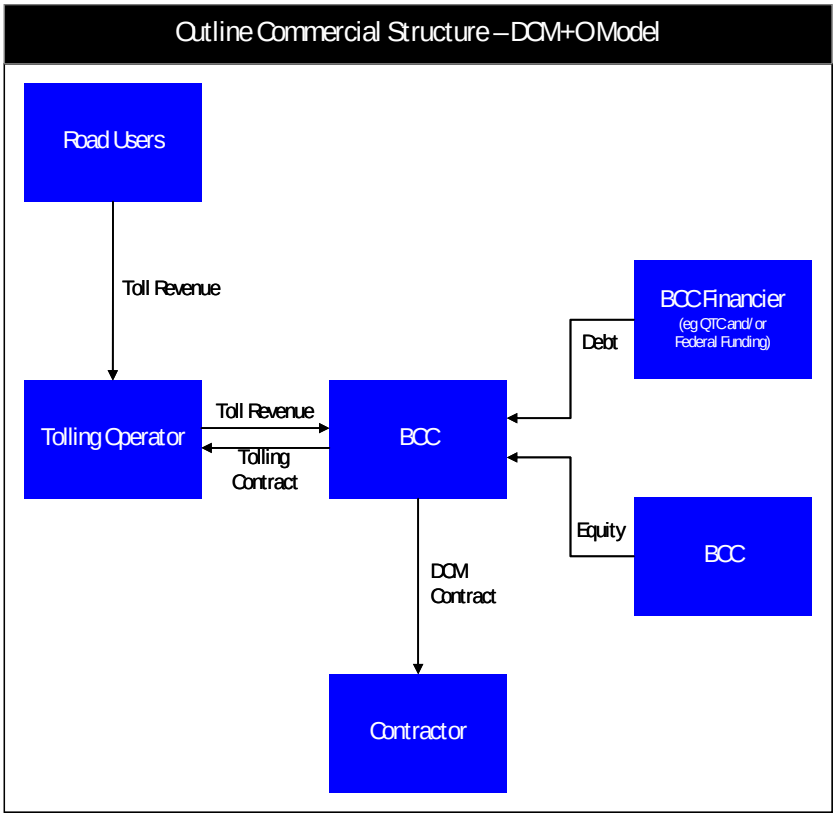
The Geelong Ring Road is funded by a combination of State and Federal resources with the project split into 3 separate contracts for delivery. This project involves the construction of 23 kilometres of freeway-standard motorway dramatically reducing travel time through the Geelong area. The first 2 contracts of the project have been awarded and construction commenced in February 2006.

Total funding committed to date for the 3 contracts is approximately $380 million, $186 million from the Federal AusLink Investment Program and $194 million from the Victorian Government.

Design & Construct contracts were awarded to Abigroup Contractors Pty Ltd and Cut and Fill Pty Ltd respectively. The project is expected to service a relatively low level of traffic with 15,000 vehicles per day forecast to use the road. It involves an element of duplication of existing bridges and roads, another factor that may have driven the selection of a D&C delivery model.

Design, Construct, Maintain plus Operate (DCM+O) Model

Figure 16 DCM+O Model



Key Features

This model builds on the D&C contract to include a period of maintenance and operations in the contract. In this delivery model, Council engages the DCM+O Contractor to design, construct and, for a period (usually 10-15 years), operate and maintain the asset. Council progressively pays the Contractor for the design, construction and maintenance of the project. The toll operations contract may be let separately to an entity such as Queensland Motorways Limited (QML).

Alternatively, Council might only pay the D&C Contract Sum (or a portion of) to the DCM+O Contractor as a lump sum upon construction completion, in which event the Contractor would need to finance the design, construction and maintenance of the project (or a portion of), the cost of which would be passed through to the Council.

Toll revenue is collected from motorists by a Tolling Operator on the behalf of Council. Tolling powers could be granted by way of:

- Entering into a Road Franchise Agreement with the State for a fixed term. Following this term the road would hand back to the State; or
- Granting of express tolling powers by way of amendments to legislation.

Advantages

- The majority of the design and construction risk is transferred to the private sector;
- Council retains control of the project;
- Enables the Council to sell its equity in the project. As an example, following completion, of the DCM+O and toll operating contracts, Council could conduct a tender process for the rights to the operations and maintenance rights, under a long-term concession contract. This could result in an up-front payment for these rights (see case study below);
- Some whole-of-life benefits due to linking of D&C and O&M contracts; and
- The Council maintains access to revenue upside and downside.

Disadvantages

- Much of the project risk, including traffic risk, remains with Council;
- Council is responsible for funding capital costs, which are likely to be significant based on initial estimates (refer Section 8) and could create affordability constraints/issues for Council (refer Section 9);
- Depending on the length of the contract, the costing of the project may not extend to whole-of-life approach; and
- There is limited incentive for innovation due to the lack of revenue risk transfer.

Precedent

While a DCM+O model has been adopted for the procurement of the current Gateway Upgrade Project in Brisbane, this model has limited precedent for toll road procurement in Australia. Similar models have been adopted by the New South Wales Roads & Traffic Authority to procure non-toll road projects such as the M5 East and Pacific Highway Upgrades.

Figure 17 Case Study

Case Study: Gateway Upgrade

The $1.88 billion Gateway Upgrade Project, the largest road and bridge infrastructure project in Queensland's history, is a Queensland Government initiative being delivered by Queensland Motorways in partnership with the Leighton Abigroup Joint Venture.

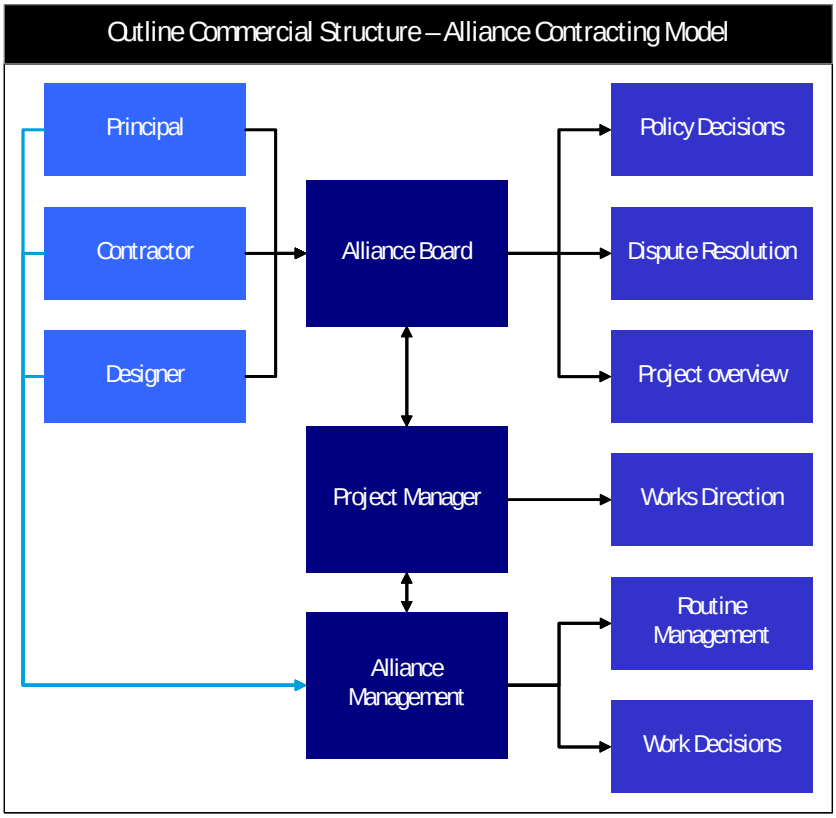
The Project involves duplicating the Gateway Bridge and upgrading 20 kilometres of the Gateway Motorway from Mt Gravatt Capalaba Road to Nudgee Road.

Following the State Government's approval of the project in 2005, Queensland Motorways undertook a tender process to appoint a contractor to design, construct and maintain the Gateway Upgrade Project (with a 10 year maintenance period). On 26 September 2006, the major contract for the Gateway Upgrade Project was awarded to the Leighton Abigroup Joint Venture (LAJV). Another separate contract will also be awarded to replace existing tolling systems with new electronic free-flow tolling facilities.

A PPP model was considered for the project but dismissed in favour of a DCM model. One of the key drivers for this decision was that the traffic usage on the bridge is well understood by the DMR due to the existing tolling of the bridge. Therefore the benefit of transferring traffic risk was deemed to be limited as DMR and Queensland Motorways Limited (QML) are well placed to manage this risk.

Alliance Contracting Model

Figure 18 Alliance Contracting Model



Key Features

Under this delivery model, the Council would appoint a contractor as an alliance partner to the project. The partners would then develop the design and target cost jointly, working together to deliver the project to that budget. The contract would be structured so that the contractor receives payment for activities plus agreed overheads and profit.

Generally an Alliance Contract model works well in an environment where Council has significant value to add during the design and construction phase, or where the field of potential bidders is small or the project is especially complex. An alliance can be implemented through a competitive alliance, or a simplified alliance process. Under a competitive alliance, two bidders prepare a Target Outturn Cost (TOC) and then a decision is made on the preferred proponent. Under the simplified alliance, the preferred proponent is decided after the Request for Proposals (RFP) stage and then a TOC is developed with the preferred proponent. The simplified alliance process is typically completed in 10 weeks from issue of the RFP documents to selection of the preferred proponent, while the multiple TOC process can take longer as the TOC for each proponent is developed to assist in the selection of a preferred alliance partner.[38]

[38] *Project Alliancing Practitioner's Guide*, Victorian Department of Treasury and Finance, April 2006.

