

Brisbane Office
Level 10, North Tower
515 St Paul's Terrace
Locked Bag 4006
Fortitude Valley Q 4006
Tel: (07) 3310 2401
Fax: (07) 3369 9722

Gold Coast Office
Level 2, Podium Level
Emerald Lakes Town Centre
1/3321 Central Place
Carrara QLD 4211
PO Box 391
Nerang Q 4211
Tel: (07) 5502 1585
Fax: (07) 5502 1586

Perth Office
Cardno Centre
2 Bagot Road
PO Box 155, Subiaco
Western Australia 6904 Australia
Tel: (08) 9273 3888
Fax: (08) 9388 3831

Sydney Office
910 Pacific Highway
Gordon NSW 2072
Tel: (02) 9496 7700
Fax: (02) 9499 3902



Ballina Roads Contributions Plan

Technical Background Report – Volume 2

*Prepared for
Ballina Shire Council*



December 2009

WORKS PROGRAM

Item Number

- 1 - 4 Construction of Western Arterial Road
- 5 Signalisation of River Street/Kerr Street – Additional Future Works
- 6 4 Laning of Existing Pacific Highway from Fisheries Creek Bridge to Tweed Street
- 7 4 Laning of Existing Pacific Highway from North Creek Road to Kerr Street
- 8 4 Laning of Kerr Street from Holden Lane to Fox Street
- 9 Duplication of Fisheries Creek Bridge (Separate 2 Lane Structure)
- 10 Duplication of North Creek Bridge (Separate 2 Lane Structure)
- 11 4 Laning of Existing Pacific Highway from Fisheries Creek Bridge to Southern Interchange of Ballina Bypass
- 12–14 Hutley Drive Upgrade and Extensions
- 15 Bangalow Road/Hogan Street Intersection – Construction of New Left-in/Left-out Lanes
- 16 Angels Beach Drive/Sheather Street Intersection – Construction of New Left-in/Left-out Lanes
- 17 Skennars Head Road Upgrade from The Coast Road to North Creek Road
- 18 North Creek Road Upgrade Including Construction of New Bridge
- 19 Skennars Head Distributor
- 20 Ross Lane Improvements
- 21 Construction of Tintenbar Road / Teven Road Climbing Lanes
- 23 Southern Cross Precinct – Construction of Right Turn Ban From Pacific Highway to Southern Cross Drive
- 24 Construction of Links Avenue/Angels Beach Drive Roundabout
- 26 Construction of Skennars Head Road/The Coast Road/Rocky Point Road Roundabout
- 27 Traffic Calming along North Creek Road/Reservoir Road/Hutley Drive
- 28 Construction of River Street/Cherry Street and River Street/Moon Street Roundabouts
- 29 Construction of Tamar Street/Cherry Street Roundabout
- 30 Signalisation of Angels Beach Drive/Bangalow Road Intersection plus 4-laning Bangalow Road to Kerr Street
- 31–33 Construction of Cumbalum North-South Link (Stage 1 only)
- 34 Construction of roundabout at Cumbalum Interchange

Note: There are no item numbers 22 or 25.

Items 1 - 4

Construction of Western Arterial Road

BALLINA SHIRE COUNCIL

SECTION 94 CONTRIBUTIONS

COST ESTIMATE – FINAL STATUS

ITEMS 1-4

18-Aug-09

Western Arterial Rd

Included in estimate:

- Road Link – From Pacific Highway/Nth Creek Rd intersection to Pacific Highway adjacent to Teven Rd
- Sth Roundabout (Western Arterial Rd / Pacific Highway)

Summary of assumptions and exclusions:

1. All estimates are based on the information provided in the attached plans and previously prepared SKM Report (also attached). Option 2A was the preferred alignment on which the following Cardno estimate is based.
2. Previously prepared SKM Report (2006) has been adopted as a base for this estimate using a CPI Index (5%) annually to bring estimates forward to current period.
3. CPI Index (5%) has been adopted based on Australian Bureau of Statistics figures as an average between 2006-2009. (attached)
4. It is noted that the SKM estimates included provision for land acquisitions and service relocations. These allowances have been removed from the SKM estimate and replaced with Council provided estimates.
5. It is unclear whether the SKM estimates included provision for street lighting. No additional allowance for this item has been included in our estimate.
6. The SKM estimate was based on a design which included 2-lane roundabouts at the Southern and Northern extremities of the Western Arterial Rd. In addition, there is also a roundabout to be constructed to serve the proposed River Oaks Estate. Based on advice from Council we have not included a cost for the River Oaks Estate roundabout, and have removed an estimated cost for the Northern roundabout from the SKM estimate, as these are to be funded by private entities.
7. All costs indicated exclude GST.
8. Contingencies were previously allowed for in the SKM report at rates varying between 35% and 100% of the base item cost. These have been retained in the current estimate.

9. It is noted that no checking of SKM's original estimate has been undertaken by Cardno, and we therefore accept no liability for the accuracy of their estimate.

**Western Arterial Road
Option 2A**

Preliminary Estimate of Construction Costs - Final Status

SKM Report Index	Total Estimate	
	SKM Estimate (2006)	5% CPI applied Annually (2009)
Section A - Project Development	\$555,000.00	\$642,481.88
Section B - Investigation and Design	\$2,086,000.00	\$2,414,805.75
Section C - Property Acquisitions* ⁱⁱⁱ	\$0.00	\$0.00
Section D - Public Utility Adjustments* ⁱⁱⁱ	\$0.00	\$0.00
Section E - Construction	\$34,113,000.00	\$39,490,061.63
Section F - Handover	\$40,000.00	\$46,305.00
Sub Total (SKM) Estimate (excl. GST)		\$42,593,654.25
Section G - Northern Roundabout		-\$595,100.00
Contingency (20%)		-\$119,020.00
Sub Total (Northern Roundabout) Estimate (excl. GST)		<b style="color: red;">-\$714,120.00
Total Estimate (excl. GST)		\$41,879,534.25
Property Acquisition costs provided by Council		\$248,500.00
Public Utility costs provided by Council		\$250,000.00
TOTAL ESTIMATE (excl. GST)		\$42,378,034

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.

3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.

4. No geotechnical investigation has been available for review.

5. No preliminary or detailed design has been undertaken.

6. This assessment has been based on the information available at this time.

7. Further contingencies may be necessary based on issues identified during detailed design.

8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.

9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.

10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

*

i. The previously prepared SKM Report (2006) has been adopted as a base for this estimate using a CPI Index (5%) annually to bring estimates forward to current period.

ii. CPI Index (5%) has been adopted based on Australian Bureau of Statistics figures as an average between 2006-2008.

iii. SKM allowances for property acquisition and public utility adjustments have been removed and replaced by Council supplied estimates.

Item	Description	Unit	Qty	Rate	Amount
SECTION A - Northern Roundabout					
A1	SITE ESTABLISHMENT	Item	1	\$15,000.00	\$15,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$5,000.00	\$5,000.00
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	750	\$3.00	\$2,250.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	2,000	\$25.00	\$50,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	200	\$10.00	\$2,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	100	\$126.00	\$12,600.00
A5	ROADWORKS				
a)	Flexible pavement (AC) including general drainage requirements	m ²	2,300	\$150.00	\$345,000.00
b)	Rigid Pavement (Reinforced Concrete) including general drainage requirements <i>(per meter of carriageway)</i>	m		\$3,000.00	
c)	Kerb for traffic diversion, roundabout, medians	m	400	\$40.00	\$16,000.00
d)	Concrete Infill of roundabout, medians	m ²	150	\$90.00	\$13,500.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²		\$20.00	
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	250	\$150.00	\$37,500.00
g)	Construct 2.7m width shared footpath / cycleway <i>(100mm thick reinforced plain concrete)</i>	m ²	50	\$150.00	\$7,500.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place (Prov. Qty) <i>(per meter of carriageway)</i>	m	250	\$5.00	\$1,250.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	250	\$8.00	\$2,000.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	6,000	\$0.50	\$3,000.00
b)	Turfing to footpaths and designated areas	m ²	1,500	\$5.00	\$7,500.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$20,000.00	\$20,000.00
b)	Landscaping	m	250	\$100.00	\$25,000.00
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION A - Northern Roundabout - Total					\$595,100.00

Australia - Consumer Price Index

You came to this page for information on the Australian CPI, now see our other pages for information on Australian salaries.



**NATIONAL
REMUNERATION
CENTRE**

The NRC is a leading, independent, Australian provider of salary information and job evaluation services. Our salary database was established in 1972 and has been continuously maintained. As well as our all-industries job evaluated and position description matched surveys we conduct or process some of Australia's largest industry surveys. Our job evaluation system Jobscore is widely used to establish pay structures and manage pay policy.

All our surveys are internet based and secure password protected, including for the collection of data (together with salary package calculation routines) and the delivery of results. Results include: (a) comprehensive salary package details for all jobs surveyed, (b) performance appraisal-linked salary policy formulation guidelines, based on current market data, (c) salary movements and forecasts, (d) comprehensive consumer price movements together with forecasts, and (d) National and State average weekly earnings data.

[▶ NRC Home](#)

[▶ Site Map](#)

[▶ Contact Us](#)

Australian Consumer Price Index.

All data included in this section are sourced from Australian Bureau of Statistics publications.

CPI (All groups) to September Quarter 2008 - Percentage Movements

City	Year to Sept Qtr 08	Sept Qtr 07 to Sept Qtr 08	June Qtr 08 to Sept Qtr 08
8 Capitals	4.2	5.0	1.2
Canberra	4.4	5.2	1.5
Sydney	3.9	4.9	1.1
Melbourne	4.2	4.8	1.2
Brisbane	4.9	5.6	1.4
Adelaide	4.2	5.1	1.3
Perth	4.2	4.9	1.0
Hobart	3.6	4.3	1.1
Darwin	3.8	4.5	1.7

Year to Sep Qtr 08 is the average of the four quarters to September 08 (rounded to nearest 0.1 percent).

Disclaimer:

Australian Bureau of Statistics figures are displayed as a matter of reference only. The National Remuneration Centre has taken reasonable care in presenting such figures but neither warrants their correctness nor accepts any liability arising from their use and recommends that the figures be verified with the ABS before any action based thereon is taken.

What is the CPI?

The Consumer Price Index is a general indicator of the rate of change in prices paid by household consumers for the goods and services they buy.

The CPI has been an important economic indicator for many years and actions related to movements in it have had a direct or indirect effect on all Australians. It has been used as a starting point by parties to the national wage hearings and by the Industrial Relations Commission in determining the size and nature of wage adjustments.

The CPI has also been used in recent years in the indexation of pension and superannuation payments. Many business contracts are regularly adjusted to take account of changes in the CPI. Rental agreements, insurance coverage and child support payments are frequently tied in some manner to changes in the CPI.

Copyright (C) 2008 National Remuneration Centre

West Ballina Arterial

ASSESSMENT OF OPTION 2 SUB-OPTIONS AND OPTION 2A

- Final
- November 2006



West Ballina Arterial

ASSESSMENT OF OPTION 2 SUB-OPTIONS AND OPTION 2A

- Final
- November 2006

Sinclair Knight Merz
ABN 37 001 024 095
100 Christie Street
PO Box 164
St Leonards NSW
Australia 1590
Tel: +61 2 9928 2100
Fax: +61 2 9928 2500
Web: www.skmconsulting.com

COPYRIGHT: The concepts and information contained in this document are the property of Sinclair Knight Merz Pty Ltd. Use or copying of this document in whole or in part without the written permission of Sinclair Knight Merz constitutes an infringement of copyright.



Contents

1.	Introduction	1
2.	The route options	3
2.1	Summary description of the options	3
2.1.1	Route Option 2 (SK 017)	3
2.1.2	Route Option 2 (SK 019)	1
2.1.3	Route Option 2A	1
2.2	Road design parameters	1
2.2.1	Road geometry	1
2.2.2	Flood immunity	2
2.2.3	Soil conditions	3
3.	Assessment criteria	4
3.1	Land use impacts	4
3.2	Ecological impacts	5
3.3	Noise impacts	5
3.4	Construction cost	7
3.5	Traffic and transport considerations	9
4.	Assessment of impacts of the route options	11
4.1	Land use and property	11
4.1.1	Existing land use, zoning and ownership	11
4.1.2	Options assessment	16
4.2	Ecology	19
4.2.1	Existing ecological conditions	19
4.2.2	Options assessment	22
4.3	Noise	24
4.3.1	Existing conditions	24
4.3.2	Options assessment	26
4.3.3	Mitigation measures	27
4.3.4	Cost estimate for noise mitigation	28
4.4	Cost estimates	30
5.	Summary and conclusions	32
5.1	Comparison of Option 2 sub-options	32
5.2	Comparison of Option 2 and Option 2A	33
	Appendix A Plans of the route options	
	Appendix B Noise assessment figures	



Appendix C Detailed cost spread sheets

Figures

■	Figure 2-1: Option 2 sub-options and Option 2A	4
■	Figure 4-1: Existing land use	12
■	Figure 4-2: Current zoning under Ballina LEP	13
■	Figure 4-3: Existing land ownership	14
■	Figure 4-4: Endangered Ecological Communities	21
■	Figure 4-5: Examples of earth mound and combined earth mound and noise wall type barriers	29

Tables

■	Table 3-1: Relevant noise criteria	6
■	Table 4-1: Vegetation communities in the study area west of Fishery Creek	19
■	Table 4-2: Summary of ecological impacts	23
■	Table 4-3: Existing noise levels on the Pacific Highway and Kerr Street [#]	25
■	Table 4-4: Cost estimates for noise mitigation measures	28
■	Table 4-5: Earth mound cost estimates	30
■	Table 5-1: Summary comparison of Option 2 sub-options	32
■	Table 5-2: Summary comparison of Option 2 and Option 2A	33



Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Draft 1					
Final	13 Nov 06	P Robilliard	P Robilliard	13 Nov 06	Incorporate client comments and figures in appendix

Distribution of copies

Revision	Copy no	Quantity	Issued to
Draft 1	1	1	Andrew Jeavons (BCC)
Final	1	1	Andrew Jeavons (BCC)
	2	1	SKM library
	3	1	File (hard copy)

Printed:	13 November 2006
Last saved:	13 November 2006 09:42 AM
File name:	I:\ENVR\Projects\EN01619\L Transfer\EN01619 - West Ballina Arterial\500 - Option 2\Report\Final report Nov 06.doc
Author:	Chris Havelock/Paul Robilliard
Project manager:	Paul Robilliard
Name of organisation:	Ballina Shire Council
Name of project:	West Ballina Arterial
Name of document:	Assessment of Option 2 Sub-options
Document version:	Final
Project number:	EN01619.500



1. Introduction

Ballina Shire Council has resolved to construct a new arterial road to serve local traffic needs in the Ballina area. The West Ballina Arterial would provide a new arterial standard connection linking the Pacific Highway at West Ballina and North Ballina. The West Ballina Arterial is primarily intended to serve strong and growing demand for local traffic between West Ballina and North and East Ballina, and continuing through to Lennox Head. It would also relieve congestion in the town centre predicted by traffic modelling to be critical after the construction of the Pacific Highway bypass. Ballina Shire Council has engaged Sinclair Knight Merz (SKM) to assess route options and prepare an Environmental Impact Statement (EIS) for the West Ballina Arterial.

The first stage of the project was to undertake an assessment of a number of potential route options and to provide information to Council to allow it to make an informed decision on the preferred route. An assessment of five route options was undertaken and a route options assessment report prepared for Council in April 2004 (*Proposed West Ballina Arterial Road – Route Options Assessment Report Final Draft SKM 2004*), hereafter referred to as “the 2004 report”. The assessment investigated the potential environmental and community impacts of each of the route options and undertook a comparative assessment of the options in terms of construction cost, traffic and road network performance.

Council publicly exhibited the 2004 report and invited submissions from the community. Following the public display period, and after consideration of submissions, Council undertook a value management study and workshop, which concluded that more detailed analysis of Route Options 2 and 5 was warranted. The main difference between Options 2 and 5 is in the connection with the Pacific Highway at the eastern end. That analysis, undertaken by SKM in September 2005, is detailed in a second Route Options Report prepared for the project (*Proposed West Ballina Arterial Road – Assessment Route Options 2 and 5 Final Draft SKM 2005*), hereafter referred to as “the 2005 report”.

Following the 2005 report, Council determined to adopt Option 2 as the preferred route for the West Ballina Arterial Road. However, further issues were brought before Council by the community and land owners in relation to the impacts of this option on existing and future development in West Ballina. This includes the Emmanuel Anglican College, residents in the Horizon Drive area of West Ballina and the approved ‘Riverbend Estate’ (currently under construction). All these developments are located north of the Pacific Highway either to the east of west of Option 2 of the West Ballina Arterial.

In response to these concerns, Council engaged SKM to develop a number of sub-options to Option 2 with different alignments west of Fishery Creek. A submission to Council from the developer of the Riverbend Estate identified an additional option that follows the alignment of Option 2 east of



Fishery Creek, then continues to the north of the Riverbend Estate before turning south and connecting with the Pacific Highway to the west of the Riverbend Estate: Option 2A. Council determined that further investigation into sub-options for Option 2 and Option 2A is warranted prior to a decision on a preferred route. This report contains that assessment.

The approach to comparative assessment of the options includes a number of steps:

- Additional technical investigations, and review of previous investigations, to determine the impacts of the options.
- Comparative assessment of the sub-options for Option 2 to determine a preferred sub-option.
- Comparative assessment of the preferred sub-option for Option 2 and Option 2A to inform a recommendation to Council on a preferred route for the project.



2. The route options

Two sub-options for Option 2 have been identified for further assessment, referred to as SK017 and SK019. Option 2A connects to the Pacific Highway approximately 370 metres (m) west of Burns Point Ferry Road (the Option 2 intersection) and passes through cane farms and grazing land to the west and north of Riverbend Estate. The two sub options for Option 2, and Option 2A, are shown on **Figure 2-1**: and the options are described below.

All of the Option 2 sub-options share the same alignment east of Fishery Creek. East of the creek crossing, the options would pass through open grazing and crop lands to the west and north of the West Ballina Sewage Treatment Plant before turning north-east and connecting to the Pacific Highway at North Creek Road intersection. The options pass through the approved River Oaks estate, south-west of North Creek Road and the Pacific Highway, and provisions have been made in the design of the subdivision and approval conditions to accommodate the arterial road, including the provision of noise mitigation.

2.1 Summary description of the options

2.1.1 Route Option 2 (SK 017)

Route Option 2 (SK 017) is approximately 3.3 kilometres (km) long and intersects with the Pacific Highway at Burns Point Ferry Road in West Ballina. A new two lane roundabout is in operation at this intersection. Option 2 travels north between the Riverbend Estate and Emmanuel Anglican College. A 35 metre wide strip of land is included in the plan of subdivision for Riverbend Estate and is required, under the subdivision conditions of consent, to be dedicated to Council at no cost by the developer. At the north-eastern corner of the Riverbend Estate, Option 2 (SK017) partially encroaches into the approved subdivision, and is partially within the dedicated road corridor. It then passes through land that, in the subdivision conditions of consent, is set aside as a habitat rehabilitation area. North and west of the Riverbend property, it passes to the north of a remnant stand of native vegetation, and through private grazing property. It then turns east and crosses Fishery Creek. From Fishery Creek east to the Pacific Highway at North Creek Road, it follows the alignment of the original Option 2 as assessed in the 2004 report and 2005 report.

This option was developed to minimise impacts on remnant vegetation and maximise separation of the West Ballina Arterial from residences on Horizon Drive, however, it directly impacts on the Riverbend Estate. A retaining wall has been incorporated in the design of this option to avoid direct impacts on the Emmanuel Anglican College. A Type F Barrier with noise wall is included in the design on the western side of this option towards the north of the Riverbend Estate to minimise the area of land within Riverbend Estate requiring acquisition.



Figure 2-1 Option 2 sub-options and Option 2A



2.1.2 Route Option 2 (SK 019)

Route Option 2 (SK 019) is approximately 3.2km long. It intersects with the Pacific Highway at the same location as Option 2 (SK 017), at Burns Point Ferry Road. Option 2 (SK019) stays entirely within the dedicated road corridor through the Riverbend Estate. North of the Emmanuel Anglican College, this option travels north-east and passes through a stand of remnant native vegetation. It then meets the alignment of SK017 and crosses Fishery Creek, following the same alignment to the intersection of the Pacific Highway and North Creek Road.

This alignment would avoid direct impacts on the Riverbend Estate and the Emmanuel Anglican College, however, some use of retaining walls is incorporated in the design to avoid encroachment into the Emmanuel Anglican College.

2.1.3 Route Option 2A

Route Option 2A is approximately 3.6km long and would intersect with the Pacific Highway at a new intersection to be constructed approximately 370m west of Burns Point Ferry Road. The intersection would be a new two lane roundabout. Option 2A includes realignment of the Pacific Highway to the north of its current alignment for a distance of approximately 300m at the intersection to ensure access to the Sunmaid Caravan Park and boat ramp at Emigrant Creek can be retained.

This option travels north from the proposed intersection and then turns east to pass to the north of the Riverbend Estate. It then continues through rural land to Fishery Creek, where it joins the alignment of Option 2 and continues to the Pacific Highway at North Creek Road. Option 2A avoids direct impacts with the Riverbend Estate and minimises impacts on remnant native vegetation north of Horizon Drive.

2.2 Road design parameters

2.2.1 Road geometry

The concept design for each option is based on the road being a single carriageway with one lane in each direction, and an 80km per hour design speed. Each lane would be 3.5m wide, with a 2m shoulder on each side. Within urban areas a 2.7m wide shared pedestrian/cycle path would be provided on both sides of the road. In rural areas a path would be provided on one side of the road only (the eastern/southern side of the road). Lighting, safety barriers and other safety measures would be provided in accordance with Austroads standards. The concept design would include indicative horizontal and vertical alignments, intersection designs, locations and scale of noise mitigation measures and a landscape concept plan.



A two lane roundabout would be provided at the intersection with the Pacific Highway at North Creek Road. Another roundabout would be provided within the West Ballina Arterial to provide access to the approved River Oaks estate, and this is to be constructed at the developer's cost.

Sub-options SK017 and SK019 would utilise the already constructed two lane roundabout at the intersection of the Pacific Highway and Burns Point Ferry Road, whereas Option 2A requires an additional intersection with the Pacific Highway. Currently an intersection allows access from Emigrant Creek Lane onto the Highway. This intersection would be unsuitable for access onto the West Ballina Arterial and the design has included a two lane roundabout and dedicated access road at this intersection. Option 2A requires re-alignment of a section of the existing Pacific Highway to accommodate the roundabout and re-aligned Emigrant Creek Road, and the design of the project has included this re-alignment. The re-alignment ties in with the proposed design of the Ballina Bypass (an RTA project) with the re-aligned Pacific Highway commencing at the end of the off ramps from the Ballina Bypass (based on current design options provided to Council by the RTA).

The road would not include kerbs and gutters, except on bridges and culverts and through urban areas, including any approved subdivisions, where kerbs would collect stormwater and drain it to collection ponds. These would then discharge into watercourses in accordance with government agency requirements.

The combined pedestrian/cycle path would be constructed on the same elevation as the road, however, at a later stage in the design consideration may be given to locating the path at the foot of the batter slope in rural areas to reduce fill requirements.

2.2.2 Flood immunity

The design of the road, including openings at waterway crossings, must consider the potential for flooding impacts on other property, and the flood immunity requirements of the road itself. The arterial route has been designed to provide immunity to the 1:20 year flood event for roads and 1:100 for bridges, as defined by the hydrological study previously undertaken by WBM Oceanics 2004 for the assessment of route options for the West Ballina Arterial. Preliminary estimates of the size of required bridges and culverts have been included in the concept designs and cost estimates. The potential to provide a lesser level of flood immunity would be investigated for the preferred option, considering upstream flooding impacts and the required design standards of the road.

The Option 2 alignment West of Fishery Creek has been previously designed to include approximately 300m of culvert openings consisting of two separate units in order to provide the 1:20 year flood immunity. The sub-options for Option 2 are considered to require the same waterway openings.



For the purposes of this study, including the development of the Option 2A concept design, requirements for waterway openings for Option 2 west of Fishery Creek, have been gained by extrapolation of the data provided in the WBM Oceanics study. In that study Option 2 was identified as located upstream of urban areas and therefore potentially less constrained by the need to minimise flooding impacts on upstream properties. The same number and size of waterway openings has been assumed for Option 2A, as for the Option 2 sub-options, as all options pass through similar topography and are within the same flood storage area.

2.2.3 Soil conditions

Soil conditions have the potential to substantially impact on the cost of the route options. Compaction rates have the potential to influence construction time, as long periods of pre-settlement may be required in some sections of some route options, particularly west of and in the vicinity of Fishery Creek. Soil conditions also influence trafficability for construction vehicles, and this may be exacerbated by wet weather. Acid sulphate soils exist across the study area and may require specific design measures to ensure the road is not impacted by acidic soils, and would not result in acid sulphate soils impacting on other developments or the natural environment. On the basis of preliminary geotechnical investigations undertaken previously for the options assessment for the West Ballina Arterial (see the 2004 report for details), soil conditions west of Fishery Creek are assumed to be the same for all options, for the purposes of option comparison.



3. Assessment criteria

The assessment of the route options is focused on the following key issues that have been identified as key differentiators between the options:

- Existing and future land uses, including existing and approved residential developments and impacts on rural land;
- Ecological impacts, in particular impacts on endangered ecological communities;
- Potential road noise impacts and the need for noise mitigation treatments; and
- Construction cost estimates.

The traffic and transport performance of Option 2 and Option 2A has been separately assessed by consultants engaged directly by Council. Council has advised SKM that both options have similar traffic and transport performance. This issue is therefore not subject to detailed consideration in this report.

This assessment focuses on the option alignments west of Fishery Creek. However, impacts and cost estimates are provided for the entire length of each option to assist Council to understand the overall impacts of each option in reaching a decision on a preferred route.

The following sections provide an overview of the criteria used in the assessment.

3.1 Land use impacts

The majority of the land through which the options would pass is rural land that is used for either cropping (sugar cane and tea-tree) or grazing. Impacts in terms of reduced capacity for agricultural production are important in the context of current rural land use. Impacts on the Emmanuel Anglican College and approved residential estates at the southern and northern ends of the West Ballina Arterial (Riverbend Estate and River Oaks Estate) are important considerations.

As the West Ballina Arterial is located near the fringe of the Ballina urban area, there are particular issues associated with impacts on residential and community related land uses. Urban expansion associated with the continued growth of Ballina and the construction of the Ballina Bypass, which may create pressure for land use change in the West Ballina area, is an important consideration in determining the impacts of the project on land use and planning.

The criteria used in the comparative assessment of the route options to determine impacts on land use are:

- Area of private property requiring acquisition (excluding land that is to be dedicated to Council at no cost).



- Impacts on existing and approved residential subdivisions.
- Impacts on agricultural production.
- Consistency with Council planning controls and potential future land use in the West Ballina area.

3.2 Ecological impacts

Clearing of remnant vegetation should be minimised to reduce the potential for ecological impacts. Vegetation clearing can be minimised by careful alignment design and by minimising the footprint. One of the main purposes of this investigation is to assess the impacts of each sub-option on remnant vegetation as there would be substantially different impacts between sub-options in this regard. The majority of remnant vegetation in the West Ballina area (particularly around Fishery Creek) has been identified as comprising one or more endangered ecological communities (EEC) under the *Threatened Species Conservation Act 1997*. Impacts on EECs would require compensatory habitat of at a rate of approximately 3:1, based on advice from the Department of Environment and Conservation (DEC). This would be in addition to the compensatory habitat requirements for impacts on SEPP 14 wetlands (discussed below). Impacts on EECs have been considered in terms of the area of clearing that would be required for each option within a 40 metre wide road reserve. Costs for compensatory habitat have also been included in the cost estimates for each option.

Impacts on SEPP 14 wetlands are an important design consideration. Direct impacts on SEPP 14 wetlands require provision of compensatory wetlands in suitable locations, at a ratio of 10:1. This can add substantially to the cost of the project through land acquisition and wetland establishment and maintenance costs. Impacts on SEPP 14 wetlands are, however, common to all options (at the Fishery Creek crossing) and therefore do not differentiate between the options. Costs for compensatory habitat at the rate of 10:1 have been included in the cost estimates.

The criteria used to assess the impacts of the route options on the ecology of the area are:

- The area of vegetation (EEC) to be directly cleared.
- Extent of edge effects on vegetation remnants.
- Fragmentation of vegetation and habitats.
- Impacts on fauna corridors.

3.3 Noise impacts

Proximity to residential areas and other sensitive land uses requires consideration of compliance with DEC guidelines for road traffic noise. Noise mitigation measures are likely to be required and the design of the road must allow for these measures to be incorporated. Noise mounds are a relatively cost-effective and less visually intrusive means of reducing noise impacts. However,



they require more land than noise walls and may impact on the floodplain. Noise walls can be highly effective in reducing noise impacts. However, they can be visually intrusive and are expensive to construct. Decisions on preferred noise mitigation measures would be made in consultation with affected community members and would be determined at the EIS stage of the project.

For the purpose of comparing Options 2 sub-options, the analysis has used modelling to predict compliance with the relevant criteria established in the DEC's *Environmental Criteria for Road Traffic Noise* (Environment Protection Authority, 2000). The criteria relevant to the project are summarised in **Table 3-1**.

■ **Table 3-1: Relevant noise criteria**

Sensitive land uses	Criteria	
	Day (7 am–10 pm) dB(A)	Night (10 pm–7 am) dB(A)
Residences	L _{Aeq} (15hour) 55	L _{Aeq} (9hour) 50
Proposed school classrooms	L _{Aeq} (1h) 40 (internal)	Not Applicable
Existing schools	L _{Aeq} (1h) 45 (internal)	Not Applicable
Passive recreation and school playgrounds	Collector and local roads: <ul style="list-style-type: none"> ■ L_{Aeq}(1h) 55 Freeway/ arterial roads: <ul style="list-style-type: none"> ■ L_{Aeq}(15h) 55 	Not Applicable

For the purposes of this assessment, where noise modelling indicates that the relevant criteria are to be exceeded, noise walls have been incorporated in the design and the height and length required to achieve compliance with the criteria. The cost of constructing noise walls has been included in the cost estimates for each option.

Where existing levels of traffic noise exceed the criteria, all feasible and reasonable noise control measures should be evaluated and applied. Where this has been done and the internal or external criteria (as appropriate) cannot be achieved, the proposed road or land use development should be designed so as not to increase existing road traffic noise levels by more than 0.5 dB(A) for new roads and 2 dB(A) for redeveloped roads or land use development with potential to create additional traffic.

The assessment of noise impacts of the route options is based on compliance with the DEC criteria. Specific criteria used to measure the impacts of the options are:

- The surface area of noise walls required to meet the DEC criteria.
- Risks associated with the ability to achieve the DEC criteria with mitigation.



3.4 Construction cost

Construction cost is an important consideration in differentiating between the route options under consideration. The project must provide value for money to Council and the community by achieving traffic and transport objectives, minimising environmental impacts and minimising the cost of the project.

For the purposes of comparative assessment of route options in this report, an estimate of construction cost has been made for each option. The estimate has been prepared based on strategic level information relating to the design of the road, the environmental constraints and the likely approval requirements for the project. Recognising the potential for actual costs to vary considerably through the design, environmental assessment and approval of the preferred option (once selected) a 50% contingency has been applied to most cost items in calculating the cost estimates for each option and while this impacts on the overall cost estimates it does not impact on the relative cost differences between the options, which is of most importance at this stage of the project.

The cost estimates are based on the following assumptions, which would be subject to further refinement for the preferred option:

- The design of each option is as described in **Section 2.2**.
- The length of road to be constructed. The length of each route option is as stated in the description of route options in **Section 2.1** of this report.
- Intersections with the Pacific Highway would be two lane roundabouts.
- Foundation conditions such as stability and compaction. The design of foundations, including the need for piling in areas with poor soils has been considered in the costing of options.
- Fill volume requirements. It has been assumed that the road would be constructed to provide flood immunity for the 1:20 year flood event as specified by WBM at Appendix C of the 2004 report. Volume estimates were generated by multiplying average fill height by the road footprint area.
- Waterway crossings as identified in the WBM report at Appendix C of the 2004 report have been incorporated into the cost estimates. The same waterway crossings have been assumed to apply to all options.
- Specific noise mitigation measures have not been finalised for each route option. However, indicative assessment has determined indicative locations, lengths and heights for each option where noise walls may potentially be required. Costs for these noise walls have been included in the cost estimates at a rate per square metre. Costs for mitigation required for the Emmanuel Anglican College have been excluded as the development consent for the school specifies that noise mitigation measures are to be provided at the College's expense.



- Estimates of property acquisition costs have been included for each route option based on the following¹:
 - A rate of \$90,000 per hectare for rural land (as per the Ballina Road Contribution Plan (2002), with the area of land based on a nominal road reserve width of 35 metres. The area of land excludes land already owned by Council but does not exclude the RTA owned road corridor.
 - Rates for acquisition of land within the Riverbend Estate, based on rates per residential lot supplied by the developer to Council in June 2006. These include a rate for the direct cost of acquiring the lot of \$70,000 plus other indirect costs that would be payable under the *Land Acquisition (Just Terms Compensation) Act* at a rate of \$40,000 per lot, providing a total of \$110,000 per affected lot.
- Costs for compensatory habitat provision, including property acquisition and ongoing management costs, to comply with government agency requirements in relation to protected ecological habitats. Estimates have been provided based on the rate for rural land of \$90,000 per hectare and using the compensatory habitat ratios of 10:1 for SEPP 14 wetlands and 3:1 for EECs². These costs are preliminary estimates at this stage of the project as the actual land to be acquired as compensatory habitat is yet to be determined and actual acquisition costs may vary.

Recent development approvals for subdivisions at either end of the West Ballina Arterial route options included conditions in relation to construction of access roads from Burns Point Ferry Road and North Creek Road to the subdivision entrances. The costs of these sections of road are to be borne by the developers, to construct access to their development sites in accordance with Council requirements. The Riverbend Estate, at West Ballina, has been commenced and the roundabout at the intersection of Burns Point Ferry Road and the Pacific Highway has been constructed, so is not included in the construction costs for the Option 2 sub-options. The section of the road required to access the estate has also been constructed at the developer's expenses but the costs of upgrading the road to meet the design standards for the West Ballina Arterial would be borne by Council.

¹ The land values have been included for the purpose of comparison only and are not valuations for the purpose of acquisition negotiations. No inference should be made in terms of property values or Council's position on land acquisition based on the information in this Report. Full land valuations, including consideration of the need for additional acquisition within the road reserve and land for ancillary purposes, would be undertaken in conjunction with any proposed property acquisitions for the preferred route only.

² Where EECs and SEPP 14 wetlands coincide, compensatory habitat has been calculated for both, meaning that the total compensatory habitat rate in these locations is 13:1.



For this reason, the full cost of construction of this section of the road has been included in the cost estimates.

For Option 2A, Council has advised by the developer of the Riverbend Estate that all land it currently owns and land to the west of the Riverbend Estate is the subject of an agreement to transfer to Council, at no cost, the land required for the West Ballina Arterial. Therefore, for Option 2A, the cost estimates provided at **Section 4.4** exclude the acquisition of this land on the basis that the land would be transferred to Council at no cost.

Costs associated with constructing the section of the Pacific Highway that is required to be re-aligned to accommodate the intersection with Option 2A are included in the cost estimate for this option.

Recurrent costs have not been included in the estimate of costs. Maintenance and repair costs would be a consideration for Council over the life of the project but would not significantly differentiate between the options under consideration.

3.5 Traffic and transport considerations

The following summary of traffic and transport issues relates mainly to the effects of the Western Ballina Arterial that would occur in the western portion of the study area. Traffic and transport considerations are not criteria that have been used in the comparative assessment of the options, however, the following information is provided to demonstrate how the options would meet the road network objectives of the project.

The traffic and transport data from 2003 study indicated that the traffic volumes on 2015 on Kerr Street would be reduced by around 9,000 vpd assuming both the Ballina Bypass and West Ballina Arterial are operational. The Pacific Highway between Burns Point Ferry Road and Kerr Street would also experience a reduction of approximately 9,000 vpd in 2015 and 2033 compared to the do nothing option.

Regardless of the West Ballina Arterial, this section of the Pacific Highway would be likely to require intersection upgrades prior to 2015 to two lane roundabouts and widening to four lanes operate within capacity. The upgrade of the intersection of Burns Point Ferry Road has now occurred and this provides the main access to the Riverbend Estate and Option 2 for the West Ballina Arterial.

The Option 2 intersection would result in a reduction in traffic volumes on the Pacific Highway east of Burns Point Ferry Road as local through traffic (ie. Traffic that does not have a destination within the Ballina town centre area) would be likely to use the West Ballina Arterial.



Options to locate the intersection further west from Burns Point Ferry Road were analysed through traffic modelling to identify whether this would affect the projected traffic volumes using the West Ballina Arterial. The analysis showed that moving the intersection up to 400m further west could produce differences of 100 to 200vpd compared with the Option 2 intersection at Burns Point Ferry Road. However, the analysis also identified that 400m was the maximum extent the intersection could be moved before proportionally greater differences started to emerge in the figures. An intersection too far west would reduce the attraction of the West Ballina Arterial to traffic with an origin in West Ballina, with an increasing proportion choosing to continue to use the Pacific Highway and Kerr Street to access North Ballina and beyond.

The extent to which the intersection can be moved west is also limited by the proposed interchange works for the Ballina Bypass, which are to be located in the vicinity of the current intersection of Teven Road and the Pacific Highway. The design of the interchange is yet to be finalised and the RTA is considering a number of options, all of which include off and on ramps connecting to the Pacific Highway west of the Teven Road intersection. The need to re-align the Pacific Highway to accommodate the roundabout for the Option 2A intersection of the West Ballina Arterial and Pacific Highway means that to tie in with the on and off ramps a reasonable separation distance must be maintained between the interchange and intersection. The location of the Option 2A intersection has been located to ensure that the re-alignment of the highway does not impact on the design of the interchange.

As the performance of Option 2 and Option 2A as part of the local and regional road network is generally similar, no further consideration of traffic and transport issues has been undertaken for this assessment.



4. Assessment of impacts of the route options

The following assessment of the Option 2 sub-options aims to identify the impacts where they occur west of Fishery Creek. However, as this report aims to make a comparative analysis of the options, the assessment focuses on those impacts that assist in differentiating between the options. That is, it is apparent from the description of the study area west of Fishery Creek that the environmental issues and constraints that relate to zoning controls, soil landscapes, topography, hydrology, visual amenity, heritage and traffic would be very much the same for either of the options. Therefore, the assessment is focused only on aspects of the environment for the options that would provide substantial differences for comparison.

4.1 Land use and property

4.1.1 Existing land use, zoning and ownership

Land use

Existing land use in the area of the route options is illustrated at **Figure 4-1**. The study area is situated on the fringe of West Ballina in an area that is changing from a rural character to a developed more urbanised setting. The majority of the land north of the Highway is used for rural production uses, predominantly cane growing and grazing. However, there are residential and community uses in the vicinity of the options.

Construction within the Riverbend Estate is approximately 60% complete. The roundabout intersection and access road for this development has been constructed up to the estate entrance. The eastern boundary of this development between the access road and the development has been landscaped. East of this property is the Emmanuel Anglican College, consisting of a number of single storey brick buildings and playing fields. The layout for both the College and Riverbend Estate reflects Council's previously identified alignment for the West Ballina Arterial, connecting to the Pacific Highway at Burns Point Ferry Road. Both developments have proceeded with full knowledge of Council's intentions in relation to the West Ballina Arterial and the conditions of consent for both include conditions relating to the West Ballina Arterial.

Relatively recent residential development is located along Horizon Drive which backs onto an area of predominantly cleared land, previously forming part of the RTA zoned road reserve for the original Western Ballina Bypass alignment. Native vegetation within the road reserve area has partly regenerated aided by the proximity to the large stand of remnant vegetation that stretches east towards Fishery Creek.

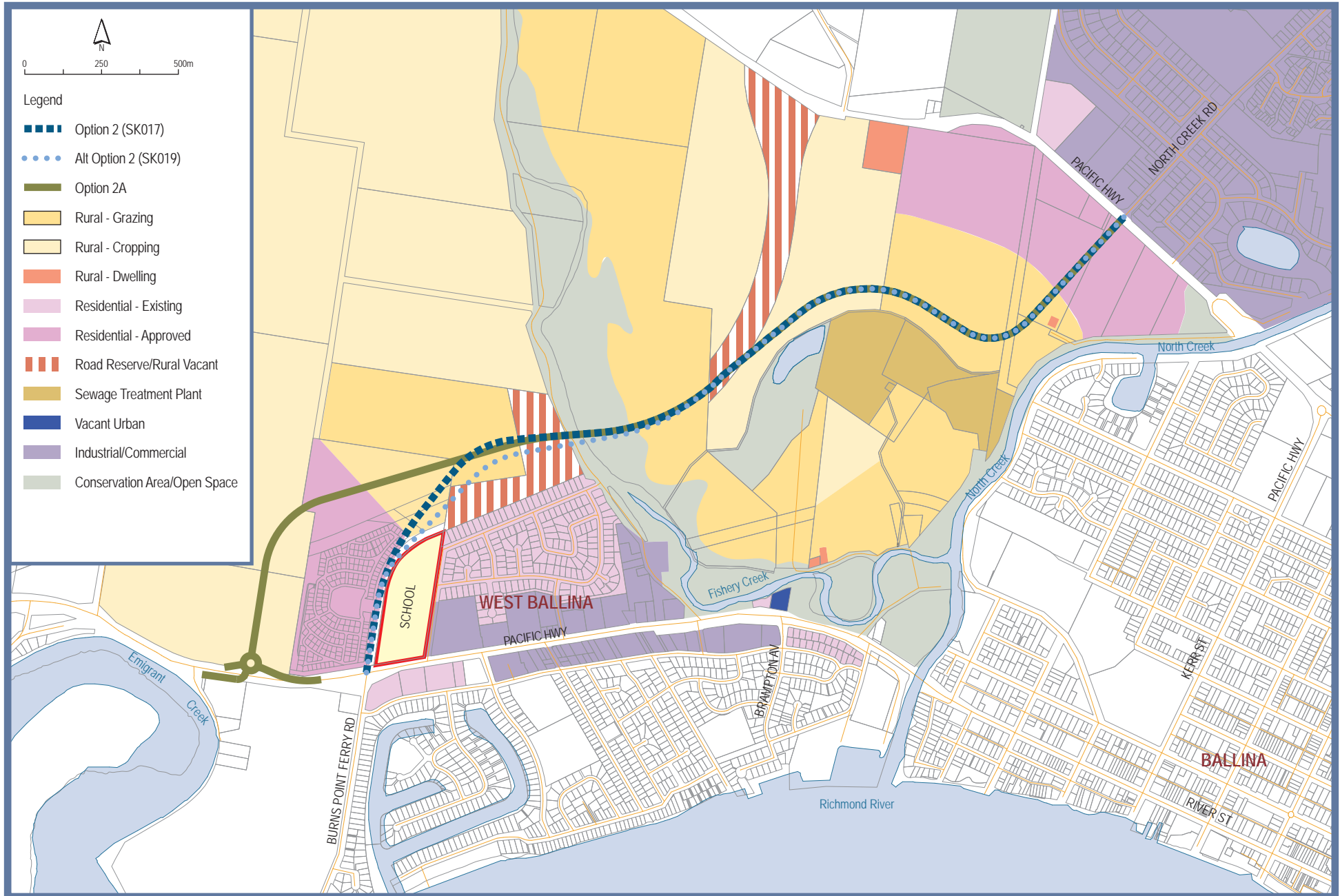


Figure 4-1 Existing Land Use

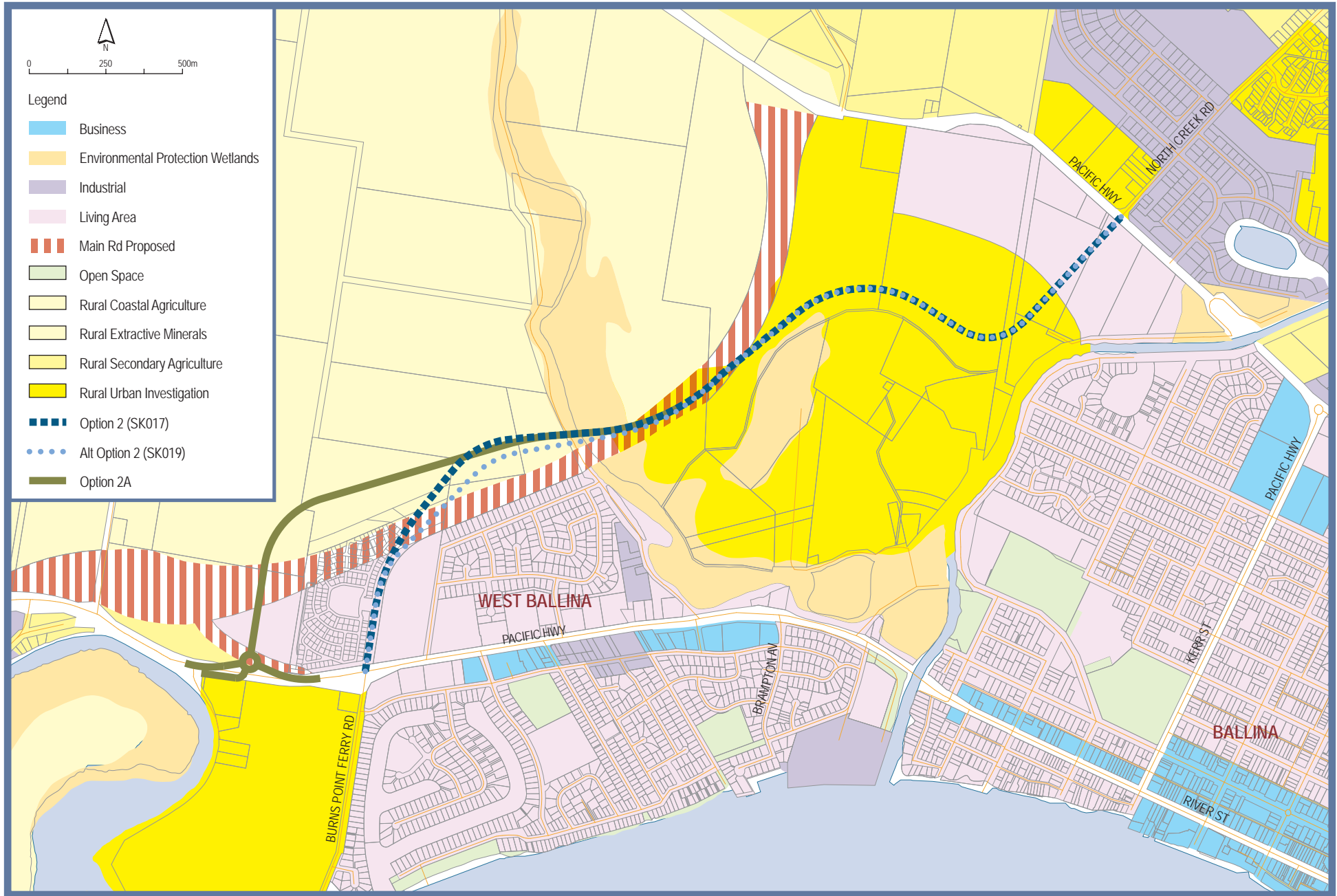


Figure 4-2 Current Zoning under Ballina LEP

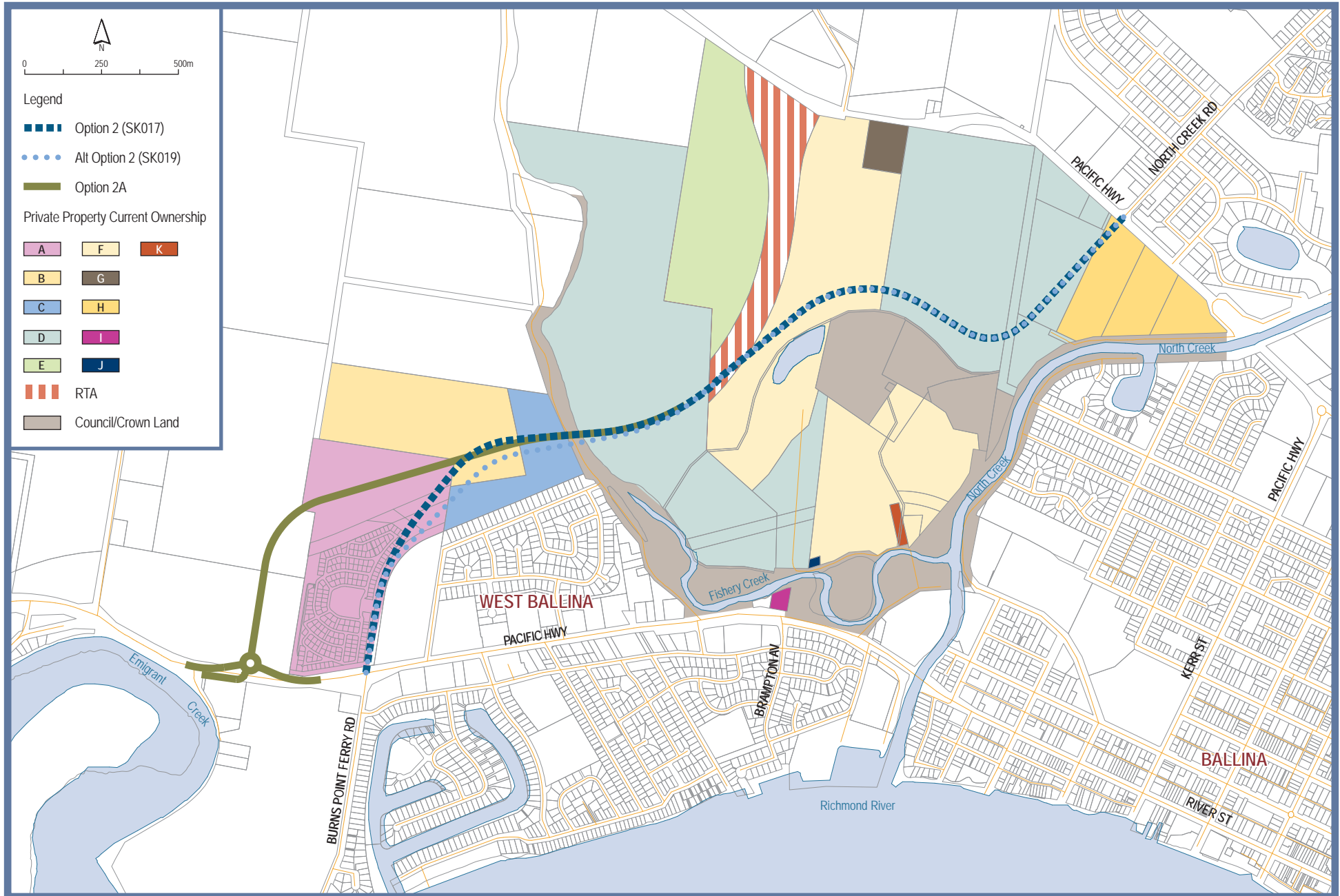


Figure 4-3 Existing Land Ownership



South of the Pacific Highway is the Sunmaid Village, a caravan park that is largely occupied by permanent residents. Much of this land is low lying and undeveloped but is zoned for urban investigation and may be subject to urban development in the future. A boat ramp is located off the Pacific Highway in this area providing waterway access to Emigrant Creek.

East of Fishery Creek rural land uses include grazing and cropping (tea tree plantations). The approved River Oaks Estate extends along the Pacific Highway both to the east and west of North Creek Road, and all options would bisect this estate. Conditions of approval for the subdivision of this land have made provision for the West Ballina Arterial.

Council has indicated that it is undertaking preliminary investigations in relation to the impacts of the Ballina Bypass on land use in the area. A major interchange is proposed in the vicinity of the Teven Road intersection with the current highway. This may generate demand for highway related uses such as service centres, or industrial development that capitalises on the improved regional accessibility arising from the Ballina Bypass and the upgrading of the Pacific Highway as a whole. This may include freight transport operators or manufacturers that service regional markets. While Council has not made any decisions in relation to future rezoning or development of land that is currently used for rural purposes, the potential for land use changes is a consideration in the assessment of the options.

Zoning

Zoning under Ballina Local Environmental Plan (LEP) 1987 is illustrated at **Figure 4-2**. Zoning within the study area includes:

- Rural 1(a2) – Coastal Lands Agricultural, which covers most of the non-urban land in the vicinity of the options.
- Rural 1(d) – Urban Investigation, south of the Pacific Highway between Burns Point Ferry Road and Emigrant Creek.
- Residential 2(a) – Living Area including the residential area of Horizon Drive, Emmanuel Anglican College and the Riverbend Estate.
- Environment Protection 7(a) – Wetlands, including the Fishery Creek SEPP 14 wetlands.
- 9(a) Main Road Proposed, indicating the former alignment of the Ballina Bypass.

Council has considered a rezoning of the land within the study area to reflect the changes in land anticipated after the construction of the Ballina Bypass. It is expected that this rezoning would include much of the study area north of the Pacific Highway with zones for industrial and living areas being the principle use.



Property ownership

Figure 4-3 illustrates land ownership. West of Fishery Creek there are five separate land owners potentially affected by the route options. East of Fishery Creek, there are also five separate land owners affected by Option 2. Key issues associated with the project for property owners are the direct acquisition of land for the road reserve and the severance of properties, which can impact on the value and usability of, and access to, residual land. Compensation to land owners is determined in accordance with the *Land Acquisition (Just Terms Compensation) Act*. Considerations include the value of the land to be directly acquired and any flow on reductions in land value that may arise from changes to the physical characteristics of the land and changes to amenity (eg. visual impacts).

4.1.2 Options assessment

Option 2 (SK017)

Option 2 (SK017) is partly within land that has been identified by Council in subdivision approvals as being required for the West Ballina Arterial, and partly encroaches onto land that is used for other purposes. In total, it would impact on 8.6 hectares of land that is in private ownership, excluding land that is to be transferred to Council at no cost. Land within the identified arterial road area on the subdivision plan is to be dedicated to Council free of charge as part of the conditions of approval for the Riverbend Estate subdivision.

This option would not impact directly on land owned by the Emmanuel Anglican College, providing retaining walls are used in the design of the road.

It would impact directly on the Riverbend Estate, requiring acquisition of approximately 620 square metres of land and affecting up to five lots within the subdivision through partial or full acquisition. This acquisition is in addition to the total provided above. This option would also impact on land within the same ownership that, as part of the conditions of approval for the subdivision, is set aside as an environmental rehabilitation area.

The property adjacent to the Riverbend Estate property (Lot 2, DP 500372, Property B on **Figure 4-3**) is used for grazing and training of horses. A residual portion south of the option would be isolated from the remainder of the land and it is assumed that this would also require acquisition (this has been included in the cost estimates as part of the compensatory habitat component of the cost estimate).

East of Property B, this option would enter Lot 137, DP 858896 (Property C on **Figure 4-3**). This property extends south along Barlows Road to the road reserve and properties fronting Horizon Drive. Option 2 would effectively bisect this property. While access to the southern section of the property would be possible from the south via Barlows Road, access to the northern section may be limited to using Barlows Road from the north, substantially increasing travel distances to Ballina.

SINCLAIR KNIGHT MERZ



This land is zoned Rural 1(a2), but is currently not used for rural production, containing remnant Forest Red Gum vegetation that has been cleared but is regenerating. The southern portion of this property is zoned for a road corridor. Consideration may be given to acquiring part or all of the residual land as part of the project. This land may be suitable as compensatory habitat, so is indirectly included in the cost estimate for the project as part of the compensatory habitat provision.

Option 2 (SK019)

Option 2 (SK019) is partly within land that has been identified by Council in subdivision approvals as being required for the West Ballina Arterial, and within rural land. In total, it would impact on approximately 8.6 hectares of land that is in private ownership, excluding land that is to be transferred to Council at no cost. Land within the identified arterial road area on the subdivision plan is to be dedicated to Council free of charge as part of the conditions of approval for the Riverbend Estate subdivision.

The main difference between Option 2 (SK019) and Option 2 (SK017) is that it is contained entirely within land identified in the Riverbend Estate subdivision for the West Ballina Arterial. This option would also be located further south within Lot 11, DP 1001995 (Property B on **Figure 4-3**) and would therefore have less severance impacts on the property than the SK017 sub-option. It would also impact on land that contains remnant vegetation, so from the perspective of impacts on rural grazing land, it would have less impact than the other sub-option.

Impacts on Lot 137, DP 858896 (Property C on **Figure 4-3**) would be similar to the other sub-option. Partial or total acquisition of residual land in addition to land required for the road reserve would also be considered for this sub-option.

Option 2A

Route Option 2A includes a realignment of the Pacific Highway to the north to facilitate better access to developments on the southern side in the vicinity of Emigrant Creek. The land situated to the north of this intersection is in two separate parcels and is currently occupied by cane farms. Option 2A would effectively sever these properties resulting in residual portions to the east of the road that would not be accessible from the remainder of the land to the west of the road. However, subject to approval by Council, this land, which is zoned Residential 2(a), may be able to be developed as an extension of the Riverbend Estate. The owner of the Riverbend Estate has indicated to Council that it has reached agreement with the current owners of these properties (understood to be in the form of an option to purchase) to transfer land required for Option 2A to Council at no cost. Further north, where option 2A enters land that is currently owned by the Riverbend Estate, this land would also be transferred to Council at no cost.



Given the fragmented zoning, including the presence of the redundant proposed road zone, and construction of the Ballina Bypass, Council is likely to consider the future zoning of this area, and this may result in zoning that facilitates increased development in this area.

In the context of potential future zoning and the agreements understood to exist with property owners, the impacts of land acquisition and severance in this area are not considered to be a major constraint to the development of Option 2A. However, this is subject to confirmation of agreement by the land owners and Council's possible review of planning controls generally in this area.

Option 2A would impact on Lot 11, DP 1001995 (Property B on **Figure 4-3**) to a greater extent than both of the Option 2 sub-options. It would encroach further into land that is used for grazing and horse training, and would result in greater severance of the property. The residual portion to the north of Option 2A would be smaller than for the other options and this may constrain its use to a greater extent than the other options. As with Option 2, the residual portion to the south of Option 2A is anticipated to be acquired and may contribute to meeting the compensatory habitat requirements for the project.

In the absence of agreements to transfer land and the potential rezoning of land generally in the area between Riverbend Estate and the Ballina Bypass, Option 2A has the greatest potential land use impacts in terms of direct acquisition and severance. A total of 12.5 hectares of land would require acquisition, and substantial areas would be isolated with potential reductions in viability of the current uses. Cane farming would be unlikely to be viable on the residual parcels of land.

However, should Council determine that it is appropriate to proceed with rezoning of this land, Option 2A presents some opportunities in terms of contributing to positive land use patterns in this area. It would provide an effective boundary between residential and community uses to the east and potential industrial or transport related uses and the Ballina Bypass, to the west. It would also provide effective access to this land should it be developed in the future for more intensive purposes. Should agreements for the transfer at no cost of land within and to the west of holdings owned by the Riverbend Estate eventuate, the total area of land requiring acquisition would be 7.5 hectares. The area of land, potential changes to land use patterns and potential severance of properties would be less than for the Option 2 sub-options by approximately 1.1 hectares.



4.2 Ecology

4.2.1 Existing ecological conditions

Field assessment was undertaken for each of the route options in October and November 2003. This involved survey of each of the route options under consideration. Literature searches were also undertaken, including NPWS and Council records, to identify existing records of significant species and communities within the study area. Aerial photography was reviewed to identify areas of potential significance as a basis for field survey.

Since the previous route options assessment ecological investigations were completed in 2003, there have been a number of new determinations made by the NSW Scientific Committee with regard to the listing of Endangered Ecological Communities (EECs) in NSW under the *Threatened Species Conservation Act 1995* (TSC Act). These listings generally relate to the identification of previously common and now poorly conserved river flat and floodplain vegetation and have direct implications for vegetation impacted by the options. **Figure 4-4** illustrates the vegetation communities of the area likely to be impacted by the options.

A description of vegetation communities within the study area and their significance in terms of conservation value is provided in **Table 4-1**. This is based on knowledge of the communities from previous field work and interpretation of aerial photography to relate vegetation types to the relevant listed communities under the TSC Act.

■ **Table 4-1: Vegetation communities in the study area west of Fishery Creek**

Swamp Forest	
Description	Much of the vegetation west of Barlow's Road comprises remnant and regrowth swamp forest. Remnant Swamp Forest communities are generally associated with the fertile floodplains which have been extensively cleared from the region and hence are not well represented on the NSW north coast in the present.
Dominant/ common species	Dominated by dense stands of Broad-leaved Paperbark <i>Melaleuca quinquenervia</i> and Swamp Oak <i>Casuarina glauca</i> with Willow Bottlebrush <i>Callistemon salignus</i> and Forest Red Gum <i>Eucalyptus tereticornis</i> . Common understorey species include <i>Carex Carex appressa</i> , Native Violet <i>Viola</i> sp., Native Reed <i>Phragmites australis</i> , Red Ash <i>Alphitonia excelsa</i> , Corkwood <i>Duboisia myoporoides</i> and Ferns (<i>Blechnum</i> sp., and <i>Histiopteris incisa</i>). Weeds are prevalent throughout this vegetation comprising mostly lantana, morning glory, wandering jew, groundsel bush, camphor laurel and blackberry.
Significance	Listed as an EEC Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and south East Corner bioregions under Part 3 of Schedule 1 of the TSC Act. Moderate to high significance due to intact or better quality areas of swamp forest are not well represented in the study area or locality. Also provides habitat and foraging for several species including migratory birds.



Swamp Oak Forest	
Description	Small fragments of Swamp Oak Forest occur to the west of Barlow's Lane. These patches are remnants of a previously more widespread vegetation type which has been historically cleared for agriculture and grazing land. This community generally occupies very low-lying areas west of Fishery Creek that are subject to periodic flooding and where soils show some influence of saline ground water.
Dominant/ common species	The structure of the community is simple, with a canopy cover of Swamp Oak and an understorey comprising primarily grasses and small herbaceous species. Native species include: Swamp Oak (<i>Casuarina glauca</i>), Common Silkpod (<i>Parsonsia straminea</i>), <i>Persicaria</i> sp., <i>Juncus</i> sp., Native Reed (<i>Phragmites australis</i>), occasional Tuckeroo (<i>Cupaniopsis anacardioides</i>). Introduced species are prevalent in the lower strata dominated by morning glory, kikuyu, couch and buffalo grass.
Significance	Listed as an EEC Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions. Isolated small stands are generally regarded as having low significance due to disturbances from edge effects and grazing leading to extensive weed abundance. The larger stands adjoining the swamp forest community appear in better condition.
Red Gum Open Forest	
Description	Very small remnant and regenerating stands of this vegetation type are located adjacent to Fishery Creek on slightly elevated land in the vicinity of Barlow's Lane verge. The community, which occurs on fertile soils is likely to have been much more widespread in the Ballina area prior to the establishment of cropping and grazing and is now very scarce on the Richmond River floodplain in general. An area of regrowth Red Gum forest occurs in a disused paddock accessed from Barlow's Lane. Remnants west of Fishery Creek are highly modified and degraded, containing few large mature trees and usually either a maintained grassy or weed dominated understorey.
Dominant/ common species	Native species include: Forest Red Gum (<i>Eucalyptus tereticornis</i>), Swamp Oak (<i>Casuarina glauca</i>), Tuckeroo (<i>Cupaniopsis anacardioides</i>), Hickory Wattle (<i>Acacia implexa</i>), Red Olive Plum (<i>Cassine australis</i> var. <i>australis</i>). Introduced – Lantana (Noxious), Rubber Tree, Coastal Morning Glory, Kikuyu, Couch.
Significance	Listed as an EEC River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions. Community has significance due to the presence of larger mature trees with habitat potential for fauna and the communities rarity within the study area and adjacent areas.
Mangrove Forest	
Description	A group of Mangroves is located within the north western area of the large stand of vegetation to the west of Barlows Lane.
Dominant/ common species	River Mangrove (<i>Avicennia marina</i>), River Mangrove (<i>Aegiceras corniculatum</i>) and scattered and patchy Swamp Oak (<i>Casuarina glauca</i>) and Black Mangrove (<i>Bruguiera gymnorhiza</i>).
Significance	The mangrove community has not been listed as an EEC. However, the community type as a whole has a high significance as it provides important breeding areas for fish and crustaceans in addition to providing stability and reducing erosion to the banks of Fishery Creek and tributaries.



The swamp forest communities including river flat eucalypt forest (Red Gum open forest) provide habitat for common amphibians, waterfowl and waders as well as nectivorous birds and mammals (such as the threatened Grey-headed Flying-fox *Pteropus poliocephalus*) during the peak flowering period. They also provide breeding habitat for insects and therefore are an important resource in terms of the provision of food for insectivorous fauna including threatened bats. Mammal fauna are generally restricted to bats and macropods that are capable of moving across cleared lands to access this habitat and the isolation of this fragment may limit its value for arboreal and small terrestrial mammals.

The fragment west of Fishery Creek does not provide a connection between other patches of forest being bound by cleared farmland and development to the south and west and therefore has no value as a regional wildlife corridor. However local fauna movements would occur given the presence of the adjacent larger swamp forest habitats associated with Fishery Creek. This vegetation has high value as a refuge area for fauna and with the future exclusion of cattle and weed mitigation works has good potential for restoration which would increase its value as habitat for local fauna.

Substantial areas of the study area are characterised by highly modified vegetation assemblages. These are broadly categorised as cropped areas and grazing/pastureland. These areas have been generally cleared of native vegetation and contain predominantly introduced species. In particular, cropped areas to the west and north of the Riverbend Estate are characterised by a virtual monoculture of sugar cane. These areas have very little ecological significance or habitat value.

Collectively the vegetation communities west of Fishery Creek form a patch of forest approximately 5.0ha in area. An adjacent area of regenerating Red Gum Forest to the north is considered to constitute the Red Gum Open Forest EEC and has a total area of approximately 2.6ha, in addition to the other communities to the south. Impacts on the mangrove and wetland vegetation associated with Fishery Creek (east of Barlows Road) are common to all options.

4.2.2 Options assessment

Table 4-2 summarises the impacts of the options on the ecology of the area west of Fishery Creek. All options would have a common crossing of Fishery Creek and the previous assessment of Option 2 (in the 2004 report) identified an impact on approximately 0.75 hectares of vegetation at the creek crossing. This impact would be common to all options and is included in the direct impacts in the table below.

Further discussion of the impacts of each option follows **Table 4-2**.



■ **Table 4-2: Summary of ecological impacts**

Criteria	Option 2		Option 2A
	Sub-option SK-017	Sub-option SK-019	
Extent of direct impact (vegetation removal)	1.2ha	2.17ha	1ha
Impacts from fragmentation	Existing 5.0ha remnant patch remains on the southern side of the road, however results in the fragmentation of the regenerating red gum forest (2.25ha patch).	Results in two smaller fragments ~0.5ha and ~3.5ha dissected by the road.	Existing 5.0ha remnant patch remains on the southern side of the road, however results in the fragmentation of the regenerating red gum forest (2.25ha patch).
Impacts on fauna corridors	Severance of potential links between Riverbend Estate habitat rehabilitation areas and Fishery Creek.	Severance of potential links between Riverbend Estate habitat rehabilitation areas and Fishery Creek.	Would not impact on links between Riverbend Estate habitat rehabilitation areas and Fishery Creek.

A formal assessment of the significance of impacts associated with the final preferred sub-option is required under Section 5A of the EP&A Act (i.e. 7-part test) for newly listed endangered ecological communities listed under the TSC Act. This would be undertaken as part of the EIS for the preferred route.

Option 2 (SK017)

Option SK017 traverses along the northern edge of the identified Swamp Forest fragment including a portion of regenerating Red Gum open Forest. Direct vegetation clearing would be approximately 0.45 hectares (ha) comprising 0.2ha of Red Gum open forest and Swamp Oak forest and the remaining 0.25ha of regenerating Red Gum open forest. Edge effects associated with noise and air quality would be evident along the southern edge of the road for a distance of approximately 475m. Assuming edge effects may extend for up to 50m into the remnants, indirect impacts may total up to 2.3ha.

Option 2 (SK019)

The direct clearing of vegetation in this area, associated with Option SK-019 would be approximately 1.42ha (approximately 25% of this patch) based on nominal road width of 30m. However, the road would lead to further fragmentation of this vegetation and effectively result in the degradation of remaining areas from edge effects along the northern and southern perimeters of the road (e.g. weeds, run-off, and noise and air quality impacts). The combination of direct and indirect impacts would in effect be greater than 1.42ha and are likely to impact on the value of the entire remnant to local fauna, meaning that up to 5ha area would effectively be impacted.



The perceived impacts on habitat from edge effects vary according to the pre-existing condition of the vegetation, including the distribution and size of other forest patches in locality. In some cases patches may become dominated by forest-edge specialists, and appear to have a greater abundance of fauna. However less mobile and tolerant fauna and species dependent on large home ranges are generally excluded suggesting that the overall fauna diversity is reduced.

Much of the subject area of vegetation is impacted by cattle grazing and weeds and there is little distinction between the existing forest edge and the interior suggesting that further edge effects in terms of weeds would have minimal measurable impact. However the impacts of roads on fauna, as a result of changes to noise and air quality are significant and should be considered.

Option 2A

Option 2A has minimal impacts to native flora and fauna as the majority of the land affected comprises cane and grazing paddocks with limited ecological value. It would have a direct impact on the regenerating Red Gum Open Forest remnant adjacent to Barlows Road, with a total direct impact of approximately 0.25 hectares, plus the 0.75ha impact on the Fishery Creek SEPP 14 wetland that is common to all options.

Edge effects west of Fishery Creek are likely to extend for approximately 300m along this option. Assuming edge effects would extend for up to 50m into remnant vegetation, a further 1.5ha may be subject to indirect effects.

Option 2A would avoid impacts on habitat rehabilitation areas identified through the conditions of approval for the Riverbend Estate. It would also retain connectivity between the rehabilitation areas and vegetation remnants to the east connecting to Fishery Creek. Acquisition of land south of Option 2A within Lot 11, DP 1001995 and Lot 137, DP 858896 would potentially create a relatively large and contiguous area of compensatory habitat in addition to minimising direct impacts on the remnant vegetation west of Fishery Creek. Option 2A is considered to provide the best outcome in terms of minimising ecological impacts and provision for potential compensatory habitat.

4.3 Noise

4.3.1 Existing conditions

During the assessment of the preferred route option background noise levels will be measured at key locations to provide information on existing noise levels. Although these measurements provide data on the level of existing traffic noise, the purpose of the survey is to gather data that is used to validate the predictive accuracy of the noise model. The noise criteria for the project are set independently of the measured noise levels however in some instances the potential for noise



mitigation may be based on a combination of the noise criteria and the existing noise conditions along the project route.

Because the purpose of the noise assessment for this stage of the project is to compare the relative impacts of Option 2 and Option 5, it has not been necessary to undertake noise monitoring to date. Monitoring would be undertaken as part of the preparation of the EIS for the preferred option.

An indication of current noise levels in the West Ballina residential area is provided from monitoring undertaken at a residence on Horizon Drive in 1997, as part of the Ballina Bypass EIS (Connell Wagner 1998). This monitoring indicated weekday daytime L_{Aeq} (15hour) noise levels at this residence (monitoring location R11 in the Ballina Bypass EIS) of between 49.0-58.9 dB(A) and night time L_{Aeq} (9 hour) noise levels of between 39.7-53.1 dB(A). The EPA specifies design noise criteria for road traffic noise in *Environmental Criteria for Road Traffic Noise (ECRTN)*, May 1999. The EPA's criteria for residential receivers exposed to road traffic noise from new arterial roads are L_{Aeq} (15 hour) 55dB(A) (daytime) and L_{Aeq} (9 hour) 50 dB(A) (night time) and where these criteria are already exceeded, the road shall be designed to limit the increase in noise from the proposal to 0.5 dB(A). The ECRTN specifies that for existing school classrooms affected by noise from proposed roads the daytime internal L_{Aeq} (1 hour) 45 dB(A) noise level shall apply.

Monitoring undertaken for the Ballina Bypass EIS indicates that the 1997 road traffic noise levels were generally below the EPA criteria, with some exceedences occurring on some days during the monitoring period.

The Ballina Bypass EIS also considers likely noise at this residence post construction of the RTA's Ballina Bypass. Significant reductions in both the day and night time noise levels are expected, with both at least 5 dB(A) below the EPA criteria.

The closest noise monitoring of noise conditions in proximity to the existing Pacific Highway was undertaken at two locations, east and west of Burns Point Ferry Road on the Pacific Highway, and one location on Kerr Street as part of the Ballina Bypass EIS (Connell Wagner 1998). This monitoring indicated noise levels as outlined in **Table 4-3**.

■ **Table 4-3: Existing noise levels on the Pacific Highway and Kerr Street #**

Location	Laeq, 15 hr (daytime)	Laeq, 9 hr (night time)
R10, west of the intersection between the Teven Road and the Highway	61.7-64.2 dB(A)	57.8-62.3dB(A)
R7, Pacific Highway west of Fishery Creek Bridge	60.9-62.9 dB(A)	58.1-62 dB(A)
R9, 1 Princess Avenue (cnr Kerr Street) Ballina	67.6-69.2 dB(A)	59.4-63.1 dB(A)

excludes weekend traffic noise levels



The EPA criteria for road traffic noise for redevelopment of existing freeway or arterial roads are $L_{Aeq (15hour)} 60dB(A)$ (daytime) and $L_{Aeq (9 hour)} 55dB(A)$ (night time). Monitoring results as reported in the Ballina Bypass EIS indicate that Highway and Kerr Street traffic currently exceeds the criteria for both day and night time at all the above locations.

The Bypass EIS does not report predicted noise levels for R7 and R9 post-construction of the Bypass. Therefore, it is not possible, without further modelling, to consider the noise impacts of the route options under consideration for the West Ballina Arterial in conjunction with the Ballina Bypass. This issue is likely to require further consideration during the EIS stage of the project.

Road traffic noise levels are likely to have increased as a result of natural traffic growth and development within the area during the past 6 years. Further consideration of existing road traffic noise levels within the West Ballina Arterial study area, including noise monitoring and modelling, is therefore likely to be required during the EIS for the project.

4.3.2 Options assessment

The results of the modelling study are presented as noise contours (graphic) overlaid on the project aerial photography. Initial modelling runs were used to determine if noise mitigation works would be required for the individual route options. The results of the initial modelling indicate that implementation of noise barriers would be required to reduce impacts at certain locations along the road corridor for both options. Noise contours both with and without mitigation measures for each option are presented in **Appendix B**.

The results indicate that noise mitigation would be needed in the vicinity of Horizon Drive, Riverbend Estate and the Emmanuel Anglican College for the Option 2A sub-options to comply with DEC criteria for night time and daytime noise. Option 2A would also require noise mitigation to comply with the criteria at the Riverbend Estate, Emmanuel Anglican College and for Horizon Drive residents. The results indicate that mitigation measures for Option 2A would be more effective in achieving the criteria than for Option 2. This is because Option 2 would require very high noise walls (more than 4 metres) to meet the criteria for residences within Riverbend Estate. Because of the greater separation distance of Option 2A from the estate, noise walls would need to be lower and much less visually intrusive than those required for Option 2. Option 2A would also reduce traffic volumes along the Pacific Highway between the intersection and Burns Point Ferry Road, resulting in reduced noise impacts for existing and future residential development adjacent to the highway.

East of Fishery Creek, previous modelling undertaken for Option 2 shows that both options (sharing a common alignment) would require substantial noise mitigation in the vicinity of the approved River Oaks Estate to achieve compliance with the relevant DEC criteria.



4.3.3 Mitigation measures

Option 2 sub-options west of Fishery Creek

West of Fishery Creek, noise barriers for the sub-options for Option 2 would be the same. Noise attenuation for the Emmanuel Anglican College is to be provided at their expense and is therefore not included in the cost estimates. Noise barrier requirements have been estimated to meet the criteria for schools and playgrounds. On the eastern side of the corridor a four metre high barrier would be required from about chainage 200 to 600 to protect the Anglican College from noise impacts.

Further north along Option 2, noise attenuation would be required to protect residences on Horizon Drive from impacts above the DEC criteria. From chainage 600 to chainage 1200 the noise wall would need to be 2 metres high. From chainage 1200 until chainage 1400, where the eastern barrier would end, the barrier height would need to be 2.5 metres. Chainage 1400 is just to the east of Fishery Creek.

The western side of Option 2 would require more than a four metre high barrier to about 500 metres north of the Pacific Highway intersection to achieve the noise goals in the Riverbend Estate. A four metre high wall is predicted to have a residual noise impact that would exceed the noise goals at the boundary of estate, so the effectiveness of mitigation measures for some residences within the estate is likely to be limited. The modelling does not include any gaps in the noise wall for traffic to enter the Estate from the West Ballina Arterial, however, this would further reduce the effectiveness of the noise wall.

North of this point there are no sensitive receivers to the west or north of this option that would be affected by noise levels above the DEC criteria, so additional mitigation is not required.

Option 2A west of Fishery Creek

For the southern section of Option 2A (west of Fishery Creek) it will be necessary to provide noise mitigation to residents and the school to the south of the alignment with a 2 metre high noise wall. This noise wall would be required to provide continuous attenuation from the southern intersection with the Pacific Highway to about 300 metres west of the crossing of Fishery Creek. At this point the noise wall would increase in height to 3 metres above the road surface and would continue over Fishery Creek for another 150 metres. No noise attenuation would be required on the western side of this option.

East of Fishery Creek

The alignments of Option 2 and Option 2A are common east of Fishery Creek and mitigation measures would be the same for both options. Mitigation would be required to achieve the DEC criteria within the approved River Oaks Estate. Within the subdivision and extending for some



distance to the south of the subdivision boundary, a four metre high noise wall would be necessary on both sides of the road to achieve the DEC noise goals. There is potential for this to be a combination of a noise mound with a noise wall on top to achieve the required barrier height. At the location of the roundabout planned for this subdivision the efficiency of a noise wall would be reduced for the residences in this area. This requirement is common to both Option 2 and Option 2A. The estimated noise barrier dimensions to achieve noise levels below the relevant DEC criteria within the River Oaks Estate are:

- Approximately 450 metres long by four metres high for the eastern barrier.
- Approximately 575 metres long by four metres high for the western barrier.

4.3.4 Cost estimate for noise mitigation

Cost estimates for noise mitigation are as set out in **Table 4-4**. Further description of the basis for the cost estimates is provided following the table. The cost estimates indicate that there is unlikely to be any significant difference in the cost of noise mitigation measures between the options.

■ **Table 4-4: Cost estimates for noise mitigation measures**

Option 2		Option 2A	
West of Fishery Creek	\$1,480,000	West of Fishery Creek	\$1,480,000
East of Fishery Creek	\$1,430,000	East of Fishery Creek	\$1,430,000
Total	\$2,910,000	Total	\$2,910,000

Option 2 sub-options west of Fishery Creek

Noise wall requirement for the Option 2 sub-options west of Fishery Creek would be as follows:

- A four metre high noise wall on the western side of Option 2 sub-options for a distance of 500 metres would cost in the order of \$800,000.
- A noise wall 600 metres long and 2 metres high from chainage 600 to 1200 would cost in the order of \$480,000.
- A wall 2.5 m high and 200 metres long from chainage 1200 to 1400 would cost in the order of \$200,000.
- The total cost of noise mitigation for the Option 2 sub-options west of Fishery Creek would be in the order of \$1,480,000.

Option 2A west of Fishery Creek

The additional cost for noise abatement measures at the southern end of the alignment on Option 2A (west of Fishery Creek) would consist of:



- A wall 1,082 m long and 2 m high would cost in the order of \$866,000.
- A wall 510 m long and 3 m high would cost in the order of \$614,000.
- Total for Option 2A west of Fishery Creek in the order of \$1,480,000.

East of Fishery Creek

Noise wall requirements for Option 2 east of Fishery Creek relate to the potential impacts on the River Oaks subdivision, which is approved but not yet constructed. It is understood, based on advice from Council, that noise mitigation is to be provided for this subdivision at Council’s expense. The requirements for noise walls have been estimated and consideration has been given to the use of earth mounds in some locations to minimise construction costs.

The type of barrier used can potentially have a significant effect on the cost of noise mitigation. Earth mounds are a cheaper form of barrier to implement but a wall height of four metres would require an extremely large footprint, due to the required batter angle. Conversely, a noise wall takes up substantially less land area but is more expensive to build. Outside the floodplain, the recommended design would be an earth mound constructed to the maximum height possible within the available land, and a noise wall constructed on top of the mound to meet the barrier height requirements. Visual amenity should also be considered. **Figure 4-5** shows examples of an earth mound and a combined earth mound and noise wall.

Within floodplain areas, noise mounds have the potential to impede flood flows and are generally not considered appropriate. Noise walls, designed to allow the passage of flood waters, would be used in the floodplain to achieve the required noise attenuation.

- **Figure 4-5: Examples of earth mound and combined earth mound and noise wall barriers**



Example of earth mound barrier



Example of combination earth mound and noise wall barrier



The estimated cost for the earth mound construction is approximately \$30 /m³. A batter angle of 2:1 has been assumed for the mound with a two metre wide top, however, the final dimensions may be varied as required. The cost per metre for construction of earth mounds of various heights is estimated in **Table 4-5**.

Noise walls may be constructed from many different types of materials. However, for cost estimation purposes a Hebel type wall at \$400 /m² has been adopted.

■ **Table 4-5: Earth mound cost estimates**

Effective Mound Height	Base Width (m)	Unit Volume (m ³)	Unit Cost (per metre)
1	6	4	\$120
2	10	12	\$360
3	14	24	\$720

The road corridor width provided for in the approved subdivision plans for the River Oaks Estate is 35 metres. Given that the typical cross section of the road through urban areas is 20 metres, this allows 7.5 metres on either side for landscaping and noise attenuation measures. Applying the base widths in **Table 4-5**, the maximum height of noise mounds would be one metre. It is realistic to assume that the possible combination of noise mounds and walls would be a one metre high mound with a three metre high wall.

Outside the boundary of the approved subdivision, the West Ballina Arterial is in the floodway. Noise mounds are not an appropriate form of treatment in the floodway. It has therefore been assumed that noise mitigation would be achieved by noise walls in these areas.

The cost estimate for noise walls for Route Option 2 east of Fishery Creek is \$1.43 Million.

4.4 Cost estimates

The cost estimates for the options (in \$2006) are as follows:

- Option 2 (SK017): \$39.3 million.
- Option 2 (SK019): \$37.9 million.
- Option 2A: \$39.9 million.

The estimates for option 2 have increased from those provided in the 2005 report primarily because rates for many construction materials have increased substantially due to the high level of construction activity on the north coast. The above costs, for most items, include a 50% contingency, however, for the purposes of comparison, the estimates provide a relatively accurate relative cost for each option.



There is very little difference in the cost of the options. Option 2A is the most expensive, and is approximately \$1.6 million more than the cheapest option, Option 2 (SK19). Option 2A is more expensive primarily because it is longer than the other options and requires re-alignment of approximately 300m of the Pacific Highway and construction of a new roundabout in addition to the construction of the West Ballina Arterial. The additional construction cost for this option is offset in the overall cost estimate by reduced property acquisition and compensatory habitat requirements for this option compared to the Option 2 sub-options.