Other features of an alliance model include:

- Partners collectively assume responsibility for delivering the project;
- Sharing in upside or downside results depending on how the actual project outcomes compare with the pre-agreed targets;
- The partners operate on an 'open book' compensation model whereby Council may pay the private sector:
    - Project costs and project-specific overheads reimbursed at cost based on audited actual costs;
    - A fee to cover corporate overheads and 'normal' profit; and
    - An equitable share of the 'pain' or 'gain' depending on how actual outcomes compare with the pre-agreed targets. Typically the downside risk to the Contractor is limited to the loss of corporate overhead fees and 'normal' profit.

Advantages

- Council will maintain flexibility to amend project specifications if required;
- There is an increased interface with other parties to the project though the alliance structure;
- Council retains control of the project and maintains access to toll revenue upside and downside; and
- There is potential to transfer more risk to the private sector than under other traditional models.

Disadvantages

- Council takes ownership of a number of risks and opportunities associated with the delivery of the project;
- Council is responsible for funding capital costs, which are likely to be significant based on initial estimates (refer Section 8) and could create affordability constraints/issues for Council (refer Section 9);
- There is limited whole-of-life cost benefits due to short-term nature of the operating and maintenance contract;
- There is limited opportunity for risk transfer; and
- There is limited incentive for innovation from the private sector due to budget restrictions and lack of revenue risk transfer.

Precedent

There is considerable precedent for this model for procurement of road infrastructure projects in Australia and Queensland in particular, however the value of most of the projects procured under an alliance are relatively small compared to major toll road projects. An example of a road project procured under an alliance is the Hale Street Link Project.

Figure 19 Case Study

Case Study - Hale Street

The Hale Street Link forms part of the *TransApex* plan for Brisbane providing an additional river crossing in Brisbane. Hale Street Link is a 60 kilometres per hour four lane tolled cross-river bridge between Milton and South Brisbane. The Link will provide additional public transport, pedestrian and cycle opportunities and support future residential development and urban renewal in the West End/Woolloongabba local area precinct.

Council approved the project in November 2006 after the feasibility studies and public viewing of the draft IAS (Impact Assessment Study) were completed. An Alliance Contract model was selected for this project.

The alliance comprises of the following companies:

- Seymour Whyte Holdings
- Bouygues Travaux Publics
- Macmahon Holdings
- Hyder Consulting

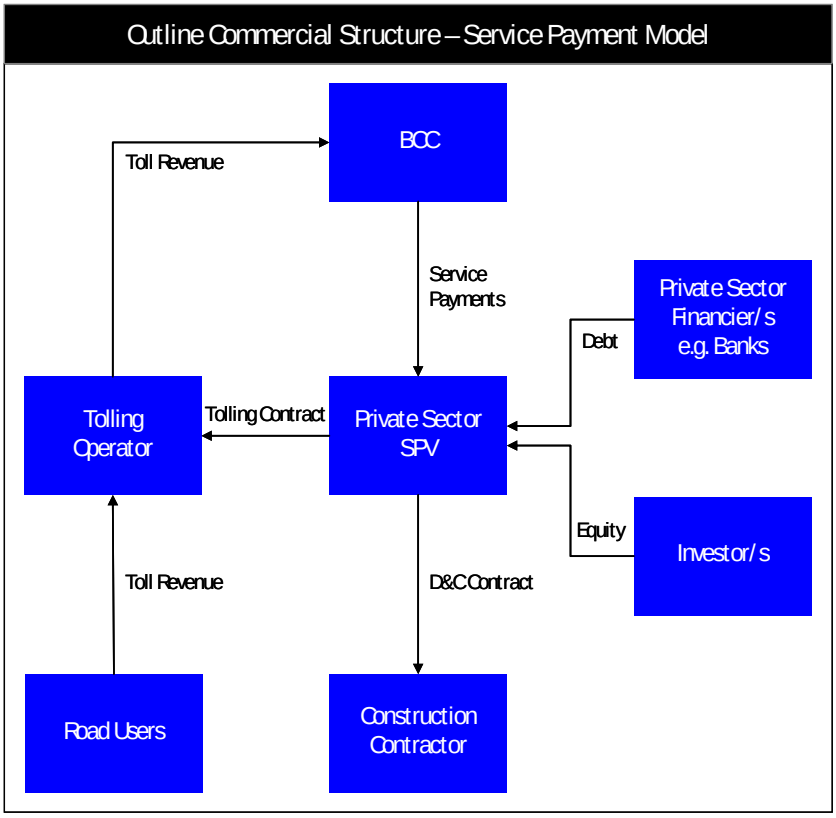
Council found the alliance model provided it with a structure to appropriately manage the risks of the project. Council signed the Alliance Design and Construct contract in June 2007. Hale Street Link Alliance and members of Council's Hale Street Link project team are now working together on the detailed design phase of the project with a final design to be completed by early December 2007.

10.2.2 Public Private Partnership (PPP) Models

A range of PPP delivery models are reviewed in this section. These models mainly differ in the way revenue risk is allocated in the private sector. A more detailed assessment of these models will be undertaken at the Business Case Stage. It is important to note however, that based on the preliminary financial analysis in Section 8, one of the issues that may drive this assessment is the likely size of an upfront Council subsidy or contribution required to make the Project viable under a BOOT model. This is because the preliminary analysis indicates that the subsidy is likely to be significantly larger than NSBT both in absolute terms but more importantly as a proportion of the total capital cost of the Project. This means that alternative models to the BOOT need to be considered in more detail, these include paying the subsidy in the form of availability payments, shadow tolls etc.

Service Payment Model

Figure 20 Service Payment Model



Key Features

This model is commonly used in social infrastructure projects (e.g. NSW Schools, Southbank TAFE), although has been used for economic infrastructure projects, such as toll roads, particularly in the UK. However, it has not been used to procure roads in Australia to date.

Council accepts demand risk and the private sector accepts asset availability risk. The private sector receives a service or availability payment from Council for making the asset available for the service to be delivered. This payment can be linked to Council objectives for the Project such as safety etc.

This model involves the transfer of the majority of design, construction, commissioning, operation, maintenance and funding risks to the private sector. Council retains traffic risk and the private sector is paid on the basis of the road being available for service delivery. This means that proponents' bids (technical, financial and commercial) revolve mainly around pricing a whole-life solution to deliver the output specification.

It is important to note that for this payment model to be viable, the concession needs to include a reasonable level of services (such as lane availability, safety, maintenance etc) so that a whole of life approach to the project may be taken.

The asset is transferred to Council at the end of the concession period in an agreed condition, requiring the private sector to take a whole-of-life approach to its operation strategy.

Advantages

- Private sector is responsible for funding the capital costs, thus Council is not required to fund the upfront capital costs, easing affordability constraints in the early years. Council's contribution would be in the shape of annual service payments over the operating life of the asset.
- Risks related to design, construction, commissioning, maintenance, operations and funding are transferred to the private sector;
- The annual service payment is capped, thus offering certainty to the government over their funding requirement; and
- The private sector is incentivised to deliver the project on time as it will not generate revenue until such time as the asset becomes available for tolling.

Disadvantages

- Traffic risk is retained by Council. That is, the tolling operator collects the tolls and transfers receipts to Council which restricts the incentive for the operator to innovate;
- There are additional tax implications of this model - S.16D of *Income Tax and Assessment Act* (1936) usually applies to projects delivered by a service payment model, adding significant cost to the project. As of 1 July 2007 S.16D will not apply but will be superseded by the new Division 250 legislation which is due to be introduced later this year. Division 250 will likely have similar cost impacts on this delivery model as S.16D; and
- It may be difficult to attract the private sector to the project given the lack of Australian precedent for implementing this delivery model, particularly with the private sector's interest in other payment mechanisms for toll road projects in Australia where their revenue is not limited to the annual service payment.

Precedent

This model has been widely used throughout the UK and Continental Europe, but not in Australia. One recent example is the E39 (Lyngdal- Flekkefjord) toll road in Norway.

Figure 21 Case Study

Case Study: E39 (Lyngdal- Flekkefjord) Toll Road, Norway

This was the second of two PPP transactions to involve the arterial E39 motorway. This €125 million project involved the design, construction, finance and operation of a new section of the motorway. It included 17.5km of new highway, a 7.5km tunnel and several bridges. The operation and maintenance of the entire 38km stretch was also part of the project. The consortium selected for the project was led by Allfarveg AS, who was granted a 20-25 year concession for the project.

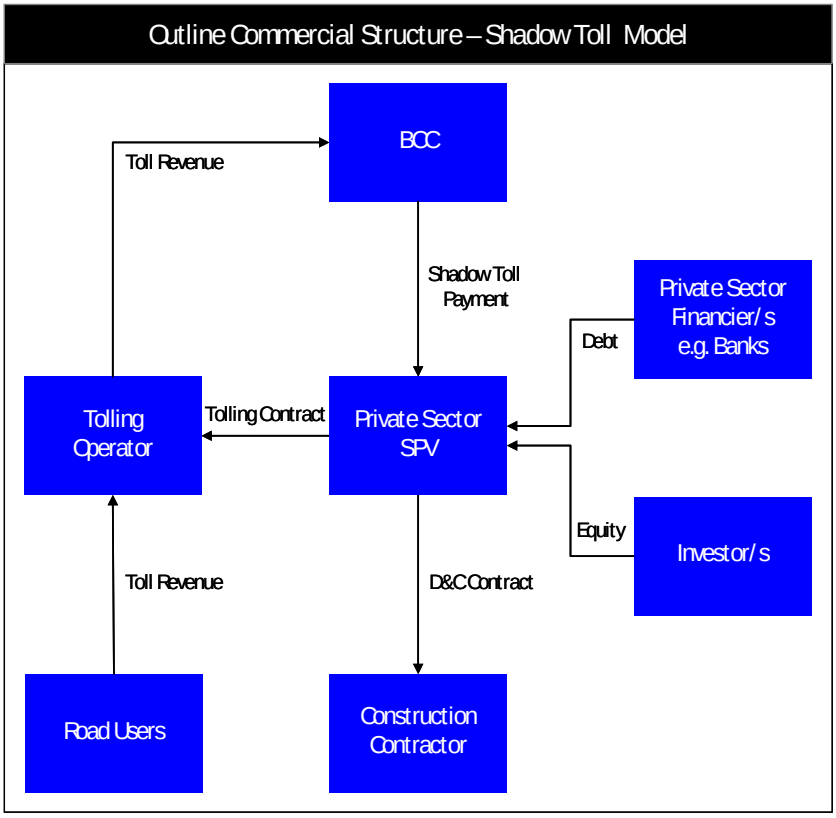
This project formed one of three pilot PPP projects in Norway and all were subject to the same payment mechanism.

The private sector receives an annual unitary payment for the provision of services under the concession, with the actual level dependent on performance against a set of criteria. The criteria are established by the Directorate's goals of good accessibility, high performance and a high level of traffic safety. Toll revenue remains under public sector control due to the location of the roads in remote areas and is collected by a not-for-profit government company.

The unitary payment is based on four separate elements: availability, performance, safety and traffic levels.

Shadow Toll Payment Model

Figure 22 Shadow Toll Model



Key Features

The Shadow Toll Payment model can be structured in a number of different ways ranging from a payment based primarily on actual traffic levels to a hybrid mechanism that considers asset availability and performance in addition to actual traffic levels. By incorporating non-traffic driven reward payments and penalties into the contract, it allows the Council to align private sector objectives to that of the travelling public and Council.

Early European examples of the Shadow Toll Payment mechanism were based on actual traffic alone. In such mechanisms, the precise formula for calculating the payment is negotiated between the government and the operator and is likely to include different bands corresponding to levels of traffic with differing toll levels attached. In this model, toll revenue is collected by the operator and passed onto Council.

Variation to Payment Structure

As the use of the Shadow Toll model developed in the UK, the model evolved into a hybrid to include elements of the Service Payment model. The hybrid model incentivised the private sector operator to provide strong levels of asset performance. Subsequently, the use of this model included payments based on availability of the asset and performance elements such as safety and lane availability in addition to actual traffic levels.

Advantages

- Private sector is responsible for funding the capital costs, thus Council is not required to fund the upfront capital costs, easing affordability constraints in the early years. Council's contribution would be in the shape of shadow toll payments over the operating life of the asset.
- Payments to the private sector are based on actual traffic levels. By making payments to the private sector dependent on traffic volume, it provides an incentive to maximise the usage of the road as well as indirectly transferring traffic risk;
- It provides the option for the public sector to transfer traffic risk to the private sector without introducing direct user charges or real tolls and creating the associated traffic diversion effects; and
- The hybrid model incentivises the private sector to encourage asset use and deliver improved performance.

Disadvantages

- Involves a complex payment mechanism;
- The National Audit Office (NAO) in the UK was critical of the use of shadow tolls in its review of the Design Build Financing Operate roads program[39]. The NAO concluded that it is likely that the premium paid for transferring volume risk via a shadow toll mechanism outweighs the benefit;
- Unlikely to be acceptable to the Federal Government unless substantial funding is available from Council and/or State to provide service payments (refer Section 8.1.3); and
- There is no precedent in Australia to date.

Precedent

The Shadow toll delivery model has been used in the UK and Continental Europe, but has fallen out of favour in the UK since the NAO Report referred to above. In the UK it has been used on projects including; M1-A1, A1 (M), A419/A417, A69 and A92. Shadow tolls have been used throughout Europe including France, Spain, and Germany.

Figure 23 Case Study

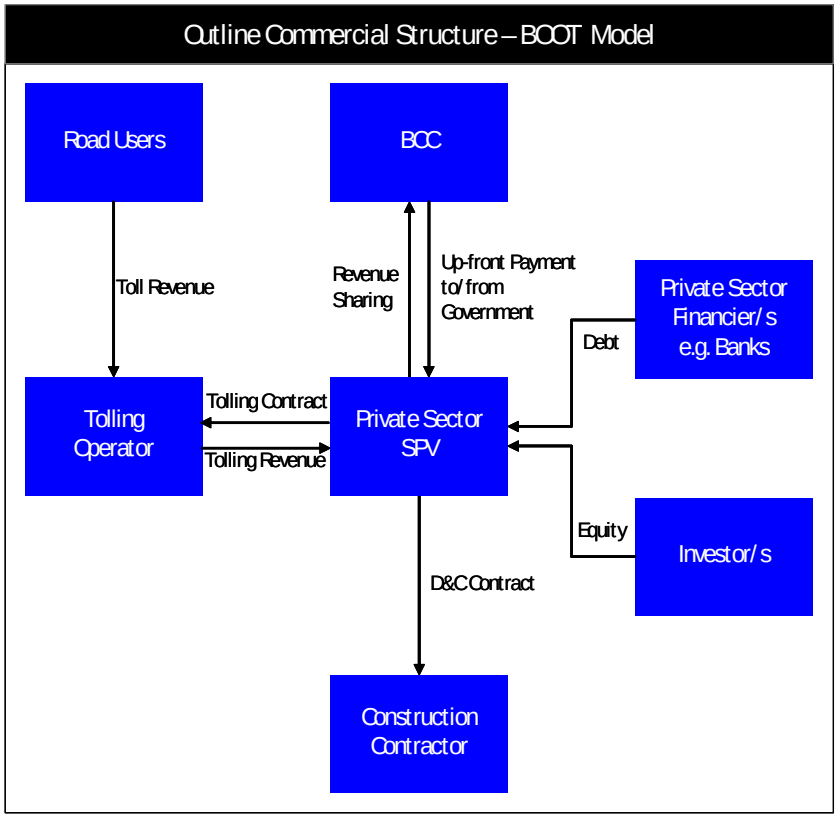
Case Study: Azores SCUT Shadow Toll Road

The Azores SCUT Shadow Toll Road project in Portugal is a recent example, reaching financial close in December 2006. A consortium led by Cintra and Ferrovial won a 30 year Design, Build, Finance and Operate (DBFO) concession for a 93.4km motorway running from the North along the Eastern side of Sao Miguel Island. The project value is estimated at €408 million. The shadow toll payment mechanism will be based on actual traffic demand.

[39] Department of the Environment, Transport and the Regions: *The Private Finance Initiative: The First Four Design, Build and Operate Roads Contracts*, published 28/1/98 (refer www.nao.org.uk). This criticism is largely directed at the appropriateness of transferring volume risk to a private sector operator when it is unable to influence demand for the road through direct pricing and/or related marketing measures. In effect there is little a private operator can do to increase traffic usage under the shadow toll mechanism.

Build, Own, Operate and Transfer (BOOT) Model

Figure 24 BOOT Model



Key Features

The BOOT model has been used for most toll road PPP procurements both in Australia and internationally where the private sector builds, owns and operates the asset then transfers it to the government at the end of the concession period. The model involves the transfer of the majority of construction, operation, maintenance and traffic risks to the private sector. This means that bids (technical, financial and commercial) revolve mainly around the private sector taking a view on future traffic and determining the extent to which tolling revenues meet the project costs and deliver investor returns. If revenues are insufficient then an upfront payment is needed, or alternatively payments can be made by bidders if revenues are more than sufficient to cover their requirements.

Council's contribution will depend on the level of construction or operating costs and revenue estimated for the project i.e. where anticipated toll revenue is less than the project costs, the government will be required to make a subsidy payment. Given the size of the potential subsidy required for Northern Link (refer Section 8), the subsidy could be provided as an up-front payment and/or payments over time to the private sector.

The private sector is granted a long-term (usually between 30-50 years) concession for the construction, ownership, operation, maintenance and financing of the asset. To recoup the private sector costs of construction and deliver a return on investment, a real toll is levied on road users and collected by the private sector.

The process of setting the toll categories and levels is negotiated between the public and private sectors. Consistent with its policy, Council may set a limit on toll levels that the private sector may charge.

Given that the private sector is unable to generate returns until the asset becomes operational, there is significant incentive for the delivery of the project in a timely manner. The D&C contractor is typically offered early completion bonuses to align the objectives of all of the consortium partners.

Advantages

- Private sector is responsible for funding the capital costs, thus easing Council affordability constraints in the early years. Council's contribution would be in the shape of a payment for works on construction completion. The Council contribution under the BOOT model is likely to be less than the construction costs as it represents the difference between the costs and revenues generated from the project over the asset life. The value for money benchmark against which bids for this delivery model would be compared is represented by the Public Sector Comparator (refer Section 8)
- There has been extensive use of this delivery model in Australia and therefore there is an active and sophisticated market for this type of project;
- Significant transfer of risks to the private sector;
- Transfer of revenue risks provides incentive for bidders to provide innovative design solutions to maximise traffic usage; and
- Upside toll revenues are shared with the public sector as are any gains from refinancing. The level of upside share is negotiated as part of the bid process.

Disadvantages

- The public sector has less flexibility, particularly the ability to amend toll levels;
- Creates an additional toll road operator in Brisbane in addition to the operators for NSBT, Hale Street Link, Airport Link and the Gateway Upgrade Project; and
- There may be a payment required from the Council depending on the costs and revenue associated with the project.

Precedent

This model is the most common delivery model for toll road procurement in Australia. Its use has extended to North America, Continental Europe and Ireland. Most recently, it has also been used in Australia on the NSBT Project, the first piece of the Brisbane *TransApex* strategy.

Figure 25 Case Study

Case Study: North South Bypass Tunnel

A $2 billion project, NSBT will use the BOOT delivery model and involve the construction of 6.8km toll road tunnel providing a vital link in Brisbane's road network, allowing motorists to bypass the CBD. Parties to the project include the procuring authority, Brisbane City Council and the winning consortium vehicle, RiverCity Motorway (RiverCity). The RiverCity SPV, awarded the concession for a 45 year period, was led by Leighton Contractors, Baulderstone Hornibrook, Bilfinger Berger and ABN AMRO. RiverCity went to Initial Public Offering in 2006.