5. Summary and conclusions

5.1 Comparison of Option 2 sub-options

Table 5-1 provides a summary of the potential impacts of the sub-options within Option 2, assessed against the criteria for the project.

Table 5-1: Summary comparison of Option 2 sub-options

Key Criteria	Specific criteria	Option 2 (SK017)	Option 2 (SK019)
Land Use and Zoning	Number of property owners directly affected	10 (plus 5 lots within Riverbend Estate)	10
	Area of private property directly affected (hectares)	8.6 hectares	8.6 hectares
	Consistency with Council zoning and future development	Direct impacts on Riverbend Estate.	Consistent with approvals for Riverbend Estate and Emmanuel College
Ecological impacts	Direct clearing of vegetation	1.2 ha	2.17 ha
	Fragmentation impacts	Existing 5.0ha remnant patch remains on the southern side of the road, however results in the fragmentation of the regenerating red gum forest (2.25ha patch).	Results in two smaller fragments ~0.5ha and ~3.5ha dissected by the road.
	Impacts on fauna corridors	Severance of potential links between Riverbend Estate habitat rehabilitation areas and Fishery Creek.	Severance of potential links between Riverbend Estate habitat rehabilitation areas and Fishery Creek.
Noise Impacts	Surface area of noise walls (m ²)	7,800 m ²	7,800 m ²
	Potential effectiveness of noise mitigation	Risks associated with non compliance at Riverbend Estate.	Risks associated with non compliance at Riverbend Estate.
Cost estimate	Construction cost (\$2006)	\$39.3 million	\$37.9 million

In summary, the main differences in impacts of the sub-options are in the direct impacts on the Riverbend Estate, impacts on rural properties, and the direct impacts on EECs:

- Option 2 (SK017) would directly impact on the Riverbend Estate, requiring acquisition of approximately five lots over more than 620 square metres within the approved development area of the subdivision. This is a substantial impact and may necessitate re-design of the subdivision, including re-construction of infrastructure that is already in place such as roads and services.



- Compensation for the acquisition of land within the Riverbend Estate is likely to be significant and to add more than \$500,000 to the overall cost of the project, potentially more depending on the indirect impacts of the option on the value and development potential of the estate.
- Impacts on rural land would be slightly greater for Option 2 (SK017) because it would impact on a greater area of land within Property B that is used for grazing and horse training. Option 2 (SK019) would also impact on this property, but to a lesser extent because it would pass through areas containing remnant bushland that are not as critical in terms of rural activities.
- Option 2 (SK019) would require substantially more clearing of EECs than Option 2 (SK017). While the remnant vegetation in this location is likely to be locally significant in the West Ballina area, on a broader landscape level these impacts are less significant due to the small size of the remnant, its poor condition and other pressures from surrounding urban and rural land uses. Compensatory habitat requirements would be slightly higher for SK019 but there is not a substantial difference between the options.

On balance, Option 2 (SK019) is considered to have less potential impacts than Option 2 (SK017). There is very little cost difference between the two options.

5.2 Comparison of Option 2 and Option 2A

While Option 2 (SK019) is considered to have less impacts than Option 2 (SK017), both Option 2 sub-options are presented in summary against Option 2A, in **Table 5-2**, to enable Council to make its decision on a preferred option for the project.

■ **Table 5-2: Summary comparison of Option 2 and Option 2A**

Key Criteria	Specific criteria	Option 2 (SK017)	Option 2 (SK019)	Option 2A
Land Use and Zoning	■ Number of property owners directly affected	10 (plus 5 lots within Riverbend Estate)	10	10
	■ Area of private property directly affected	8.6 hectares	8.6 hectares	7.5 hectares
	■ Consistency with Council zoning and future development	Direct impacts on Riverbend Estate.	Consistent with approvals for Riverbend Estate and Emmanuel College	Consistent with current zoning. Potential opportunities to service future development adjacent to Ballina Bypass.
Ecological impacts	■ Direct clearing of vegetation	1.2 ha	2.17 ha	1 ha
	■ Fragmentation impacts	Existing 5.0ha remnant retained south of Option. Fragmentation of the regenerating red gum forest	Results in two smaller fragments ~0.5ha and ~3.5ha dissected by the road.	Existing 5.0ha remnant retained south of Option. Fragmentation of the regenerating red gum forest



Key Criteria	Specific criteria	Option 2 (SK017)	Option 2 (SK019)	Option 2A
		(2.25ha patch).		(2.25ha patch).
	<ul style="list-style-type: none"> Impacts on fauna corridors 	Severance of potential links between Riverbend Estate habitat rehabilitation areas and Fishery Creek.	Severance of potential links between Riverbend Estate habitat rehabilitation areas and Fishery Creek.	Would not impact on links between Riverbend Estate habitat rehabilitation areas and Fishery Creek.
Noise Impacts	<ul style="list-style-type: none"> Surface area of noise walls to be provided by Council 	7,800 m ²	7,800 m ²	7,890 m ²
	<ul style="list-style-type: none"> Potential effectiveness of noise mitigation 	Risks associated with non compliance at Riverbend Estate.	Risks associated with non compliance at Riverbend Estate.	Less risk of impacts and mitigation measures likely to be more effective in achieving criteria.
Cost estimate	<ul style="list-style-type: none"> Construction cost (\$2006) 	\$39.3 million	\$37.9 million	\$39.9 million

The main items of differentiation between the Option 2 sub-options and Option 2A are:

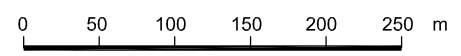
- Impacts on land use and acquisition of land, assuming that land is dedicated to Council at no cost in line with advice from the Riverbend developer.
- Consistency with current and potential future land use, assuming that land is dedicated to Council at no cost and that Council proceeds with review of zoning in this area to address issues associated with the Ballina Bypass and West Ballina Arterial.
- The potential effectiveness of noise mitigation, as Option 2A has less risk of non-compliance with the DEC criteria and the need for additional noise treatments.
- Potential ecological impacts, including the combined effects of vegetation clearing and the severance of links between the Riverbend habitat rehabilitation area and existing remnant vegetation. Option 2A has less direct vegetation clearing impacts, less potential for edge effects and would result in less severance of fauna linkages.

The differences between the options are in most cases minimal, however, on balance Option 2A is considered to perform better than both the Option 2 sub-options. The difference between the cost of the least and most expensive options is less than five percent of the total cost of the options, and with consideration of contingencies, is not considered to be significant.



Appendix A Plans of the route options

LOCATION: I:\ENVR\Projects\EN01619\L Transfer\EN01619 - West Ballina Arterial\300 - Concept Design\Drawings\Sketches\
 DATE: 05-10-2005 16:11 XREF: X_Aerial_Photo, X_New_Development_Riverbend, X_Cadastral



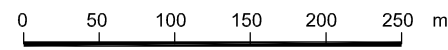
LEGEND

 INTERSECTION TREATMENT

ALIGNMENT OPTIONS

 OPTION 2

LOCATION: I:\ENVR\Projects\EN01619\L Transfer\EN01619 - West Ballina Arterial\300 - Concept Design\Drawings\Sketches\
DATE: 30-09-2005 13:58 XREF: X_Aerial_Photo, X_New_Development_Riverbend, X_Cadastral



LEGEND

 INTERSECTION TREATMENT

ALIGNMENT OPTIONS

 OPTION 2

LOCATION: I:\ENVR\Projects\EN01619\L Transfer\EN01619 - West Ballina Arterial\300 - Concept Design\Drawings\Sketches\
DATE: 05-10-2005 16:10 XREF: X_Aerial_Photo, X_New_Development_Riverbend, X_Cadastral



FILE NAME: SK-020
JOB N°: EN01619

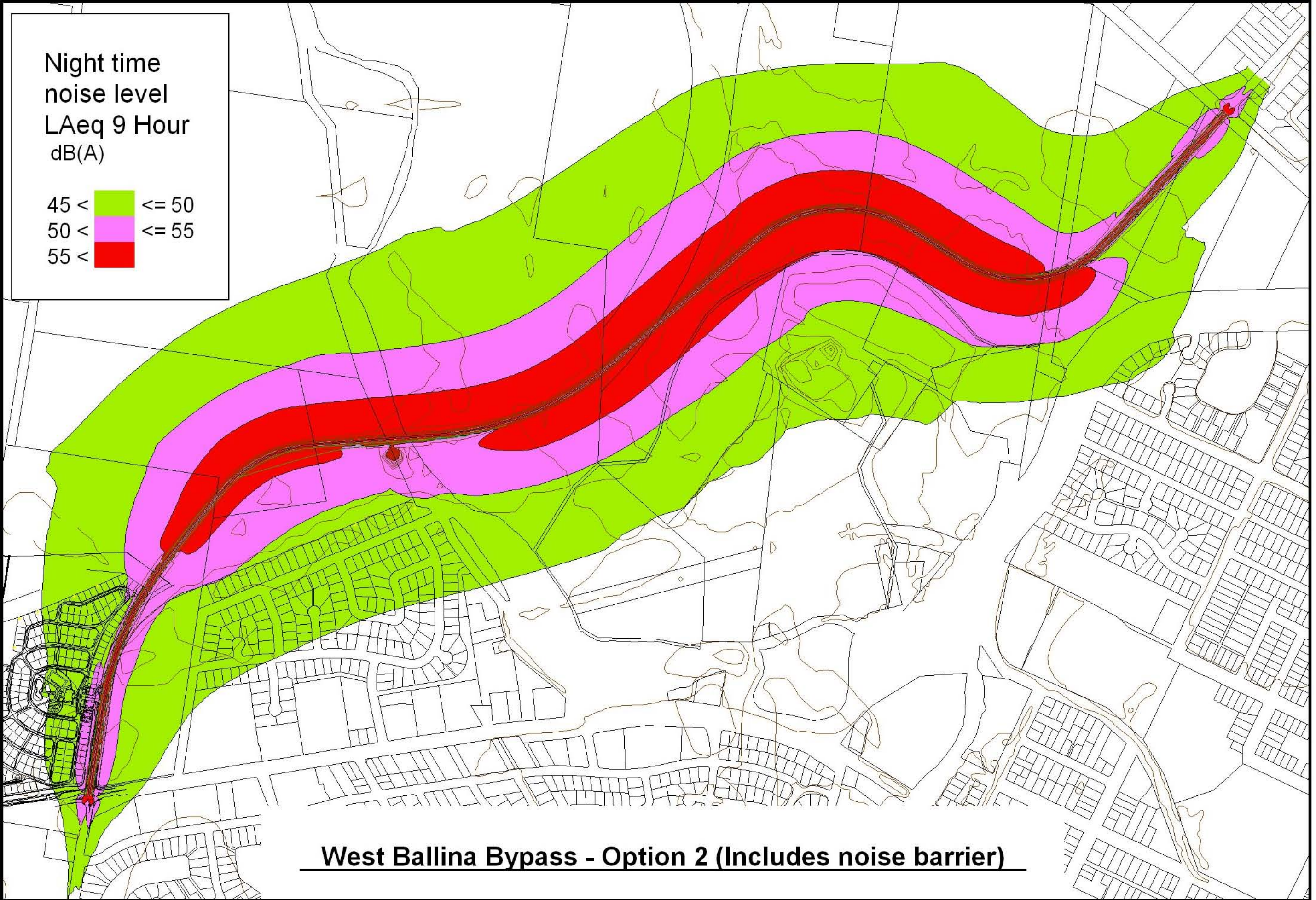


ALIGNMENT OPTIONS




-  ALTERNATE ALIGNMENT AND INTERSECTION LOCATION



Appendix B Noise assessment figures






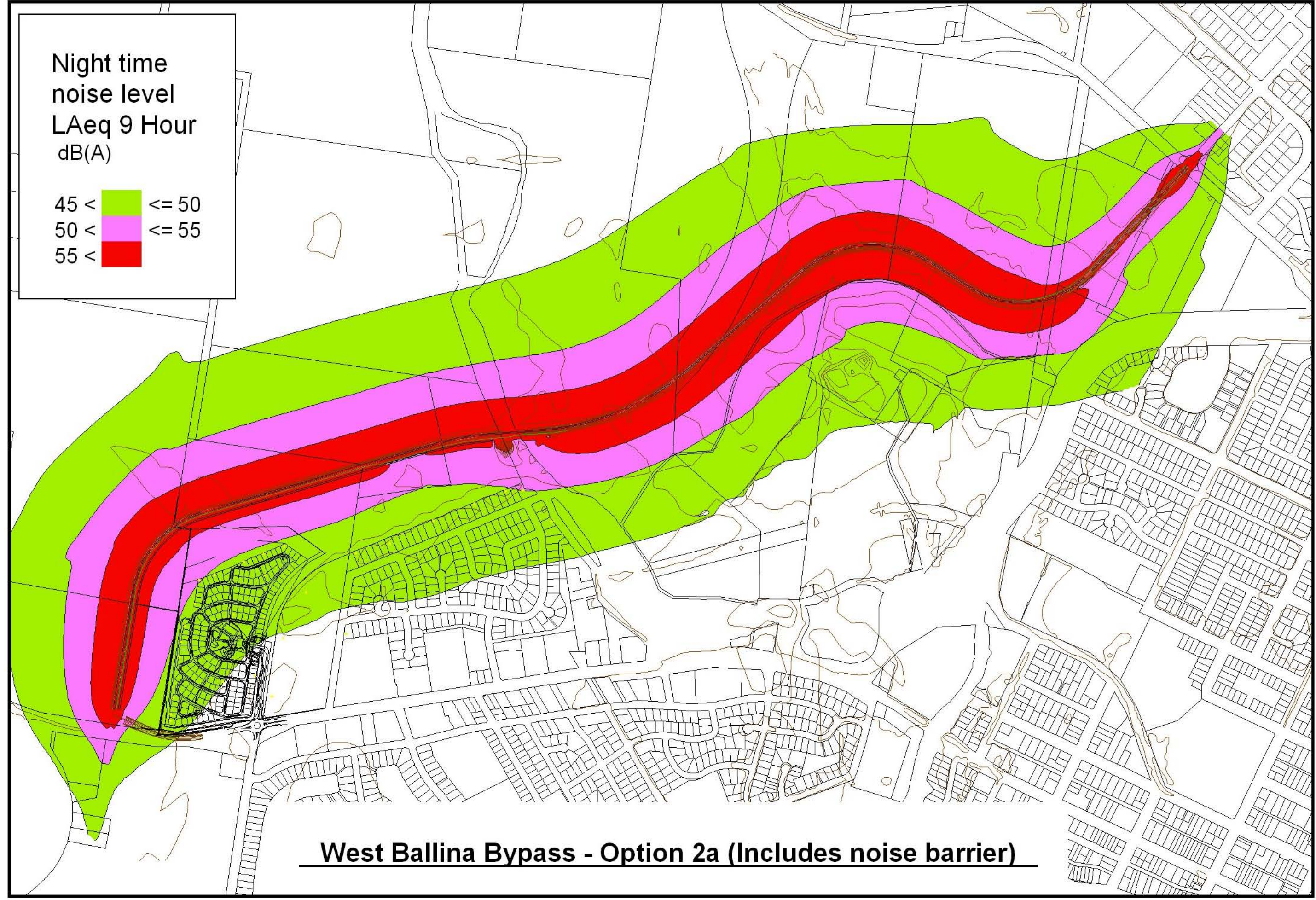
Night time
noise level
L_{Aeq} 9 Hour
dB(A)

- 45 <  <= 50
- 50 <  <= 55
- 55 < 

West Ballina Bypass - Option 2 (Includes noise barrier)

Night time
noise level
LAeq 9 Hour
dB(A)

- 45 <  <= 50
- 50 <  <= 55
- 55 < 



West Ballina Bypass - Option 2a (Includes noise barrier)



Appendix C Detailed cost spread sheets



Project: West Ballina Arterial Option 2 (SK-017)	Prepared by: Greg Vercoe	Date: 14-Sep-06	Type: E90
SKM Project No: EN01619.300	Estimate Stage: Strategic	Revision: 4	

ITEM	DESCRIPTION OF WORK	AMOUNT (excluding contingency)	CONTINGENCY		ESTIMATE (including contingency)	% OF TOTAL ESTIMATE	COMMENTS/ASSUMPTIONS
			%	AMOUNT			
1	PROJECT DEVELOPMENT						
1(a)	Route/Concept/EIS	\$350,000	50	\$175,000	\$525,000		
1(b)	Project Management Services	\$18,000	50	\$9,000	\$27,000		
1(c)	Client Representation	\$2,000	50	\$1,000	\$3,000		
	Sub-total	\$370,000		\$185,000	\$555,000	1.4	
2	INVESTIGATION AND DESIGN						
2(a)	Investigation and Design	\$1,229,000	50	\$615,000	\$1,844,000		
2(b)	Project Management Services	\$61,000	50	\$31,000	\$92,000		
2(c)	Client Representation	\$6,000	50	\$3,000	\$9,000		
	Sub-total	\$1,296,000		\$649,000	\$1,945,000	4.9	
3	PROPERTY ACQUISITIONS						
3(a)	Property Acquisitions	\$2,716,200	50	\$1,358,000	\$4,074,200		Assume 35m reserve, \$90000/ha
3(b)	Professional Services for Property	\$190,000	50	\$95,000	\$285,000		
3(c)	Project Management Services	\$145,000	50	\$73,000	\$218,000		
3(d)	Client Representation	\$15,000	50	\$8,000	\$23,000		
	Sub-total	\$3,066,200		\$1,534,000	\$4,600,200	11.7	
4	PUBLIC UTILITY ADJUSTMENTS						
4(a)	Adjust Utilities	\$179,000	100	\$179,000	\$358,000		
4(b)	Project Management Services	\$4,000	100	\$4,000	\$8,000		
4(c)	Principal Arranged Insurance	\$2,000	100	\$2,000	\$4,000		
4(d)	Client Representation	\$1,000	100	\$1,000	\$2,000		
	Sub-total	\$186,000		\$186,000	\$372,000	0.9	
5	CONSTRUCTION						
5(a)	General Provisions	\$850,000	50	\$425,000	\$1,275,000		
5(b)	Control of Erosion and Sedimentation	\$348,000	50	\$174,000	\$522,000		
5(c)	Drainage	\$3,177,000	50	\$1,589,000	\$4,766,000		
5(d)	Earthworks	\$5,447,000	50	\$2,724,000	\$8,171,000		
5(e)	Bridges	\$3,630,000	35	\$1,271,000	\$4,901,000		
5(f)	Pavements	\$2,563,000	35	\$897,000	\$3,460,000		
5(g)	Roadside Improvements	\$1,029,000	50	\$515,000	\$1,544,000		
5(h)	Miscellaneous Items	\$3,445,000	50	\$1,723,000	\$5,168,000		
		\$20,489,000	45	\$9,318,000	\$29,807,000		
5(i)	Project Management Services	\$1,024,000	50	\$512,000	\$1,536,000		
5(j)	Principal Arranged Insurance	\$205,000	50	\$103,000	\$308,000		
5(k)	Client Representation	\$102,000	50	\$51,000	\$153,000		
	Sub-total	\$21,820,000		\$9,984,000	\$31,804,000	80.9	
6	HANDOVER						
6(a)	Refurbish Old Route	\$0	50	\$0	\$0		
6(b)	Project Data and Performance	\$25,000	50	\$13,000	\$38,000		
6(c)	Project Management Services	\$1,000	50	\$1,000	\$2,000		
6(d)	Client Representation	\$0	50	\$0	\$0		
	Sub-total	\$26,000		\$14,000	\$40,000	0.1	
	TOTAL	\$26,764,200	46.9	\$12,552,000	\$39,316,200	100.0	

Project Management	Total Amount	% of Total Estimate
Client Representation	\$1,883,000	4.8
	\$190,000	0.5

REALITY CHECK

Project Cost /km	\$11.9 (million)	3.3 km
Project Cost /lane km (new)	\$4.5 (million)	8.8 km
Pavement Cost / m ²	\$69	50,440 m ²
Bridge Cost / m ²	\$2,970	1,650 m ²

ESTIMATED COST (2006 dollars) \$39 million

SCHEDULE OF QUANTITIES FOR:

PROJECT TITLE :	West Ballina Arterial
CONTRACT NO. :	EN01619.300
CONTRACT TITLE :	Option 2 (SK-017) REV 04

= Items with a Quantity Calculation Sheet

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	CONSTRUCTION								OTHER
						5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	
G1	JOB SPECIFIC REQUIREMENTS													
G1P1	Landscaping	km	3.28	140,000.00	459,200.00							\$ 459,200		
G1P2	Roundabout Intersections	lump sum	1	380,000.00	380,000.00								\$ 380,000	
G1	JOB SPECIFIC REQUIREMENTS			Sub-Total:	839,200.00									
G4	PRINCIPAL'S PROJECT ACCOMMODATION													
G4P1	Provision of Principal's Project Accommodation	lump sum	1	60,000.00	60,000.00									
G4	PRINCIPAL'S PROJECT ACCOMMODATION			Sub-Total:	60,000.00	\$ 60,000								
G10	CONTROL OF TRAFFIC													
G10P1	Control of Traffic	lump sum	1	651,000.00	651,000.00									
G10	CONTROL OF TRAFFIC			Sub-Total:	651,000.00	\$ 651,000								
G36	ENVIRONMENTAL PROTECTION (MANAGEMENT SYSTEM)													
G36P1	Building Condition Inspections (Item with provisional quantity)	each	100	685.00	68,500.00									
G36P2	Site Monitoring													
G36P2(a)	Air Pollution	lump sum	1	25,000.00	25,000.00									
G36P2(b)	Noise	lump sum	1	25,000.00	25,000.00									
G36P2(c)	Ground Vibration	lump sum	1	20,000.00	20,000.00									
G36	ENVIRONMENTAL PROTECTION (MANAGEMENT SYSTEM)			Sub-Total:	138,500.00	\$ 138,500								
G38	SOIL AND WATER MANAGEMENT (SOIL AND WATER MANAGEMENT PLAN)													
G38P7	Site Water Quality Monitoring	lump sum	1	116,000.00	116,000.00									#
G38P8	Erosion and Sedimentation Control	lump sum	1	232,000.00	232,000.00									#
G38	SOIL AND WATER MANAGEMENT (SOIL AND WATER MANAGEMENT PLAN)			Sub-Total:	348,000.00		\$ 348,000							
G40	CLEARING AND GRUBBING													

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
G40P1	Clearing and Grubbing	lump sum	1	179,000.00	179,000.00									
G40	CLEARING AND GRUBBING			Sub-Total:	179,000.00				\$ 179,000					
R11	STORMWATER DRAINAGE													
R11P2	Excavation for Stormwater Drainage Structures	m3	2740	23.00	63,020.00	#								
R11P3	Excavation for Open Drains	m3	110	14.00	1,540.00									
R11P4	Unsuitable Material under Drainage Structures and Open Drains (Item with provisional quantity)	m3	290	25.00	7,250.00	#								
R11P5	Precast Concrete and Fibre Reinforced Concrete Pipes													
R11P5.1	450mm - Class 4 - RRJ	m	3200	210.00	672,000.00	#								
R11P6	Precast Concrete Box Culvert Structures													
R11P6.1	3600 x 1500 RC Box Culverts	m	100	2,400.00	240,000.00	#								
R11P6.2	3600 x 900 RC Box Culverts	m	440	2,100.00	924,000.00	#								
R11P6.3	Box Culvert Double Headwalls	each	11	6,600.00	72,600.00									
R11P6.4	Box Culvert Triple Headwalls	each	10	9,000.00	90,000.00									
R11P7	Drainage Structures Other Than Pipes and Box Culverts													
R11P7.1	Headwalls - Pipe culverts	each	27	800.00	21,600.00									
R11P7.2	Pits	each	77	2,800.00	215,600.00	#								
R11P7.3	Open Drains	m	220	120.00	26,400.00									
R11P7.4	Water Quality Control Devices	each	4	28,000.00	112,000.00	#								
R11	STORMWATER DRAINAGE			Sub-Total:	2,446,010.00			\$ 2,446,010						
R15	KERBS AND GUTTERS													
R15P1	Kerbs and Gutters													
R15P1.1	Type SA	m	2260	90.00	203,400.00	#								
R15P1.2	Type SG	m	4010	60.00	240,600.00	#								
R15	KERBS AND GUTTERS			Sub-Total:	444,000.00			\$ 444,000						
R33	TRENCH DRAINS													
R33P9	Trench Drains	m	6560	35.00	229,600.00	#								
R33	TRENCH DRAINS			Sub-Total:	229,600.00			\$ 229,600						
RW40	OTHER SUB-SURFACE DRAINS													
RW40	Wick Drains	m	157820	3.00	473,460.00									
RW40	OTHER SUB-SURFACE DRAINS			Sub-Total:	473,460.00			\$ 473,460						
R44	EARTHWORKS													
R44P1	Topsoil													
R44P1.1	Removal and Stockpiling of Topsoil	m3	12870	6.00	77,220.00									
R44P2	General Earthworks (Cut/Fill)	m3	445	10.00	4,450.00									
R44P3	Imported or Borrowed Material	m3	99135	25.00	2,478,375.00									

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
R44P4	Unsuitable Material (Item with provisional quantity)	m3	90	25.00	2,250.00	#								
R44P7	Foundation Treatments													
R44P7.2	Treatment Type E2 - Bridging Layer	m3	71448	25.00	1,786,200.00									
R44P7.3	Treatment Type E4 and Cutting Type C5 - Geotextile and Geogrid													
R44P7.3(a)	Geotextile	m2	118601	3.00	355,803.00									
R44	EARTHWORKS			Sub-Total:	4,704,298.00				\$ 4,704,298					
R50	STABILISATION OF EARTHWORKS													
R50P1	Supply of Stabilising Agent													
R50P1.2	Hydrated Lime	t	67	260.00	17,420.00									
R50P2	Stabilisation with In Place Mixing													
R50P2.2	Hydrated Lime	m3	3635	20.00	72,700.00									
R50	STABILISATION OF EARTHWORKS			Sub-Total:	90,120.00				\$ 90,120					
R55	ROCK FILLED GABIONS AND MATTRESSES													
R55P1	Rock Filled Gabions	m3	160	250.00	40,000.00									
R55P2	Rock Filled Wire Mattresses	m2	160	86.00	13,760.00									
R55P5	Excavation for Gabions and Mattresses.	m3	110	34.00	3,740.00									
R55	ROCK FILLED GABIONS AND MATTRESSES			Sub-Total:	57,500.00			\$ 57,500						
R58	CONSTRUCTION OF REINFORCED SOIL WALLS													
R58P8	Reinforced Soil Walls	m2	87	780.00	67,860.00									
R58	CONSTRUCTION OF REINFORCED SOIL WALLS			Sub-Total:	67,860.00								\$ 67,860	
R71	UNBOUND PAVEMENT COURSE (NORMAL DUTY)													
R71P1	Subbase Course - DGS 40	m3	10100	80.00	808,000.00	#								
R71P2	Base Course - DGB 20	m3	5700	90.00	513,000.00	#								
R71	UNBOUND PAVEMENT COURSE (NORMAL DUTY)			Sub-Total:	1,321,000.00						\$ 1,321,000			
R111	SPRAYED BITUMINOUS SURFACING (WITH BITUMEN EMULSION)													
R111P2	Supply, Precoat, Apply, Incorporate and Sweep Aggregate													
R111P2.2	7mm Aggregate (Precoated)	m3	37685	2.30	86,675.50									
R111	SPRAYED BITUMINOUS SURFACING (WITH BITUMEN EMULSION)			Sub-Total:	86,675.50						\$ 86,676			

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
R116	ASPHALT (DENSE GRADED AND OPEN GRADED)													
R116P4	Dense Graded Asphalt In Wearing Course													
R116P4.2.1	10 mm Nominal Size, 20 mm thick	m2	5660	15.00	84,900.00	#								
R116P4.2.2	10 mm Nominal Size, 25 mm thick	m2	37630	18.00	677,340.00	#								
R116	ASPHALT (DENSE GRADED AND OPEN GRADED)			Sub-Total:	762,240.00						\$ 762,240			
R131	GUIDEPOSTS													
R131P1	Supply and Installation of Guide Posts	each	160	25.00	4,000.00									
R131	GUIDEPOSTS			Sub-Total:	4,000.00							\$ 4,000		
R132	SAFETY BARRIER SYSTEMS													
R132P3	Construction of Post and Rail Safety Barriers	m	3300	105.00	346,500.00	#								
R132P8	Construction of Terminals	each	8	3,170.00	25,360.00									
R132	SAFETY BARRIER SYSTEMS			Sub-Total:	371,860.00							\$ 371,860		
R141	PAVEMENT MARKING													
R141P16	Line marking (per metre of carriageway)	m	5600	5.00	28,000.00									
R141P17	Arrows, chevrons, etc	m2	70	15.00	1,050.00									
R141	PAVEMENT MARKING			Sub-Total:	29,050.00							\$ 29,050		
R142	RETROFLECTIVE RAISED PAVEMENT MARKERS													
R142P2	Installation of Retroreflective Raised Pavement Markers	each	410	7.50	3,075.00									
R142	RETROFLECTIVE RAISED PAVEMENT MARKERS			Sub-Total:	3,075.00							\$ 3,075		
R143	SIGNPOSTING													
R143P8	General Signage	km	3.28	3,300.00	10,824.00									
R143	SIGNPOSTING			Sub-Total:	10,824.00							\$ 10,824		
R161	FENCING													
R161P1	Controlled Access Rural Road Fencing - Wire	m	5640	11.00	62,040.00									
R161P4	Controlled Access Rural Road Fencing - Rabbit-proof - Buried Netting	m	630	40.00	25,200.00									

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
R161	FENCING				Sub-Total:								\$ 87,240	
RN162	NOISE WALLS													
RN162P1	Noise Treatments													
RN162P1.1	Noise Treatment - West of Fishery Ck	lump sum	1	1,480,000.00	1,480,000.00									
RN162P1.3	Noise Treatment - East of Fishery Ck	lump sum	1	1,430,000.00	1,430,000.00									
RN162	NOISE WALLS				Sub-Total:								\$ 2,910,000	
R173	GENERAL CONCRETE PAVING													
R173P1	Concrete Paving													
R173P1.1	150mm - Mesh Reinforcement	m2	7150	55.00	393,250.00									
R173	GENERAL CONCRETE PAVING				Sub-Total:						\$ 393,250			
R178	VEGETATION													
R178P22	Topsoiling and seeding	m2	47154	1.20	56,584.80									
R178P23	Planting of tubestock (incl. Watering)	each	11860	8.00	94,880.00									
R178	VEGETATION				Sub-Total:							\$ 151,465		
RB99	BRIDGES													
RB99P1	Major Bridges													
RB99P1.1	Bridge at Station 1160	m2	825	2,200.00	1,815,000.00									
RB99P1.2	Bridge at Station 3010	m2	825	2,200.00	1,815,000.00									
RB99	BRIDGES				Sub-Total:					\$ 3,630,000				
PA01	PROPERTY ACQUISITIONS													
PA01P1	Road Corridor													
PA01P1.1	Required Acquisitions	ha	8.58	90,000.00	772,200.00									
PA01P1.2	Transferred Land (no cost)	ha	2.91	0.00	0.00									
PA01P1.3	Developer Compensation	lots	9	105,000.00	945,000.00									
PA01P2	Compensatory Habitate													
PA01P1.1	Compensatory Habitate	ha	11.1	90,000.00	999,000.00									
PA01	PROPERTY ACQUISITIONS				Sub-Total:									\$ 2,716,200
TOTAL					\$ 23,205,427.30	\$ 849,500	\$ 348,000	\$ 3,177,110	\$ 5,446,878	\$ 3,630,000	\$ 2,563,166	\$ 1,029,474	\$ 3,445,100	\$ 2,716,200

Bal. Check:
Correct



Project: West Ballina Arterial Option 2 (Modified to SK-019)	Prepared by: Greg Vercoe	Date: 14-Sep-06	Type: E90
SKM Project No: EN01619.300	Estimate Stage: Strategic	Revision: 1	

ITEM	DESCRIPTION OF WORK	AMOUNT (excluding contingency)	CONTINGENCY		ESTIMATE (including contingency)	% OF TOTAL ESTIMATE	COMMENTS/ASSUMPTIONS
			%	AMOUNT			
1	PROJECT DEVELOPMENT						
1(a)	Route/Concept/EIS	\$350,000	50	\$175,000	\$525,000		
1(b)	Project Management Services	\$18,000	50	\$9,000	\$27,000		
1(c)	Client Representation	\$2,000	50	\$1,000	\$3,000		
	Sub-total	\$370,000		\$185,000	\$555,000	1.5	
2	INVESTIGATION AND DESIGN						
2(a)	Investigation and Design	\$1,221,000	50	\$611,000	\$1,832,000		
2(b)	Project Management Services	\$61,000	50	\$31,000	\$92,000		
2(c)	Client Representation	\$6,000	50	\$3,000	\$9,000		
	Sub-total	\$1,288,000		\$645,000	\$1,933,000	5.1	
3	PROPERTY ACQUISITIONS						
3(a)	Property Acquisitions	\$2,019,600	50	\$1,010,000	\$3,029,600		Assume 35m reserve, \$90000/ha
3(b)	Professional Services for Property	\$141,000	50	\$71,000	\$212,000		
3(c)	Project Management Services	\$108,000	50	\$54,000	\$162,000		
3(d)	Client Representation	\$11,000	50	\$6,000	\$17,000		
	Sub-total	\$2,279,600		\$1,141,000	\$3,420,600	9.0	
4	PUBLIC UTILITY ADJUSTMENTS						
4(a)	Adjust Utilities	\$179,000	100	\$179,000	\$358,000		
4(b)	Project Management Services	\$4,000	100	\$4,000	\$8,000		
4(c)	Principal Arranged Insurance	\$2,000	100	\$2,000	\$4,000		
4(d)	Client Representation	\$1,000	100	\$1,000	\$2,000		
	Sub-total	\$186,000		\$186,000	\$372,000	1.0	
5	CONSTRUCTION						
5(a)	General Provisions	\$834,000	50	\$417,000	\$1,251,000		
5(b)	Control of Erosion and Sedimentation	\$315,000	50	\$158,000	\$473,000		
5(c)	Drainage	\$3,170,000	50	\$1,585,000	\$4,755,000		
5(d)	Earthworks	\$5,418,000	50	\$2,709,000	\$8,127,000		
5(e)	Bridges	\$3,630,000	35	\$1,271,000	\$4,901,000		
5(f)	Pavements	\$2,535,000	35	\$887,000	\$3,422,000		
5(g)	Roadside Improvements	\$1,010,000	50	\$505,000	\$1,515,000		
5(h)	Miscellaneous Items	\$3,444,000	50	\$1,722,000	\$5,166,000		
		\$20,356,000	45	\$9,254,000	\$29,610,000		
5(i)	Project Management Services	\$1,018,000	50	\$509,000	\$1,527,000		
5(j)	Principal Arranged Insurance	\$204,000	50	\$102,000	\$306,000		
5(k)	Client Representation	\$102,000	50	\$51,000	\$153,000		
	Sub-total	\$21,680,000		\$9,916,000	\$31,596,000	83.3	
6	HANDOVER						
6(a)	Refurbish Old Route	\$0	50	\$0	\$0		
6(b)	Project Data and Performance	\$25,000	50	\$13,000	\$38,000		
6(c)	Project Management Services	\$1,000	50	\$1,000	\$2,000		
6(d)	Client Representation	\$0	50	\$0	\$0		
	Sub-total	\$26,000		\$14,000	\$40,000	0.1	
	TOTAL	\$25,829,600	46.8	\$12,087,000	\$37,916,600	100.0	

Project Management	Total Amount	% of Total Estimate
Client Representation	\$1,818,000	4.8
	\$184,000	0.5

REALITY CHECK

Project Cost /km	\$11.8 (million)	3.2 km
Project Cost /lane km (new)	\$4.4 (million)	8.7 km
Pavement Cost / m ²	\$69	49,892 m ²
Bridge Cost / m ²	\$2,970	1,650 m ²

ESTIMATED COST (2006 dollars)	\$38 million
--------------------------------------	---------------------

SCHEDULE OF QUANTITIES FOR:

PROJECT TITLE :	West Ballina Arterial
CONTRACT NO. :	EN01619.300
CONTRACT TITLE :	Option 2 (Modified to SK-019) REV 01

= Items with a Quantity Calculation Sheet

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	CONSTRUCTION								OTHER
						5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	
G1	JOB SPECIFIC REQUIREMENTS													
G1P1	Landscaping	km	3.24	140,000.00	453,600.00							\$ 453,600		
G1P2	Roundabout Intersections	lump sum	1	380,000.00	380,000.00								\$ 380,000	
G1	JOB SPECIFIC REQUIREMENTS			Sub-Total:	833,600.00									
G4	PRINCIPAL'S PROJECT ACCOMMODATION													
G4P1	Provision of Principal's Project Accommodation	lump sum	1	60,000.00	60,000.00									
G4	PRINCIPAL'S PROJECT ACCOMMODATION			Sub-Total:	60,000.00	\$ 60,000								
G10	CONTROL OF TRAFFIC													
G10P1	Control of Traffic	lump sum	1	635,000.00	635,000.00									
G10	CONTROL OF TRAFFIC			Sub-Total:	635,000.00	\$ 635,000								
G36	ENVIRONMENTAL PROTECTION (MANAGEMENT SYSTEM)													
G36P1	Building Condition Inspections (Item with provisional quantity)	each	100	685.00	68,500.00									
G36P2	Site Monitoring													
G36P2(a)	Air Pollution	lump sum	1	25,000.00	25,000.00									
G36P2(b)	Noise	lump sum	1	25,000.00	25,000.00									
G36P2(c)	Ground Vibration	lump sum	1	20,000.00	20,000.00									
G36	ENVIRONMENTAL PROTECTION (MANAGEMENT SYSTEM)			Sub-Total:	138,500.00	\$ 138,500								
G38	SOIL AND WATER MANAGEMENT (SOIL AND WATER MANAGEMENT PLAN)													
G38P7	Site Water Quality Monitoring	lump sum	1	105,000.00	105,000.00									#
G38P8	Erosion and Sedimentation Control	lump sum	1	210,000.00	210,000.00									#
G38	SOIL AND WATER MANAGEMENT (SOIL AND WATER MANAGEMENT PLAN)			Sub-Total:	315,000.00		\$ 315,000							
G40	CLEARING AND GRUBBING													

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
G40P1	Clearing and Grubbing	lump sum	1	156,000.00	156,000.00									
G40	CLEARING AND GRUBBING			Sub-Total:	156,000.00				\$ 156,000					
R11	STORMWATER DRAINAGE													
R11P2	Excavation for Stormwater Drainage Structures	m3	2740	23.00	63,020.00	#								
R11P3	Excavation for Open Drains	m3	110	14.00	1,540.00									
R11P4	Unsuitable Material under Drainage Structures and Open Drains (Item with provisional quantity)	m3	290	25.00	7,250.00	#								
R11P5	Precast Concrete and Fibre Reinforced Concrete Pipes													
R11P5.1	450mm - Class 4 - RRJ	m	3200	210.00	672,000.00	#								
R11P6	Precast Concrete Box Culvert Structures													
R11P6.1	3600 x 1500 RC Box Culverts	m	100	2,400.00	240,000.00	#								
R11P6.2	3600 x 900 RC Box Culverts	m	440	2,100.00	924,000.00	#								
R11P6.3	Box Culvert Double Headwalls	each	11	6,600.00	72,600.00									
R11P6.4	Box Culvert Triple Headwalls	each	10	9,000.00	90,000.00									
R11P7	Drainage Structures Other Than Pipes and Box Culverts													
R11P7.1	Headwalls - Pipe culverts	each	27	800.00	21,600.00									
R11P7.2	Pits	each	77	2,800.00	215,600.00	#								
R11P7.3	Open Drains	m	220	120.00	26,400.00									
R11P7.4	Water Quality Control Devices	each	4	28,000.00	112,000.00	#								
R11	STORMWATER DRAINAGE			Sub-Total:	2,446,010.00			\$ 2,446,010						
R15	KERBS AND GUTTERS													
R15P1	Kerbs and Gutters													
R15P1.1	Type SA	m	2260	90.00	203,400.00	#								
R15P1.2	Type SG	m	3940	60.00	236,400.00	#								
R15	KERBS AND GUTTERS			Sub-Total:	439,800.00			\$ 439,800						
R33	TRENCH DRAINS													
R33P9	Trench Drains	m	6480	35.00	226,800.00	#								
R33	TRENCH DRAINS			Sub-Total:	226,800.00			\$ 226,800						
RW40	OTHER SUB-SURFACE DRAINS													
RW40	Wick Drains	m	155840	3.00	467,520.00									
RW40	OTHER SUB-SURFACE DRAINS			Sub-Total:	467,520.00			\$ 467,520						
R44	EARTHWORKS													
R44P1	Topsoil													
R44P1.1	Removal and Stockpiling of Topsoil	m3	12870	6.00	77,220.00									
R44P2	General Earthworks (Cut/Fill)	m3	445	10.00	4,450.00									
R44P3	Imported or Borrowed Material	m3	99135	25.00	2,478,375.00									