Key risks to the project include traffic, construction, operations and financing. Many of the risks have been transferred to the private sector and investors in RiverCity. Construction has commenced with RiverCity committing to the delivery of the project by 2010.

NSBT will be a tolled road with revenue from operating the tunnel to service operating and financing costs, with the balance returned to investors. The payment mechanism also allows for the Council to share in any upside traffic performances and refinancing gains.

10.3 PRELIMINARY OVERVIEW OF DELIVERY MODELS

Preliminary Overview

The following table summarises the likely key advantages and disadvantages of each delivery model. It also outlines the role of the Council under each model and the potential exposure for the State from the financial role assumed by Council under each model.

Table 29 Advantages and Disadvantages of Delivery Model

	Advantages	Disadvantages	Role for Council	Exposure for State
Traditional Models				
D&C	■ Construction risk transferred to the private sector ■ Council controls the development of the performance & quality requirement specifications ■ Best suited for high capital cost projects with low operating and maintenance costs	■ Limited capacity for private sector innovation ■ Long term performance risk remains with Council ■ Does not provide for whole of life costing ■ Council required to fund all construction costs, creating affordability issues	■ Assumes delivery and ownership risk (mitigated through fixed price D&C) ■ Assumes tolling role ■ Need to source funding	Significant exposure, particularly if QTC funded (via *Statutory Bodies Financial Arrangements Act 1982)*[1]
DCM+O	■ Some degree of risk transfer to the private sector ■ Council experience with model ■ Council retains control ■ Council accesses revenue upside (& downside)	■ Majority of risk remains with Council ■ Limited precedent for toll road procurement ■ Whole of life costing is reduced ■ Council required to fund all construction costs, creating affordability issues	■ Assumes delivery and ownership risk (mitigated through fixed price DCMO) ■ Assumes tolling role ■ Need to source funding	Significant exposure, particularly if QTC funded (via *Statutory Bodies Financial Arrangements Act 1982)*[1]
Alliance Contract	■ 'Open book' approach ■ Complete flexibility for Council to amend project ■ Council retains control ■ Council accesses revenue upside (& downside) ■ Strong market appetite	■ Majority of risk lies with Council ■ Limited incentive for private sector ■ Limited precedent for toll road procurement ■ Council required to fund all construction costs, creating affordability issues ■ No whole of life costing	■ Assumes significant delivery and ownership risk ■ Assumes tolling role ■ Need to source funding	Significant exposure, particularly if QTC funded (via *Statutory Bodies Financial Arrangements Act 1982)*[40]

[40] Queensland Treasury *Issues Summary*, dated 19 February 2004.

	Advantages	Disadvantages	Role for Council	Exposure for State
Public/Private Partnership Mode				
Service Payment	■ Council accesses revenue upside (& downside) ■ Opportunity to transfer whole of life risks ■ Incentives to complete early ■ International precedent ■ Private sector funds upfront construction costs, thus easing Council affordability pressures	■ No precedent for toll roads in Australia ■ Ongoing Council funding required ■ Complex contractual arrangements ■ Inflexible post-signature ■ Private sector interest, particularly given lack of tolling role ■ Tax issues may impact Federal Government support	■ Payments to SPV based on availability and performance ■ Assumes tolling and traffic risks. ■ Source funding if gap exists between toll revenue and SPV costs	Private sector may require Treasury to stand behind Council service payments.
Shadow Payment	■ Payments to the private sector relates to actual traffic volumes ■ Places incentive on private sector to encourage asset use ■ Can include a performance element, such as safety measures ■ Private sector funds upfront construction costs, thus easing Council affordability pressures	■ Traffic risk is not transferred completely to the private sector ■ Payment formula can be highly complex ■ Ongoing Council funding ■ No precedent in Australia	■ Payment will rise with increases in traffic levels ■ Source of funding if gap exists between toll revenue and SPV costs	Private sector may require Treasury to stand behind Council service payments.
BOOT	■ Significant risk transfer ■ Limited risk exposure to State and Council ■ Benefit sharing - refinancing, traffic upside ■ Incentives to complete early ■ Limited call on Council funds ■ Australian and international precedent ■ Council funding requirements typically lower than other models	■ Inflexible post-signature ■ Complex contractual arrangements ■ Limits network control ■ Creates additional toll operator in Brisbane	■ Shares upside benefits on an ongoing basis ■ Monitoring role ■ Source of funding if gap exists between toll revenue and SPV costs	Exposure limited to standing behind Council's contractual obligations to fund upfront payment.

10.4 SUMMARY

This section outlines several traditional and PPP delivery models that may be viable for the delivery of Northern Link. While the *TransApex Prefeasibility Report* identified the BOOT model as a possible PPP style model for the Project, the financial analysis undertaken in Section 8 of this report indicates that a BOOT model may involve a large subsidy to the private sector both in absolute terms but more importantly as a proportion of the Project costs (refer Section 8 for further detail). This means that alternative ways of paying this subsidy - such as shadow tolls, availability payments, etc - need to be assessed at the Business Case stage to determine the suitability of all potential delivery models, including the BOOT model.

This assessment will include analysis of the outcomes of a market sounding process and further analysis of the required size of the government subsidy under different delivery models. The analysis should enable Council to determine the preferred traditional procurement model and the preferred partnership or private financing model (as per the VfM Framework). A key element of the Northern Link Business Case will involve comparing these options based on a qualitative and quantitative analysis (by way of a final PSC and Partnership Model).

At the Business Case stage, the Project Team in conjunction with key stakeholders will evaluate the delivery models with a view to selecting the option that will provide Council with the optimal value for money. Potential models will be assessed against;

- Value for money drivers included in the State's VfM Framework; and
- Key financial and commercial objectives of the Project.

Following a summary of this evaluation and workshops involving key stakeholders, a recommended delivery model will be selected.

11 MARKET REVIEW AND PRELIMINARY TRANSACTION STRATEGY

11.1 INTRODUCTION

In accordance with the Terms of Reference of this Preliminary Assessment as outlined in Section 2, this chapter provides:

- A preliminary assessment of private sector interest in the Northern Link Project. In doing so, an overview of the Australian toll road market has been undertaken with particularly emphasis on market developments since Council signed the NSBT PPP contract; and
- A preliminary transaction strategy. This provides Council with an overview of the key tasks required to take the Project to market.

11.2 PRELIMINARY ASSESSMENT OF PRIVATE SECTOR INTEREST

A key success factor for Northern Link will be the level of market interest in the Project, as competition is a key driver of value for money on major infrastructure projects. In assessing the potential for private sector interest, this section has focused on market developments since the NSBT procurement.

11.2.1 Projects

The following key developments have occurred on key Australian toll road projects:

- Westlink M7 PPP (NSW) opened to operation in December 2005, 8 months early;
- The Cross City Tunnel PPP (NSW) was put into voluntary receivership by its financiers in December 2006 (see Impact of Cross City Tunnel). This resulted in the NSW Government putting a number of planned road projects on hold;
- The Lane Cove Tunnel PPP (NSW) opened to operation in March 2007 around 2 months early;
- Construction on the Eastlink PPP (Victoria) and Gateway Upgrade Project (Queensland) are ongoing. Eastlink is due to complete in 2008 and Gateway is due to complete in 2011;
- The Airport Link / Northern Busway PPP procurement process commenced in February 2007, with three short-listed bidders announced in June 2007.

This demonstrates that, unlike the period between 2000 and 2006 which saw Cross City Tunnel, Lane Cove Tunnel, Westlink M7, Eastlink, Gateway and NSBT all being tendered, the only major project in the Australian market place that is currently planned to be in the market between 2007 and late 2008 will be Airport Link / Northern Busway (AL/NB). This provides an opportunity for Northern Link to capture a ‘bidding window’ following the Financial Close of AL/NB (see Section 11.3).

11.2.2 Market Confidence in Queensland

One of the key challenges Council faced prior to commencing the NSBT procurement in early 2004 was providing the private sector with deal certainty and a transaction pipeline. Having achieved this, through an efficient transaction process, the market's perception about Queensland has changed dramatically, particularly in the following areas:

- Confidence through the Council's approach to NSBT. This means bidders would approach a Northern Link procurement with a positive perception in relation to deal certainty;
- A number of international players, such as Bouygues, Grupo ACS and Ferrovial, are attracted to the Queensland market;
- There is evidence of a deal pipeline emerging. In other words, NSBT, Gateway Upgrade, AL/NB and Hale Street Bridge have provided credible deal flow. This therefore provides an opportunity for Northern Link to continue this 'pipeline'; and
- Other States, particularly NSW and Victoria, have not procured a major road project since Eastlink (Victoria) and Westlink M7 (NSW) reached Financial Close in 2003. This has provided Queensland with an opportunity to become the market's main focus for major toll road projects. There is an opportunity for Northern Link to maintain this focus through an accelerated procurement process (see below).

11.2.3 Impact of the Cross City Tunnel

It is important to consider whether the Cross City Tunnel (CCT) situation has had a material impact on potential private sector interest in toll road projects.

The CCT is the first of 11 PPP toll road contracts signed in Australia go into receivership. It was recently sold to a Leighton/ABN Amro led consortium for $700 million. The main problems experienced by the CCT can be summarised as follows:

- Inaccurate projection of traffic volume. Cross City Motorway (the private sector entity established to build, own, finance and operate the CCT) grossly over estimated the traffic that would use the project. Publicly available data shows that at the time of writing, actual traffic was about 30% of forecast;
- Management of the changes to the surface roads. The concept of 'traffic funnelling' emerged, where it was alleged that the proposed surface works at various sites such as William Street were designed (and contractually committed by the NSW Government) to encourage traffic into the CCT. Importantly, however, these proposed changes to the road network were well documented in the environmental impact statement undertaken before CCT reached financial close;
- The 'up-front payment versus toll' debate. The tender process involved companies bidding an up-front payment to the NSW Government, based on a toll level set by the Roads and Traffic Authority (RTA). The NSW Government was criticised for adopting this structure. Many suggested that structuring a tender process focussed on an outcome of the lowest possible toll would result in a more appropriate outcome; and
- Limited contract disclosure. While the NSW Government has traditionally published contract summaries it was heavily criticised for not releasing full details of the contracts, leading to a change of policy in this regard.

Whilst CCT has experienced a number of issues, and both public and private sector stakeholders have been criticised heavily, it is important to focus on the following facts:

- The private sector investors in CCT have publicly stated that they have written down 100% of their equity investment. Total equity in CCT exceeds $400 million;
- The NSW tax payer has incurred no cost. In other words, the risk allocation that is core to a PPP transaction has successfully held. Revenue risk has been fully borne by the private sector;
- CCT has remained open for traffic and continued to operate within the contract requirements;
- To date, private investors, contractors and financiers have not been discouraged by the CCT experience. They continue to bid on opportunities. NSBT yielded competitive bids, the Airport Link / Northern Busway Project yielded four strong consortia, the Lane Cove Tunnel has traded its equity, a number of toll road PPPs in NSW and Victoria have refinanced on improved terms and, most importantly, the CCT sale process yielded a strong list of private sector bidders and was recently sold for $700 million to a Leighton/ABN Amro led consortium. All of this has occurred in the 'post CCT' environment;
- Improvements in contract disclosure, the procurement process and the commercial terms of the PPP contract have been adopted as standard on more recent procurements such as NSBT and Eastlink; and
- A number of important recommendations have been made by the various NSW Government inquiries into CCT[41].These have been incorporated into the procurement processes for NSBT and AL/NB. Examples include no network restrictions as part of the PPP contract and full contract disclosure. Council should ensure that these recommendations are also fed into the Northern Link procurement process as appropriate.

In summary, there are lessons learnt from CCT which were adopted by NSBT, AL/NB and should be taken on board in the event Northern Link progresses to procurement. However, the empirical evidence is that the CCT experience has not affected private sector appetite in toll road projects.

11.2.4 Bidding Market

The Australian construction market is currently experiencing significant demand due to the number of large infrastructure projects both in the market and planned in the next few years. Most of the Australian State Governments have recently issued multi-billion dollar infrastructure plans which identify their infrastructure needs over the next 15-20 years, including the SEQIPP in Queensland.

The high level of construction activity is likely to be reflected in increased levels of building price escalation (BPI), which will result in increased project costs. As well as competition from road projects, Northern Link is likely to face competition for resources from other large projects planned as part of SEQIPP, particularly given the current issues in relation to water in Queensland.

In addition to the issues associated with the construction market as a whole outlined above, the structure of the bidding market for toll roads (and other large projects) is such that there are a limited number of companies that are capable of delivering a project of the magnitude of Northern Link. The market for these large projects is dominated by the two major Australian contracting groups, Leighton Holdings (Leighton Contractors, Thiess and John Holland) and Bilfinger Berger (Bilfinger Berger, Baulderstone Hornibrook and Abigroup).

[41] *"The Cross City Tunnel and Public Private Partnerships"* Second Report – May 2006, Parliament of New South Wales, and "*Review of Future Provision of Motorways in NSW*", December 2005, Infrastructure Implementation Group, Premiers Department.

However, there have been some key developments since NSBT reached Financial Close, summarised as follows:

- The emergence of Babcock & Brown as a key financial player. This has added greater depth to the financial adviser/sponsor market and has lead to a greater level of competition as demonstrated by the AL/NB bidder list;
- Four strong consortia submitted Expressions of Interest for AL/NB:
    - BrisConnections (Thiess, John Holland, Macquarie Bank);
    - NorthConnect (Baulderstone, Bilfinger Berger Civil, Abigroup, Babcock & Brown);
    - Northern Motorway (Leighton Contractors, ABN Amro); and
    - Iridium / Dragados (owned by Grupo ACS).

  BrisConnections, NorthConnect and Northern Motorway were short-listed in June 2007.
- In terms of the potential for new entrants into the Australian market, recent developments have suggested that Northern Link may benefit from potential new international players, including:
    - Bouygues, who has established a local office in Sydney and has recently been awarded the Hale Street Bridge contract by Council;
    - Laing O'Rourke, through their acquisition of Barclay Mowlem, now has an Australian presence;
    - The Spanish contractor Grupo ACS submitted an expression of interest (EOI) for the Airport Link/Northern Busway Project in Queensland;
    - A number of other international players who participated in recent market sounding processes.

This therefore demonstrates that, since NSBT, the bidding market has broadened with potential for additional companies entering the market place. As a result, Council should as part of its Business Case process, ensure it engages proactively with the bidding market prior to commencing a procurement process.

11.3 PRELIMINARY TRANSACTION STRATEGY

11.3.1 Competing Project pipeline

As outlined above, there is currently a strong bidding market in Australian toll road PPPs while there are a limited number of firms that may form part of a bidding consortium (e.g. Baulderstone Hornibrook, Bilfinger Berger, ABN Amro).

It is therefore important that the proposed timeframe of the Northern Link takes into account the procurement timeframe of when other toll road PPPs are likely to be put to the market at the EOI stage, to maximise the chances of a clear 'bidding window' for Northern Link.

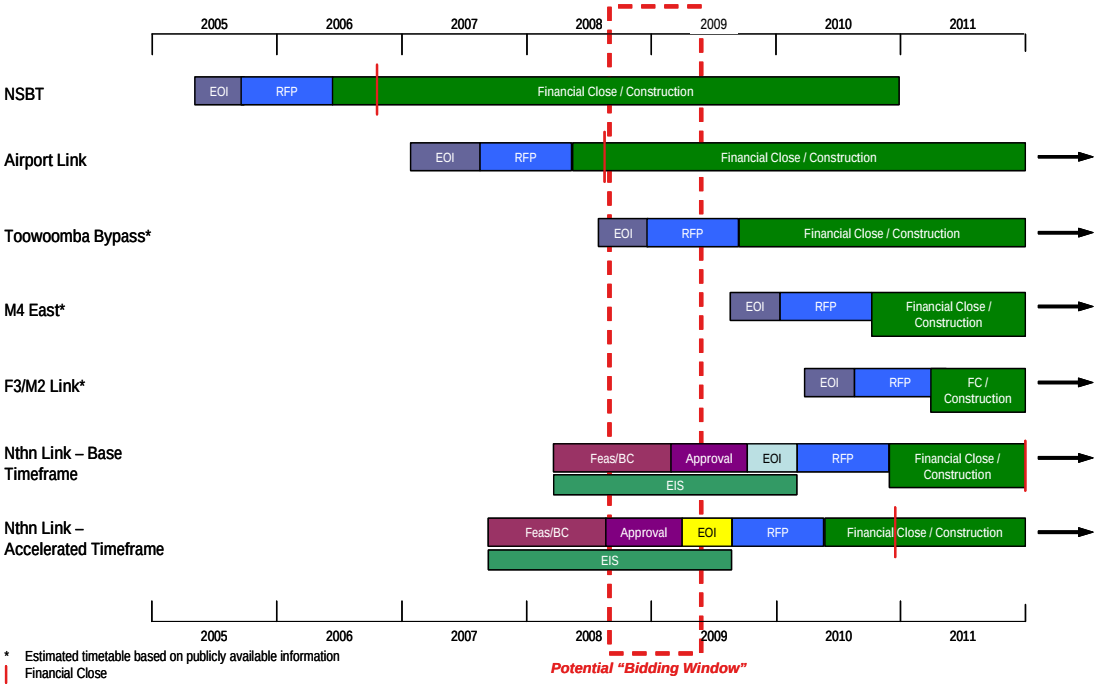
The estimated timeframe for the EOI stage of other major Australian road PPP projects is outlined below:

Table 30 Estimate Timeframe

Project	Estimated Timeframe for EOI Stage
Airport Link	Q1,Q2 2007
Toowoomba Bypass	Q3,Q4 2008
M4 East	Q3,Q4 2009
F3/M2 Link	Q2,Q3 2010

Based on the above it appears that a potential 'EOI window' for Northern Link may eventuate between Q1 and Q3 2009. During this window, it appears likely that no other toll road PPPs will be in the process of being put to the market at the EOI stage (see diagram below).

Figure 26 Northern Link Bidding Window



If this potential window were to be utilised, the feasibility/business case stage would be required to start by Q3 2007 (refer Section 11.2.5 for description of likely activities and timeframes associated with the procurement phase).

It is noted that if this potential window were not utilised, the next available window may not occur until Q3-Q4 2010.