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
R44P4	Unsuitable Material (Item with provisional quantity)	m3	90	25.00	2,250.00	#								
R44P7	Foundation Treatments													
R44P7.2	Treatment Type E2 - Bridging Layer	m3	71448	25.00	1,786,200.00									
R44P7.3	Treatment Type E4 and Cutting Type C5 - Geotextile and Geogrid													
R44P7.3(a)	Geotextile	m2	118601	3.00	355,803.00									
R44	EARTHWORKS			Sub-Total:	4,704,298.00				\$ 4,704,298					
R50	STABILISATION OF EARTHWORKS													
R50P1	Supply of Stabilising Agent													
R50P1.2	Hydrated Lime	t	67	260.00	17,420.00									
R50P2	Stabilisation with In Place Mixing													
R50P2.2	Hydrated Lime	m3	3635	20.00	72,700.00									
R50	STABILISATION OF EARTHWORKS			Sub-Total:	90,120.00				\$ 90,120					
R55	ROCK FILLED GABIONS AND MATTRESSES													
R55P1	Rock Filled Gabions	m3	160	250.00	40,000.00									
R55P2	Rock Filled Wire Mattresses	m2	160	86.00	13,760.00									
R55P5	Excavation for Gabions and Mattresses.	m3	110	34.00	3,740.00									
R55	ROCK FILLED GABIONS AND MATTRESSES			Sub-Total:	57,500.00			\$ 57,500						
R58	CONSTRUCTION OF REINFORCED SOIL WALLS													
R58P8	Reinforced Soil Walls	m2	87	780.00	67,860.00									
R58	CONSTRUCTION OF REINFORCED SOIL WALLS			Sub-Total:	67,860.00								\$ 67,860	
R71	UNBOUND PAVEMENT COURSE (NORMAL DUTY)													
R71P1	Subbase Course - DGS 40	m3	10000	80.00	800,000.00	#								
R71P2	Base Course - DGB 20	m3	5600	90.00	504,000.00	#								
R71	UNBOUND PAVEMENT COURSE (NORMAL DUTY)			Sub-Total:	1,304,000.00						\$ 1,304,000			
R111	SPRAYED BITUMINOUS SURFACING (WITH BITUMEN EMULSION)													
R111P2	Supply, Precoat, Apply, Incorporate and Sweep Aggregate													
R111P2.2	7mm Aggregate (Precoated)	m3	37190	2.30	85,537.00									
R111	SPRAYED BITUMINOUS SURFACING (WITH BITUMEN EMULSION)			Sub-Total:	85,537.00						\$ 85,537			

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
R116	ASPHALT (DENSE GRADED AND OPEN GRADED)													
R116P4	Dense Graded Asphalt In Wearing Course													
R116P4.2.1	10 mm Nominal Size, 20 mm thick	m2	5552	15.00	83,280.00	#								
R116P4.2.2	10 mm Nominal Size, 25 mm thick	m2	37190	18.00	669,420.00	#								
R116	ASPHALT (DENSE GRADED AND OPEN GRADED)			Sub-Total:	752,700.00						\$ 752,700			
R131	GUIDEPOSTS													
R131P1	Supply and Installation of Guide Posts	each	160	25.00	4,000.00									
R131	GUIDEPOSTS			Sub-Total:	4,000.00							\$ 4,000		
R132	SAFETY BARRIER SYSTEMS													
R132P3	Construction of Post and Rail Safety Barriers	m	3200	105.00	336,000.00	#								
R132P8	Construction of Terminals	each	8	3,170.00	25,360.00									
R132	SAFETY BARRIER SYSTEMS			Sub-Total:	361,360.00							\$ 361,360		
R141	PAVEMENT MARKING													
R141P16	Line marking (per metre of carriageway)	m	5500	5.00	27,500.00									
R141P17	Arrows, chevrons, etc	m2	60	15.00	900.00									
R141	PAVEMENT MARKING			Sub-Total:	28,400.00							\$ 28,400		
R142	RETROFLECTIVE RAISED PAVEMENT MARKERS													
R142P2	Installation of Retroreflective Raised Pavement Markers	each	400	7.50	3,000.00									
R142	RETROFLECTIVE RAISED PAVEMENT MARKERS			Sub-Total:	3,000.00							\$ 3,000		
R143	SIGNPOSTING													
R143P8	General Signage	km	3.24	3,300.00	10,692.00									
R143	SIGNPOSTING			Sub-Total:	10,692.00							\$ 10,692		
R161	FENCING													
R161P1	Controlled Access Rural Road Fencing - Wire	m	5570	11.00	61,270.00									
R161P4	Controlled Access Rural Road Fencing - Rabbit-proof - Buried Netting	m	620	40.00	24,800.00									

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
R161	FENCING				Sub-Total:								\$ 86,070	
RN162	NOISE WALLS													
RN162P1	Noise Treatments													
RN162P1.1	Noise Treatment - West of Fishery Ck	lump sum	1	1,480,000.00	1,480,000.00									
RN162P1.3	Noise Treatment - East of Fishery Ck	lump sum	1	1,430,000.00	1,430,000.00									
RN162	NOISE WALLS				Sub-Total:								\$ 2,910,000	
R173	GENERAL CONCRETE PAVING													
R173P1	Concrete Paving													
R173P1.1	150mm - Mesh Reinforcement	m2	7150	55.00	393,250.00									
R173	GENERAL CONCRETE PAVING				Sub-Total:						\$ 393,250			
R178	VEGETATION													
R178P22	Topsoiling and seeding	m2	46560	1.20	55,872.00									
R178P23	Planting of tubestock (incl. Watering)	each	11664	8.00	93,312.00									
R178	VEGETATION				Sub-Total:							\$ 149,184		
RB99	BRIDGES													
RB99P1	Major Bridges													
RB99P1.1	Bridge at Station 1160	m2	825	2,200.00	1,815,000.00									
RB99P1.2	Bridge at Station 3010	m2	825	2,200.00	1,815,000.00									
RB99	BRIDGES				Sub-Total:					\$ 3,630,000				
PA01	PROPERTY ACQUISITIONS													
PA01P1	Road Corridor													
PA01P1.1	Required Acquisitions	ha	8.44	90,000.00	759,600.00									
PA01P1.2	Transferred Land (no cost)	ha	2.91	0.00	0.00									
PA01P1.3	Developer Compensation	lots	0	105,000.00	0.00									
PA01P2	Compensatory Habitate													
PA01P1.1	Compensatory Habitate	ha	14	90,000.00	1,260,000.00									
PA01	PROPERTY ACQUISITIONS				Sub-Total:									\$ 2,019,600
TOTAL					\$ 22,375,801.00	\$ 833,500	\$ 315,000	\$ 3,170,110	\$ 5,417,938	\$ 3,630,000	\$ 2,535,487	\$ 1,010,236	\$ 3,443,930	\$ 2,019,600

Bal. Check:
Correct



Project: West Ballina Arterial Option 2A (Developer Alignment)	Prepared by: Greg Vercoe	Date: 14-Sep-06	Type: E90
SKM Project No: EN01619.300	Estimate Stage: Strategic	Revision: 1	

ITEM	DESCRIPTION OF WORK	AMOUNT (excluding contingency)	CONTINGENCY		ESTIMATE (including contingency)	% OF TOTAL ESTIMATE	COMMENTS/ASSUMPTIONS
			%	AMOUNT			
1	PROJECT DEVELOPMENT						
1(a)	Route/Concept/EIS	\$350,000	50	\$175,000	\$525,000		
1(b)	Project Management Services	\$18,000	50	\$9,000	\$27,000		
1(c)	Client Representation	\$2,000	50	\$1,000	\$3,000		
	Sub-total	\$370,000		\$185,000	\$555,000	1.4	
2	INVESTIGATION AND DESIGN						
2(a)	Investigation and Design	\$1,317,000	50	\$659,000	\$1,976,000		
2(b)	Project Management Services	\$66,000	50	\$33,000	\$99,000		
2(c)	Client Representation	\$7,000	50	\$4,000	\$11,000		
	Sub-total	\$1,390,000		\$696,000	\$2,086,000	5.2	
3	PROPERTY ACQUISITIONS						
3(a)	Property Acquisitions	\$1,622,700	50	\$811,000	\$2,433,700		Assume 35m reserve, \$90000/ha
3(b)	Professional Services for Property	\$114,000	50	\$57,000	\$171,000		
3(c)	Project Management Services	\$87,000	50	\$44,000	\$131,000		
3(d)	Client Representation	\$9,000	50	\$5,000	\$14,000		
	Sub-total	\$1,832,700		\$917,000	\$2,749,700	6.9	
4	PUBLIC UTILITY ADJUSTMENTS						
4(a)	Adjust Utilities	\$179,000	100	\$179,000	\$358,000		
4(b)	Project Management Services	\$4,000	100	\$4,000	\$8,000		
4(c)	Principal Arranged Insurance	\$2,000	100	\$2,000	\$4,000		
4(d)	Client Representation	\$1,000	100	\$1,000	\$2,000		
	Sub-total	\$186,000		\$186,000	\$372,000	0.9	
5	CONSTRUCTION						
5(a)	General Provisions	\$850,000	50	\$425,000	\$1,275,000		
5(b)	Control of Erosion and Sedimentation	\$348,000	50	\$174,000	\$522,000		
5(c)	Drainage	\$3,159,000	50	\$1,580,000	\$4,739,000		
5(d)	Earthworks	\$6,218,000	50	\$3,109,000	\$9,327,000		
5(e)	Bridges	\$3,630,000	35	\$1,271,000	\$4,901,000		
5(f)	Pavements	\$2,797,000	35	\$979,000	\$3,776,000		
5(g)	Roadside Improvements	\$1,180,000	50	\$590,000	\$1,770,000		
5(h)	Miscellaneous Items	\$3,774,000	50	\$1,887,000	\$5,661,000		
		\$21,956,000	46	\$10,015,000	\$31,971,000		
5(i)	Project Management Services	\$1,098,000	50	\$549,000	\$1,647,000		
5(j)	Principal Arranged Insurance	\$220,000	50	\$110,000	\$330,000		
5(k)	Client Representation	\$110,000	50	\$55,000	\$165,000		
	Sub-total	\$23,384,000		\$10,729,000	\$34,113,000	85.5	
6	HANDOVER						
6(a)	Refurbish Old Route	\$0	50	\$0	\$0		
6(b)	Project Data and Performance	\$25,000	50	\$13,000	\$38,000		
6(c)	Project Management Services	\$1,000	50	\$500	\$1,500		
6(d)	Client Representation	\$0	50	\$0	\$0		
	Sub-total	\$26,000		\$14,000	\$40,000	0.1	
	TOTAL	\$27,188,700	46.8	\$12,727,000	\$39,915,700	100.0	

	Total Amount	% of Total Estimate
Project Management	\$1,914,000	4.8
Client Representation	\$195,000	0.5

REALITY CHECK

Project Cost /km	\$10.2 (million)	3.9 km
Project Cost /lane km (new)	\$4.2 (million)	9.6 km
Pavement Cost / m ²	\$66	57,023 m ²
Bridge Cost / m ²	\$2,970	1,650 m ²

ESTIMATED COST (2006 dollars) \$40 million

SCHEDULE OF QUANTITIES FOR:

PROJECT TITLE :	West Ballina Arterial
CONTRACT NO. :	EN01619.300
CONTRACT TITLE :	Option 2A (Developer Alignment) REV 01

= Items with a Quantity Calculation Sheet

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	CONSTRUCTION								OTHER
						5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	
G1	JOB SPECIFIC REQUIREMENTS													
G1P1	Landscaping	km	3.9	140,000.00	546,000.00							\$ 546,000		
G1P2	Roundabout Intersections	lump sum	2	380,000.00	760,000.00								\$ 760,000	
G1	JOB SPECIFIC REQUIREMENTS			Sub-Total:	1,306,000.00									
G4	PRINCIPAL'S PROJECT ACCOMMODATION													
G4P1	Provision of Principal's Project Accommodation	lump sum	1	60,000.00	60,000.00									
G4	PRINCIPAL'S PROJECT ACCOMMODATION			Sub-Total:	60,000.00	\$ 60,000								
G10	CONTROL OF TRAFFIC													
G10P1	Control of Traffic	lump sum	1	651,000.00	651,000.00									
G10	CONTROL OF TRAFFIC			Sub-Total:	651,000.00	\$ 651,000								
G36	ENVIRONMENTAL PROTECTION (MANAGEMENT SYSTEM)													
G36P1	Building Condition Inspections (Item with provisional quantity)	each	100	685.00	68,500.00									
G36P2	Site Monitoring													
G36P2(a)	Air Pollution	lump sum	1	25,000.00	25,000.00									
G36P2(b)	Noise	lump sum	1	25,000.00	25,000.00									
G36P2(c)	Ground Vibration	lump sum	1	20,000.00	20,000.00									
G36	ENVIRONMENTAL PROTECTION (MANAGEMENT SYSTEM)			Sub-Total:	138,500.00	\$ 138,500								
G38	SOIL AND WATER MANAGEMENT (SOIL AND WATER MANAGEMENT PLAN)													
G38P7	Site Water Quality Monitoring	lump sum	1	116,000.00	116,000.00									#
G38P8	Erosion and Sedimentation Control	lump sum	1	232,000.00	232,000.00									#
G38	SOIL AND WATER MANAGEMENT (SOIL AND WATER MANAGEMENT PLAN)			Sub-Total:	348,000.00		\$ 348,000							
G40	CLEARING AND GRUBBING													

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
G40P1	Clearing and Grubbing	lump sum	1	179,000.00	179,000.00									
G40	CLEARING AND GRUBBING			Sub-Total:	179,000.00				\$ 179,000					
R11	STORMWATER DRAINAGE													
R11P2	Excavation for Stormwater Drainage Structures	m3	3030	23.00	69,690.00	#								
R11P3	Excavation for Open Drains	m3	130	14.00	1,820.00									
R11P4	Unsuitable Material under Drainage Structures and Open Drains (Item with provisional quantity)	m3	310	25.00	7,750.00	#								
R11P5	Precast Concrete and Fibre Reinforced Concrete Pipes													
R11P5.1	450mm - Class 4 - RRJ	m	2660	210.00	558,600.00	#								
R11P6	Precast Concrete Box Culvert Structures													
R11P6.1	3600 x 1500 RC Box Culverts	m	100	2,400.00	240,000.00	#								
R11P6.2	3600 x 900 RC Box Culverts	m	440	2,100.00	924,000.00	#								
R11P6.3	Box Culvert Double Headwalls	each	11	6,600.00	72,600.00									
R11P6.4	Box Culvert Triple Headwalls	each	10	9,000.00	90,000.00									
R11P7	Drainage Structures Other Than Pipes and Box Culverts													
R11P7.1	Headwalls - Pipe culverts	each	33	800.00	26,400.00									
R11P7.2	Pits	each	64	2,800.00	179,200.00	#								
R11P7.3	Open Drains	m	270	120.00	32,400.00									
R11P7.4	Water Quality Control Devices	each	4	28,000.00	112,000.00	#								
R11	STORMWATER DRAINAGE			Sub-Total:	2,314,460.00			\$ 2,314,460						
R15	KERBS AND GUTTERS													
R15P1	Kerbs and Gutters													
R15P1.1	Type SA	m	1760	90.00	158,400.00	#								
R15P1.2	Type SG	m	5740	60.00	344,400.00	#								
R15	KERBS AND GUTTERS			Sub-Total:	502,800.00			\$ 502,800						
R33	TRENCH DRAINS													
R33P9	Trench Drains	m	7800	35.00	273,000.00	#								
R33	TRENCH DRAINS			Sub-Total:	273,000.00			\$ 273,000						
RW40	OTHER SUB-SURFACE DRAINS													
RW40	Wick Drains	m	188510	3.00	565,530.00									
RW40	OTHER SUB-SURFACE DRAINS			Sub-Total:	565,530.00			\$ 565,530						
R44	EARTHWORKS													
R44P1	Topsoil													
R44P1.1	Removal and Stockpiling of Topsoil	m3	14310	6.00	85,860.00									
R44P2	General Earthworks (Cut/Fill)	m3	170	10.00	1,700.00									
R44P3	Imported or Borrowed Material	m3	106000	25.00	2,650,000.00	#								

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
R44P4	Unsuitable Material (Item with provisional quantity)	m3	40	25.00	1,000.00	#								
R44P7	Foundation Treatments													
R44P7.2	Treatment Type E2 - Bridging Layer	m3	85407	25.00	2,135,175.00									
R44P7.3	Treatment Type E4 and Cutting Type C5 - Geotextile and Geogrid													
R44P7.3(a)	Geotextile	m2	141384	3.00	424,152.00									
R44	EARTHWORKS			Sub-Total:	5,297,887.00				\$ 5,297,887					
R50	STABILISATION OF EARTHWORKS													
R50P1	Supply of Stabilising Agent													
R50P1.2	Hydrated Lime	t	144	260.00	37,440.00									
R50P2	Stabilisation with In Place Mixing													
R50P2.2	Hydrated Lime	m3	6925	20.00	138,500.00									
R50	STABILISATION OF EARTHWORKS			Sub-Total:	175,940.00				\$ 175,940					
R55	ROCK FILLED GABIONS AND MATTRESSES													
R55P1	Rock Filled Gabions	m3	190	250.00	47,500.00									
R55P2	Rock Filled Wire Mattresses	m2	190	86.00	16,340.00									
R55P5	Excavation for Gabions and Mattresses.	m3	140	34.00	4,760.00									
R55	ROCK FILLED GABIONS AND MATTRESSES			Sub-Total:	68,600.00			\$ 68,600						
R58	CONSTRUCTION OF REINFORCED SOIL WALLS													
R58P8	Reinforced Soil Walls	m2	0	780.00	0.00									
R58	CONSTRUCTION OF REINFORCED SOIL WALLS			Sub-Total:	0.00								\$ -	
R71	UNBOUND PAVEMENT COURSE (NORMAL DUTY)													
R71P1	Subbase Course - DGS 40	m3	11500	80.00	920,000.00	#								
R71P2	Base Course - DGB 20	m3	6800	90.00	612,000.00	#								
R71	UNBOUND PAVEMENT COURSE (NORMAL DUTY)			Sub-Total:	1,532,000.00						\$ 1,532,000			
R111	SPRAYED BITUMINOUS SURFACING (WITH BITUMEN EMULSION)													
R111P2	Supply, Precoat, Apply, Incorporate and Sweep Aggregate													
R111P2.2	7mm Aggregate (Precoated)	m3	44977	2.30	103,447.10									
R111	SPRAYED BITUMINOUS SURFACING (WITH BITUMEN EMULSION)			Sub-Total:	103,447.10						\$ 103,447			

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
R116	ASPHALT (DENSE GRADED AND OPEN GRADED)													
R116P4	Dense Graded Asphalt In Wearing Course													
R116P4.2.1	10 mm Nominal Size, 20 mm thick	m2	7776	15.00	116,640.00	#								
R116P4.2.2	10 mm Nominal Size, 25 mm thick	m2	44977	18.00	809,586.00	#								
R116	ASPHALT (DENSE GRADED AND OPEN GRADED)			Sub-Total:	926,226.00						\$ 926,226			
R131	GUIDEPOSTS													
R131P1	Supply and Installation of Guide Posts	each	200	25.00	5,000.00									
R131	GUIDEPOSTS			Sub-Total:	5,000.00							\$ 5,000		
R132	SAFETY BARRIER SYSTEMS													
R132P3	Construction of Post and Rail Safety Barriers	m	3600	105.00	378,000.00	#								
R132P8	Construction of Terminals	each	8	3,170.00	25,360.00									
R132	SAFETY BARRIER SYSTEMS			Sub-Total:	403,360.00							\$ 403,360		
R141	PAVEMENT MARKING													
R141P16	Line marking (per metre of carriageway)	m	5600	5.00	28,000.00									
R141P17	Arrows, chevrons, etc	m2	100	15.00	1,500.00									
R141	PAVEMENT MARKING			Sub-Total:	29,500.00							\$ 29,500		
R142	RETROFLECTIVE RAISED PAVEMENT MARKERS													
R142P2	Installation of Retroreflective Raised Pavement Markers	each	510	7.50	3,825.00									
R142	RETROFLECTIVE RAISED PAVEMENT MARKERS			Sub-Total:	3,825.00							\$ 3,825		
R143	SIGNPOSTING													
R143P8	General Signage	km	3.9	3,300.00	12,870.00									
R143	SIGNPOSTING			Sub-Total:	12,870.00							\$ 12,870		
R161	FENCING													
R161P1	Controlled Access Rural Road Fencing - Wire	m	6750	11.00	74,250.00									
R161P4	Controlled Access Rural Road Fencing - Rabbit-proof - Buried Netting	m	750	40.00	30,000.00									

PAY ITEM	DESCRIPTION OF WORK	UNIT	QTY	BUDGET RATE	BUDGET AMOUNT	5(a) General	5(b) Erosion	5(c) Drainage	5(d) Earth	5(e) Bridges	5(f) Pave	5(g) Roadside	5(h) Misc	OTHER
R161	FENCING				Sub-Total:								\$ 104,250	
RN162	NOISE WALLS													
RN162P1	Noise Treatments													
RN162P1.1	Noise Treatment - West of Fishery Ck	lump sum	1	1,480,000.00	1,480,000.00									
RN162P1.3	Noise Treatment - East of Fishery Ck	lump sum	1	1,430,000.00	1,430,000.00									
RN162	NOISE WALLS				Sub-Total:								\$ 2,910,000	
R173	GENERAL CONCRETE PAVING													
R173P1	Concrete Paving													
R173P1.1	150mm - Mesh Reinforcement	m2	4270	55.00	234,850.00									
R173	GENERAL CONCRETE PAVING				Sub-Total:						\$ 234,850			
R178	VEGETATION													
R178P22	Topsoiling and seeding	m2	56265	1.20	67,518.00									
R178P23	Planting of tubestock (incl. Watering)	each	14042	8.00	112,336.00									
R178	VEGETATION				Sub-Total:							\$ 179,854		
RB99	BRIDGES													
RB99P1	Major Bridges													
RB99P1.1	Bridge at Station 1160	m2	825	2,200.00	1,815,000.00									
RB99P1.2	Bridge at Station 3010	m2	825	2,200.00	1,815,000.00									
RB99	BRIDGES				Sub-Total:					\$ 3,630,000				
PA01	PROPERTY ACQUISITIONS													
PA01P1	Road Corridor													
PA01P1.1	Required Acquisitions	ha	7.53	90,000.00	677,700.00									
PA01P1.2	Transferred Land (no cost)	ha	5.01	0.00	0.00									
PA01P1.3	Developer Compensation	lots	0	105,000.00	0.00									
PA01P2	Compensatory Habitate													
PA01P1.1	Compensatory Habitate	ha	10.5	90,000.00	945,000.00									
PA01	PROPERTY ACQUISITIONS				Sub-Total:									\$ 1,622,700
	TOTAL				\$ 23,578,599.10	\$ 849,500	\$ 348,000	\$ 3,158,860	\$ 6,218,357	\$ 3,630,000	\$ 2,796,523	\$ 1,180,409	\$ 3,774,250	\$ 1,622,700

Bal. Check:
Correct

Item 5

Signalisation of River Street/Kerr Street

– Additional Future Works

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 5

18-Aug-09

Ballina Island and Adjoining Area Improvements

Included in estimate:

- Additional future works to the signalisation of River Street/Kerr Street

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Based on advice from Council, no service relocations are envisaged to be required as part of the proposed works.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has not been allowed for. There are streetlights currently in place. We have assumed these will not be relocated during the construction process.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans.
7. All costs indicated exclude GST.
8. Signalisation works at the River Street / Kerr Street intersection are currently in progress. This cost estimate details future works in addition to those currently underway, as illustrated on the two attached plans supplied by Council.
9. Contingencies have been allowed for at a rate of 20% of the total construction costs.
10. Based on advice from Council, all new pavement construction associated with the road widening is to be full depth reinforced concrete. Existing areas of flexible

pavement affected by widening works will be removed and reinstated with reinforced concrete (as reflected in the cost estimates).

11. Existing footpaths and other related infrastructure adjacent to the existing carriageway (street furniture etc) should not be affected by the proposed roadworks.

**Ballina Island + Adjoining Area Improvements
 Signalisation of River Street/Kerr Street
 Item 5**

Preliminary Estimate of Construction Costs - Final Status

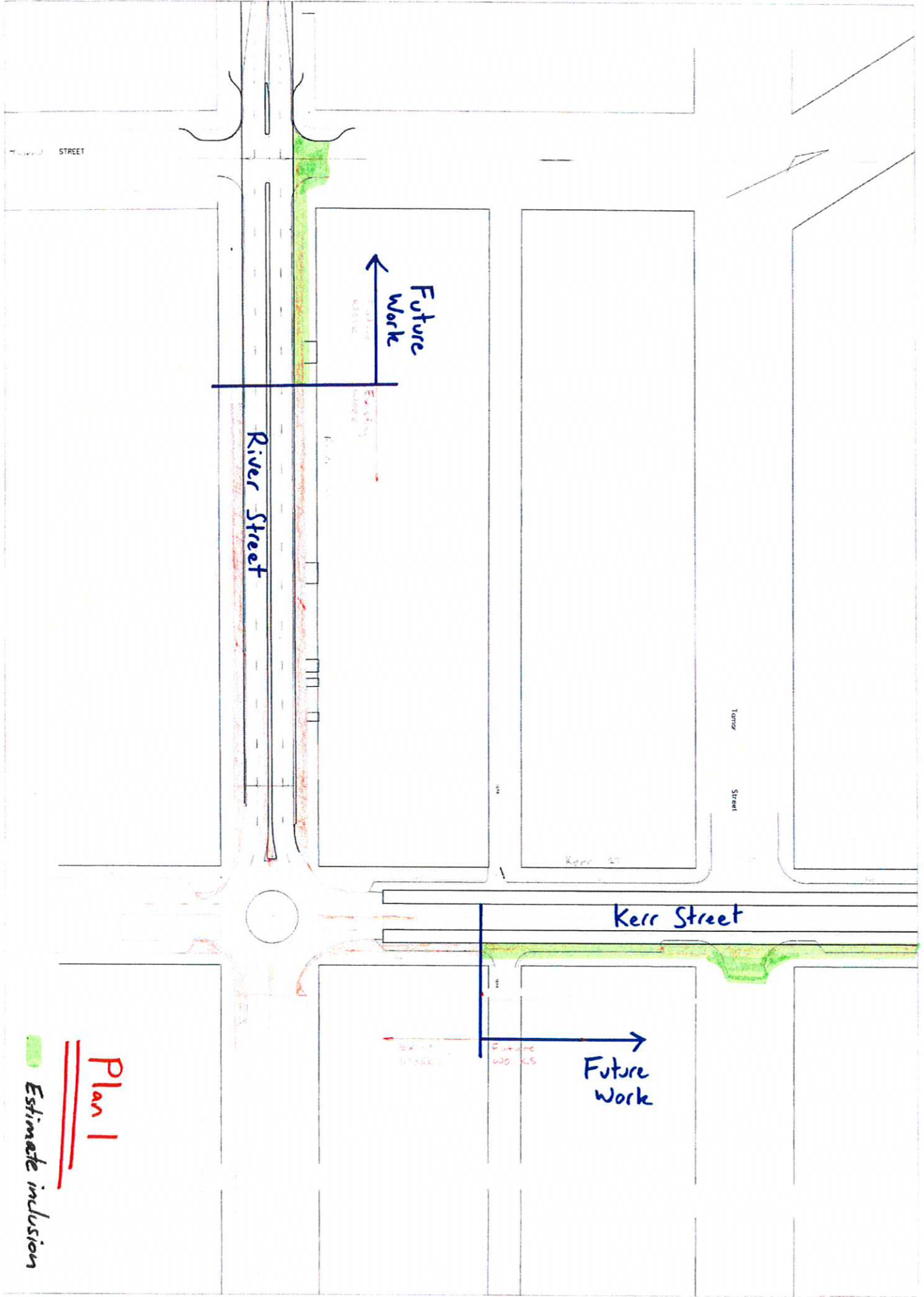
Summary	Total Estimate
Section A - General Construction	\$303,150.00
Sub Total Estimate (excl. GST) \$303,150.00	
SUB TOTAL ESTIMATE (excl. GST) \$303,150.00	
CONTINGENCY (20%) \$60,630.00	
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$14,551.20
Engineering Detailed Design (8%)	\$29,102.40
Project Management (4%)	\$14,551.20
TOTAL ESTIMATE (excl. GST) \$421,985	

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
SECTION 5 - Signalisation of River Street/Kerr Street					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item		\$5,000.00	
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	50	\$3.00	\$150.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	100	\$10.00	\$1,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC) including general drainage requirements <i>(per meter of carriageway)</i>	m		\$1,400.00	
b)	Rigid Pavement (Reinforced Concrete) including general drainage requirements	m ²	500	\$300.00	\$150,000.00
c)	Kerb - construct or replace as necessary	m	250	\$40.00	\$10,000.00
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²	500	\$30.00	\$15,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	250	\$150.00	\$37,500.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²	0	\$100.00	
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	250	\$5.00	\$1,250.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	250	\$8.00	\$2,000.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²		\$0.50	
b)	Turfing to footpaths and designated areas	m ²	250	\$5.00	\$1,250.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	2	\$10,000.00	\$20,000.00
b)	Landscaping	m	250	\$100.00	\$25,000.00
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION 5 - Signalisation of River Street/Kerr Street - Total					\$303,150.00



Item	Description	Unit	Qty	Rate	Amount
<u>SECTION B - Specific Drainage</u>					
SECTION B - Specific Drainage - Total					\$0.00



Plan 1

Estimate inclusion

FOR CRC PAVEMENT DETAILS
SEE SHEETS 6 & 7.

FOR LINEMARKING DETAILS
SEE SHEET 5



Plan 2
Estimate Inclusion

PROPOSED CRC PAVEMENT SHOWN

No	Date	By	Change	X'd	Sheet 1 of 7 Sheets	Scale 1:500	Plan No SH 10/58	AI
			Amendments					

Survey	Dmk (34082)	Designed	G.H.
Date	April, 2002	Drawn	Jul V, 2002
FB	L.B.	Checked	
Drawing	AUX1	Approved	
Datum	AHD	Date	

SHIRE OF BALLINA	
SH 10 - KERR STREET, BALLINA	
RIVER STREET TO SWIFT STREET	
235mm thick CRC Auxiliary Lanes	

Item 6

***4 Laning of Existing Pacific Highway from
Fisheries Creek Bridge to Tweed Street***

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE–FINAL STATUS

ITEM 6

18-Aug-09

Ballina Island + Adjoining Area Improvements

Included in estimate:

- 4 Laning of Existing Pacific Highway from Fisheries Creek Bridge to Tweed St

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Service Relocation costs have been provided by Council and are included in the estimate.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has not been allowed for. There are streetlights currently in place. We have assumed these will not be relocated during the construction process.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans.
7. All costs indicated exclude GST.
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. Based on advice from Council, all new pavement construction associated with road widening is to be full depth reinforced concrete. Existing areas of flexible pavement affected by widening works will be removed and reinstated with reinforced concrete (as reflected in the cost estimates). Sections of road which

are raised by imported fill above low lying ground conditions (ie. bridge ramps) will be surfaced with asphalt.

10. The cost estimates allow for the addition of two extra traffic lanes to the existing cross section, resulting in an additional 7m being added to the overall carriageway width.
11. The proposed upgrade to 4 lanes requires that the existing on street parking be removed. No provision for replacing this parking through additional widening is included in this cost estimate.
12. Existing footpaths and other related infrastructure adjacent to the existing carriageway (street furniture etc) should not be affected by the proposed road works.
13. Provision of a retaining wall 0.5m height to retain the elevated road level due to road widening has been allowed along each side of road. The existing footpath will remain at existing level.
14. Allowance has been made for raising gully pits to suit new elevated road levels.

**Ballina Island + Adjoining Area Improvements
 4 Laning of Existing Pacific Highway from Fisheries Creek Bridge
 to Tweed Street
 Item 6**

Preliminary Estimate of Construction Costs - Final Status

Summary		Total Estimate
Section A - General Construction	.....	\$2,191,600.00
Section B - Specific Drainage + Structures	.....	\$48,000.00
Sub Total Estimate (excl. GST)		\$2,239,600.00
SUB TOTAL ESTIMATE (excl. GST)		\$2,239,600.00
CONTINGENCY (20%)		\$447,920.00
PROFESSIONAL COSTS -	Route Concept / EIS (4%)	\$107,500.80
	Engineering Detailed Design (8%)	\$215,001.60
	Project Management (4%)	\$107,500.80
Total Estimate (excl. GST)		\$3,117,523.20
Public Utility Relocation costs provided by Council		\$50,000.00
TOTAL ESTIMATE (excl. GST)		\$3,167,523

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Description	Unit	Qty	Rate	Amount
Preliminary Estimate of Construction Costs - Final Status					
SECTION 6 - 4 Laning of Pacific Motorway Fisheries Creek Bridge to Tweed Street					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item		\$5,000.00	
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³		\$3.00	
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	5,000	\$25.00	\$125,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	400	\$10.00	\$4,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC) <i>Total Estimate (excl. GST)</i>	m		\$1,400.00	
b)	Rigid Pavement (Reinforced Concrete)	m ²	4,200	\$300.00	\$1,260,000.00
	Public Utility Relocation costs provided by Council				
c)	Kerb - construct or replace as necessary	m	1,200	\$40.00	\$48,000.00
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²	4,200	\$30.00	\$126,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	1,200	\$150.00	\$180,000.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$100.00	
h)	Retaining wall - blockwork - 0.5m high	m	1,200	\$200.00	\$240,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	1,200	\$5.00	\$6,000.00

Ballina Shire Council
Section 94 Contributions
Estimate of Construction Costs
Ballina Island + Adjoining Area Improvements
4 Laning of Pacific Motorway Fisheries Creek Bridge to Tweed Street



Item	Description	Unit	Qty	Rate	Amount
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPm's as specified <i>(per meter of carriageway)</i>	m	1,200	\$8.00	\$9,600.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²		\$0.50	
b)	Turfing to footpaths and designated areas	m ²	600	\$5.00	\$3,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	3	\$10,000.00	\$30,000.00
b)	Landscaping	m	1,200	\$100.00	\$120,000.00
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION 6 - 4 Laning of Pacific Motorway Fisheries Creek Bridge to Tweed Street - Total					\$2,191,600.00



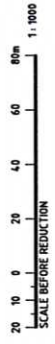
Item	Description	Unit	Qty	Rate	Amount
Preliminary Estimate of Construction Costs - Final Status					
SECTION B - Specific Drainage					
1	Raising of gully pits to suit new road level Assume gully pit every 50m	No.	24	\$2,000.00	\$48,000.00
SECTION B - Specific Drainage - Total					\$48,000.00



LAYOUT PLAN
SCALE 1:1000

LEGEND:

-  PROPOSED NEW CONCRETE PAVEMENT
-  PROPOSED NEW AC PAVEMENT



REV.	DATE	ISSUED FOR ESTIMATES	REVISIONS	REV.	APPR.		
A	07/2009						
<p>DECIDED: BSC DRAWN: NS CHECKED: TS RECOMMENDED: PROJ. MAN. SK</p>							
<p>© Cardno (Qld) Pty Ltd. All Rights Reserved 2002. Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, copied, reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Cardno (Qld) Pty Ltd. This document is prepared by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client to whom it is issued. It is not to be used for any other purpose. The client is responsible for the accuracy and completeness of the information provided to Cardno (Qld) Pty Ltd and for the accuracy of any data used in the preparation of this document.</p>							
<p>Cardno (Qld) Pty Ltd ADR: 601 674 892 Gold Coast City, Queensland 4217 Phone: 0755301000 cardno.com.au</p>				<p>Cardno CIVIL ENGINEERS ARCHITECTS PLANNERS LANDSCAPE ARCHITECTS SURVEYORS PORT MARINE PHOTOGRAMMETRY</p>			
<p>TELEPHONE: (07) 5556 4422 (07) 5556 4423 (07) 5556 4424 (07) 5556 4425 (07) 5556 4426 (07) 5556 4427 (07) 5556 4428 (07) 5556 4429 (07) 5556 4430 (07) 5556 4431 (07) 5556 4432 (07) 5556 4433 (07) 5556 4434 (07) 5556 4435 (07) 5556 4436 (07) 5556 4437 (07) 5556 4438 (07) 5556 4439 (07) 5556 4440 (07) 5556 4441 (07) 5556 4442 (07) 5556 4443 (07) 5556 4444 (07) 5556 4445 (07) 5556 4446 (07) 5556 4447 (07) 5556 4448 (07) 5556 4449 (07) 5556 4450 (07) 5556 4451 (07) 5556 4452 (07) 5556 4453 (07) 5556 4454 (07) 5556 4455 (07) 5556 4456 (07) 5556 4457 (07) 5556 4458 (07) 5556 4459 (07) 5556 4460 (07) 5556 4461 (07) 5556 4462 (07) 5556 4463 (07) 5556 4464 (07) 5556 4465 (07) 5556 4466 (07) 5556 4467 (07) 5556 4468 (07) 5556 4469 (07) 5556 4470 (07) 5556 4471 (07) 5556 4472 (07) 5556 4473 (07) 5556 4474 (07) 5556 4475 (07) 5556 4476 (07) 5556 4477 (07) 5556 4478 (07) 5556 4479 (07) 5556 4480 (07) 5556 4481 (07) 5556 4482 (07) 5556 4483 (07) 5556 4484 (07) 5556 4485 (07) 5556 4486 (07) 5556 4487 (07) 5556 4488 (07) 5556 4489 (07) 5556 4490 (07) 5556 4491 (07) 5556 4492 (07) 5556 4493 (07) 5556 4494 (07) 5556 4495 (07) 5556 4496 (07) 5556 4497 (07) 5556 4498 (07) 5556 4499 (07) 5556 4500</p>				<p>FAX: (07) 5556 4462 (07) 5556 4463 (07) 5556 4464 (07) 5556 4465 (07) 5556 4466 (07) 5556 4467 (07) 5556 4468 (07) 5556 4469 (07) 5556 4470 (07) 5556 4471 (07) 5556 4472 (07) 5556 4473 (07) 5556 4474 (07) 5556 4475 (07) 5556 4476 (07) 5556 4477 (07) 5556 4478 (07) 5556 4479 (07) 5556 4480 (07) 5556 4481 (07) 5556 4482 (07) 5556 4483 (07) 5556 4484 (07) 5556 4485 (07) 5556 4486 (07) 5556 4487 (07) 5556 4488 (07) 5556 4489 (07) 5556 4490 (07) 5556 4491 (07) 5556 4492 (07) 5556 4493 (07) 5556 4494 (07) 5556 4495 (07) 5556 4496 (07) 5556 4497 (07) 5556 4498 (07) 5556 4499 (07) 5556 4500</p>			
<p>BALLINA SHIRE COUNCIL BALLINA SHIRE COUNCIL ROAD UPGRADES PACIFIC HIGHWAY - FISHERIES CREEK BRIDGE TO TWEED STREET CE008667-06 DATE: FEBRUARY 2009 DRAWING NO:</p>							

Item 7

***4 Laning of Existing Pacific Highway from
North Creek Road to Kerr Street***

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 7

18-Aug-09

Ballina Island + Adjoining Area Improvements

Included in estimate:

- 4 Laning of Existing Pacific Highway from North Creek Road to Kerr Street

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Service Relocation costs have been provided by Council and are included in the estimate.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has been allowed for as the current alignment is likely to need relocation due to the widening of road.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans.
7. All costs indicated exclude GST.
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. Based on advice from Council, all new pavement construction associated with road widening is to be full depth reinforced concrete. Existing areas of flexible pavement affected by widening works will be removed and reinstated with reinforced concrete (as reflected in the cost estimates). Sections of road which are raised by imported fill above low lying ground conditions (ie. bridge ramps)

will be surfaced with asphalt. The tie in at North Creek Rd has also been based on a flexible pavement design to match the existing pavement.

10. The cost estimates allows for the addition of two extra traffic lanes to the existing cross-section, with alignment as shown on the attached sketch. Allowance has been made for the reconstruction of footpath which is likely to be affected by the proposed works.
11. Allowance has been made for the construction of stormwater gully pits and associated pipework.

**Ballina Island + Adjoining Area Improvements
4 Laning of Pacific Highway from North Creek Road to Kerr Street
Item 7**

Preliminary Estimate of Construction Costs - Final Status

Summary		Total Estimate
Section A - General Construction	.....	\$3,595,000.00
Section B - Specific Drainage + Structures	.....	\$216,000.00
Sub Total Estimate (excl. GST)		\$3,811,000.00
SUB TOTAL ESTIMATE (excl. GST)		\$3,811,000.00
CONTINGENCY (20%)		\$762,200.00
PROFESSIONAL COSTS -	Route Concept / EIS (4%)	\$182,928.00
	Engineering Detailed Design (8%)	\$365,856.00
	Project Management (4%)	\$182,928.00
Total Estimate (excl. GST)		\$5,304,912.00
Public Utility Relocation costs provided by Council		\$570,000.00
TOTAL ESTIMATE (excl. GST)		\$5,874,912

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
SECTION 7 - 4 Laning of Pacific Highway from North Creek Road to Kerr Street					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$5,000.00	\$5,000.00
b)	Stripping and stockpiling of topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	600	\$3.00	\$1,800.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	10,000	\$25.00	\$250,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	1,000	\$10.00	\$10,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	800	\$126.00	\$100,800.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	4,200	\$150.00	\$630,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²	6,000	\$300.00	\$1,800,000.00
c)	Kerb to be constructed	m	800	\$40.00	\$32,000.00
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²	5,000	\$30.00	\$150,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	800	\$150.00	\$120,000.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²	950	\$100.00	\$95,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	800	\$5.00	\$4,000.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	800	\$8.00	\$6,400.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	4,000	\$0.50	\$2,000.00
b)	Turfing to footpaths and designated areas	m ²	1,600	\$5.00	\$8,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	5	\$10,000.00	\$50,000.00
b)	Landscaping	m	800	\$100.00	\$80,000.00
c)	Electrical - Streetlights	No.	14	\$15,000.00	\$210,000.00
SECTION 7 - 4 Laning of Pacific Highway from North Creek Road to Kerr Street - Total					\$3,595,000.00

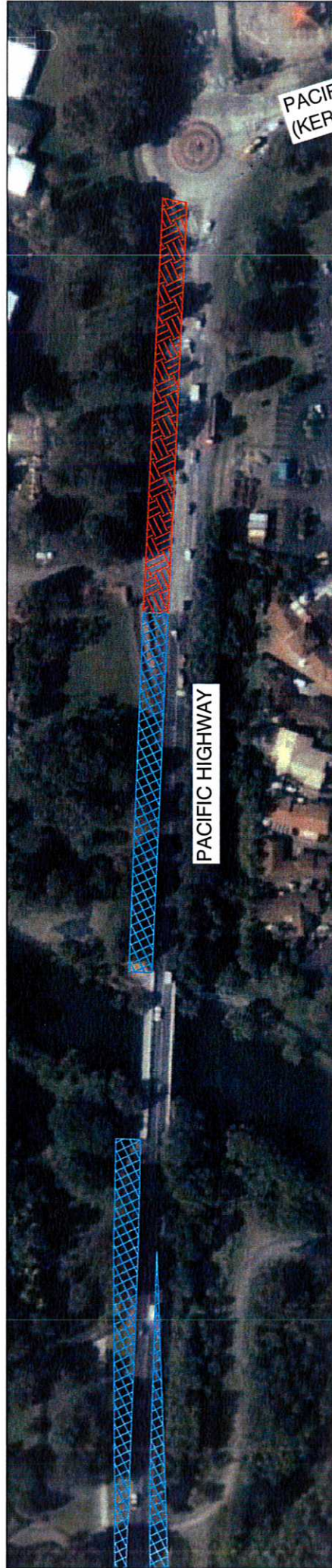
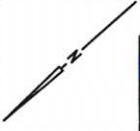
Item	Description	Unit	Qty	Rate	Amount
SECTION B - Specific Drainage					
1	Stormwater Gully Pits including pipes Assume Gully Pit every 40m	m	800	\$270.00	\$216,000.00
SECTION B - Specific Drainage - Total					\$216,000.00

REFER BELOW FOR CONTINUATION



PACIFIC HIGHWAY

NORTH CREEK ROAD





PACIFIC HIGHWAY

PACIFIC HWY
(KERR STR)

LAYOUT PLAN
SCALE 1:750



- LEGEND:**
-  PROPOSED NEW CONCRETE PAVEMENT
 -  PROPOSED NEW AC PAVEMENT

REFER ABOVE FOR CONTINUATION

DESIGNED: BDC		A1 DATUM: A.H.D.		BALLINA SHIRE COUNCIL		DATE: FEBRUARY 2009	
DRAWN: NS		APPROVED: PROJ. DIR.		BALLINA SHIRE COUNCIL ROAD UPGRADES		DRAWING NO:	
CHECKED: TS				PACIFIC HIGHWAY - NORTH		CE008667-07	
RECOMMENDED: PROJ. MAN.				CREEK ROAD TO KERR STREET			
SK							
REVISIONS		ISSUED FOR ESTIMATES		REVISIONS			
No.	DATE						
				<p>© Cardno (Qld) Pty Ltd. All Rights Reserved 2002. Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, copied, reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of Cardno (Qld) Pty Ltd.</p> <p>This document is prepared by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client to whom it is issued. It is not to be used for any other purpose without the prior written consent of Cardno (Qld) Pty Ltd. Cardno (Qld) Pty Ltd does not accept any liability for any loss or damage, however caused, arising from the use of this document.</p>		<p>OFFICERS: Director Business Development Project Manager Surveying Civil Engineering Plant Machinery Photogrammetry</p> <p>TELEPHONE: (07) 5396 9722 (07) 5396 9823 (07) 5396 9824 (07) 5396 9825 (07) 5396 9826 (07) 5396 9827 (07) 5396 9828 (07) 5396 9829 (07) 5396 9830 (07) 5396 9831 (07) 5396 9832 (07) 5396 9833 (07) 5396 9834 (07) 5396 9835 (07) 5396 9836 (07) 5396 9837 (07) 5396 9838 (07) 5396 9839 (07) 5396 9840 (07) 5396 9841 (07) 5396 9842 (07) 5396 9843 (07) 5396 9844 (07) 5396 9845 (07) 5396 9846 (07) 5396 9847 (07) 5396 9848 (07) 5396 9849 (07) 5396 9850 (07) 5396 9851 (07) 5396 9852 (07) 5396 9853 (07) 5396 9854 (07) 5396 9855 (07) 5396 9856 (07) 5396 9857 (07) 5396 9858 (07) 5396 9859 (07) 5396 9860 (07) 5396 9861 (07) 5396 9862 (07) 5396 9863 (07) 5396 9864 (07) 5396 9865 (07) 5396 9866 (07) 5396 9867 (07) 5396 9868 (07) 5396 9869 (07) 5396 9870 (07) 5396 9871 (07) 5396 9872 (07) 5396 9873 (07) 5396 9874 (07) 5396 9875 (07) 5396 9876 (07) 5396 9877 (07) 5396 9878 (07) 5396 9879 (07) 5396 9880 (07) 5396 9881 (07) 5396 9882 (07) 5396 9883 (07) 5396 9884 (07) 5396 9885 (07) 5396 9886 (07) 5396 9887 (07) 5396 9888 (07) 5396 9889 (07) 5396 9890 (07) 5396 9891 (07) 5396 9892 (07) 5396 9893 (07) 5396 9894 (07) 5396 9895 (07) 5396 9896 (07) 5396 9897 (07) 5396 9898 (07) 5396 9899 (07) 5396 9900</p> <p>FAX: (07) 5396 9723 (07) 5396 9824 (07) 5396 9825 (07) 5396 9826 (07) 5396 9827 (07) 5396 9828 (07) 5396 9829 (07) 5396 9830 (07) 5396 9831 (07) 5396 9832 (07) 5396 9833 (07) 5396 9834 (07) 5396 9835 (07) 5396 9836 (07) 5396 9837 (07) 5396 9838 (07) 5396 9839 (07) 5396 9840 (07) 5396 9841 (07) 5396 9842 (07) 5396 9843 (07) 5396 9844 (07) 5396 9845 (07) 5396 9846 (07) 5396 9847 (07) 5396 9848 (07) 5396 9849 (07) 5396 9850 (07) 5396 9851 (07) 5396 9852 (07) 5396 9853 (07) 5396 9854 (07) 5396 9855 (07) 5396 9856 (07) 5396 9857 (07) 5396 9858 (07) 5396 9859 (07) 5396 9860 (07) 5396 9861 (07) 5396 9862 (07) 5396 9863 (07) 5396 9864 (07) 5396 9865 (07) 5396 9866 (07) 5396 9867 (07) 5396 9868 (07) 5396 9869 (07) 5396 9870 (07) 5396 9871 (07) 5396 9872 (07) 5396 9873 (07) 5396 9874 (07) 5396 9875 (07) 5396 9876 (07) 5396 9877 (07) 5396 9878 (07) 5396 9879 (07) 5396 9880 (07) 5396 9881 (07) 5396 9882 (07) 5396 9883 (07) 5396 9884 (07) 5396 9885 (07) 5396 9886 (07) 5396 9887 (07) 5396 9888 (07) 5396 9889 (07) 5396 9890 (07) 5396 9891 (07) 5396 9892 (07) 5396 9893 (07) 5396 9894 (07) 5396 9895 (07) 5396 9896 (07) 5396 9897 (07) 5396 9898 (07) 5396 9899 (07) 5396 9900</p> <p>Cardno (Qld) Pty Ltd ACN: 981 074 892 Level 1, 100-102, South Creek Drive, South Creek, Queensland 4217 Email: info@cardno.com.au</p>	

Item 8

4 Laning of Kerr Street from Holden Lane to Fox Street

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 8

18-Aug-09

Ballina Island + Adjoining Area Improvements

Included in estimate:

- 4 Lane Upgrade of Kerr Street – between intersection with Holden Lane (just north of) and intersection with Fox Street.

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Service Relocation costs have been provided by Council and are included in the estimate.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has not been allowed for. There are streetlights currently in place. We have assumed these will not be relocated during the construction process.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. Replace existing flexible pavement (At intersection of Kerr St and Bentinck) with Reinforced Concrete Pavement) as advised by Ballina Shire Council.
7. All estimates are based on the information provided by the attached plans.
8. All costs indicated exclude GST.
9. Contingencies have been allowed for at a rate of 20% of the total construction costs.
10. Based on advice from Council, all new pavement construction associated with road widening is to be full depth reinforced concrete. Existing areas of flexible

pavement affected by widening works will be removed and reinstated with reinforced concrete (as reflected in the cost estimates).

11. The costs estimates allow for the addition of two extra traffic lanes to the existing cross-section, resulting in an additional 7m being added to the overall carriageway width.
12. The proposed upgrade to 4 lanes requires that the existing on street parking be removed. No provision for replacing this parking through additional widening is included in this cost estimate.
13. Existing footpaths and other related infrastructure adjacent to the existing carriageway (street furniture etc) should not be affected by the proposed road works.
14. Allowances have been made for stormwater gully pits to be upgraded to suit new construction.

**Ballina Island + Adjoining Area Improvements
 4 Laning of Kerr Street
 Item 8**

Preliminary Estimate of Construction Costs - Final Status

Summary		Total Estimate
Section A - General Construction	.....	\$3,493,250.00
Section B - Specific Drainage + Structures	.....	\$75,000.00
Sub Total Estimate (excl. GST)		\$3,568,250.00
SUB TOTAL ESTIMATE (excl. GST)		\$3,568,250.00
CONTINGENCY (20%)		\$713,650.00
PROFESSIONAL COSTS -	Route Concept / EIS (4%)	\$171,276.00
	Engineering Detailed Design (8%)	\$342,552.00
	Project Management (4%)	\$171,276.00
Total Estimate (excl. GST)		\$4,967,004.00
Public Utility Relocation costs provided by Council		\$3,000.00
TOTAL ESTIMATE (excl. GST)		\$4,970,004

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Description	Unit	Qty	Rate	Amount
Item 8 - 4 Laning of Kerr Street					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item		\$5,000.00	
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³		\$3.00	
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	500	\$10.00	\$5,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC)	m		\$1,400.00	
b)	Rigid Pavement (Reinforced Concrete)	m ²	9,500	\$300.00	\$2,850,000.00
c)	Kerb - construct or replace as necessary	m	1,500	\$40.00	\$60,000.00
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²	9,500	\$30.00	\$285,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	750	\$150.00	\$112,500.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$100.00	
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	750	\$5.00	\$3,750.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPm's as specified <i>(per meter of carriageway)</i>	m	1,500	\$8.00	\$12,000.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²		\$0.50	
b)	Turfing to footpaths and designated areas	m ²		\$5.00	
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	5	\$10,000.00	\$50,000.00
b)	Landscaping	m	750	\$100.00	\$75,000.00
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION 8 - 4 Laning of Kerr Street - Total					\$3,493,250.00



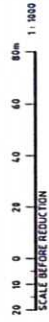
Item	Description	Unit	Qty	Rate	Amount
SECTION B - Specific Drainage					
1	Stormwater Gully Pits reconstructed Assume Gully Pit every 40m	m	38	\$2,000.00	\$75,000.00
SECTION B - Specific Drainage - Total					\$75,000.00



REFER BELOW FOR CONTINUATION



REFER ABOVE FOR CONTINUATION



LAYOUT PLAN
SCALE 1:1000

LEGEND:

PROPOSED NEW CONCRETE PAVEMENT

© 2017 by Cardno Pty Ltd. All Rights Reserved 2017.
This document is prepared by Cardno Pty Ltd solely for the benefit of and use by the client in accordance with the contract for services between the client and Cardno Pty Ltd. It is not to be used for any other purpose without the prior written consent of Cardno Pty Ltd.
This document is prepared by Cardno Pty Ltd solely for the benefit of and use by the client in accordance with the contract for services between the client and Cardno Pty Ltd. It is not to be used for any other purpose without the prior written consent of Cardno Pty Ltd.

NO.	DATE	ISSUED FOR ESTIMATES	REVISIONS	BY

DESIGNED: BSC	DATE: A1	DATUM: A.H.D.
DRAWN: BSC	CHECKED: SK	APPROVED: PNCL SK
RECOMMENDED: PNCL BAK		

Cardno
Cardno (Qld) Pty Ltd ACN: 601 674 993
Cardno Group, Inc. of 1917
Cardno Group, Inc. of 1917
Cardno Group, Inc. of 1917

BALLINA SHIRE COUNCIL
BALLINA SHIRE COUNCIL ROAD UPGRADES
KERR STREET -
HOLDEN LANE TO FOX STREET

DATE: FEBRUARY 2017
DRAWING No: CE008667-08

Item 9

Duplication of Fisheries Creek Bridge

(Separate 2 Lane Structure)

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE–FINAL STATUS

ITEM 9

19-Aug-09

Duplication of Fisheries Creek Bridge (Separate 2-lane structure)

Included in estimate:

- Bridge duplication of Fisheries Creek Bridge – separate 2 lane structure

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Based on advice from Council, no service relocations are envisaged to be required as part of the proposed works.
3. Landscaping (street trees) not required.
4. Street lighting has been allowed for.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. Flood Studies or Environmental Impact Assessments to determine affects of the Bridge over the Creek have not been allowed for.
7. All estimates are based on the information provided by the attached plans.
8. All costs indicated exclude GST.
9. Contingencies have been allowed for at a rate of 20% of the total construction costs.
10. Bridge details assumed for estimate are based on a replica bridge of the existing structure to be constructed identical and adjacent.

11. The duplicate bridge location has been proposed for the southern side of the existing bridge based on advice provided by Ballina Shire Council.

**Fisheries Creek Bridge
 Construction of Fisheries Creek Bridge
 Item 9**

Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section A - General Construction	\$3,130,700.00
Sub Total Estimate (excl. GST) \$3,130,700.00	
SUB TOTAL ESTIMATE (excl. GST) \$3,130,700.00	
CONTINGENCY (20%) \$626,140.00	
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$150,273.60
Engineering Detailed Design (8%)	\$300,547.20
Project Management (4%)	\$150,273.60
TOTAL ESTIMATE (excl. GST) \$4,357,934	

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

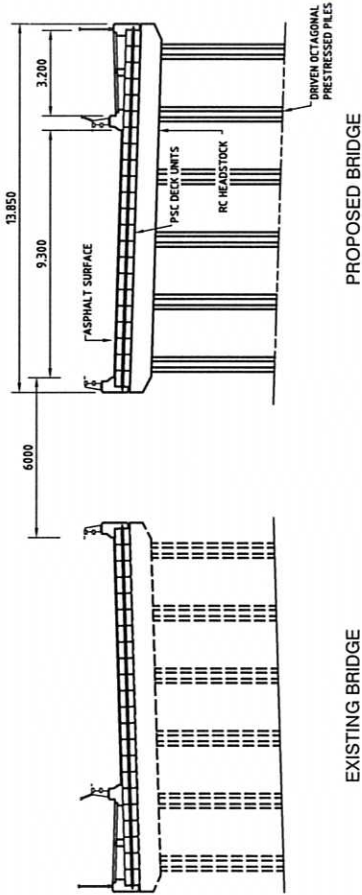


Item	Description	Unit	Qty	Rate	Amount
Item 9 - Fisheries Creek Bridge					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A2	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	300	\$10.00	\$3,000.00
b)	Silt curtain	m	150	\$50.00	\$7,500.00
A5	BRIDGE				
a)	Concrete Bridge: 2 lanes with pedestrian walkway - 14m wide and 80 m long as per plan no. CE008667-09	m ²	1,120	\$2,200.00	\$2,464,000.00
A6	ROADWORKS				
a)	Flexible pavement (AC)	m ²	3,000	\$150.00	\$450,000.00
b)	Remove and dispose of existing pavement, kerb, medians	m ²		\$30.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place (Prov. Qty) (per meter of carriageway)	m	400	\$5.00	\$2,000.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPMS as specified (per meter of carriageway)	m	400	\$8.00	\$3,200.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	2,000	\$0.50	\$1,000.00
b)	Turfing to footpaths and designated areas	m ²	1,000	\$5.00	\$5,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$20,000.00	\$20,000.00
b)	Landscaping	m	150	\$100.00	\$15,000.00
c)	Electrical - Streetlights	No.	8	\$15,000.00	\$120,000.00
SECTION A - Fisheries Creek Bridge- Total					\$3,130,700.00

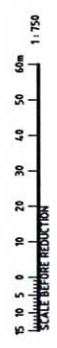


Item	Description	Unit	Qty	Rate	Amount
SECTION B - Specific Drainage					
1	Stormwater Gully Pits including pipes Assume Gully Pit every 40m	m		\$270.00	\$0.00
SECTION B - Specific Drainage - Total					\$0.00

FOR INFORMATION ONLY



LAYOUT PLAN
SCALE 1:750



LEGEND:

PROPOSED NEW BRIDGE STRUCTURE

NO.	DATE	ISSUED FOR ESTIMATES	REVISIONS

DESIGNED:	CHKD:	DATE:

CHECKED:	DATE:

APPROVED:	DATE:

DATE:	DESCRIPTION:

DATE:	DESCRIPTION:

DATE:	DESCRIPTION:

DATE:	DESCRIPTION:

DATE:	DESCRIPTION:

BALLINA SHIRE COUNCIL
BALLINA SHIRE COUNCIL ROAD UPGRADES
PACIFIC HIGHWAY - FISHERIES
CREEK BRIDGE DUPLICATION

DRAWING NO: **CE008667-09**
DATE: FEBRUARY 2002

OFFICE: **Cardno**
 100/100 Pacific Highway, Ballina NSW 2463
 Phone: (02) 6621 1111
 Fax: (02) 6621 1112
 Email: info@cardno.com.au

PROJECT NO: **CE008667-09**
 DRAWING NO: **CE008667-09**
 DATE: **FEBRUARY 2002**

DESIGNED: **MS**
 CHECKED: **TS**
 APPROVED: **PHIL SK**
 DATE:

DATUM: **A.H.D.**
 APPROVED: **PHIL SK**
 DATE:

© Cardno (NSW) Pty Ltd All Rights Reserved 2002.
 Copyright in the whole and every part of this drawing belongs to Cardno (NSW) Pty Ltd and may not be used, copied, reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Cardno (NSW) Pty Ltd.

Item 10

Duplication of North Creek Bridge

(Separate 2 Lane Structure)

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE–FINAL STATUS

ITEM 10

20-Aug-09

Duplication of North Creek Bridge (Separate 2-lane structure)

Included in estimate:

- Bridge duplication of North Creek Bridge – separate 2 lane structure

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Based on advice from Council, no service relocations are envisaged to be required as part of the proposed works.
3. Landscaping (street trees) not required.
4. Street lighting has been allowed for.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. Flood Studies or Environmental Impact Assessments to determine affects of the Bridge over the Creek have not been allowed for.
7. All estimates are based on the information provided by the attached plans.
8. All costs indicated exclude GST.
9. Contingencies have been allowed for at a rate of 20% of the total construction costs.
10. Bridge details assumed for estimate are based on a replica bridge of the existing structure to be constructed identical and adjacent.

11. The duplicate bridge location has been proposed for the northern side of the existing bridge based on advice provided by Ballina Shire Council.

**North Creek Bridge
 Construction of North Creek Bridge
 Item 10**

Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section A - General Construction	\$2,362,145.00
Sub Total Estimate (excl. GST) \$2,362,145.00	
SUB TOTAL ESTIMATE (excl. GST) \$2,362,145.00	
CONTINGENCY (20%) \$472,429.00	
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$113,382.96
Engineering Detailed Design (8%)	\$226,765.92
Project Management (4%)	\$113,382.96
TOTAL ESTIMATE (excl. GST) \$3,288,105.84	

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

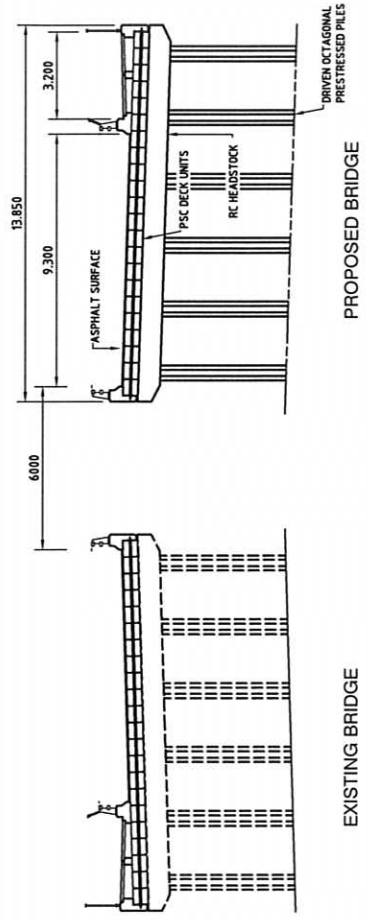


Item	Description	Unit	Qty	Rate	Amount
Preliminary Estimate of Construction Costs - Final Status					
SECTION A - North Creek Bridge					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	300	\$10.00	\$3,000.00
b)	Silt curtain	m	150	\$50.00	\$7,500.00
A5	BRIDGE				
a)	Concrete Bridge: 2 lanes with pedestrian walkway - 14m wide and 65 m long as per plan no. CE008667-10	m2	910	\$2,200.00	\$2,002,000.00
A6	ROADWORKS				
a)	Flexible pavement (AC)	m ²	1,000	\$150.00	\$150,000.00
b)	Remove and dispose of existing pavement, kerb, medians	m ²		\$30.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place (Prov. Qty) (per meter of carriageway)	m	165	\$5.00	\$825.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified (per meter of carriageway)	m	165	\$8.00	\$1,320.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	5,000	\$0.50	\$2,500.00
b)	Turfing to footpaths and designated areas	m ²	1,000	\$5.00	\$5,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$20,000.00	\$20,000.00
b)	Landscaping	m	100	\$100.00	\$10,000.00
c)	Electrical - Streetlights	No.	8	\$15,000.00	\$120,000.00
SECTION A - North Creek Bridge- Total					\$2,362,145.00



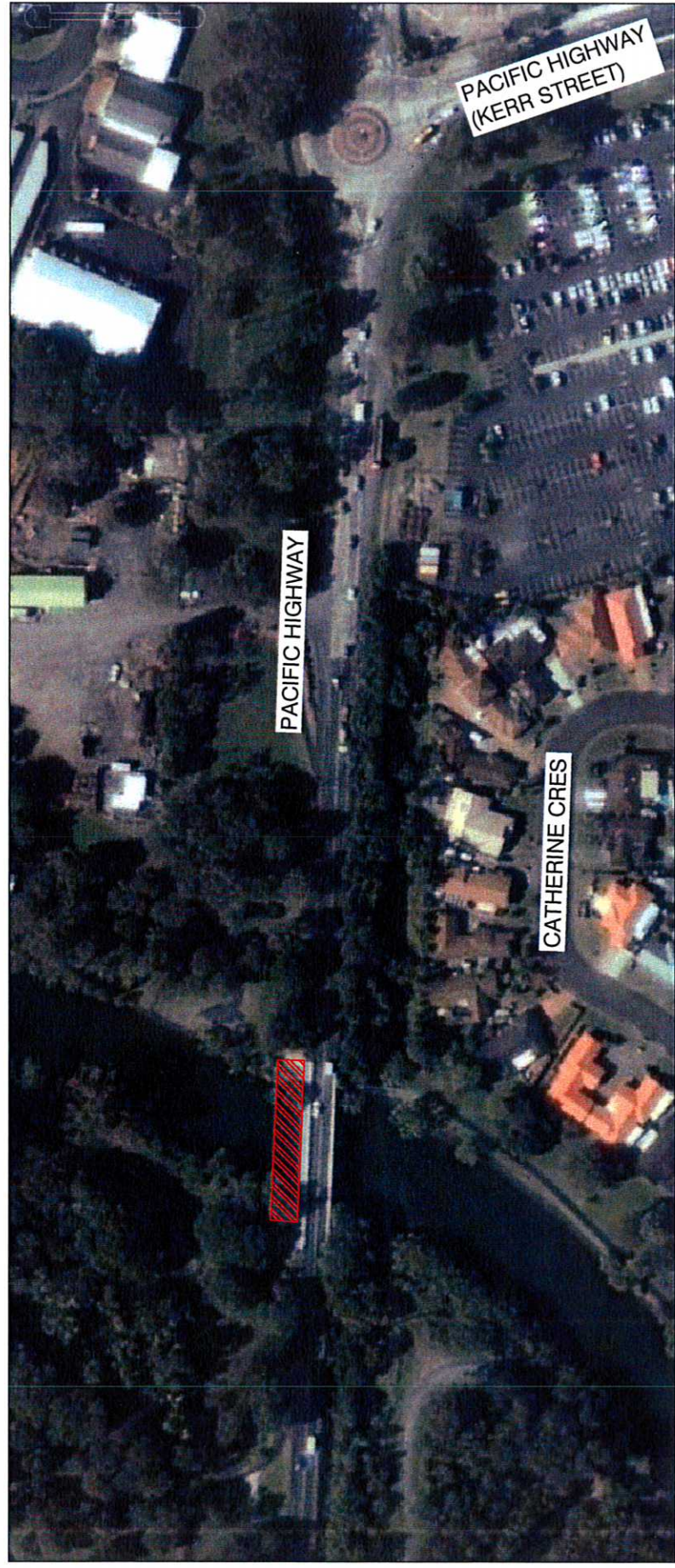
Item	Description	Unit	Qty	Rate	Amount
SECTION B - Specific Drainage					
1	Stormwater Gully Pits including pipes Assume Gully Pit every 40m	m		\$270.00	\$0.00
SECTION B - Specific Drainage - Total					\$0.00

FOR INFORMATION ONLY



EXISTING BRIDGE

PROPOSED BRIDGE



LAYOUT PLAN
SCALE 1:150

LEGEND:



NO.	DATE	ISSUED FOR ESTIMATES	REVISIONS	BY	CHKD.	APPD.
A	07/2009					

DESIGNED:	BSC	DATE:	FEBRUARY 2009
DRAWN:	NS	DRAWING NO.:	CE008667-10
CHECKED:	TS		
RECOMMENDED:	PROJ. MAN.		
	SK		

<p>© Cardno (Qld) Pty Ltd All Rights Reserved 2002. Copyright in the titles and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, copied, reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Cardno (Qld) Pty Ltd.</p> <p>The accuracy of this drawing is guaranteed by Cardno (Qld) Pty Ltd and its employees and any liability for any loss or damage, whether direct or indirect, arising from the use of this drawing is hereby excluded to the maximum extent permitted by law.</p>	
<p>OFFICES:</p> <p>Ballina Bellingen Burrumbidgee Coffs Harbour Grafton Lismore Newcastle North Coast Queensland Sydney Tweed Heads</p>	<p>TELEPHONE:</p> <p>07 5396 4427 07 5396 4428 07 5396 4429 07 5396 4430 07 5396 4431 07 5396 4432 07 5396 4433 07 5396 4434 07 5396 4435 07 5396 4436 07 5396 4437 07 5396 4438 07 5396 4439 07 5396 4440 07 5396 4441 07 5396 4442 07 5396 4443 07 5396 4444 07 5396 4445 07 5396 4446 07 5396 4447 07 5396 4448 07 5396 4449 07 5396 4450 07 5396 4451 07 5396 4452 07 5396 4453 07 5396 4454 07 5396 4455 07 5396 4456 07 5396 4457 07 5396 4458 07 5396 4459 07 5396 4460 07 5396 4461 07 5396 4462 07 5396 4463 07 5396 4464 07 5396 4465 07 5396 4466 07 5396 4467 07 5396 4468 07 5396 4469 07 5396 4470 07 5396 4471 07 5396 4472 07 5396 4473 07 5396 4474 07 5396 4475 07 5396 4476 07 5396 4477 07 5396 4478 07 5396 4479 07 5396 4480 07 5396 4481 07 5396 4482 07 5396 4483 07 5396 4484 07 5396 4485 07 5396 4486 07 5396 4487 07 5396 4488 07 5396 4489 07 5396 4490 07 5396 4491 07 5396 4492 07 5396 4493 07 5396 4494 07 5396 4495 07 5396 4496 07 5396 4497 07 5396 4498 07 5396 4499 07 5396 4500</p>

<p>BALLINA SHIRE COUNCIL BALLINA SHIRE COUNCIL ROAD UPGRADES PACIFIC HIGHWAY - NORTH CREEK BRIDGE DUPLICATION</p>	
---	--

Item 11

***4 Laning of Existing Pacific Highway from
Fisheries Creek Bridge to
Southern Interchange of Ballina Bypass***

BALLINA SHIRE COUNCIL

SECTION 94 CONTRIBUTIONS

COST ESTIMATE–FINAL STATUS

ITEM 11

20-Aug-09

4 Lane upgrade of existing Pacific Highway from Fisheries Creek Bridge to Southern Interchange of Ballina Bypass

Included in estimate:

Section A: From Fisheries Ck Bridge to existing 4 lane carriageway.

Section B: From Barlows Road roundabout to Riverbend Drive roundabout.
Upgrading of two Asphalt lanes to Concrete pavements

Section C: Widen existing road by adding an additional lane (Asphalt) to each side from Riverbend Dr roundabout to the proposed Ballina Bypass interchange.

Summary of assumptions and exclusions:

1. Land acquisition costs have been provided by Council and are included within the estimate.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have been allowed for where existing street landscape is in place.
4. Street lighting has been allowed for in Sections A & C. There are streetlights currently in place for Section B and we have assumed these will not require alteration.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. The existing geometry of the roundabouts located within the sections for upgrade has been assessed and are considered to be adequate to support the 4 lane upgrades. Therefore no provision has been made within this estimate for upgrading of existing roundabouts.

7. All estimates are based on the information provided by the attached plans.
8. All costs indicated exclude GST.
9. Contingencies have been allowed for at a rate of 20% of the total construction costs.
10. For Sections A & B, based on advice from Council all new pavement construction associated with road widening is to be full depth reinforced concrete. Existing areas of flexible pavement affected by widening works will be removed and reinstated with reinforced concrete (as reflected in the cost estimates). The off ramp from the Fisheries Creek Bridge in Section A is raised by imported fill above low lying ground conditions and will be surfaced with asphalt.
11. Section C (between Riverbend Dr and Ballina Bypass) is currently surfaced with AC pavement. For uniformity, we have assumed that the proposed widening will be constructed with an AC surface also.
12. The proposed upgrade to 4 lanes requires that the existing on street parking be removed. No provision for replacing this parking through additional widening is included in this cost estimate.
13. Existing footpaths and other related infrastructure adjacent to the existing carriageway (street furniture etc) should not be affected by the proposed road works.
14. Allowance has been made for reconstruction of gully pits to suit new pavement surfaces in Sections A & B. Section C has an allowance for construction of stormwater gully pits and associated pipework as this section is currently drained by a grass lined swale.

**4 Lane upgrade of existing Pacific Highway from Fisheries Creek Bridge to Southern Interchange of Ballina Bypass
 Item 11**

Preliminary Estimate of Construction Costs - Final Status

Summary		Total Estimate
Section A - General Construction	.....	\$1,018,895.00
Section B - General Construction	.....	\$3,374,900.00
Section C - General Construction	.....	\$1,015,065.00
Section D - Specific Drainage	.....	\$215,400.00
Sub Total Estimate (excl. GST)		\$5,624,260.00
SUB TOTAL ESTIMATE (excl. GST)		\$5,624,260.00
CONTINGENCY (20%)		\$1,124,852.00
PROFESSIONAL COSTS -	Route Concept / EIS (4%)	\$269,964.48
	Engineering Detailed Design (8%)	\$539,928.96
	Project Management (4%)	\$269,964.48
Total Estimate (excl. GST)		\$7,828,969.92
Public Utility Relocation costs provided by Council		\$103,500.00
Property Acquisition costs provided by Council		\$112,000.00
TOTAL ESTIMATE (excl. GST)		\$8,044,470

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

4 Lane upgrade of existing Pacific Highway from Fisheries Creek Bridge to Southern Interchange of Ballina Bypass

Item	Description	Unit	Qty	Rate	Amount
SECTION A					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing (and removal of trees)	m ²	2,000	\$5.00	\$10,000.00
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	200	\$3.00	\$600.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	1,000	\$10.00	\$10,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting (approach works to bridge)	m ³	5,000	\$25.00	\$125,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	200	\$10.00	\$2,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	155	\$126.00	\$19,530.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	1,350	\$150.00	\$202,500.00
b)	Rigid Pavement (Reinforced Concrete)	m ²	1,500	\$300.00	\$450,000.00
c)	Kerb for traffic diversion, roundabout, medians	m	500	\$40.00	\$20,000.00
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²	750	\$30.00	\$22,500.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	155	\$150.00	\$23,250.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²	185	\$100.00	\$18,500.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	155	\$5.00	\$775.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	155	\$8.00	\$1,240.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	4,000	\$0.50	\$2,000.00
b)	Turfing to footpaths and designated areas	m ²	100	\$5.00	\$500.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m	155	\$100.00	\$15,500.00
c)	Electrical - Streetlights	No.	3	\$15,000.00	\$45,000.00
SECTION A - Total					\$1,018,895.00

4 Lane upgrade of existing Pacific Highway from Fisheries Creek Bridge to Southern Interchange of Ballina Bypass

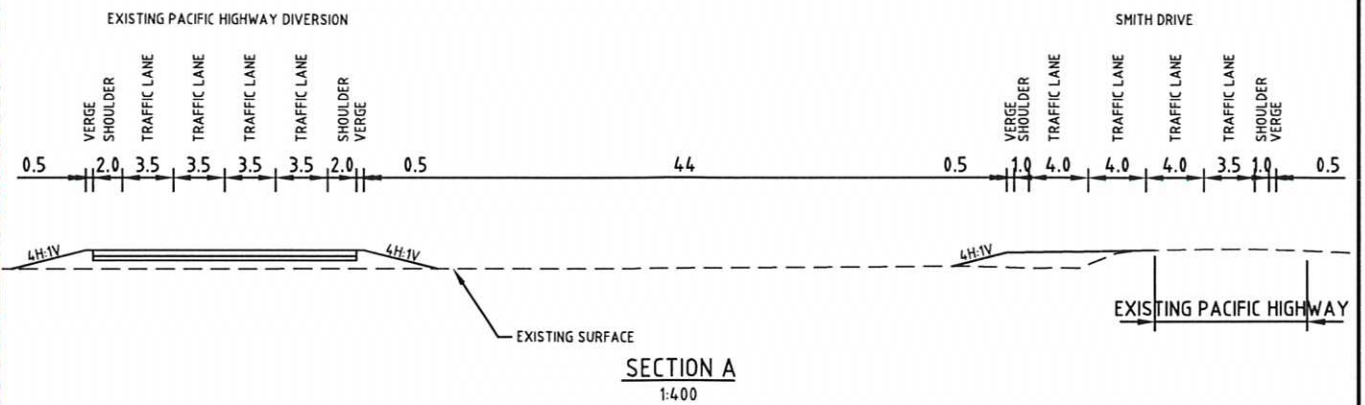
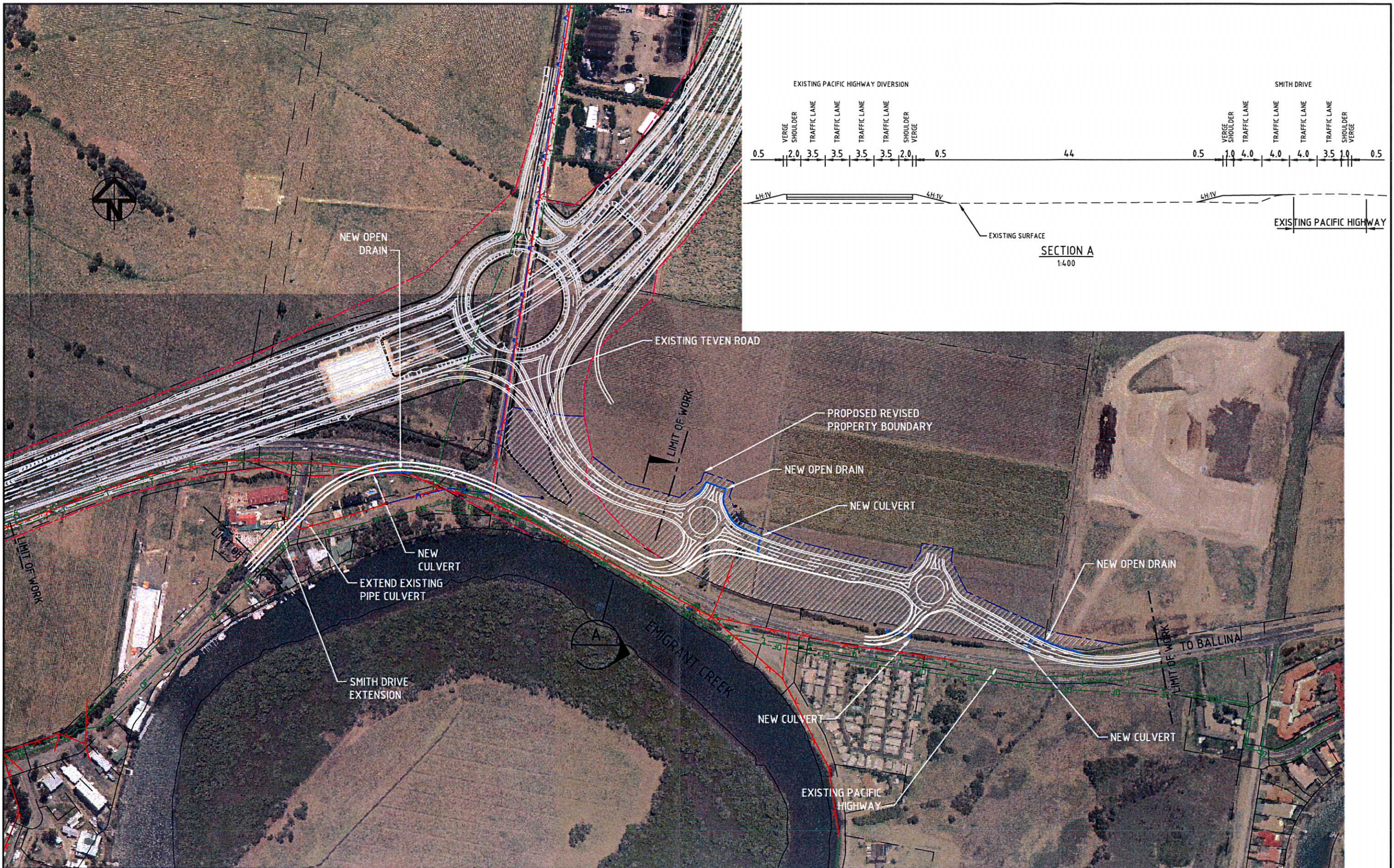
Item	Description	Unit	Qty	Rate	Amount
SECTION B					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item		\$5,000.00	
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³		\$3.00	
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	100	\$10.00	\$1,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC)	m		\$1,400.00	
b)	Rigid Pavement (Reinforced Concrete)	m ²	9,300	\$300.00	\$2,790,000.00
c)	Kerb for traffic diversion, roundabout, medians	m	2,000	\$40.00	\$80,000.00
d)	Concrete Infill of roundabout, medians	m ²	200	\$90.00	\$18,000.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	9,000	\$30.00	\$270,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	950	\$150.00	\$142,500.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$100.00	
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	1,800	\$5.00	\$9,000.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPm's as specified <i>(per meter of carriageway)</i>	m	1,800	\$8.00	\$14,400.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²		\$0.50	
b)	Turfing to footpaths and designated areas	m ²		\$5.00	
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION B - - Total					\$3,374,900.00

4 Lane upgrade of existing Pacific Highway from Fisheries Creek Bridge to Southern Interchange of Ballina Bypass

Item	Description	Unit	Qty	Rate	Amount
SECTION C					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$5,000.00	\$5,000.00
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	500	\$3.00	\$1,500.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	5,000	\$25.00	\$125,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	1,350	\$10.00	\$13,500.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	675	\$126.00	\$85,050.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	2,000	\$150.00	\$300,000.00
b)	Rigid Pavement (Reinforced Concrete)	m		\$2,500.00	
c)	Kerb for traffic diversion, roundabout, medians	m	500	\$40.00	\$20,000.00
d)	Concrete Infill of roundabout, medians	m ²	500	\$90.00	\$45,000.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	2,500	\$30.00	\$75,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	655	\$150.00	\$98,250.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$100.00	
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	655	\$5.00	\$3,275.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPm's as specified <i>(per meter of carriageway)</i>	m	655	\$8.00	\$5,240.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	1,500	\$0.50	\$750.00
b)	Turfing to footpaths and designated areas	m ²	1,500	\$5.00	\$7,500.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.	12	\$15,000.00	\$180,000.00
SECTION C - Total					\$1,015,065.00

4 Lane upgrade of existing Pacific Highway from Fisheries Creek Bridge to Southern Interchange of Ballina Bypass

Item	Description	Unit	Qty	Rate	Amount
<u>SECTION D - Specific Drainage</u>					
1	Raising of Gully Pits to suit new pavement Assume Gully Pit every 50m (Sections A & B)	No.	50	\$1,500.00	\$75,000.00
2	Stormwater Gully Pits including pipes Assume Gully Pit every 40m (Section C)	m	520	\$270.00	\$140,400.00
SECTION D - Specific Drainage - Total					\$215,400.00



Issue	Description	Date
D	ISSUED FOR INFORMATION	08.10.07
C	ISSUED FOR INFORMATION	25.09.07
B	ISSUED FOR INFORMATION	06.09.07
A	ISSUED FOR INFORMATION	28.08.07

LEGEND

- OPTICAL FIBRE
- TELSTRA
- OVERHEAD POWER
- WATER
- WIRE ROPE SAFETY BARRIER
- EXISTING PROPERTY BOUNDARY
- BALLINA BYPASS BOUNDARY
- PROPOSED BOUNDARY FOR SMITH DRIVE ROUNDABOUT
- DRAINAGE CULVERT
- ADDITIONAL LAND ACQUISITION REQUIRED

Scale: 1:4000

Client

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

Scales: 1:4000

Original Size: A3

Height Datum: AHD

Grid: GDA94-MGA56

Filename: SK06.dwg

Current Issue Signatures

Drawn: C.H.