11.3.2 Procurement Process Timetable

As discussed above there is therefore an opportunity for the Northern Link timetable to be moved forward in order to optimise the bidding market for the Project. Assuming this approach is taken and a PPP model is adopted, the key phases in the process are outlined in the table below (note the estimated timing is indicative at this stage):

Table 31 Procurement Process Phases

Procurement Phase	Tasks	Estimated Timing[42]	Current Transaction Timetable	Accelerated Transaction Timetable
Pre EOI	■ Business case ■ EIS ■ Community consultation	Uncertain but likely to be more than 12 months.	Q1 2008 - Q2 2009	Q3/Q4 2007 - Q4 2008
Expression of Interest (EOI) Phase	■ Prepare document ■ Issue document to market ■ Receive EOI responses ■ Evaluate responses and announce shortlist	3 months from issue of EOI.	Q1-Q2 2010	Q1-Q2 2009
Request for Proposal (RFP) Phase	■ Prepare tender documents ■ Issue tender documents ■ Bidder clarification process ■ Receive bids	6 months from issue of RFP. (RFP Documents generally prepared during the EOI phase).	Q3-Q4 2010	Q3-Q4 2009
RFP Evaluation and Negotiation Phase	■ Evaluate bids ■ Negotiate commercial terms with bidders ■ Announce preferred bidder	4 months.	Q1-Q3 2011	Q1-Q3 2010
Financial Close Period	■ Final negotiations with preferred bidder ■ Contractual close ■ Financial close	2 months.	Q4 2011	Q4 2010

11.3.3 Key Issues for the Northern Link Business Case

There are a number of additional issues relating to the status of the Australian toll road market that will need to be considered as part of the Northern Link Business Case, including:

- The impact on the transaction strategy for the Project: As noted in this section there are a number of major road projects in Australia which will be in different stages of implementation and bidding during the planned implementation program. This means that the timing and marketing of the Northern Link, irrespective of delivery model, will be very important in order to run an effective competition, especially given the current over-capacity in the construction industry.

- Establish a well resourced internal project team in Council's MIPO supported by external advisers. Council resourcing should include a dedicated Project Director, Project Manager supported by commercial and technical resources.

- Ensuring that the Council recognises (and maximises the potential benefits of) the existence of an established toll road investment market in Australia. This should be an important factor when the Council is considering potential delivery models for Northern Link.

[42] Timing estimates for PPP procurement process provided by Ernst & Young, based on procurement timetables on recent PPP projects.

- Detailed understanding of likely network change including a decision on the WBTNI outcomes.

- Conducting a formal market sounding: As part of the Northern Link Business Case process (and in accordance with the Queensland Government's VfM Framework) the Council should hold a focused market sounding with key private sector participants. The objective here should be to market Northern Link and to seek early views which may assist in refining any tender process. The Council should also consider extending the market sounding internationally, particularly given the increasing consolidation in the Australian construction market. Where possible, this should be done in conjunction with the State Government to ensure that participants see whole of government commitment to the Project.

The objective of the transaction strategy will be to seek to maximise the likelihood of a value for money outcome for Council through effective competition. While the strategies for delivering that outcome will be partially dependent on the delivery model selected, the objective is consistent across all procurement models.

The characteristics of the Project are such that ensuring a competitive bidding market will require careful consideration and planning. At this time, consideration of the transaction strategy that is likely to be utilised remains at a preliminary stage.

At a high level the elements of the transaction strategy will include:

- Ensuring the Project is developed and presented to the market in a manner that is attractive and that includes risk allocations that the market is able to accept (seeking unrealistic risk transfer is likely to inflate cost and lead to suboptimal value for money outcomes);

- Engagement of the market in an informed discussion so as to identify the hurdles to maximising competition. This will include a range of market sounding and roadshow exercises to contractors, operators, equity investors and financiers;

- Providing certainty to the market as to the expectations of the Council and consistency of process;

- Presenting to industry a process and documentation with which industry is familiar and builds upon projects completed to date;

- Adopting competitive and probity measures to minimise the effect of the common ownership of a number of the key construction contractors;

- The Commercial Team will continue development of market engagement to assist in the development of an efficient and effective Transaction Strategy; and

- Development and delivery of a procurement strategy that appreciates the cost and time required to develop a bid of this nature but ensures that council has the best opportunity for gaining a value for money outcome. This may include the use of split bidding and other strategies to maintain effective competition.

11.4 SUMMARY

The following conclusions can be reached in relation to a preliminary assessment of private sector interest in the Northern Link Project and a preliminary transaction strategy.

This assessment suggests the following:

- The bidding market has broadened - including potential for new players entering the market - since NSBT reached Financial Close. This is demonstrated by the number of bidders (four) that have formed for Airport Link / Northern Busway;
- Queensland has successfully captured the Australian market's attention by delivering a deal pipeline - NSBT, Gateway Upgrade, Hale Street Bridge and Airport Link / Northern Busway. There is an opportunity for Northern Link to capitalise on this rolling 'pipeline';
- There is significant market appetite for toll road projects. This has not been affected by the Cross City Tunnel situation in NSW; and
- Based on current known project timeframes in other States, accelerating the Northern Link Business Case and procurement timetable would increase the chances for the Project to have a clear bidding 'window' whereby it is the sole major toll road project in procurement.

12 RECOMMENDATIONS AND OUTSTANDING ISSUES FOR THE BUSINESS CASE STAGE

12.1 RECOMMENDATION

This Preliminary Assessment Report recommends that the Project is progressed through to the Business Case stage because, in accordance with the Queensland State Government's VfM Framework, this Preliminary Assessment has:

- Refined the Technical Solutions that meet the Project's service requirement;
- Identified and assessed the appropriate delivery options for each Technical Solution to determine the potential for a PPP arrangement; and
- Council has received outline proposals incorporating forward work plans in preparation for the Project Business Case stage.

This Report further recommends that:

- The issues or gaps outlined in Section 12.2 are addressed during the Business Case stage to strengthen and enhance the development of the Project; and
- Council considers accelerating the project timetable to ensure that the bidding market for the Project is optimised in light of the timing of other major projects (i.e. construction to commence in 2010), as discussed in Section 11.

12.2 OUTSTANDING ISSUES FOR THE BUSINESS CASE STAGE

12.2.1 Overview

As described in Section 2, one of the key roles of the Preliminary Assessment is to identify the key gaps and issues that exist in the Prefeasibility work to ensure that they are effectively investigated during the Business Case.

This review of major gaps has been undertaken by the IPT in conjunction with Council and considers the requirements under the State Government's VfM Framework and the Federal Government's NGTSM guidelines for the AusLink program.

12.2.2 Strategic Issues

Project Timing

During the Business Case stage, further examination of the timing of Northern Link's delivery will be important to determine the Project's procurement and delivery timeframe. This examination will consider the timing and stage of delivery for other Council projects, including other *TransApex* projects, to identify Council's capacity to manage the procurement and delivery of Northern Link from a resourcing and budgetary perspective. The level of market activity will also be an important factor in this assessment, and the impact of market activity on the Project's delivery is discussed in Section 11.

The timing of the Project's procurement and delivery will also need to consider the State Government's intended transport improvements within the Western Corridor. The outcomes of the WBTNI may assist in clarifying the level of infrastructure that the State intends to deliver to the corridor in the long-term. The delivery of projects under the State's SEQIPP will also require consideration.

Further, the delivery of other projects resulting from the State and Federal Government's Brisbane Urban Corridor Study will also be considered in this assessment, particularly any projects that receive funding under the AusLink 2 program (2009-10 to 2013-14).

State Government Support

The State Government has indicated that a decision on in-principle support for Northern Link will be made at the completion of the Preliminary Assessment stage. If in-principle support is received, the focus during the Business Case stage will be to ensure that the Project progresses in a way which is satisfactory to the State (as well meeting the VfM Framework requirements) and is also complimentary to the WBTNI outcomes and SEQIPP, to assist the State in determining its level of support and funding contribution to the Project once the Business Case is finalised.

During the Business Case stage, the requirement for Council to be granted tolling powers from the State if the Project proceeds as a toll road will also be required.

Federal Government Support

Discussions between Council and the Federal Government will continue during the Business Case stage, as Council seeks support for Northern Link to be included under the AusLink 2 funding program. To support these discussions, it is important that the development of the Project during the Business Case stage is aligned with outcomes of the State and Federal *Brisbane Urban Corridor Strategy* and is consistent with the NGTSM Framework for the AusLink program.

Delivery Models and Governance

The Business Case stage will enable further analysis and selection of the preferred delivery model for the Project as well as the preferred governance structure and contractual framework.

While this Preliminary Assessment includes discussion on the potential delivery options for the Project, there are also a number of options for governance models which have not yet been considered. These models may impact on the Project risk profile for Council. The cost associated with implementing the selected governance model will also need to be included in the Project cost during the Business Case stage.

Market Interest

A significant issue facing the delivery of Northern Link is the level market interest and the potential that expected activity within the market may have on the industry's level of interest. This issue may manifest differently depending on the delivery model chosen, however it is likely to impact in some way on all delivery models.

The issues requiring further consideration during the Business Case stage to address this concern include:

- Timing of the Project;
- Limited market participants; and
- Selection of the preferred delivery option.

12.2.3 Traffic and Tolling Issues

The traffic and tolling forecasts utilised during the Preliminary Assessment were based on pre-existing models and existing experience. The Business Case will see further improvements made to the traffic model and will allow for a more robust and detailed assessment of traffic demand and of toll revenue.

Improvements to the Traffic Model

Traffic and revenue forecasts for Northern Link were developed using the Brisbane Strategic Transport Model (BSTM). The following improvements and enhancements to these models are planned:

Table 32 Improvements to the Traffic Model

Improvements/Enhancements	Possible Impact
Traffic & Transport Modelling	Enhanced traffic and transport model for the project development and design process and input to the Business Case
	Local traffic modelling for traffic management strategies at connections
	Complete more detailed freight studies

12.2.4 Technical Issues

Reference Project

The design presented in Section 6 requires more detailed design work to be undertaken in order to develop the Reference Project for the Business Case, including solutions in the areas highlighted in the following table. Further development of the Reference Project will also provide a greater degree of confidence in the Capex and Opex costings required for the financial analysis of the Project:

Table 33 Reference Project

Elements of the Design	Possible Impact
Detailed Geotechnical Investigations	Review of project alignments and grading
	Confirmation of construction techniques
	Confirmation of tunnel design assumptions
Options Analysis and Design	Detailed assessment of property impacts/work site requirements
	Detailed assessment of infrastructure impacts
	Detailed assessment of traffic management for construction
	Confirmation of tunnel design parameters
Detailed Hydrological Investigations	Detailed assessment of flood immunity/tunnel drainage
Public Utility Plant (PUP) Investigations	Detailed assessment of PUP impacts
Estimating	Confirmation of estimating assumptions Updated estimates
Connections	Consideration of optimal connections of Northern Link to the existing network

Environmental Requirements

Given the early stage of the Project, the work performed by the IPT includes a high level analysis of the Project's environmental/statutory requirements. Key issues that will need to be addressed include:

Table 34 Environmental/Statutory Requirements

Element	Possible Impact
Options Analysis and Design	Assessment of planning, environmental and community impacts, relating to design options, worksite locations, ventilation outlets, construction methods and operation.
	Community and stakeholder input into the options analysis, design development and impact assessment.