Checked:

Approved:

© Copyright reserved

Project: **H10 - PACIFIC HIGHWAY SMITH DRIVE BALLINA**

Title: **ULTIMATE EXISTING PACIFIC HIGHWAY/ SMITH DRIVE/ WESTERN ARTERIAL ROUNDABOUTS**

HYDER CONSULTING PTY LTD
ABN 76 904 485 289
Level 5, 141 Walker St
North Sydney NSW 2060
Australia
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.hyderconsulting.com

Drawing No. SK06 - Project No. NS03953 - Issue D

Items 12 - 14

Hutley Drive Upgrade and Extensions

BALLINA SHIRE COUNCIL

SECTION 94 CONTRIBUTIONS

COST ESTIMATE – FINAL STATUS

ITEMS 12-14

20-Aug-09

Hutley Drive

Included in estimate:

- Road Link – Hutley Dr divided into 5 sections (including existing section) for construction
- Nth Roundabout (The Coast Rd / Ballina St / Byron Bay Rd / Nth Creek Rd)
- Sth Roundabout (Skennars Head Rd / Nth Creek Rd / Hutley Dr)

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has been allowed for where residents may have direct access to the road. In this instance we have not included streetlights between Chg 3350 – Chg 4500 as this section continues past the back of an existing residential estate adjacent to the nature reserve.
5. Professional costs for road planning/engineering design/project management have been included based on 16% of the estimated construction costs.
6. Existing section of road between Chg 5100 – Chg 5750 does not require any roadworks/drainage alterations based on advice by Dave Kelly (Ballina Shire Council) Linemarking of this section has been included.
7. All estimates are based on the information provided by the attached plans.
8. All costs indicated exclude GST.
9. Contingencies have been allowed for at a rate of 20% of the total construction costs.
10. Allowance has been made for a bridge structure (single lane each direction) at Chg. 5000 – Section 3, following discussion with BSC.

**Hutley Drive Road Link + Northern and Southern Roundabouts
 Chg 2610 - Chg 6050**

Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section 1 - Chg 2610 to Chg 3350	\$2,941,614.80
Section 2 - Chg 3350 to Chg 4500	\$3,092,505.84
Section 3 - Chg 4500 to Chg 5100	\$3,409,713.30
Section 4 - Chg 5100 to Chg 5750 (Existing)	\$9,609.60
Section 5 - Chg 5750 to Chg 6050	\$932,188.76
Northern Roundabout	\$769,968.79
Southern Roundabout	\$974,145.46
Total Estimate (excl. GST)	\$12,129,746.54
Public Utility Relocation costs provided by Council	\$455,850.00
TOTAL ESTIMATE (excl. GST)	\$12,585,597

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Hutley Drive - Section 1
Chg 2610 - Chg 3350
Length 740m - Urban 11.2m Collector Street
Preliminary Estimate of Construction Costs

Summary	Total Estimate
Section A - Earthworks	\$637,660.00
Section B - Roadworks	\$593,250.60
Section C - Drainage	\$469,818.42
Section D - Landscaping 750m @ \$100.00	\$75,000.00
Section E - Acoustic Fencing 750m @ \$200.00	\$150,000.00
Section F - Electrical (Streetlights) 750m @ \$250	\$187,500.00
Sub Total Estimate (excl. GST)	\$2,113,229.02
SUB TOTAL ESTIMATE (excl. GST)	\$2,113,229.02
CONTINGENCY (20%)	\$422,645.80
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$101,434.99
Engineering Detailed Design (8%)	\$202,869.99
Project Management (4%)	\$101,434.99
TOTAL ESTIMATE	\$2,941,614.80

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
SECTION A - Earthworks					
A1	PROVISION FOR TRAFFIC	PC Item	1	\$2,500.00	\$2,500.00
A2	CLEARING AND GRUBBING Clearing and grubbing as directed, including mulching to stockpile for later respreading to batters etc.				
a)	Roadways and footpaths 740 x 30m = 22,200 m ² mostly cleared farmland	Item	1	\$10,000.00	\$10,000.00
A3	EARTHWORKS				
a)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	2,220	\$3.00	\$6,660.00
b)	Excavate bad ground under roads and allotments including backfilling with selected imported fill (CBR15) compacted to 95% modified AASHO as directed. Excavated material to be blended and used as fill	m ³	500	\$15.00	\$7,500.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	1,750	\$10.00	\$17,500.00
c)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting 4,000m x 10 m3/m - assumed 500mm thick	m ³	21,880	\$25.00	\$547,000.00
A4	SILT MANAGEMENT Supply in place standard silt fences	m	1,500	\$10.00	\$15,000.00
A5	Supply materials and construct temporary truck shakedown facility as specified including removal of device on completion of works	No	1	\$5,000.00	\$5,000.00
A6	Grass seeding to external earthworks	m ²	15,000	\$0.50	\$7,500.00
A7	Turfing to footpaths and designated areas	m ²	1,800	\$5.00	\$9,000.00
A8	MISCELLANEOUS Compliance with Environmental Management Plan (Air, noise, pollution)	Item	1	\$10,000.00	\$10,000.00
SECTION A - Earthworks - Total					\$637,660.00

Item	Description	Unit	Qty	Rate	Amount
SECTION B - Roadworks					
SUBSOIL DRAINAGE					
B1	Side drains, complete, including supply of 100mm dia perforated pipe, geofabric lining, bedding and surround,	m	1,500	\$18.00	\$27,000.00
B2	Side drain Flushing Points as directed	No	25	\$120.00	\$3,000.00
PAVEMENT					
B3	Trimming and compaction of subgrade to pavement	m ²	8,850	\$2.10	\$18,585.00
B4	Final trim to road pavement	m ²	7,725	\$2.50	\$19,312.50
B5	Pavement material as specified including supply, spreading and compaction (<i>Solid Measure</i>) (assumed 150mm thick)				
a)	Base Course Material (Subtype 2.1 - CBR 80)	m ³	1,160	\$90.00	\$104,400.00
b)	Sub-base Course Material (Subtype 2.3 - CBR 45)	m ³	1,328	\$80.00	\$106,240.00
B6	Additional paving material including excavation in all classes of material and disposal of spoil, supply, spreading and compaction (<i>Solid Measure</i>)				
a)	Subtype 2.5 - CBR 15	m ³	200	\$80.00	\$16,000.00
SURFACING					
B7	Aphalt Seal				
a)	40mm DG10 with primer seal	m ²	7,725	\$22.00	\$169,950.00
FOOTPATH					
B8	Construct N25 concrete footpath complete including excavation, joints, broom finish				
a)	1800mm x 100mm thick (reinforced - plain concrete)	m	750	\$90.00	\$67,500.00
CONCRETE KERBS & MEDIANS					
B9	Standard concrete kerbing to BSC standards				
a)	Type B1 - 610 mm wide Barrier K&G	m	1,500	\$35.00	\$52,500.00
b)	Type SM5 - 500 mm wide mountable KO	m	0	\$23.35	
c)	Type B2 - 150mm wide Barrier KO	m	0	\$20.80	
SIGNS AND PAVEMENT MARKING					
B10	Supply standard traffic control signs and devices, complete in place (Prov. Qty)				
a)	General Signage	m	740	\$4.00	\$2,960.00
B11	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified (per metre of carriageway)	m	740	\$7.00	\$5,180.00
B13	Saw cut existing pavement including asphalt	m	30	\$20.77	\$623.10
SECTION B - Roadworks - Total					\$593,250.60

Item	Description	Unit	Qty	Rate	Amount
SECTION C - Drainage					
PIPEWORK					
C1	Supply, lay and joint Class '3' RC pipe (as specified) complete, including excavation, bedding sand, backfill				
b)	375mm dia	m	80	\$110.00	\$8,800.00
c)	450mm dia	m	200	\$135.00	\$27,000.00
d)	525mm dia	m	200	\$165.00	\$33,000.00
e)	600mm dia	m	200	\$195.00	\$39,000.00
f)	675mm dia	m	150	\$225.00	\$33,750.00
g)	900mm dia	m	80	\$300.00	\$24,000.00
C2	Extra over for excavation in rock on measured quantities (Prov Qty)	m ³	100	\$90.00	\$9,000.00
GULLY PITS / INLETS					
C3	Construct standard BSC gully trap, complete, including excavation, extended kerb inlet and grate				
a)	Type 'M' lintel (3.60m)	No	15	\$1,401.44	\$21,021.60
MANHOLES / CHAMBERS					
C4	Construct standard manholes, complete, including excavation, step irons, covers, frames, etc.				
a)	1050mm dia	No	4	\$2,142.09	\$8,568.36
b)	1200mm dia	No	2	\$2,474.23	\$4,948.46
c)	1500mm dia	No	0	\$2,759.15	
DRAINAGE OUTLETS/INLETS					
C5	Inlet Outlet Headwalls				
a)	900 mm pipe	No	4	\$1,500.00	\$6,000.00
STORMWATER QUALITY CONTROL DEVICES					
C6	Construct Bio Retention Basins <i>allow 400 m2 each @ \$ 315 = \$126,000 ea</i>	No	2	\$126,000.00	\$252,000.00
MISCELLANEOUS					
C7	CCTV Video surveillance of stormwater lines prior to "On Maintenance" inspection(if ordered)	m	910	\$3.00	\$2,730.00
SECTION C - Drainage - Total					\$469,818.42

Hutley Drive - Section 2
Chg 3350 - Chg 4500
Length 1,150m - Urban 9.0m Collector Street

Preliminary Estimate of Construction Costs

Summary	Total Estimate
Section A - Earthworks	\$545,650.00
Section B - Roadworks	\$770,831.50
Section C - Drainage	\$540,146.26
Section D - Landscaping 1150m @ \$100	\$115,000.00
Section E - Acoustic Fencing 1000m @ \$250.00	\$250,000.00
Section F - Electrical (Streetlights)	not required
Sub Total Estimate (excl. GST)	\$2,221,627.76
SUB TOTAL ESTIMATE (excl. GST)	\$2,221,627.76
CONTINGENCY (20%)	\$444,325.55
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$106,638.13
Engineering Detailed Design (8%)	\$213,276.26
Project Management (4%)	\$106,638.13
TOTAL ESTIMATE	\$3,092,505.84

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
SECTION A - Earthworks					
A1	PROVISION FOR TRAFFIC	PC Item	1	\$2,500.00	\$2,500.00
CLEARING AND GRUBBING					
A2	Clearing and grubbing as directed, including mulching to stockpile for later respreading to batters etc.				
a)	Roadways and footpaths 1150 x 30m = 34,500 m2 adjacent wetland ?	Item	1	\$21,000.00	\$21,000.00
EARTHWORKS					
A3	EARTHWORKS				
a)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	3,450	\$3.00	\$10,350.00
b)	Excavate bad ground under roads and allotments including backfilling with selected imported fill (CBR15) compacted to 95% modified AASHO as directed. Excavated material to be blended and used as fill <i>NOTE : old dam at 3370-3460</i>	m ³	2,000	\$15.00	\$30,000.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	7,900	\$10.00	\$79,000.00
c)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	13,500	\$25.00	\$337,500.00
SILT MANAGEMENT					
A4	Supply in place standard silt fences	m	2,500	\$10.00	\$25,000.00
A5	Supply materials and construct temporary truck shakedown facility as specified including removal of device on completion of works	No	1	\$5,000.00	\$5,000.00
A6	Grass seeding to external earthworks	m ²	23,000	\$0.50	\$11,500.00
A7	Turfing to footpaths and designated areas	m ²	2,760	\$5.00	\$13,800.00
MISCELLANEOUS					
A8	Compliance with Environmental Management Plan (Air, noise, pollution)	Item	1	\$10,000.00	\$10,000.00
SECTION A - Earthworks - Total					\$545,650.00

Item	Description	Unit	Qty	Rate	Amount
SECTION B - Roadworks					
SUBSOIL DRAINAGE					
B1	Side drains, complete, including supply of 100mm dia perforated pipe, geofabric lining, bedding and surround,	m	2,300	\$18.00	\$41,400.00
B2	Side drain Flushing Points as directed	No	38	\$120.00	\$4,560.00
PAVEMENT					
B3	Trimming and compaction of subgrade to pavement	m ²	11,040	\$2.10	\$23,184.00
B4	Final trim to road pavement	m ²	9,315	\$2.50	\$23,287.50
B5	Pavement material as specified including supply, spreading and compaction (<i>Solid Measure</i>) (assumed 150mm thick)				
a)	Base Course Material (Subtype 2.1 - CBR 80)	m ³	1,656	\$90.00	\$149,040.00
b)	Sub-base Course Material (Subtype 2.3 - CBR 45)	m ³	1,397	\$80.00	\$111,780.00
B6	Additional paving material including excavation in all classes of material and disposal of spoil, supply, spreading and compaction (<i>Solid Measure</i>)				
a)	Subtype 2.5 - CBR 15	m ³	200	\$80.00	\$16,000.00
SURFACING					
B7	Aphalt Seal				
a)	40mm DG10 with primer seal	m ²	9,315	\$22.00	\$204,930.00
FOOTPATH					
B8	Construct N25 concrete footpath complete including excavation, joints, broom finish				
a)	1800mm x 100mm thick (reinforced - plain concrete)	m	1,150	\$90.00	\$103,500.00
CONCRETE KERBS & MEDIANS					
B9	Standard concrete kerbing to BSC standards				
a)	Type B1 - 610 mm wide Barrier K&G	m	2,300	\$35.00	\$80,500.00
b)	Type SM5 - 500 mm wide mountable KO	m	0	\$23.35	
c)	Type B2 - 150mm wide Barrier KO	m	0	\$20.80	
SIGNS AND PAVEMENT MARKING					
B10	Supply standard traffic control signs and devices, complete in place (Prov. Qty)				
a)	General Signage	m	1,150	\$4.00	\$4,600.00
B11	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified (per metre of carriageway)	m	1,150	\$7.00	\$8,050.00
B13	Saw cut existing pavement including asphalt	m	0	\$20.77	
SECTION B - Roadworks - Total					\$770,831.50

Item	Description	Unit	Qty	Rate	Amount
SECTION C - Drainage					
PIPEWORK					
C1	Supply, lay and joint Class '3' RC pipe (as specified) complete, including excavation, bedding sand, backfill				
b)	375mm dia	m	100	\$110.00	\$11,000.00
c)	450mm dia	m	300	\$135.00	\$40,500.00
d)	525mm dia	m	300	\$165.00	\$49,500.00
e)	600mm dia	m	250	\$195.00	\$48,750.00
f)	675mm dia	m	200	\$225.00	\$45,000.00
g)	900mm dia	m	30	\$330.00	\$9,900.00
h)	1200mm dia	m	30	\$450.00	\$13,500.00
C2	Extra over for excavation in rock on measured quantities (Prov Qty)	m ³	100	\$90.00	\$9,000.00
GULLY PITS / INLETS					
C3	Construct standard BSC gully trap, complete, including excavation, extended kerb inlet and grate				
a)	Type 'M' lintel (3.60m)	No	23	\$1,401.44	\$32,233.12
MANHOLES / CHAMBERS					
C4	Construct standard manholes, complete, including excavation, step irons, covers, frames, etc.				
a)	1050mm dia	No	5	\$2,142.09	\$10,710.45
b)	1200mm dia	No	3	\$2,474.23	\$7,422.69
c)	1500mm dia	No	0	\$2,759.15	
DRAINAGE OUTLETS/INLETS					
C5	Inlet Outlet Headwalls				
a)	900 mm pipe	No	2	\$1,500.00	\$3,000.00
b)	1200 mm pipe	No	2	\$2,000.00	\$4,000.00
STORMWATER QUALITY CONTROL DEVICES					
C6	Construct Bio Retention Basins allow 400 m2 each @ \$ 315 = \$126,000 ea	No	2	\$126,000.00	\$252,000.00
MISCELLANEOUS					
C7	CCTV Video surveillance of stormwater lines prior to "On Maintenance" inspector(if ordered)	m	1210	\$3.00	\$3,630.00
SECTION C - Stage 15A - Drainage - Total					\$540,146.26

Hutley Drive - Section 3
Chg 4500 - Chg 5100
Length 600m - Urban 11.2m Collector Street

Preliminary Estimate of Construction Costs

Summary	Total Estimate
Section A - Earthworks	\$695,400.00
Section B - Roadworks	\$442,116.01
Section C - Drainage	\$297,390.67
Section D - Bridge (Chg 5000)	\$1,200,000.00
Section E - Landscaping 600m @ \$100	\$60,000.00
Section F - Acoustic Fencing 1200m @ \$250.00	\$300,000.00
Section G - Electrical (Streetlights) 600m @ \$250	\$150,000.00
Sub Total Estimate (excl. GST)	\$2,449,506.68
SUB TOTAL ESTIMATE (excl. GST)	\$2,449,506.68
CONTINGENCY (20%)	\$489,901.34
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$117,576.32
Engineering Detailed Design (8%)	\$235,152.64
Project Management (4%)	\$117,576.32
TOTAL ESTIMATE	\$3,409,713.30

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
<u>SECTION A - Earthworks</u>					
A1	PROVISION FOR TRAFFIC	PC Item	1	\$2,500.00	\$2,500.00
CLEARING AND GRUBBING					
A2	Clearing and grubbing as directed, including mulching to stockpile for later resspreading to batters etc.				
a)	Roadways and footpaths 600 x 30m = 18,000 m2 adjacent drain ?	Item	1	\$10,000.00	\$10,000.00
EARTHWORKS					
A3	a) Stripping and stockpiling at topsoil to earthworks areas and resspreading as directed (100mm nominal)	m ³	1,800	\$3.00	\$5,400.00
	b) Excavate bad ground under roads and allotments including backfilling with selected imported fill (CBR15) compacted to 95% modified AASHO as directed. Excavated material to be blended and used as fill <i>NOTE : remove spoil from drain</i>	m ³	5,000	\$15.00	\$75,000.00
	c) Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	0	\$10.00	
	c) Imported fill CBR 15 to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	22,500	\$25.00	\$562,500.00
SILT MANAGEMENT					
A4	Supply in place standard silt fences	m	1,200	\$10.00	\$12,000.00
A5	Supply materials and construct temporary truck shakedown facility as specified including removal of device on completion of works	No	1	\$5,000.00	\$5,000.00
A6	Grass seeding to external earthworks	m ²	12,000	\$0.50	\$6,000.00
A7	Turfing to footpaths and designated areas	m ²	1,400	\$5.00	\$7,000.00
MISCELLANEOUS					
A8	Compliance with Environmental Management Plan (Air, noise, pollution)	Item	1	\$10,000.00	\$10,000.00
SECTION A - Earthworks - Total					\$695,400.00

Item	Description	Unit	Qty	Rate	Amount
SECTION B - Roadworks					
SUBSOIL DRAINAGE					
B1	Side drains, complete, including supply of 100mm dia perforated pipe, geofabric lining, bedding and surround,	m	1,200	\$18.00	\$21,600.00
B2	Side drain Flushing Points as directed	No	20	\$120.00	\$2,400.00
PAVEMENT					
B3	Trimming and compaction of subgrade to pavement	m ²	5,760	\$2.10	\$12,096.00
B4	Final trim to road pavement	m ²	4,860	\$2.50	\$12,150.00
B5	Pavement material as specified including supply, spreading and compaction (<i>Solid Measure</i>) (assumed 150mm thick)				
a)	Base Course Material (Subtype 2.1 - CBR 80)	m ³	864	\$90.00	\$77,760.00
b)	Sub-base Course Material (Subtype 2.3 - CBR 45)	m ³	729	\$80.00	\$58,320.00
B6	Additional paving material including excavation in all classes of material and disposal of spoil, supply, spreading and compaction (<i>Solid Measure</i>)				
a)	Subtype 2.5 - CBR 15	m ³	600	\$80.00	\$48,000.00
SURFACING					
B7	Aphalt Seal				
a)	40mm DG10 with primer seal	m ²	4,860	\$22.00	\$106,920.00
FOOTPATH					
B8	Construct N25 concrete footpath complete including excavation, joints, broom finish				
a)	1800mm x 100mm thick (reinforced - plain concrete)	m	600	\$90.00	\$54,000.00
CONCRETE KERBS & MEDIANS					
B9	Standard concrete kerbing to BSC standards				
a)	Type B1 - 610 mm wide Barrier K&G	m	1,200	\$35.00	\$42,000.00
b)	Type SM5 - 500 mm wide mountable KO	m	0	\$23.35	
c)	Type B2 - 150mm wide Barrier KO	m	0	\$20.80	
SIGNS AND PAVEMENT MARKING					
B10	Supply standard traffic control signs and devices, complete in place (Prov. Qty)				
a)	General Signage (per metre of carriageway)	m	600	\$4.00	\$2,400.00
B11	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified (per metre of carriageway)	m	600	\$7.00	\$4,200.00
B13	Saw cut existing pavement including asphalt	m	13	\$20.77	\$270.01
SECTION B - Roadworks - Total					\$442,116.01

Item	Description	Unit	Qty	Rate	Amount
SECTION C - Drainage					
PIPEWORK					
C1	Supply, lay and joint Class '3' RC pipe (as specified) complete, including excavation, bedding sand, backfill				
b)	375mm dia	m	60	\$110.00	\$6,600.00
c)	450mm dia	m	100	\$135.00	\$13,500.00
d)	525mm dia	m	100	\$165.00	\$16,500.00
e)	600mm dia	m	100	\$195.00	\$19,500.00
f)	675mm dia	m	200	\$225.00	\$45,000.00
g)	900mm dia	m	30	\$330.00	\$9,900.00
h)	1200mm dia	m	60	\$450.00	\$27,000.00
C2	Extra over for excavation in rock on measured quantities (Prov Qty)	m ³		\$90.00	
GULLY PITS / INLETS					
C3	Construct standard BSC gully trap, complete, including excavation, extended kerb inlet and grate				
a)	Type 'M' lintel (3.60m)	No	10	\$1,401.44	\$14,014.40
MANHOLES / CHAMBERS					
C4	Construct standard manholes, complete, including excavation, step irons, covers, frames, etc.				
a)	1050mm dia	No	3	\$2,142.09	\$6,426.27
b)	1200mm dia	No	0	\$2,474.23	
c)	1500mm dia	No	0	\$2,759.15	
DRAINAGE OUTLETS/INLETS					
C5	Inlet Outlet Headwalls				
a)	900 mm pipe	No	2	\$1,500.00	\$3,000.00
b)	1200 mm pipe	No	4	\$2,000.00	\$8,000.00
STORMWATER QUALITY CONTROL DEVICES					
C6	Construct Bio Retention Basins <i>allow 400 m2 each @ \$ 315 = \$126,000 ea</i>	No	1	\$126,000.00	\$126,000.00
MISCELLANEOUS					
C7	CCTV Video surveillance of stormwater lines prior to "On Maintenance" inspection(if ordered)	m	650	\$3.00	\$1,950.00
SECTION C - Drainage - Total					\$297,390.67
BRIDGE					
C6	Construct concrete bridge <i>50m long x (9+3 wide) =</i>	m2	600	\$2,000.00	\$1,200,000.00
SECTION D - Bridge - Total					\$1,200,000.00

Hutley Drive - Section 4 (Existing)
Chg 5100 - Chg 5750
Length 650m - Urban 9.0m Collector Street
Preliminary Estimate of Construction Costs

Summary	Total Estimate
Section A - Earthworks	\$2,500.00
Section B - Roadworks	\$7,150.00
Section C - Drainage	\$0.00
Section D - Bridge (Chg 5000)	\$0.00
Section E - Landscaping	existing
Section F - Acoustic Fencing	not included
Section G - Electrical (Streetlights)	existing
Sub Total Estimate (excl. GST)	\$7,150.00
SUB TOTAL ESTIMATE (excl. GST)	\$7,150.00
CONTINGENCY (20%)	\$1,430.00
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	
Engineering Detailed Design (8%)	\$686.40
Project Management (4%)	\$343.20
TOTAL ESTIMATE	\$9,609.60

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
SECTION A - Earthworks					
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$2,500.00	\$2,500.00
CLEARING AND GRUBBING					
A2	Clearing and grubbing as directed, including mulching to stockpile for later resspreading to batters etc.				
a)	Roadways and footpaths 600 x 30m = 18,000 m2 adjacent drain ?	Item			
EARTHWORKS					
A3	a) Stripping and stockpiling at topsoil to earthworks areas and resspreading as directed (100mm nominal)	m ³			
	b) Excavate bad ground under roads and allotments including backfilling with selected imported fill (CBR15) compacted to 95% modified AASHO as directed. Excavated material to be blended and used as fill <i>NOTE : remove spoil from drain</i>	m ³			
	c) Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³			
	c) Imported fill CBR 15 to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³			
SILT MANAGEMENT					
A4	Supply in place standard silt fences	m			
A5	Supply materials and construct temporary truck shakedown facility as specified including removal of device on completion of works	No			
A6	Grass seeding to external earthworks	m ²			
A7	Turfing to footpaths and designated areas	m ²			
MISCELLANEOUS					
A8	Compliance with Environmental Management Plan (Air, noise, pollution)	Item	1		
SECTION A - Earthworks - Total					\$2,500.00

Item	Description	Unit	Qty	Rate	Amount
SECTION B - Roadworks					
SUBSOIL DRAINAGE					
B1	Side drains, complete, including supply of 100mm dia perforated pipe, geofabric lining, bedding and surround,	m			
B2	Side drain Flushing Points as directed	No			
PAVEMENT					
B3	Trimming and compaction of subgrade to pavement	m ²			
B4	Final trim to road pavement	m ²			
B5	Pavement material as specified including supply, spreading and compaction (<i>Solid Measure</i>) (assumed 150mm thick)				
a)	Base Course Material (Subtype 2.1 - CBR 80)	m ³			
b)	Sub-base Course Material (Subtype 2.3 - CBR 45)	m ³			
B6	Additional paving material including excavation in all classes of material and disposal of spoil, supply, spreading and compaction (<i>Solid Measure</i>)				
a)	Subtype 2.5 - CBR 15	m ³			
SURFACING					
B7	Aphalt Seal				
a)	40mm DG10 with primer seal	m ²			
FOOTPATH					
B8	Construct N25 concrete footpath complete including excavation, joints, broom finish				
a)	1800mm x 100mm thick (reinforced - plain concrete)	m			
CONCRETE KERBS & MEDIANS					
B9	Standard concrete kerbing to BSC standards				
a)	Type B1 - 610 mm wide Barrier K&G	m			
b)	Type SM5 - 500 mm wide mountable KO	m			
c)	Tpe B2 - 150mm wide Barrier KO	m			
SIGNS AND PAVEMENT MARKING					
B10	Supply standard traffic control signs and devices, complete in place (Prov. Qty)				
a)	General Signage	m	650	\$4.00	\$2,600.00
B11	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified (per metre of carriageway)	m	650	\$7.00	\$4,550.00
B13	Saw cut existing pavement including asphalt	m			
SECTION B - Roadworks - Total					\$7,150.00



Item	Description	Unit	Qty	Rate	Amount
SECTION C - Drainage					
PIPEWORK					
C1	Supply, lay and joint Class '3' RC pipe (as specified) complete, including excavation, bedding sand, backfill				
b)	375mm dia	m			
c)	450mm dia	m			
d)	525mm dia	m			
e)	600mm dia	m			
f)	675mm dia	m			
g)	900mm dia	m			
h)	1200mm dia	m			
C2	Extra over for excavation in rock on measured quantities (Prov Qty)	m ³			
GULLY PITS / INLETS					
C3	Construct standard BSC gully trap, complete, including excavation, extended kerb inlet and grate				
a)	Type 'M' lintel (3.60m)	No			
MANHOLES / CHAMBERS					
C4	Construct standard manholes, complete, including excavation, step irons, covers, frames, etc.				
a)	1050mm dia	No			
b)	1200mm dia	No			
c)	1500mm dia	No			
DRAINAGE OUTLETS/INLETS					
C5	Inlet Outlet Headwalls				
a)	900 mm pipe	No			
b)	1200 mm pipe	No			
STORMWATER QUALITY CONTROL DEVICES					
C6	Construct Bio Retention Basins <i>allow 400 m2 each @ \$ 315 = \$126,000 ea</i>	No			
MISCELLANEOUS					
C7	CCTV Video surveillance of stormwater lines prior to "On Maintenance" inspector(if ordered)	m			
SECTION C - Drainage - Total					\$0.00

BRIDGE					
C6	Construct concrete bridge <i>50m long x (9+3 wide) =</i>	m2			
SECTION D - Bridge - Total					\$0.00

Hutley Drive - Section 5
Chg 5750 - Chg 6050
Length 300m - Urban 13.0m Collector Street

Preliminary Estimate of Construction Costs

Summary	Total Estimate
Section A - Earthworks	\$69,300.00
Section B - Roadworks	\$291,233.01
Section C - Drainage	\$204,142.82
Section D - Landscaping 300m @ \$100	\$30,000.00
Section E - Acoustic Fencing	not included
Section F - Electrical (Streetlights) 300m @ \$250	\$75,000.00
Sub Total Estimate (excl. GST)	\$669,675.83
SUB TOTAL ESTIMATE (excl. GST)	\$669,675.83
CONTINGENCY (20%)	\$133,935.17
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$32,144.44
Engineering Detailed Design (8%)	\$64,288.88
Project Management (4%)	\$32,144.44
TOTAL ESTIMATE	\$932,188.76

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
<u>SECTION A - Earthworks</u>					
A1	PROVISION FOR TRAFFIC	PC Item	1	\$2,500.00	\$2,500.00
CLEARING AND GRUBBING					
A2	Clearing and grubbing as directed, including mulching to stockpile for later respreading to batters etc.				
a)	Roadways and footpaths 300 x 30m = 9,000 m2 existing track	Item	1	\$5,000.00	\$5,000.00
EARTHWORKS					
A3	a) Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	900	\$3.00	\$2,700.00
	b) Excavate bad ground under roads and allotments including backfilling with selected imported fill (CBR15) compacted to 95% modified AASHO as directed. Excavated material to be blended and used as fill	m ³	200	\$15.00	\$3,000.00
	c) Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	3,000	\$10.00	\$30,000.00
	c) Imported fill CBR 15 to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
SILT MANAGEMENT					
A4	Supply in place standard silt fences	m	600	\$10.00	\$6,000.00
A5	Supply materials and construct temporary truck shakedown facility as specified including removal of device on completion of works	No	1	\$5,000.00	\$5,000.00
A6	Grass seeding to external earthworks	m ²	3,000	\$0.50	\$1,500.00
A7	Turfing to footpaths and designated areas	m ²	720	\$5.00	\$3,600.00
MISCELLANEOUS					
A8	Compliance with Environmental Management Plan (Air, noise, pollution)	Item	1	\$10,000.00	\$10,000.00
SECTION A - Earthworks - Total					\$69,300.00

Item	Description	Unit	Qty	Rate	Amount
<u>SECTION B - Roadworks</u>					
SUBSOIL DRAINAGE					
B1	Side drains, complete, including supply of 100mm dia perforated pipe, geofabric lining, bedding and surround,	m	600	\$18.00	\$10,800.00
B2	Side drain Flushing Points as directed	No	6	\$120.00	\$720.00
PAVEMENT					
B3	Trimming and compaction of subgrade to pavement	m ²	4,080	\$2.10	\$8,568.00
B4	Final trim to road pavement	m ²	3,630	\$2.50	\$9,075.00
B5	Pavement material as specified including supply, spreading and compaction (<i>Solid Measure</i>) (assumed 150mm thick)				
a)	Base Course Material (Subtype 2.1 - CBR 80)	m ³	612	\$90.00	\$55,080.00
b)	Sub-base Course Material (Subtype 2.3 - CBR 45)	m ³	545	\$80.00	\$43,560.00
B6	Additional paving material including excavation in all classes of material and disposal of spoil, supply, spreading and compaction (<i>Solid Measure</i>)				
a)	Subtype 2.5 - CBR 15	m ³	400	\$80.00	\$32,000.00
SURFACING					
B7	Aphalt Seal				
a)	40mm DG10 with primer seal	m ²	3,630	\$22.00	\$79,860.00
FOOTPATH					
B8	Construct N25 concrete footpath complete including excavation, joints, broom finish				
a)	1800mm x 100mm thick (reinforced - plain concrete)	m	300	\$90.00	\$27,000.00
CONCRETE KERBS & MEDIANS					
B9	Standard concrete kerbing to BSC standards				
a)	Type B1 - 610 mm wide Barrier K&G	m	600	\$35.00	\$21,000.00
b)	Type SM5 - 500 mm wide mountable KO	m	0	\$23.35	
c)	Type B2 - 150mm wide Barrier KO	m	0	\$20.80	
SIGNS AND PAVEMENT MARKING					
B10	Supply standard traffic control signs and devices, complete in place (Prov. Qty)				
a)	General Signage	m	300	\$4.00	\$1,200.00
B11	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified (per metre of carriageway)	m	300	\$7.00	\$2,100.00
B13	Saw cut existing pavement including asphalt	m	13	\$20.77	\$270.01
SECTION B - Roadworks - Total					\$291,233.01

Item	Description	Unit	Qty	Rate	Amount
SECTION C - Drainage					
PIPEWORK					
C1	Supply, lay and joint Class '3' RC pipe (as specified) complete, including excavation, bedding sand, backfill				
b)	375mm dia	m	40	\$110.00	\$4,400.00
c)	450mm dia	m	100	\$135.00	\$13,500.00
d)	525mm dia	m	150	\$165.00	\$24,750.00
e)	600mm dia	m	0	\$195.00	
f)	675mm dia	m	0	\$225.00	
g)	900mm dia	m	30	\$330.00	\$9,900.00
h)	1200mm dia	m		\$450.00	
C2	Extra over for excavation in rock on measured quantities (Prov Qty)	m ³	100	\$90.00	\$9,000.00
GULLY PITS / INLETS					
C3	Construct standard BSC gully trap, complete, including excavation, extended kerb inlet and grate				
a)	Type 'M' lintel (3.60m)	No	6	\$1,401.44	\$8,408.64
MANHOLES / CHAMBERS					
C4	Construct standard manholes, complete, including excavation, step irons, covers, frames, etc.				
a)	1050mm dia	No	2	\$2,142.09	\$4,284.18
b)	1200mm dia	No	0	\$2,474.23	
c)	1500mm dia	No	0	\$2,759.15	
DRAINAGE OUTLETS/INLETS					
C5	Inlet Outlet Headwalls				
a)	900 mm pipe	No	2	\$1,500.00	\$3,000.00
b)	1200 mm pipe	No		\$2,000.00	
STORMWATER QUALITY CONTROL DEVICES					
C6	Construct Bio Retention Basins <i>allow 400 m2 each @ \$ 315 = \$126,000 ea</i>	No	1	\$126,000.00	\$126,000.00
MISCELLANEOUS					
C7	CCTV Video surveillance of stormwater lines prior to "On Maintenance" inspection(if ordered)	m	300	\$3.00	\$900.00
SECTION C - Drainage - Total					\$204,142.82

**Hutley Rd - Northern Roundabout
 Widening to existing Single Lane Roundabout**

Preliminary Estimate of Construction Costs

Summary	Total Estimate
Section A - Earthworks	\$68,100.00
Section B - Roadworks	\$315,038.50
Section C - Drainage	\$20,000.00
Section D - Landscaping Item	\$30,000.00
Section E - Electrical (Streetlights) 8 Lights @ \$15,000	\$120,000.00
Sub Total Estimate (excl. GST)	\$553,138.50
SUB TOTAL ESTIMATE (excl. GST)	\$553,138.50
CONTINGENCY (20%)	\$110,627.70
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$26,550.65
Engineering Detailed Design (8%)	\$53,101.30
Project Management (4%)	\$26,550.65
TOTAL ESTIMATE	\$769,968.79

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
<u>SECTION A - Earthworks</u>					
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$25,000.00	\$25,000.00
CLEARING AND GRUBBING					
A2	Clearing and grubbing as directed, including mulching to stockpile for later respreading to batters etc.				
a)	Roadways and footpaths	Item	1	\$5,000.00	\$5,000.00
EARTHWORKS					
A3	a) Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	200	\$3.00	\$600.00
b)	General earthworks (cut/fill)	m ³	500	\$15.00	\$7,500.00
c)	Excavate bad ground under roads and allotments including backfilling with selected imported fill (CBR15) compacted to 95% modified AASHO as directed. Excavated material to be blended and used as fill	m ³	100	\$15.00	\$1,500.00
d)	Imported fill CBR 15 to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	500	\$20.00	\$10,000.00
SILT MANAGEMENT					
A4	Supply in place standard silt fences	m	150	\$10.00	\$1,500.00
A5	Supply materials and construct temporary truck shakedown facility as specified including removal of device on completion of works	No	1	\$5,000.00	\$5,000.00
A6	Grass seeding to external earthworks	m ²	1,000	\$0.50	\$500.00
A7	Turfing to footpaths and designated areas	m ²	300	\$5.00	\$1,500.00
MISCELLANEOUS					
A8	Compliance with Environmental Management Plan (Air, noise, pollution)	Item	1	\$10,000.00	\$10,000.00
SECTION A - Earthworks - Total					\$68,100.00

Item	Description	Unit	Qty	Rate	Amount
SECTION B - Roadworks					
SUBSOIL DRAINAGE					
B1	Side drains, complete, including supply of 100mm dia perforated pipe, geofabric lining, bedding and surround,	m			
B2	Side drain Flushing Points as directed	No			
PAVEMENT					
B3	Trimming and compaction of subgrade to pavement	m ²			
B4	Final trim to road pavement	m ²			
B5	Pavement material as specified including supply, spreading and compaction (<i>Solid Measure</i>) (assumed 250mm thick)				
a)	Base Course Material (Subtype 2.1 - CBR 80)	m ³			
b)	Sub-base Course Material (Subtype 2.3 - CBR 45)	m ³			
B6	Additional paving material including excavation in all classes of material and disposal of spoil, supply, spreading and compaction (<i>Solid Measure</i>)				
a)	Subtype 2.5 - CBR 15	m ³			
SURFACING					
B7	Rigid Pavement				
a)	Reinforced Concrete Pavement	m ²			
	General Rate for all of the above combined including standard drainage-	m ²	980	\$300.00	\$294,000.00
B8	CYCLEWAY Construct N25 concrete footpath complete including excavation, joints, broom finish				
a)	1800mm x 100mm thick (reinforced - plain concrete)	m			
CONCRETE KERBS & MEDIANS					
B9	Standard concrete kerbing to BSC standards				
a)	Type B1 - 610 mm wide Barrier K&G	m	200	\$35.00	\$7,000.00
b)	Type SM5 - 500 mm wide mountable KO	m			
c)	Type B2 - 150mm wide Barrier KO	m			
d)	Annulus Ring 1.5 wide	m ²			
e)	Median Infill	m ²			
SIGNS AND PAVEMENT MARKING					
B10	Supply standard traffic control signs and devices, complete in place (Prov. Qty)				
a)	No. of legs entering roundabout	No	4	\$2,500.00	\$10,000.00
B11	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified (legs entering roundabout)				
		No	4	\$750.00	\$3,000.00
B12	Saw cut existing pavement including asphalt	m	50	\$20.77	\$1,038.50
SECTION B - Roadworks - Total					\$315,038.50

Item	Description	Unit	Qty	Rate	Amount
SECTION C - Drainage					
PIPEWORK					
C1	Supply, lay and joint Class '3' RC pipe (as specified) complete, including excavation, bedding sand, backfill				
b)	375mm dia	m		\$110.00	
c)	450mm dia	m		\$135.00	
B4	Extra over for excavation in rock on measured quantities (Prov Qty)	m ³		\$90.00	
GULLY PITS / INLETS					
B5	Construct standard BSC gully trap, complete, including excavation, extended kerb inlet and grate				
a)	Type 'M' lintel (3.60m)	No		\$1,401.44	
MANHOLES / CHAMBERS					
B6	Construct standard manholes, complete, including excavation, step irons, covers, frames, etc.				
a)	1050mm dia	No		\$2,142.09	
DRAINAGE OUTLETS/INLETS					
B8	Construct specified cement grouted stone pitched outlet complete including excavation, backfill, and timber sleepers. Refer Drg 7506/01/26-127 & 128				
a)	450 mm dia pipe	No		\$900.00	
	General (PC Item)				\$20,000.00
SECTION B - Drainage - Total					\$20,000.00