Costing

Costing of Capex and Opex at this stage of the Project must be done in recognition that contingencies or due allowance needs to be made for the following:

- Design development;
- Scope change;
- Items not specifically itemised in the current estimate;
- Construction cost overruns; and
- Changes in regulations/standards.

Further, as the gaps identified in this section are addressed during the Business Case development, the Project's Capex and Opex costs will be revised accordingly.

Risk Analysis

The preliminary risk analysis conducted has highlighted and quantified the Project's high-level risks. Further analysis is required during the Business Case stage to focus on:

- Detailed risk identification: Further consideration of the Project's specific planned and unplanned risks will need to be conducted once the Project scope and Reference Project is confirmed.
- Risk quantification: This will involve assessing the likelihood of identified risks materialising and the magnitude of their consequences should they arise and ensuring an appropriate value is allocated for each risk in the PSC.
- Risk allocation: This will require allocating the responsibility for dealing with the consequences of each risk to one of the contracted parties, or agreeing to deal with the risk through a specified mechanism which may involve sharing the risk. This process is especially important to conduct the value for money analysis of the PSC and Partnership Model (for PPP delivery) during the Business Case stage. It will also be important to ensure that the final risk allocation matrix and resultant delivery models leave Council with risks it is able to manage.
- Risk mitigation: An assessment of the capacity of the risk-taker to reduce the likelihood of risks occurring or the degree of the risks consequences.
- Monitoring and Review: Consideration of the process required to monitor and review the identified risks and new risks as the Project develops and its environment changes.

It is important to note that the degree of optimism bias in the current Project costs and risk estimations also requires analysis during the Business Case stage. Optimism bias describes the optimistic views of government offices in the development of estimates. As the level of understanding of the project increases, the optimism bias for the project reduces. Key areas of risk contributing to the optimism bias are:

- Disputes and claims;
- Degree of innovation achieved;
- Inadequacy of Business Case;
- Poor project intelligence;
- Site characteristics; and
- Economic influences.[43]

The current level of design development and analysis associated with the Project indicates that these risks have not yet been fully evaluated and will require evaluation as the Project develops.

Escalation Assumptions

The escalation assumptions adopted for the Preliminary Assessment are consistent with the recent Airport Link Business Case, completed by Council in 2006, with a sensitivity conducted on the Building Price Inflation (BPI) adopted (refer Section 8.4.5). During the Business Case stage, it will be important to re-assess these assumptions, especially regarding the BPI, to ensure that the escalation rate accurately reflects the expected growth in market prices over the procurement and construction phases.

12.2.5 Financial Analysis Issues

Financing Assumptions

The financing assumptions required to prepare a Partnership Model for the Project will need to be considered during the Business Case stage. These assumptions include market observed practises to assess how the private sector may finance the Project, including the:

- Gearing ratio;
- Debt margins;
- Required cover ratio;
- Return on equity; and
- Refinancing opportunities.

Discount Rate

The discount rate for the Preliminary PSC is 9.6%, to provide consistency with the *TransApex* Prefeasibility analysis undertaken by Council. During the Business Case stage, the appropriate discount rate for the Project PSC and Partnership model will require analysis and determination. The discount rates identified for the PSC and Partnership model will reflect the financing assumptions and delivery model underlying each scenario.

[43] *Review of Large Public Procurement in the UK*, Mott MacDonald, 2002.

12.2.6 Economic Analysis Issues

It is expected that further economic analysis of Northern Link will occur in line with the development of technical options should the Project progress to the Business Case stage. This includes review of the traffic model results and further consideration of economic issues, including impacts on business activities along the proposed route and around the greater Brisbane area, impacts on tourism markets etc.

It may also be appropriate during the Business Case stage to review the traffic modelling framework and consider the need for measuring traffic using Variable Demand Modelling concepts. The model is used in transport studies to assess the extent of 'induced' or 'generated' traffic which may result from the new infrastructure in an urban setting (through switching of travel modes, new journeys or destinations, changes in land use etc).

In addition, the operation of the tunnel may generate environmental externalities that need to be considered, such as impacts on carbon emissions associated with energy consumption.

12.2.7 Legal Issues

To date, Council has not received specific legal advice on the development of the Project. During the Business Case stage, Council and the IPT will investigate the following legal issues and seek advice as appropriate:

- Consistency of tolling mechanism with the State Government's tolling policy;
- Land acquisition and compensation; and
- Contractual arrangements.

APPENDIX 1 - FINANCIAL ASSUMPTIONS BOOK

1. INTRODUCTION

The following Assumptions Book has been compiled to describe key inputs used in the financial model that has been prepared as part of the Preliminary Assessment stage of Northern Link. This Assumptions Book uses information provided by the Council and its technical advisers, a joint venture between Sinclair Knight Merz Consulting and Connell Wagner (SKM/CW). In this regard, Ernst & Young (EY) has not performed any work in assessing the reasonableness of the assumptions provided by Council and its advisers.

1.1 GLOBAL ASSUMPTIONS

Table 35 Timing

Assumptions		Source
Financial Year End	30 June	Brisbane City Council
Model Start Date	31 December 2011	Brisbane City Council
Financial Close Date	31 December 2011	Brisbane City Council
Construction Start Date	1 January 2012	Brisbane City Council
Construction Period	45-months	SKM/CW
Operation Start Date	1 October 2015	SKM/CW
Operation Period	41.25 years	Brisbane City Council
Period Modelled (During Construction)	Monthly	EY
Period Modelled (Post Construction)	Quarterly	EY

While the construction period was modelled on a monthly basis, these cash flows were restated quarterly (consistent with the operating periods) for discounting purposes.

1.2 ECONOMIC

Following are the key economic assumptions contained in the Financial Model.

Table 36 Key Economic Assumptions

Assumptions		Source
Long Term Inflation Rate	2.50% pa	*TransApex* Prefeasibility
Nominal Discount Rate	9.6%[44]	*TransApex* Prefeasibility

- The Nominal Discount Rate Used to Calculate the NPC under the PSC is a risk adjusted nominal rate that incorporates the Nominal Risk-free Discount Rate. This rate is applied to the cash flows in the PSC model for the purposes of determining a NPC to Council of the Project under traditional procurement.
- The PSC effectively involves discounting after-tax cash flows. This is because no taxes are payable by Council under the PSC model as it is exempt from tax.

[44] The discount rate applied to the project cash flows is based on the Weighted Average Cost of Capital (WACC) of a typical toll-road asset. The main components of the WACC are the debt and equity used to finance the construction of the asset. The key drivers which generate the WACC are the proportion of debt to equity used (i.e. the gearing level) and the cost of the debt and equity assumed (based on market terms).

2. REVENUE

Revenue is derived through the collection of tolls. Revenue is calculated by multiplying toll rates by traffic volume across vehicle classes. For the purposes of consistency, revenue is stated exclusive of GST. The level of toll charges was selected and provided by the Council. Toll charges are set according to daily time and vehicle type (light vehicles (cars) and heavy vehicles (trucks)).

2.1 TOLL CHARGES

Summarised below are toll rates by vehicle class.

Table 37 Toll Rates

Assumptions		Source
Toll Charges (excl. GST)		
Car	$3.37 (June 2006)	Brisbane City Council
Truck	$8.93 (June 2006)	Brisbane City Council
Revenue Inflation	2.50% pa	Brisbane City Council
Base Date for Escalation	June 2006	SKM/CW
Uncollected Tolls (% of Revenue)	2.0%	*TransApex* Prefeasibility

2.1.1 Traffic Forecast

Three traffic forecast cases were prepared by the SKM/CW for Northern Link. The traffic forecasts take into account such factors as a ramp-up phase during the initial years of the operating period, real increases in traffic flow over time, and, a levelling off of traffic into the longer term based on factors such as maturity of the asset and the physical capacity of the tunnel itself.

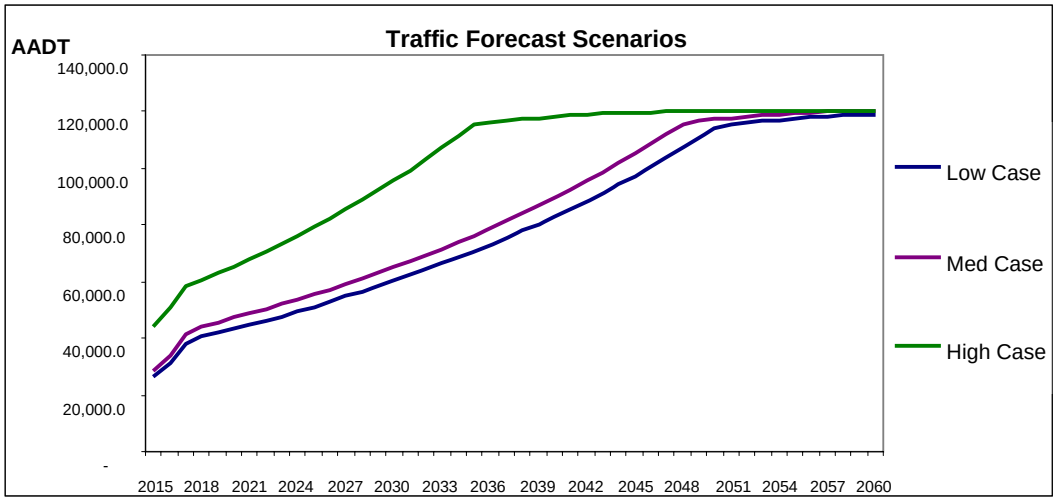
Set out below are the key assumptions for the traffic forecast.

The period covered is December 2015 to December 2060.

Table 38 Key Assumptions for Traffic Forecast

Traffic Case	SKM/CW Traffic Run Reference	Key Features
Medium Case	B1A: Base Case	ABS medium population growth with trend mode share and T3 lanes on Coronation Drive and Milton Road.
Low Case	B2: Enhanced Mode Share	ABS medium population growth with enhanced mode share and T3 lanes on Coronation Drive and Milton Road.
High Case	B3A: Optimal Traffic 45 Year Concession	ABS high population growth with trend mode share and T3 lanes on Coronation Drive and Milton Road.

Figure 27 Traffic Comparison



3. RAW COSTS

Raw costs are the non-risk adjusted Project costs used in the PSC Model including:

- Capital costs;
- Operating costs; and
- Maintenance costs.

There are some raw cost expenses that have been excluded from all classes of expenditure including:

- Revenues to government - components within the cost items above that constitute a cash flow to government (e.g. council rates and levies) are excluded from the measure of raw cash costs and are dealt with separately; and
- GST - consistent with Queensland Government PPP guidelines, GST has been excluded from the both the PSC model.

3.1 CAPITAL EXPENDITURE COSTS

3.1.1 Design and Construction Costs

Construction period cash flows consist of development (including design) and construction costs. These costs have been supplied by the SKM/CW and are apportioned over a monthly basis (see 1.4.3).

Table 39 D&C Costs

Item	Assumption	Source
Total Design & Construction Costs	$1,124 million (Jan 2006)	SKM/CW
Escalation Rate Range	4.5% - 5.5%	Brisbane City Council

3.1.2 Timing of Development and Construction Costs

The timing of development and construction costs was provided by SKM/CW.

Table 40 Timing

Month	Percentage of Total Construction Cost Incurred
Jan 2012	0.97%
Feb 2012	0.97%
Mar 2012	0.97%
Apr 2012	0.97%
May2012	0.97%
Jun 2012	2.12%
Jul 2012	2.12%
Aug 2012	2.12%
Sep 2012	2.12%
Oct 2012	2.12%
Nov 2012	2.12%
Dec 2012	2.12%
Jan 2013	1.94%
Feb 2013	1.94%
Mar 2013	1.94%

Month	Percentage of Total Construction Cost Incurred
Apr 2013	1.94%
May 2013	3.12%
Jun 2013	3.12%
Jul 2013	3.12%
Aug 2013	3.12%
Sep 2013	2.98%
Oct 2013	2.98%
Nov 2013	2.98%
Dec 2013	2.69%
Jan 2014	2.69%
Feb 2014	2.69%
Mar 2014	2.69%
Apr 2014	2.69%
May2014	2.05%
Jun 2014	2.05%
Jul 2014	2.05%
Aug 2014	1.83%
Sep 2014	1.83%
Oct 2014	2.94%
Nov 2014	2.94%
Dec 2014	2.94%
Jan 2015	3.12%
Feb 2015	3.12%
Mar 2015	1.94%
Apr 2015	1.94%
May2015	1.94%
Jun 2015	1.94%
Jul 2015	1.76%
Aug 2015	1.64%
Sep 2015	1.64%

3.2 OPERATIONAL EXPENDITURE

Operating expenses are incurred from operation start date. All annual operating expense data has been provided by SKM/CW.

3.2.1 Operating Expenses

Summarised below are operating expense assumptions in relation to tolling operation.

Table 41 Operating Expense Assumptions

Assumptions		Source
Base Date for Escalation	Dec 2004	Brisbane City Council
Operating Expenses Escalation Rate	2.50% pa	Brisbane City Council

3.2.2 Timing of Operating Expenses

Table 42 Timing

Date	Amount (Real $000's 2004)
Year 1	24,726
Year 2	24,726
Year 3	24,726
Year 4	24,726
Year 5	24,726
Year 6	24,890
Year 7	24,890
Year 8	24,890
Year 9	24,890
Year 10	24,890
Year 11	24,890
Year 12	24,890
Year 13	24,890
Year 14	24,890
Year 15	24,890
Year 16	24,890
Year 17	24,890
Year 18	24,890
Year 19	24,890
Year 20	24,890
Year 21	24,890
Year 22	24,890
Year 23	24,890
Year 24	24,890
Year 25	24,890
Year 26	24,890
Year 27	24,890
Year 28	24,890
Year 29	24,890
Year 30	24,890
Year 31	24,890
Year 32	24,890
Year 33	24,890
Year 34	24,890
Year 35	24,890
Year 36	24,866
Year 37	24,866
Year 38	24,866
Year 39	24,866
Year 40	24,866
Year 41	24,866
Year 42	6,217
Total	**1,025,733**

3.3 MAJOR MAINTENANCE EXPENDITURE

3.3.1 Major Maintenance Costs

Major maintenance amounts include all planned lifecycle capital expenditure. Annualised major maintenance costs were provided by the SKM/CW.

Table 43 Major Maintenance Costs

Assumptions		Source
Base Date for Escalation	Dec 2004	Brisbane City Council
Major Maintenance Escalation Rate	2.50% pa	Brisbane City Council

3.3.2 Timing of Major Maintenance Expenses

Table 44 Timing

Year	Amount (Real $000's 2004)
Year 1	389
Year 2	434
Year 3	520
Year 4	493
Year 5	2,074
Year 6	738
Year 7	506
Year 8	3,254
Year 9	10,608
Year 10	12,074
Year 11	1,804
Year 12	946
Year 13	794
Year 14	912
Year 15	5,821
Year 16	547
Year 17	759
Year 18	3,532
Year 19	12,454
Year 20	17,343
Year 21	4,176
Year 22	1,997
Year 23	1,984
Year 24	8,122
Year 25	18,598
Year 26	6,092
Year 27	1,501
Year 28	3,629
Year 29	12,589
Year 30	19,194
Year 31	5,129
Year 32	5,129
Year 33	5,129
Year 34	5,129
Year 35	5,129

Year	Amount (Real $000's 2004)
Year 36	5,129
Year 37	5,129
Year 38	5,129
Year 39	5,129
Year 40	5,129
Year 41	5,129
Year 42	1,282
Total	**211,589**

3.4 TAXATION

The PSC effectively involves discounting after-tax cash flows. This is because no taxes are payable by Council under the PSC model as it is exempt from tax.

4. RISK

The risk assessment process and calculation of risk values was carried out on construction period and operating period raw cash costs to determine an appropriate estimate of the expected costs of the Project.

Set out below are the key assumptions for the Preliminary Risk Adjusted PSC.

4.1 CONSTRUCTION AND OPERATING COST VALUES

Table 45 Risk Value Assumptions

Item	Percentile	Retained Risk Value
Construction Period Risk ($000 Jan 2006)	10th Percentile	145,000
	50th Percentile	242,000
	90th Percentile	350,000
Operating Period Risk ($000 Dec 2004)	10th Percentile	13,000
	50th Percentile	20,000
	90th Percentile	56,000

The above risk value assumptions regarding construction and operating periods were provided by SKM/CW. The base date for escalation and the associated rate of these values are outlined below. This applies to all raw cost classes.

Table 46 Escalation Base Date

Assumptions		Source
Base Date for Escalation of Construction Risks	Jan 2006	SKM/CW
Construction Risk Escalation Rate	4.5-5.5% pa	SKM/CW
Base Date for Escalation of Operating Risk	Dec 2004	SKM/CW
Operating Risk Escalation Rate	2.50% pa	SKM/CW

4.2 RISK ADJUSTMENT TIMING

In addition to placing a value on risk associated with each category of raw cash flow, the timing of the risk adjustments needs to be considered.

Table 47 Risk Adjustment Timing

Item	Timing	Source
Construction Cost Risk	Aligned with timing of development and construction costs	SKM/CW
Major Maintenance Cost Risk	Aligned with timing of major maintenance costs	SKM/CW

5. AFFORDABILITY ANALYSIS

There are categories of costs which are not directly included in the PSC model, but need to be considered when determining the total cost to Council in delivering the Project. These costs are costs which must be incurred by Council regardless of whether the Project is delivered traditionally or through a PPP. The categories of costs are:

- Land & Preconstruction Costs - being costs incurred by Council up to financial close; and
- Non-Construction Costs - being costs incurred by Council post-financial close, irrespective of the delivery model.

5.1 LAND & PRECONSTRUCTION COSTS

Land & Preconstruction Costs include all costs incurred by Council in relation to the procurement process. For example, the cost of current and planned land acquisitions and consultants fees. These costs need to be separately identified and included over and above the risk-adjusted NPC of the Project as calculated in the PSC, as part of a complete evaluation of the total cost to Council of procuring the Project. For Northern Link these costs and escalation factors are:

Table 48 Costs and Escalation Factors

Item		Source
Land Costs (Real $000's 2007)	50,000	SKM/CW
Preconstruction Costs (Real $000's 2006)	40,000	SKM/CW
Non-Construction Costs (Real $000's 2006)	32,750	SKM/CW
Base Date for Escalation	Apr 2007	SKM/CW
Base Date Escalation Rate	2.5%	Brisbane City Council
Timing of Land Acquisition	30% in 2010; 70% in 2011	Brisbane City Council
Timing of Preconstruction Costs	31 March 2012	SKM/CW
Timing of Non-Construction Costs	As per Construction Cost Profile	SKM/CW