**Hutley Rd - Southern Roundabout
 Dual Lane Roundabout**

Preliminary Estimate of Construction Costs

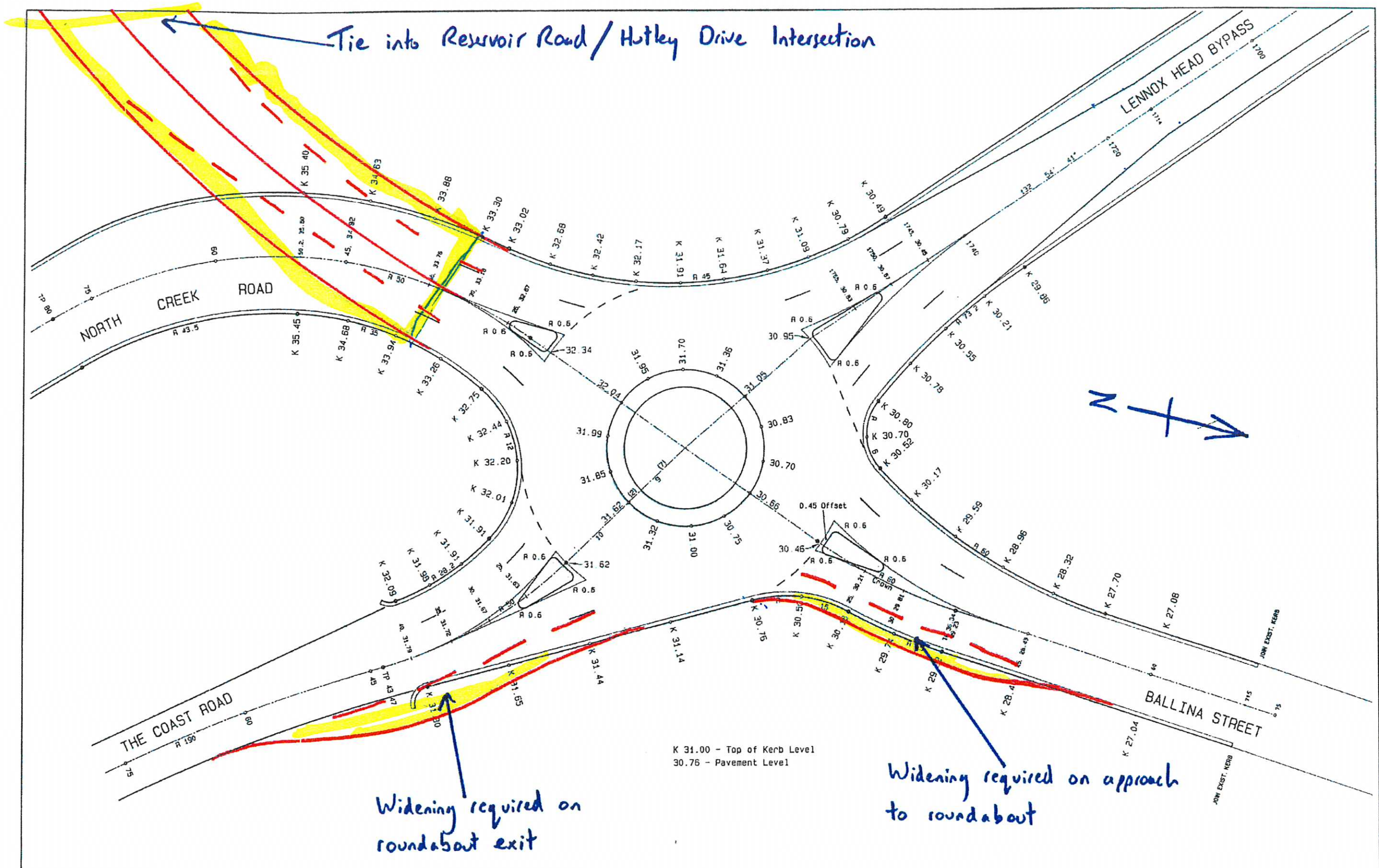
Summary	Total Estimate
Section A - Earthworks	\$103,420.00
Section B - Roadworks	\$401,107.20
Section C - Drainage	\$45,289.94
Section D - Landscaping Item	\$30,000.00
Section E - Electrical (Streetlights) 8 Lights @ \$15,000	\$120,000.00
Sub Total Estimate (excl. GST)	\$699,817.14
SUB TOTAL ESTIMATE (excl. GST)	\$699,817.14
CONTINGENCY (20%)	\$139,963.43
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$33,591.22
Engineering Detailed Design (8%)	\$67,182.45
Project Management (4%)	\$33,591.22
TOTAL ESTIMATE	\$974,145.46

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
<u>SECTION A - Earthworks</u>					
A1	PROVISION FOR TRAFFIC	PC Item	1	\$25,000.00	\$25,000.00
CLEARING AND GRUBBING					
A2	Clearing and grubbing as directed, including mulching to stockpile for later respreading to batters etc.				
a)	Roadways and footpaths	Item	1	\$5,000.00	\$5,000.00
EARTHWORKS					
A3	a) Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	640	\$3.00	\$1,920.00
	b) Excavate bad ground under roads and allotments including backfilling with selected imported fill (CBR15) compacted to 95% modified AASHO as directed. Excavated material to be blended and used as fill	m ³	500	\$15.00	\$7,500.00
	c) Imported fill CBR 15 to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	2,000	\$20.00	\$40,000.00
SILT MANAGEMENT					
A4	Supply in place standard sill fences	m	150	\$10.00	\$1,500.00
A5	Supply materials and construct temporary truck shakedown facility as specified including removal of device on completion of works	No	1	\$5,000.00	\$5,000.00
A6	Grass seeding to external earthworks	m ²	5,000	\$0.50	\$2,500.00
A7	Turfing to footpaths and designated areas	m ²	1,000	\$5.00	\$5,000.00
MISCELLANEOUS					
A8	Compliance with Environmental Management Plan (Air, noise, pollution)	Item	1	\$10,000.00	\$10,000.00
SECTION A - Earthworks - Total					\$103,420.00

Item	Description	Unit	Qty	Rate	Amount
<u>SECTION B - Roadworks</u>					
SUBSOIL DRAINAGE					
B1	Side drains, complete, including supply of 100mm dia perforated pipe, geofabric lining, bedding and surround,	m	550	\$18.00	\$9,900.00
B2	Side drain Flushing Points as directed	No	8	\$120.00	\$960.00
PAVEMENT					
B3	Trimming and compaction of subgrade to pavement	m ²	5,304	\$2.10	\$11,138.40
B4	Final trim to road pavement	m ²	5,107	\$2.50	\$12,767.50
B5	Pavement material as specified including supply, spreading and compaction (<i>Solid Measure</i>) (assumed 250mm thick)				
a)	Base Course Material (Subtype 2.1 - CBR 80)	m ³	240	\$150.00	\$36,000.00
b)	Sub-base Course Material (Subtype 2.3 - CBR 45)	m ³	800	\$140.00	\$112,000.00
B6	Additional paving material including excavation in all classes of material and disposal of spoil, supply, spreading and compaction (<i>Solid Measure</i>)				
a)	Subtype 2.5 - CBR 15	m ³	500	\$80.00	\$40,000.00
SURFACING					
B7	Aphalt Seal				
a)	40mm DG10 with primer seal	m ²	4,600	\$25.00	\$115,000.00
B8	CYCLEWAY Construct N25 concrete footpath complete including excavation, joints, broom finish				
a)	1800mm x 100mm thick (reinforced - plain concrete)	m	200	\$90.00	\$18,000.00
CONCRETE KERBS & MEDIANS					
B9	Standard concrete kerbing to BSC standards				
a)	Type B1 - 610 mm wide Barrier K&G	m	320	\$35.00	\$11,200.00
b)	Type SM5 - 500 mm wide mountable KO	m	230	\$23.35	\$5,370.50
c)	Type B2 - 150mm wide Barrier KO	m	0	\$20.80	
d)	Annulus Ring 1.5 wide	m ²	111	\$100.00	\$11,100.00
e)	Median Infill	m ²	48	\$80.00	\$3,840.00
SIGNS AND PAVEMENT MARKING					
B10	Supply standard traffic control signs and devices, complete in place (Prov. Qty)				
a)	No. of legs entering roundabout	No	4	\$2,500.00	\$10,000.00
B11	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified (legs entering roundabout)				
		No	4	\$750.00	\$3,000.00
B12	Saw cut existing pavement including asphalt	m	40	\$20.77	\$830.80
SECTION B - Roadworks - Total					\$401,107.20

Item	Description	Unit	Qty	Rate	Amount
SECTION C - Drainage					
PIPEWORK					
C1	Supply, lay and joint Class '3' RC pipe (as specified) complete, including excavation, bedding sand, backfill				
b)	375mm dia	m	60	\$110.00	\$6,600.00
c)	450mm dia	m	200	\$135.00	\$27,000.00
B4	Extra over for excavation in rock on measured quantities (Prov Qty)	m ³	0	\$90.00	
GULLY PITS / INLETS					
B5	Construct standard BSC gully trap, complete, including excavation, extended kerb inlet and grate				
a)	Type 'M' lintel (3.60m)	No	4	\$1,401.44	\$5,605.76
MANHOLES / CHAMBERS					
B6	Construct standard manholes, complete, including excavation, step irons, covers, frames, etc.				
a)	1050mm dia	No	2	\$2,142.09	\$4,284.18
DRAINAGE OUTLETS/INLETS					
B8	Construct specified cement grouted stone pitched outlet complete including excavation, backfill, and timber sleepers. Refer Drg 7506/01/26-127 & 128				
a)	450 mm dia pipe	No	2	\$900.00	\$1,800.00
SECTION B - Drainage - Total					\$45,289.94

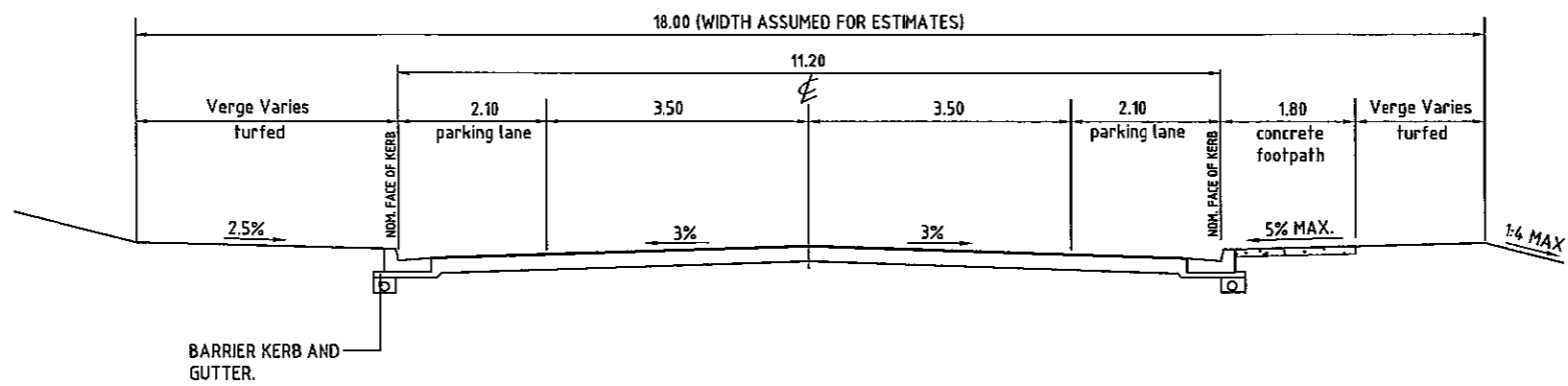


CEO
03/12/08

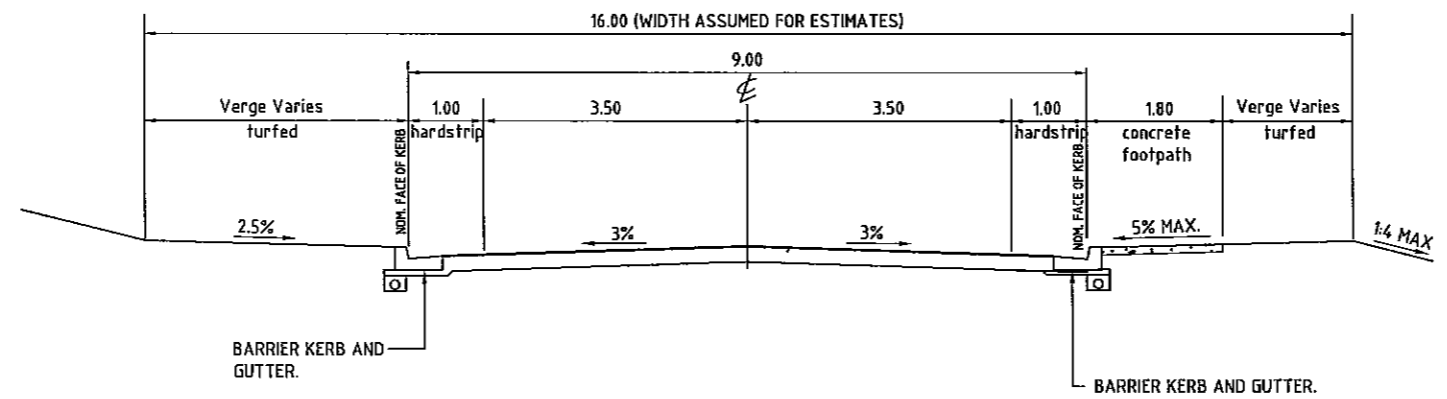
No.	Date	By	Change	X'd
Amendments				

Survey	DMK	Designed	GJH
Date		Drawn	
F.B.	L.B.	Checked	
Drawing	ABOUT	Approved	
Datum	AHD	Date	JUNE, '94
Sheet		of Sheets	

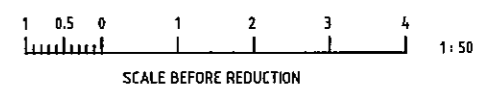
SHIRE OF BALLINA		
LENNOX HEAD BYPASS ROUNDAABOUT AT THE INTERSECTION OF NTH CREEK RD, COAST RD & BALLINA ST		
Scale	1 : 200	Plan No. SR 16/8 A1



TYPICAL CROSS SECTION 1
 11.2m WIDE ROAD
HUTLEY DRIVE (CH 2610.000 TO CH 3350.000)
 SCALE 1:50



TYPICAL CROSS SECTION 2
 9.0m WIDE ROAD
HUTLEY DRIVE (CH 3350.000 TO CH 4500.000)
 SCALE 1:50



Rev.	DATE	REVISIONS	REC.	APPR.
A	11/2008	DRAFTED FOR ESTIMATES		

© Cardno (Qld) Pty Ltd All Rights Reserved 2002.
 Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, in any person other than by agreement with Cardno (Qld) Pty Ltd.

This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

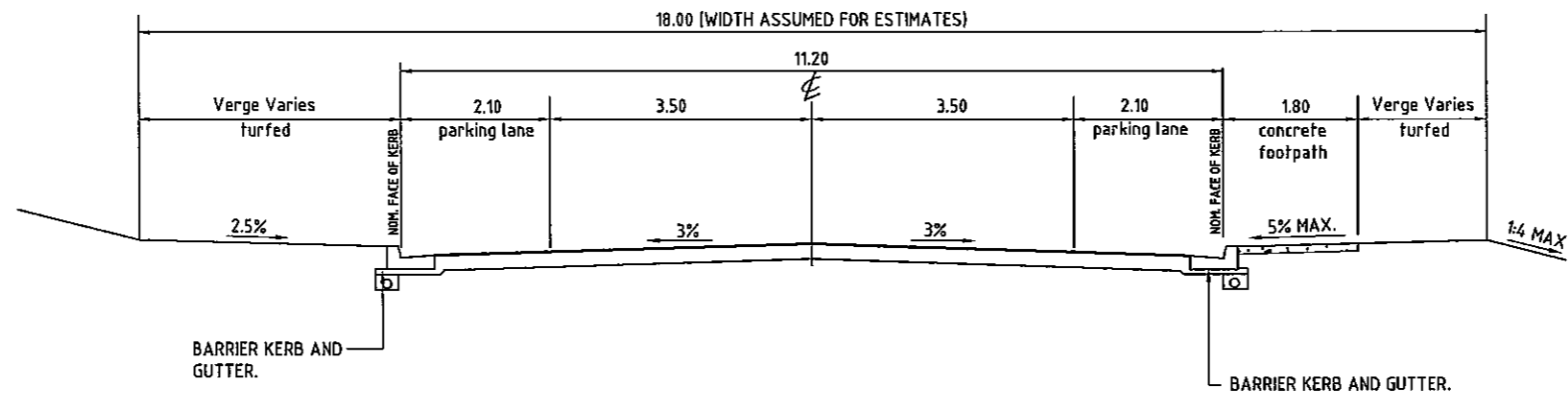
DESIGNED:	BSC	A1	DATUM: A.H.D.
DRAWN:	HS		
CHECKED:	TS	RECOMMENDED:	PROJ. MAN.
		APPROVED:	PROJ. DIR.
		XREF ATTACHED:	G:\2970\02\38\XREFS\...
		CAD FILE NAME:	G:\PEPPELL OLSEN\CE008667\HUTLEY DR.dwg

Cardno
 Cardno (Qld) Pty Ltd ACH: 051 074 982
 Commercial Centre, Isle of Capri
 Gold Coast City, Queensland 4217
 Email: gco@gold.cardno.com.au

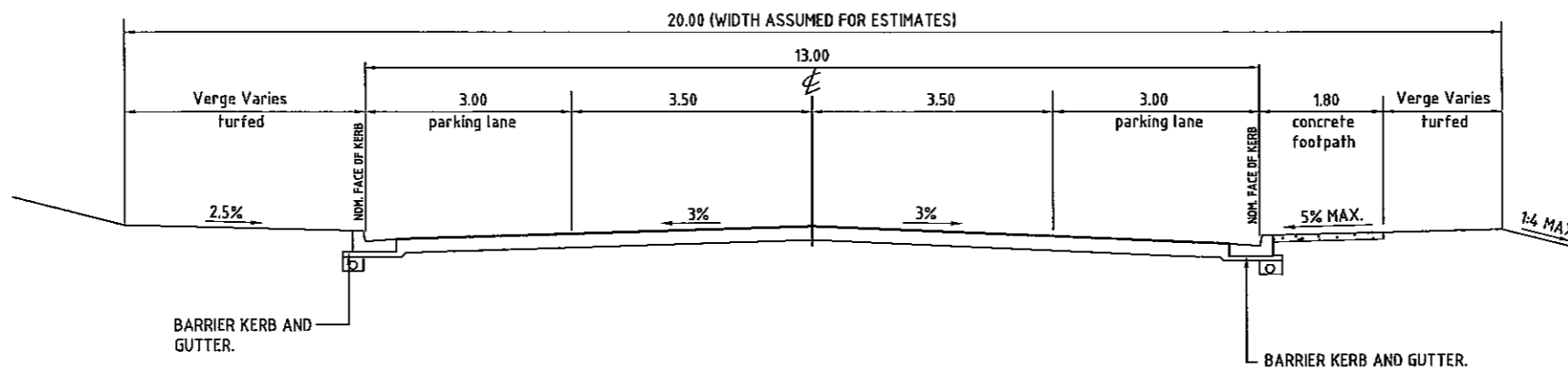
OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 8333	(07) 5538 4847
Brisbane	(07) 3369 9822	(07) 3369 9723
Sydney	(02) 9418 8233	(02) 9416 8529
Sunshine Coast	(07) 5443 2555	(07) 5443 5842
Townsville	(07) 4772 1166	(07) 4772 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2556	(02) 4324 3251
Port Moresby	(0011675) 325 2322	(0011675) 325 0951
Philippines	(0011632) 910 5148	(0011632) 910 5148

BALLINA SHIRE COUNCIL ROAD UPGRADES
HUTLEY DRIVE
 TYPICAL CROSS SECTIONS
 SHEET 1 OF 2

DATE:	NOVEMBER 2008
DRAWING No:	CE008667-02

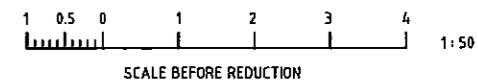


TYPICAL CROSS SECTION 3
 11.2m WIDE ROAD
HUTLEY DRIVE (CH 4500.000 TO CH 5100.000)
 SCALE 1:50



TYPICAL CROSS SECTION 5
 13.0m WIDE ROAD
HUTLEY DRIVE (CH 5750.000 TO END)
 SCALE 1:50

NOTE: SECTION 4 (CH 5100.00 TO 5750.00) IS EXISTING AND NOT REQUIRED TO BE SHOWN



© Cardno (Qld) Pty Ltd All Rights Reserved 2002. Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.		DESIGNED: BSC DRAWN: NS CHECKED: TS RECOMMENDED: PROJ. MAN. SK	A1 DATUM: A.H.D.	 Cardno (Qld) Pty Ltd ACN: 051 074 992 Commercial Centre, late of Copri Gold Coast City, Queensland 4217 Email: gco@gold.cardno.com.au	OFFICES: TELEPHONE FAX Gold Coast (07) 5539 9333 (07) 5538 4847 Brisbane (07) 3368 8822 (07) 3368 5723 Sydney (02) 9418 8233 (02) 9418 8538 Sunshine Coast (07) 5443 2555 (07) 5443 5642 Townsville (07) 4772 1188 (07) 4721 5508 Harvey Bay (07) 4124 5455 (07) 4124 5155 Central Coast (02) 4323 2558 (02) 4324 3251 Port Moresby (6011815) 325 2322 (6011815) 325 0528 Philippines (6011832) 910 5146 (6011832) 910 5146	BALLINA SHIRE COUNCIL ROAD UPGRADES HUTLEY DRIVE TYPICAL CROSS SECTIONS SHEET 2 OF 2	DATE: NOVEMBER 2008 DRAWING No:	CE008667-03	A1
This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.	XREF ATTACHED: G:\2970\02\38\XREFS\... CAD FILE NAME: G:\EPPELL OLSEN\CE008667\HUTLEY DR.dwg	APPROVED: PROJ. DIR.	REC. APPR.		REVISIONS				



M. J. LAWSON
C/O PROTECTIVE ENGINEERING
P.O. BOX 4215
LENNOX HEAD
N.S.W. 2469

G. & J.M. STAMBERG
P.O. BOX 1719
LENNOX HEAD N.S.W.
2478

E.J. & D.P. BOWEN
280 NORTH CREEK RD
LENNOX HEAD
N.S.W. 2478

NEW CULVERT
SIZE TO BE DETERMINED

NEW CULVERT
SIZE TO BE DETERMINED

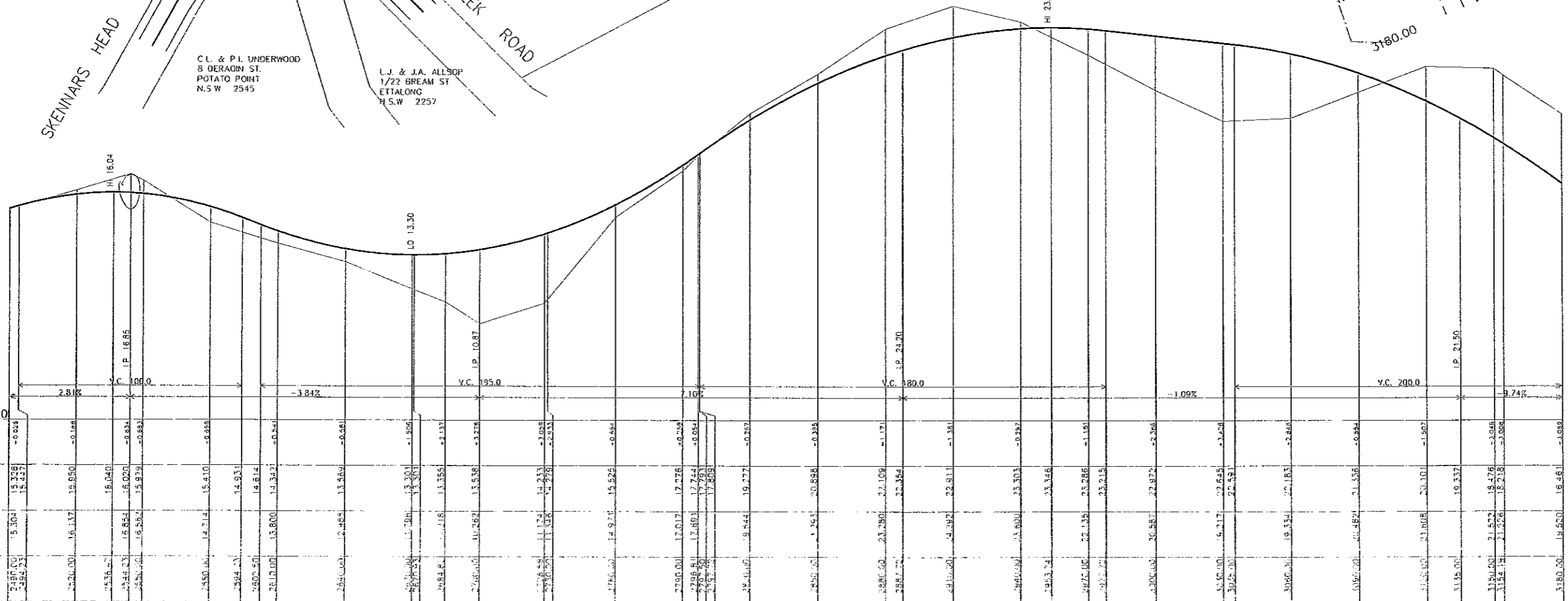
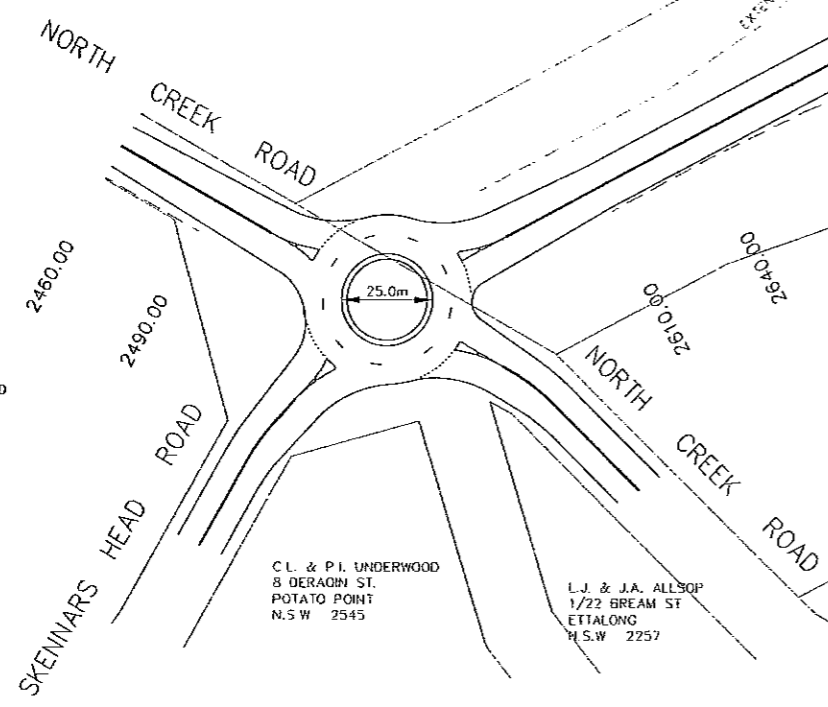
J.G. RITCHE
KINGS FEG
NORTH CREEK RD
LENNOX HEAD
N.S.W. 2478

V.B. & B.J. ZAKARAS
260 NORTH CREEK RD.
LENNOX HEAD
N.S.W. 2478

K. GILES
250 NORTH CREEK RD
LENNOX HEAD
N.S.W. 2478

C.L. & P.I. UNDERWOOD
8 DERAIN ST.
POTATO POINT
N.S.W. 2545

L.J. & J.A. ALLSOP
1/22 BREEM ST
ETTALONG
N.S.W. 2257

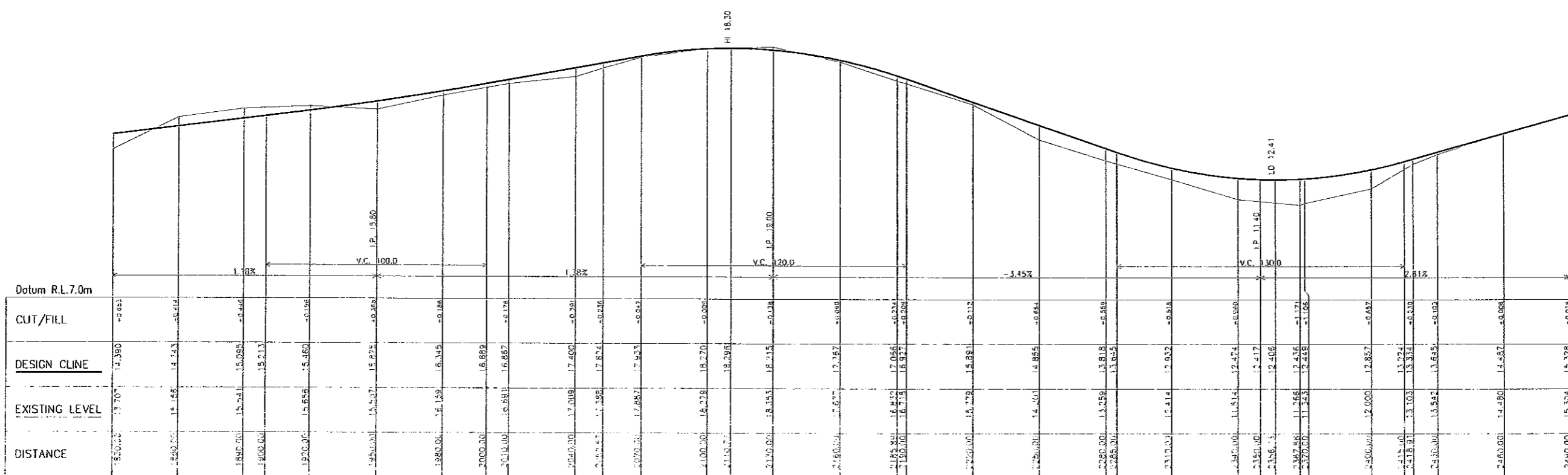
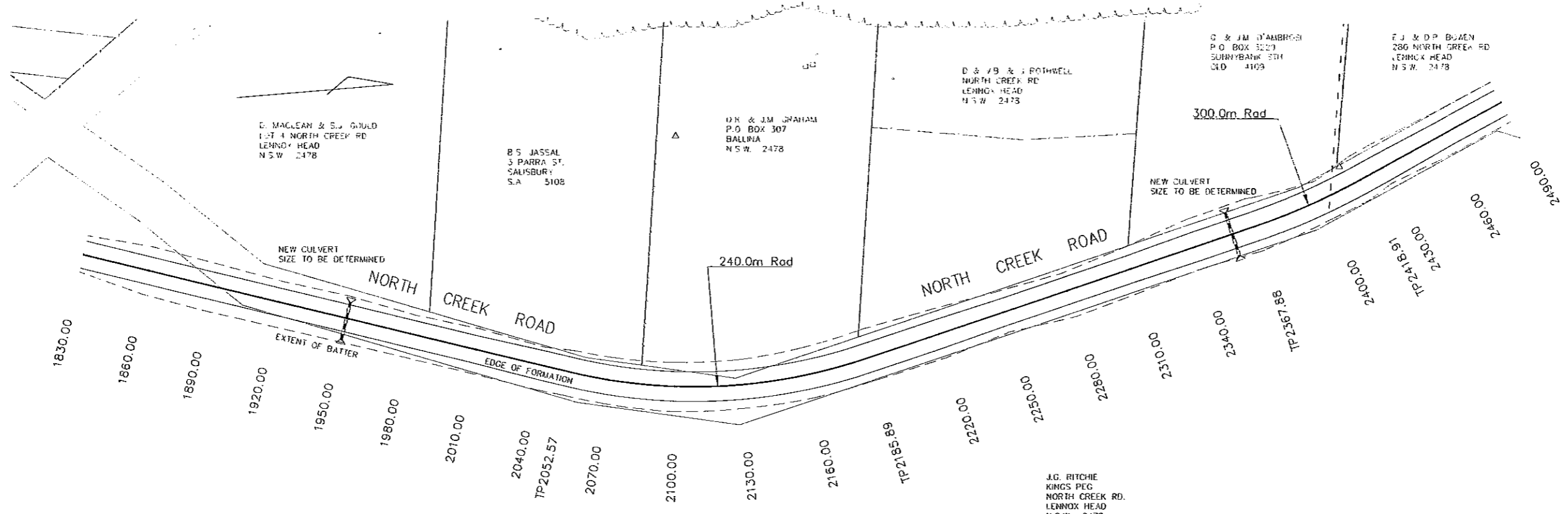


DISTANCE	EXISTING LEVEL	DESIGN CLINE	CUT/FILL
2460.00	15.304	15.378	-0.074
2480.00	15.417	15.417	0.000
2500.00	15.530	15.550	-0.020
2520.00	15.643	15.640	0.003
2540.00	15.756	15.600	0.156
2560.00	15.869	15.519	0.350
2580.00	15.982	15.440	0.542
2600.00	16.095	15.361	0.734
2620.00	16.208	15.282	0.926
2640.00	16.321	15.203	1.118
2660.00	16.434	15.124	1.310
2680.00	16.547	15.045	1.502
2700.00	16.660	14.966	1.694
2720.00	16.773	14.887	1.886
2740.00	16.886	14.808	2.078
2760.00	17.000	14.729	2.270
2780.00	17.113	14.650	2.462
2800.00	17.226	14.571	2.654
2820.00	17.340	14.492	2.846
2840.00	17.453	14.413	3.038
2860.00	17.566	14.334	3.230
2880.00	17.680	14.255	3.422
2900.00	17.793	14.176	3.614
2920.00	17.906	14.097	3.806
2940.00	18.020	14.018	3.998
2960.00	18.133	13.939	4.190
2980.00	18.246	13.860	4.382
3000.00	18.360	13.781	4.574
3020.00	18.473	13.702	4.766
3040.00	18.586	13.623	4.958
3060.00	18.700	13.544	5.150
3080.00	18.813	13.465	5.342
3100.00	18.926	13.386	5.534
3120.00	19.040	13.307	5.726
3140.00	19.153	13.228	5.918
3160.00	19.266	13.149	6.110
3180.00	19.380	13.070	6.302

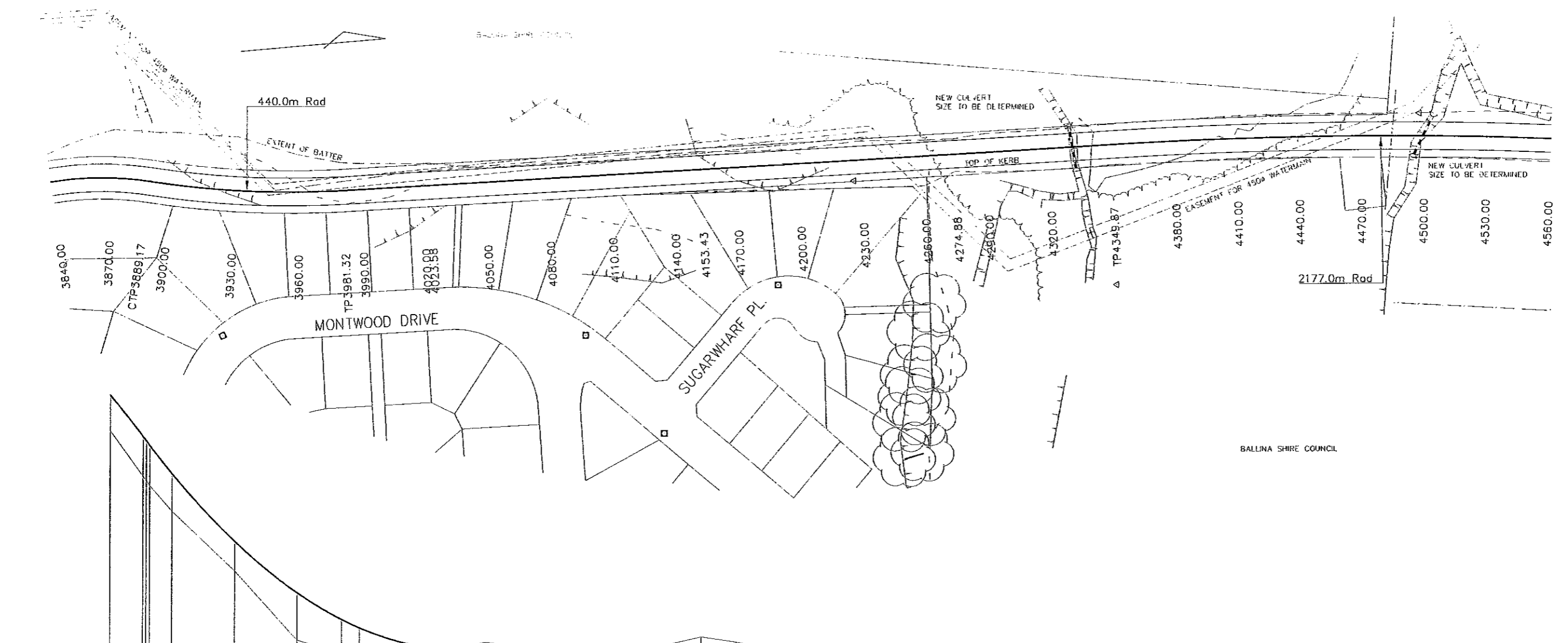
DATE	FEB 2001	DESIGNED	MHF
DATE	FEB 2001	DRAWN	MHF
DATE	FEB 2001	CHECKED	
DATE	FEB 2001	APPROVED	
DATE	FEB 2001	DATE	

SHIRE OF BALLINA
PROPOSED BY-PASS FROM
ANGELS BEACH DRIVE TO HUTLEY DRIVE
CONCEPT PLAN
Scale: Hor 1 : 1000 Vert 1 : 100

No.	Date	By	Change
Amendment			



NO.	DATE	BY	CHKD	APP'D	REVISION												
<table border="1"> <tr> <td>DESIGNED</td> <td>MMF</td> <td rowspan="4"> SHIRE OF BALLINA PROPOSED BY-PASS FROM ANGELS BEACH DRIVE TO HUTLEY DRIVE CONCEPT PLAN </td> </tr> <tr> <td>DRAWN</td> <td>MMF</td> </tr> <tr> <td>CHECKED</td> <td> </td> </tr> <tr> <td>APPROVED</td> <td> </td> </tr> <tr> <td colspan="2">DATE</td> <td> </td> </tr> </table>						DESIGNED	MMF	SHIRE OF BALLINA PROPOSED BY-PASS FROM ANGELS BEACH DRIVE TO HUTLEY DRIVE CONCEPT PLAN	DRAWN	MMF	CHECKED		APPROVED		DATE		
DESIGNED	MMF	SHIRE OF BALLINA PROPOSED BY-PASS FROM ANGELS BEACH DRIVE TO HUTLEY DRIVE CONCEPT PLAN															
DRAWN	MMF																
CHECKED																	
APPROVED																	
DATE																	
Scale: Hor 1 : 1000 Vert 1 : 100					Sheet No. A1												



BALLINA SHIRE COUNCIL

DISTANCE	EXISTING LEVEL	DESIGN CLINE	CUT/FILL
3870.00	13.713	15.400	+1.687
3880.00	13.734	15.434	+1.700
3890.00	13.755	15.468	+1.713
3900.00	13.776	15.502	+1.726
3910.00	13.797	15.536	+1.739
3920.00	13.818	15.570	+1.752
3930.00	13.839	15.604	+1.765
3940.00	13.860	15.638	+1.778
3950.00	13.881	15.672	+1.791
3960.00	13.902	15.706	+1.804
3970.00	13.923	15.740	+1.817
3980.00	13.944	15.774	+1.830
3990.00	13.965	15.808	+1.843
4000.00	13.986	15.842	+1.856
4010.00	14.007	15.876	+1.869
4020.00	14.028	15.910	+1.882
4030.00	14.049	15.944	+1.895
4040.00	14.070	15.978	+1.908
4050.00	14.091	16.012	+1.921
4060.00	14.112	16.046	+1.934
4070.00	14.133	16.080	+1.947
4080.00	14.154	16.114	+1.960
4090.00	14.175	16.148	+1.973
4100.00	14.196	16.182	+1.986
4110.00	14.217	16.216	+1.999
4120.00	14.238	16.250	+2.012
4130.00	14.259	16.284	+2.025
4140.00	14.280	16.318	+2.038
4150.00	14.301	16.352	+2.051
4160.00	14.322	16.386	+2.064
4170.00	14.343	16.420	+2.077
4180.00	14.364	16.454	+2.090
4190.00	14.385	16.488	+2.103
4200.00	14.406	16.522	+2.116
4210.00	14.427	16.556	+2.129
4220.00	14.448	16.590	+2.142
4230.00	14.469	16.624	+2.155
4240.00	14.490	16.658	+2.168
4250.00	14.511	16.692	+2.181
4260.00	14.532	16.726	+2.194
4270.00	14.553	16.760	+2.207
4280.00	14.574	16.794	+2.220
4290.00	14.595	16.828	+2.233
4300.00	14.616	16.862	+2.246
4310.00	14.637	16.896	+2.259
4320.00	14.658	16.930	+2.272
4330.00	14.679	16.964	+2.285
4340.00	14.700	17.000	+2.300
4350.00	14.721	17.034	+2.315
4360.00	14.742	17.070	+2.330
4370.00	14.763	17.104	+2.345
4380.00	14.784	17.140	+2.360
4390.00	14.805	17.174	+2.375
4400.00	14.826	17.210	+2.390
4410.00	14.847	17.246	+2.405
4420.00	14.868	17.282	+2.420
4430.00	14.889	17.318	+2.435
4440.00	14.910	17.354	+2.450
4450.00	14.931	17.390	+2.465
4460.00	14.952	17.426	+2.480
4470.00	14.973	17.462	+2.495
4480.00	14.994	17.498	+2.510
4490.00	15.015	17.534	+2.525
4500.00	15.036	17.570	+2.540
4510.00	15.057	17.606	+2.555
4520.00	15.078	17.642	+2.570
4530.00	15.099	17.678	+2.585
4540.00	15.120	17.714	+2.600
4550.00	15.141	17.750	+2.615
4560.00	15.162	17.786	+2.630

Datum R.L. -4.0

C 240.00
V.C. 145.0
-13.02%

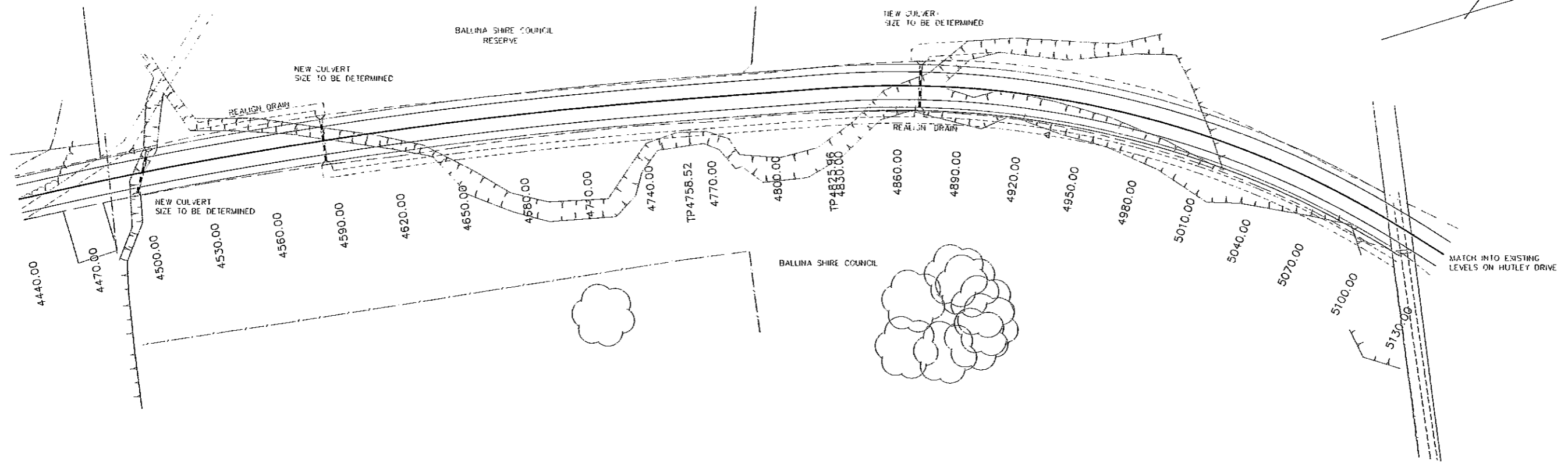
-0.51%

0.50%

I.P. 3.80

I.P. 1.61

DESIGNED: MNI DATE: FEB 2001		SHIRE OF BALLINA PROPOSED BY-PASS FROM ANGELS BEACH DRIVE TO HUTLEY DRIVE CONCEPT PLAN	
DRAWING: B-PASS 001 DWG DATE:		Scale: Hor 1 : 1000 Vert 1 : 100	
PLAN NO.: A1		SHEET: 4 OF 4	



DISTANCE	EXISTING LEVEL	DESIGN CLINE	CUT/FILL
4500.00	0.993	2.810	+1.817
4550.00	1.101	2.860	+1.759
4600.00	1.239	3.110	+1.871
4650.00	1.291	3.260	+1.969
4680.00	2.079	3.410	+1.331
4710.00	2.325	3.560	+1.235
4740.00	2.579	3.710	+1.132
4758.52	2.608	3.802	+1.194
4770.00	2.535	3.860	+1.325
4800.00	2.895	4.010	+1.115
4830.00	2.713	4.135	+1.422
4850.00	2.679	4.180	+1.501
4880.00	3.425	4.310	+0.885
4900.00	2.902	4.460	+1.558
4930.00	2.579	4.610	+2.031
4950.00	2.650	4.760	+2.110
4980.00	2.651	4.910	+2.259
5010.00	2.672	5.060	+2.388
5040.00	3.387	5.210	+1.823
5070.00	3.925	5.360	+1.435
5100.00	3.689	5.510	+1.821
5116.30	4.121	5.591	+1.470
5118.02	2.067	5.600	+3.533
5130.00	3.406	5.660	+2.254
5133.02	3.240	5.675	+2.435

0.50%

	SURVEY: GMP (XXXX) DATE: FEB 2008 BY: LB DRAWING: SUPPLEMENTARY DRAWN: GPC CHECKED: GPC APPROVED: GPC DATE:	DESIGNED: MIF DRAWN: MIF CHECKED: APPROVED: DATE:	SHIRE OF BALLINA PROPOSED BY-PASS FROM ANGELS BEACH DRIVE TO HUTLEY DRIVE CONCEPT PLAN
No. Date By Change Amendments	Scale: Hor 1 : 1000 Vert 1 : 100		Sheet No. A1

Item 15

***Bangalow Road/Hogan Street Intersection – Construction of
New Left-in/Left-out Lanes***

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 15

20-Aug-09

**Construct New Left In / Left Out Lanes
on Bangalow Road**

Included in estimate:

- Left In / Left Out Lanes at intersection between Bangalow Rd and Hogan St

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has been allowed for since the existing provision is expected to be affected by the proposed works.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans.
7. All costs indicated exclude GST.
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. Based on advice from Council, flexible pavement is to be used for the left in / left out lane upgrade works. We have assumed the existing flexible pavement will remain and that additional pavement width will be constructed where necessary as indicated by the overlay on the attached plan.

10. Construction of footpaths has been included to reinstate the current footpath where it may be affected by the works.
11. Allowance has been made for the construction of stormwater gully pits and associated pipework. The proposed alignment will require new gully pits and associated pipework to suit the new kerb location.

**Bangalow Rd / Hogan St Intersection
 Construction of new Left In / Left Out Lanes**

Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section A - General Construction	\$320,900.00
Section B - Specific Drainage + Structures	\$54,000.00
Sub Total Estimate (excl. GST)	\$374,900.00
SUB TOTAL ESTIMATE (excl. GST)	\$374,900.00
CONTINGENCY (20%)	\$74,980.00
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$17,995.20
Engineering Detailed Design (8%)	\$35,990.40
Project Management (4%)	\$17,995.20
Total Estimate (excl. GST)	\$521,860.80
Public Utility Relocation costs provided by Council	\$30,000.00
TOTAL ESTIMATE (excl. GST)	\$551,861

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Item 16	Unit	Qty	Rate	Amount
SECTION A - Left In / Left Out Lanes					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$5,000.00	\$5,000.00
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	100	\$3.00	\$300.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	100	\$10.00	\$1,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	200	\$10.00	\$2,000.00
b)	Stormwater quality (Bio Retention Basins) (Allow 400sq.m @ \$315/sq.m for 1000m road)	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	430	\$150.00	\$64,500.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb - construct or replace as necessary	m	400	\$40.00	\$16,000.00
d)	Concrete Infill of roundabout, medians	m ²	300	\$90.00	\$27,000.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	200	\$30.00	\$6,000.00
f)	Safety Barrier and reflective markers (per meter of carriageway)	m	200	\$150.00	\$30,000.00
g)	Construct footpath (varying widths) (100mm thick reinforced plain concrete)	m ²	50	\$100.00	\$5,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place (Prov. Qty) (per meter of carriageway)	m	200	\$5.00	\$1,000.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPm's as specified (per meter of carriageway)	m	200	\$8.00	\$1,600.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	1,000	\$0.50	\$500.00
b)	Turfing to footpaths and designated areas	m ²	200	\$5.00	\$1,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m	200	\$100.00	\$20,000.00
c)	Electrical - Streetlights	No.	6	\$15,000.00	\$90,000.00
SECTION A - Left In / Left Out Lanes		Total			\$320,900.00

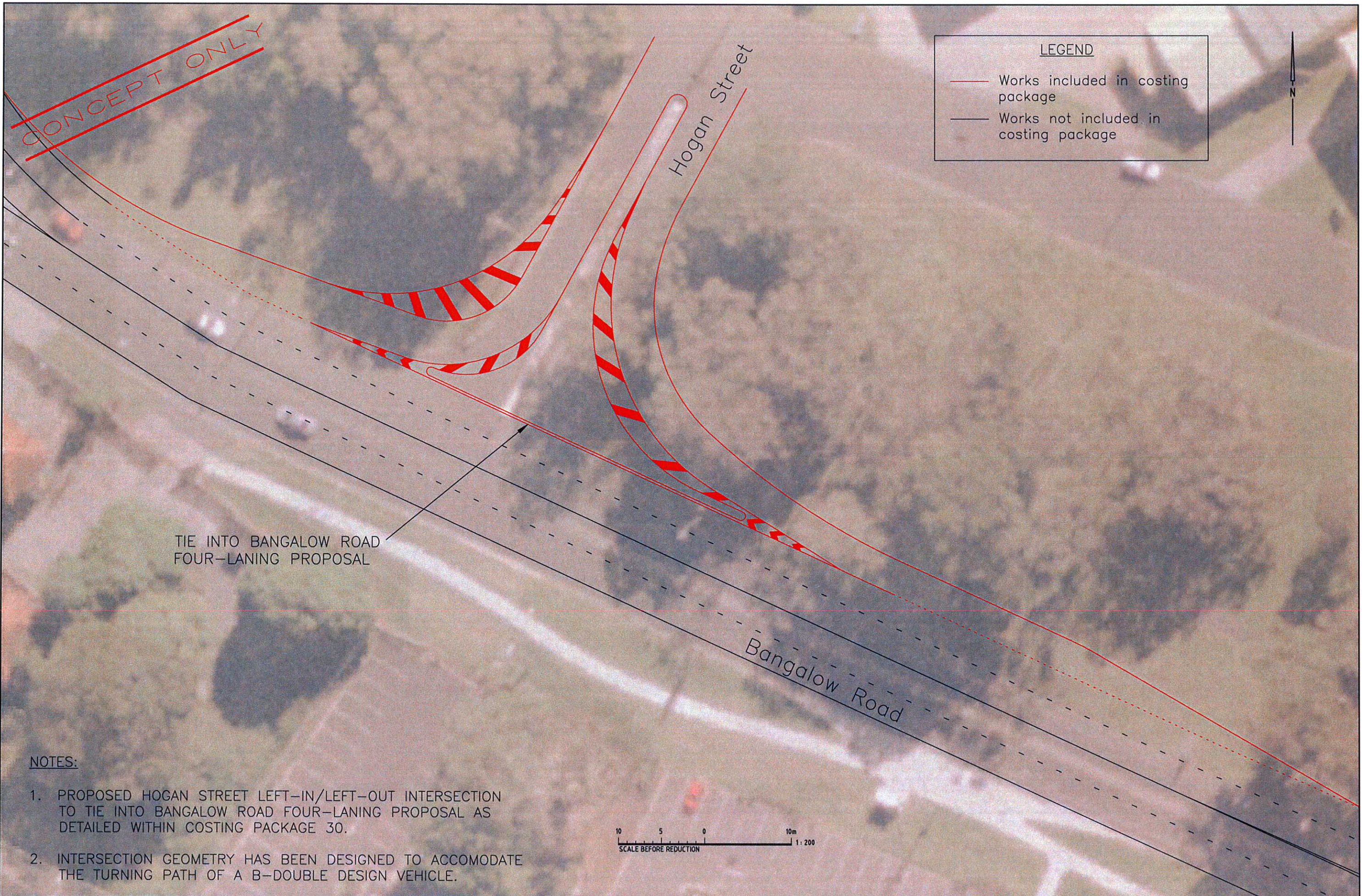


Item	Unit	Qty	Rate	Amount
<u>SECTION B - Specific Drainage</u>				
1 Stormwater Gully Pits including pipes Assume Gully Pit every 40m	m	200	\$270.00	\$54,000.00
SECTION B - Specific Drainage - Total				\$54,000.00

CONCEPT ONLY

LEGEND

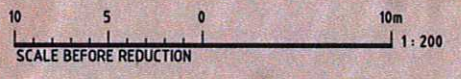
- Works included in costing package
- Works not included in costing package



TIE INTO BANGALOW ROAD
FOUR-LANING PROPOSAL

NOTES:

1. PROPOSED HOGAN STREET LEFT-IN/LEFT-OUT INTERSECTION TO TIE INTO BANGALOW ROAD FOUR-LANING PROPOSAL AS DETAILED WITHIN COSTING PACKAGE 30.
2. INTERSECTION GEOMETRY HAS BEEN DESIGNED TO ACCOMODATE THE TURNING PATH OF A B-DOUBLE DESIGN VEHICLE.



DESIGNED: BSC DRAWN: NS CHECKED: TS RECOMMENDED: PROJ. MAN. SK APPROVED: PROJ. DIR.		A1 DATUM: A.H.D.	<p>Cardno (Qld) Pty Ltd ACN: 051 074 992 Commercial Centre, Isle of Capri Gold Coast City, Queensland 4217 Email: gco@gold.cardno.com.au</p>	OFFICES: Gold Coast (07) 5539 9333 Brisbane (07) 3369 9822 Sydney (02) 9418 8233 Sunshine Coast (07) 5443 2555 Townsville (07) 4772 1168 Hervey Bay (07) 4124 5455 Central Coast (02) 4323 2558 Port Moresby (0011675) 325 2322 Philippines (0011632) 910 5146	FAX: (07) 5538 4647 (07) 3369 9722 (02) 9418 8529 (07) 5443 3642 (07) 4721 2508 (07) 4124 5155 (02) 4324 3251 (0011675) 325 0951 (0011632) 910 5146	BALLINA SHIRE COUNCIL BALLINA SHIRE COUNCIL ROAD UPGRADES CONVERT EXISTING ACCESS TO BANGALOW RD TO LEFT IN/LEFT OUT	DATE: FEBRUARY 2009 DRAWING No: CE008667-15
© Cardno (Qld) Pty Ltd All Rights Reserved 2002. Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.	REVISIONS REC. APPR.	Rv. DATE ISSUED FOR ESTIMATES A 02/2009					

Item 16

***Angels Beach Drive/Sheather Street Intersection –
Construction of New Left-in/Left-out Lanes***

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 16

20-Aug-09

**Construct New Left In / Left Out Lanes
on Angels Beach Drive**

Included in estimate:

- Left In / Left Out Lanes at intersection between Angels Beach Dr and Sheather St

Summary of assumptions and exclusions:

1. Land acquisition costs have been provided by Council and are included within the estimate.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has been allowed for at this new intersection.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans.
7. All costs indicated exclude GST.
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. Based on advice from Council, flexible pavement is to be used for the left in / left out lane upgrade works. Additional pavement will be constructed as indicated by the overlay on the attached plan.
10. Currently there is only an asphalt driveway (Angels Beach Dr access) on the proposed road alignment which does not allow traffic access to Sheather St. The

proposed upgrade will allow vehicle access from Angels Beach Dr to Sheather St and the adjacent industrial area.

11. Construction of footpaths has not been included in this estimate as there are no current footpaths situated in either Angels Beach Dr or Sheather St.
12. Allowance has been made for the construction of stormwater gully pits and associated pipework.

**Angels Beach Dr / Sheather St Intersection
 Construction of new Left In / Left Out Lanes**

Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section A - General Construction	\$315,850.00
Section B - Specific Drainage + Structures	\$40,500.00
Sub Total Estimate (excl. GST)	\$356,350.00
SUB TOTAL ESTIMATE (excl. GST)	\$356,350.00
CONTINGENCY (20%)	\$71,270.00
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$17,104.80
Engineering Detailed Design (8%)	\$34,209.60
Project Management (4%)	\$17,104.80
Total Estimate (excl. GST)	\$496,039.20
Public Utility Relocation costs provided by Council	\$7,000.00
Property Acquisition costs provided by Council	\$88,000.00
TOTAL ESTIMATE (excl. GST)	\$591,039

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Item 16	Unit	Qty	Rate	Amount
SECTION A - Left In / Left Out Lanes					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$5,000.00	\$5,000.00
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	200	\$3.00	\$600.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	100	\$10.00	\$1,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	150	\$10.00	\$1,500.00
b)	Stormwater quality (Bio Retention Basins) (Allow 400sq.m @ \$315/sq.m for 1000m road)	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	600	\$150.00	\$90,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb - construct or replace as necessary	m	320	\$40.00	\$12,800.00
d)	Concrete Infill of roundabout, medians	m ²	200	\$90.00	\$18,000.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	200	\$30.00	\$6,000.00
f)	Safety Barrier and reflective markers (per meter of carriageway)	m	150	\$150.00	\$22,500.00
g)	Construct footpath (varying widths) (100mm thick reinforced plain concrete)	m ²		\$100.00	
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place (Prov. Qty) (per meter of carriageway)	m	150	\$5.00	\$750.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPm's as specified (per meter of carriageway)	m	150	\$8.00	\$1,200.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	1,000	\$0.50	\$500.00
b)	Turfing to footpaths and designated areas	m ²	200	\$5.00	\$1,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m	150	\$100.00	\$15,000.00
c)	Electrical - Streetlights	No.	6	\$15,000.00	\$90,000.00
SECTION A - Left In / Left Out Lanes		Total			\$315,850.00



Item	Unit	Qty	Rate	Amount
<u>SECTION B - Specific Drainage</u>				
1 Stormwater Gully Pits including pipes Assume Gully Pit every 40m	m	150	\$270.00	\$40,500.00
SECTION B - Specific Drainage - Total				\$40,500.00

CONCEPT ONLY

LEGEND

- Works included in costing package
- Works not included in costing package

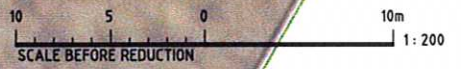
Sheather Street

TIE INTO EXISTING ROADWAY

Angels Beach Drive

NOTES:

1. PROPOSED SHEATHER STREET LEFT-IN/LEFT-OUT INTERSECTION TO TIE INTO ANGELS BEACH DRIVE/BANGALOW ROAD INTERSECTION IMPROVEMENTS AS DETAILED WITHIN COSTING PACKAGE 30.
2. INTERSECTION GEOMETRY HAS BEEN DESIGNED TO ACCOMODATE THE TURNING PATH OF A B-DOUBLE DESIGN VEHICLE.



REV.	DATE	ISSUED FOR ESTIMATES	REVISIONS	REC.	APPR.
A	02/2009	ISSUED FOR ESTIMATES			

© Cardno (Qld) Pty Ltd All Rights Reserved 2002.
 Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.

This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

DESIGNED: BSC	A1	DATUM: A.H.D.
DRAWN: NS		
CHECKED: TS		
RECOMMENDED: PROJ. MAN. SK		APPROVED: PROJ. DIR.

Cardno

Cardno (Qld) Pty Ltd ACN: 051 074 992
 Commercial Centre, Isle of Capri
 Gold Coast City, Queensland 4217
 Email: gco@gold.cardno.com.au

OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 9333	(07) 5538 4847
Brisbane	(07) 3369 9822	(07) 3369 9722
Sydney	(02) 9418 8233	(02) 9418 8529
Sunshine Coast	(07) 5443 2555	(07) 5443 5642
Toowoomba	(07) 4772 1166	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2558	(02) 4324 3251
Port Moresby	(0011675) 325 2322	(0011675) 325 0951
Philippines	(0011632) 910 5146	(0011632) 910 5146

BALLINA SHIRE COUNCIL

BALLINA SHIRE COUNCIL ROAD UPGRADES

CONSTRUCT NEW LEFT IN/LEFT OUT ON ANGELS BEACH DRIVE

DATE: FEBRUARY 2009
DRAWING No: CE008667-16

Item 17

***Skennars Head Road Upgrade from
The Coast Road to North Creek Road***

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 17

20-Aug-09

Skennars Head Rd Upgrade

Included in estimate:

- Upgrade of Skennars Head Rd from The Coast Rd to North Creek Rd
-

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Service Relocation costs have been provided by Council and are included within the cost estimate.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has not been allowed for as it is not currently provided and with the limited level of development along the road (now and in the future) is not anticipated to be required.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans.
7. All costs indicated exclude GST
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. The estimate is based on the upgrade of Skennars Head Rd only. No allowance has been made for the proposed roundabout intersections with North Creek Rd (West) and The Coast Rd (East). These are included as part of works packages 12-14 and 26 respectively.

10. Based on advice from Council the estimate includes widening of the existing two lane road to achieve a 13m carriageway. This will consist of 2 x 3.5m lanes and 2 x 3m shoulders with kerb (see cross section attached). A 2.5m cycleway is also included along the complete longitudinal length of the upgrade on the Southern side.
11. Allowance has been made for the construction of stormwater gully pits and associated pipework.

Skennars Head Rd Upgrade

Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section A - General Construction	\$3,106,350.00
Section B - Specific Drainage	\$445,500.00
Sub Total Estimate (excl. GST)	\$3,551,850.00
SUB TOTAL ESTIMATE (excl. GST)	\$3,551,850.00
CONTINGENCY (20%)	\$710,370.00
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$170,488.80
Engineering Detailed Design (8%)	\$340,977.60
Project Management (4%)	\$170,488.80
Total Estimate (excl. GST)	\$4,944,175.20
Public Utility Relocation costs provided by Council	\$252,000.00
TOTAL ESTIMATE (excl. GST)	\$5,196,175

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.

3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.

4. No geotechnical investigation has been available for review.

5. No preliminary or detailed design has been undertaken.

6. This assessment has been based on the information available at this time.

7. Further contingencies may be necessary based on issues identified during detailed design.

8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.

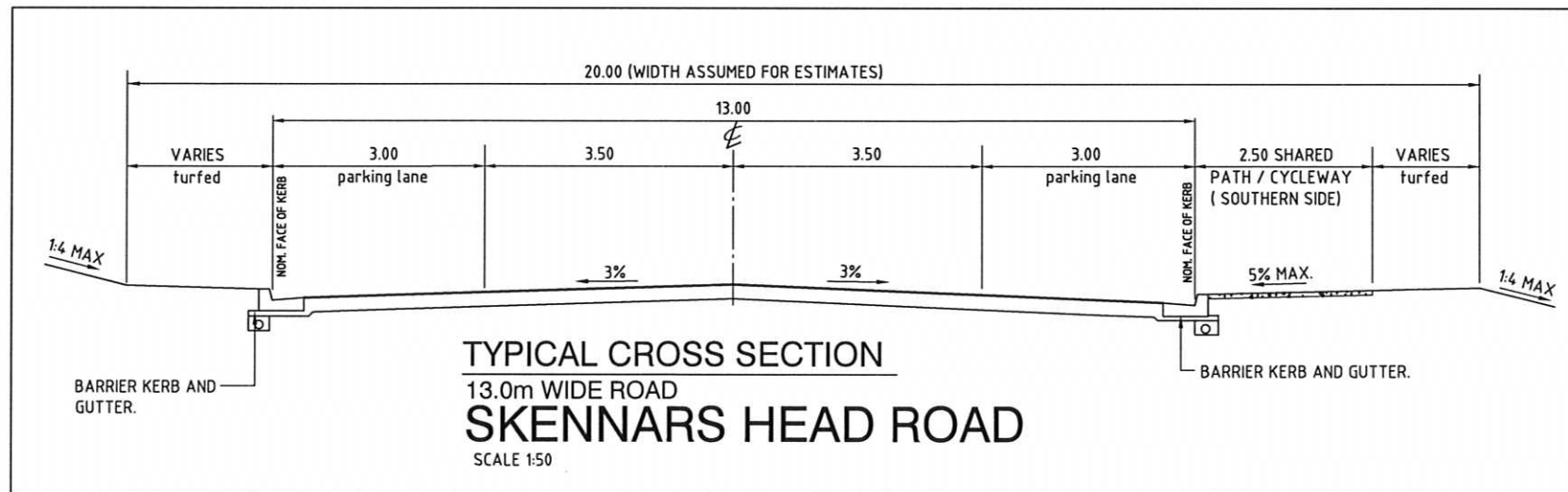
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.

10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
SECTION A - General					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$40,000.00	\$40,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$20,000.00	\$20,000.00
b)	Stripping and stockpiling of topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	2,500	\$3.00	\$7,500.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	10,000	\$10.00	\$100,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	5,000	\$25.00	\$125,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	3,000	\$10.00	\$30,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	1,650	\$126.00	\$207,900.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	10,000	\$150.00	\$1,500,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb to be constructed	m	3,300	\$40.00	\$132,000.00
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²	1,000	\$30.00	\$30,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	1,650	\$150.00	\$247,500.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²	4,200	\$100.00	\$420,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	1,650	\$5.00	\$8,250.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	1,650	\$8.00	\$13,200.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	20,000	\$0.50	\$10,000.00
b)	Turfing to footpaths and designated areas	m ²	4,000	\$5.00	\$20,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$20,000.00	\$20,000.00
b)	Landscaping	m	1,650	\$100.00	\$165,000.00
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION A - General - Total					\$3,106,350.00



Item	Description	Unit	Qty	Rate	Amount
SECTION B - Specific Drainage					
1	Stormwater Gully Pits including pipes (Rate provided per lineal length of road) (Assume Gully Pit intervals - 40m)	m	1,650	\$270.00	\$445,500.00
SECTION B - Specific Drainage - Total					\$445,500.00



LAYOUT PLAN
SCALE 1:2500

LEGEND:

— SKENNARS HEAD ROAD ALIGNMENT



Rev.	DATE	ISSUED FOR ESTIMATES	REVISIONS	REC.	APPR.
A	02/2009	ISSUED FOR ESTIMATES			

© Cardno (Qld) Pty Ltd All Rights Reserved 2002.
Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.
This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

DESIGNED: BSC	A1	DATUM: A.H.D.
DRAWN: NS		
CHECKED: TS		
RECOMMENDED: PROJ. MAN. SK	APPROVED: PROJ. DIR.	

Cardno (Qld) Pty Ltd ACN: 051 074 992
Commercial Centre, Isle of Capri
Gold Coast City, Queensland 4217
Email: gco@gold.cardno.com.au

OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 9333	(07) 5538 4647
Brisbane	(07) 3369 9822	(07) 3369 9722
Sydney	(02) 9416 8233	(02) 9416 8629
Sunshine Coast	(07) 5443 2505	(07) 5443 5942
Townsville	(07) 4772 1166	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2508	(02) 4324 3251
Port Moresby	(0011675) 325 2322	(0011675) 325 0951
Philippines	(0011632) 910 5148	(0011632) 910 5146

BALLINA SHIRE COUNCIL
BALLINA SHIRE COUNCIL ROAD UPGRADES
SKENNARS HEAD - ROAD LAYOUT & CROSS SECTION

DATE: FEBRUARY 2009	
DRAWING No:	
CE008667-17	

Item 18

North Creek Road Upgrade Including

Construction of New Bridge

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE-FINAL STATUS

ITEM 18

20-Aug-09

North Creek Rd Upgrade

Included in estimate:

- Upgrade of North Creek Rd from (450m NE of) Corks Lane to Skennars Head Rd
- Proposed new bridge structure (CH.2200-2300)

Summary of assumptions and exclusions:

1. Land acquisition costs have been provided by Council and are included within the estimate.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have not been allowed for.
4. Streetlighting has not been allowed for as the road has a rural character and is not currently lit.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans.
7. All costs indicated exclude GST
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. The estimate is based on the proposed upgrade of North Creek Road from (450m NE of) Corks Lane to Skennars Head Road. Allowance has been made for the construction of a concrete bridge crossing where required at CH.2200-2300.

10. Some of the existing road bends will require a new alignment based on the minimum design radius for specific speeds as defined in the relevant Austroads guide for the design of rural roads (refer to sketch). The estimate has been carried out assuming that bends requiring a new radius alignment will be constructed to the desirable minimum radius. The absolute minimum radius and existing radius are also shown for reference where necessary. The assessment is based on a posted speed limit of 80km/h.
11. Based on advice from Council the cross section of proposed road is to include 2 x 3.5m lanes with shoulders as detailed on the attached sketch. There is also a 2.5m cycleway included along the complete longitudinal length of the upgrade, nominally located on the eastern side.
12. We have assumed that the current pavement along the route will not be satisfactory for re-use on the upgrade works. Therefore allowance has been made for pavement to cover the full width of the cross section for the nominated length of road.
13. Flood studies or Environmental Impact Assessments to determine the effects of the bridge over the creek have not been allowed for. Similarly, the environmental effects of the proposed curve realignment and road widening (eg. loss of mangrove habitat) have not been considered in determining the upgrade requirements.
14. Bridge details assumed for the estimate are based on a similar structure to that which is currently servicing the Fisheries Creek crossing.
15. The Northern roundabout intersection with Skennars Head Rd is not included with the estimate as it was included as part of Works Package 14.
16. Allowance has been made for environmental bioretention basins to accommodate stormwater runoff and for concrete box culverts to maintain existing drainage channels along the route.

North Creek Road Upgrade + Construction of new bridge

Preliminary Estimate of Construction Costs - Final Status

Summary		Total Estimate
Section A - North Creek Road	.....	\$6,788,650.00
Section B - North Creek Road (CH.0-600)	.....	\$1,396,100.00
Section C - Bridge	.....	\$3,117,300.00
Section D - Specific Drainage	.....	\$120,000.00
Sub Total Estimate (excl. GST)		\$11,422,050.00
SUB TOTAL ESTIMATE (excl. GST)		\$11,422,050.00
CONTINGENCY (20%)		\$2,284,410.00
PROFESSIONAL COSTS -	Route Concept / EIS (4%)	\$548,258.40
	Engineering Detailed Design (8%)	\$1,096,516.80
	Project Management (4%)	\$548,258.40
Total Estimate (excl. GST)		\$15,899,493.60
Public Utility Relocation costs provided by Council		\$150,000.00
Property Acquisition costs provided by Council		\$5,250.00
TOTAL ESTIMATE (excl. GST)		\$16,054,744

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.

3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.

4. No geotechnical investigation has been available for review.

5. No preliminary or detailed design has been undertaken.

6. This assessment has been based on the information available at this time.

7. Further contingencies may be necessary based on issues identified during detailed design.

8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.

9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.

10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Description	Unit	Qty	Rate	Amount
SECTION A - North Creek Rd					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$20,000.00	\$20,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$30,000.00	\$30,000.00
b)	Stripping and stockpiling of topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	5,000	\$3.00	\$15,000.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	2,000	\$10.00	\$20,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	5,000	\$25.00	\$125,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	6,000	\$10.00	\$60,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	2,850	\$126.00	\$359,100.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	31,400	\$150.00	\$4,710,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb to be constructed	m		\$40.00	
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²	6,000	\$30.00	\$180,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	2,850	\$150.00	\$427,500.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²	7,200	\$100.00	\$720,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	2,850	\$5.00	\$14,250.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	2,850	\$8.00	\$22,800.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	30,000	\$0.50	\$15,000.00
b)	Turfing to footpaths and designated areas	m ²	6,000	\$5.00	\$30,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$30,000.00	\$30,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION A - North Creek Rd - Total					\$6,788,650.00



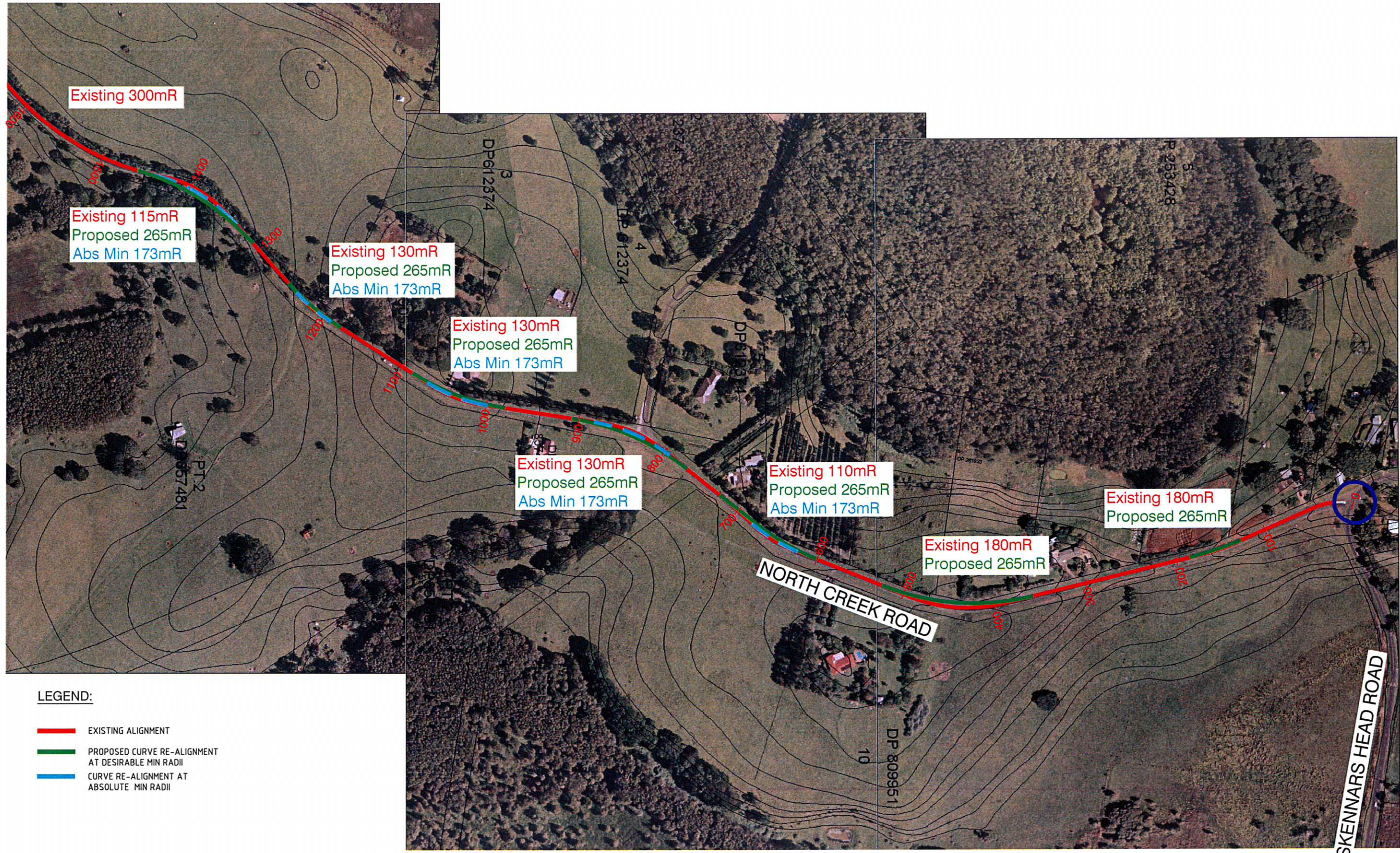
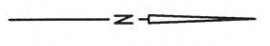
Item	Description	Unit	Qty	Rate	Amount
SECTION B - North Creek Rd (CH.0-600)					
A1	SITE ESTABLISHMENT	Item		\$10,000.00	
A1	PROVISION FOR TRAFFIC CONTROL	PC Item		\$20,000.00	
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$2,000.00	\$2,000.00
b)	Stripping and stockpiling of topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	400	\$3.00	\$1,200.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	500	\$10.00	\$5,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	1,200	\$10.00	\$12,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	600	\$126.00	\$75,600.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	6,600	\$150.00	\$990,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb to be constructed	m		\$40.00	
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²	1,500	\$30.00	\$45,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	600	\$150.00	\$90,000.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²	1,500	\$100.00	\$150,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	600	\$5.00	\$3,000.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	600	\$8.00	\$4,800.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	5,000	\$0.50	\$2,500.00
b)	Turfing to footpaths and designated areas	m ²	1,000	\$5.00	\$5,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION B - North Creek Rd (CH.0-600) - Total					\$1,396,100.00



Item	Description	Unit	Qty	Rate	Amount
Item 9 - Bridge					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A2	PROVISION FOR TRAFFIC CONTROL	PC Item		\$30,000.00	
A3	EARTHWORKS				
a)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	100	\$10.00	\$1,000.00
b)	Silt curtain	m	200	\$50.00	\$10,000.00
A5	BRIDGE				
a)	Concrete Bridge: 2 lanes with pedestrian walkway - 13m wide and 100 m long as per attached plan	m ²	1,300	\$2,200.00	\$2,860,000.00
A6	ROADWORKS				
a)	Flexible pavement (AC)	m ²	1,150	\$150.00	\$172,500.00
b)	Safety Barrier and reflective markers	m	200	\$150.00	\$30,000.00
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place (Prov. Qty) (per meter of carriageway)	Item	1	\$10,000.00	\$10,000.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified (per meter of carriageway)	m	100	\$8.00	\$800.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	2,000	\$0.50	\$1,000.00
b)	Turfing to footpaths and designated areas	m ²	400	\$5.00	\$2,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$20,000.00	\$20,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION A - Bridge - Total					\$3,117,300.00



Item	Description	Unit	Qty	Rate	Amount
SECTION D - Specific Drainage					
1	Culvert crossings under road to maintain existing drainage channels (Assume crossing every 400m) (1500 x 900mm box culvert)	Item	8	\$15,000.00	\$120,000.00
SECTION D - Specific Drainage - Total					\$120,000.00



LEGEND:

- EXISTING ALIGNMENT
- PROPOSED CURVE RE-ALIGNMENT AT DESIRABLE MIN RADII
- CURVE RE-ALIGNMENT AT ABSOLUTE MIN RADII

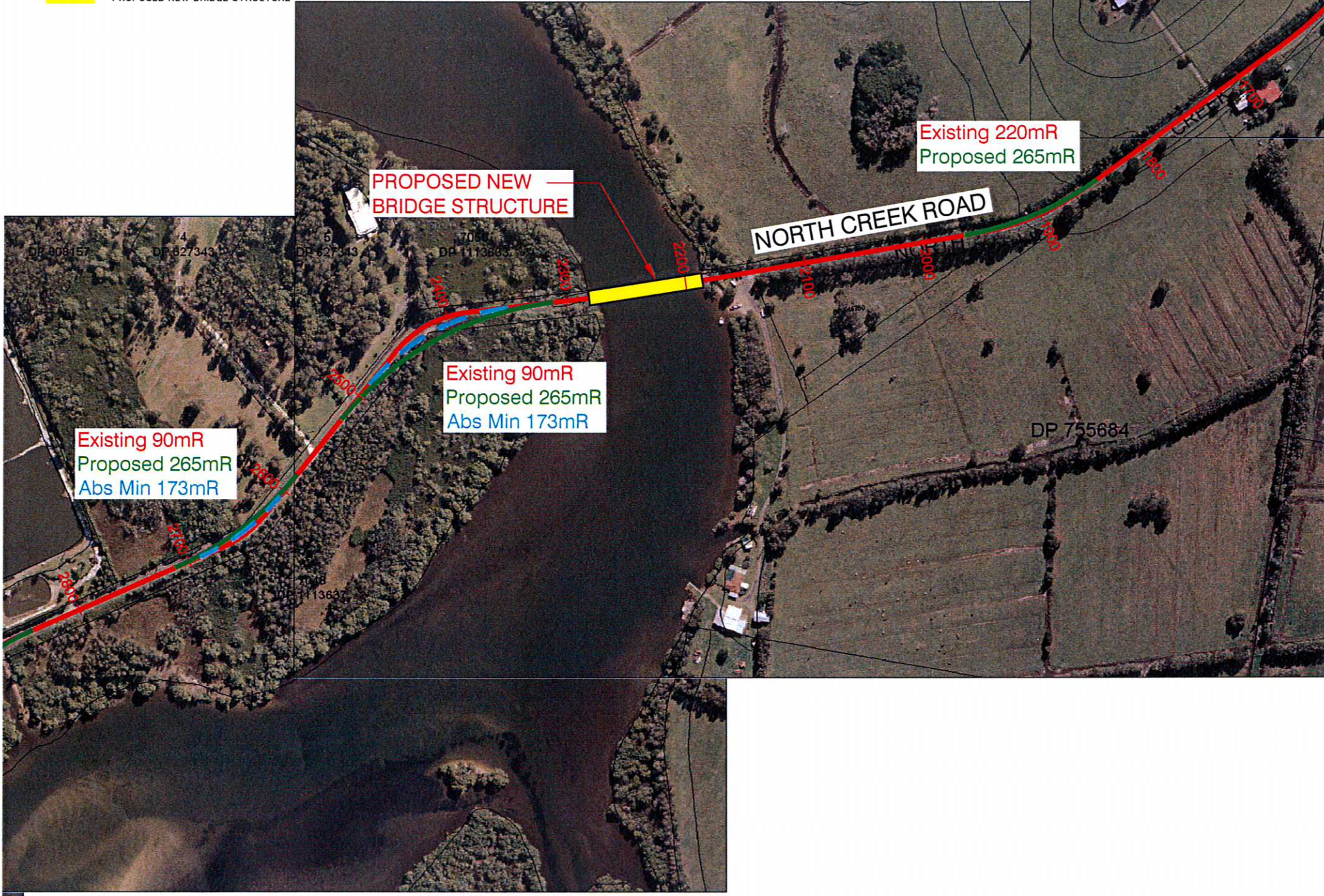
LAYOUT PLAN
SCALE 1:2000



	© Cardno (Qld) Pty Ltd All Rights Reserved 2002. Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.	DESIGNED: BSC DRAWN: NS CHECKED: TS RECOMMENDED: PROJ. MAN. SK APPROVED: PROJ. DIR.	A1 DATUM: A.H.D.	 Cardno (Qld) Pty Ltd ACN: 051 074 992 Commercial Centre, Isle of Capri Gold Coast City, Queensland 4217 Email: gco@gold.cardno.com.au	OFFICES: TELEPHONE FAX Gold Coast (07) 5539 9333 (07) 5538 4647 Brisbane (07) 3369 9822 (07) 3369 9722 Sydney (02) 9416 8233 (02) 9416 8529 Sunshine Coast (07) 5443 2555 (07) 5443 5842 Townsville (07) 4772 1166 (07) 4721 2508 Hervey Bay (07) 4124 5455 (07) 4124 5155 Central Coast (02) 4323 2558 (02) 4324 3251 Port Moreaby (0011675) 325 2322 (0011675) 325 0951 Philippines (0011632) 910 5146 (0011632) 910 5146	BALLINA SHIRE COUNCIL BALLINA SHIRE COUNCIL ROAD UPGRADES NORTH CREEK ROAD - LAYOUT & CROSS SECTION Sh 1 of 3	DATE: FEBRUARY 2009 DRAWING No: CE008667-18	
This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.	Rv. DATE ISSUED FOR ESTIMATES REVISIONS REC. APPR.							

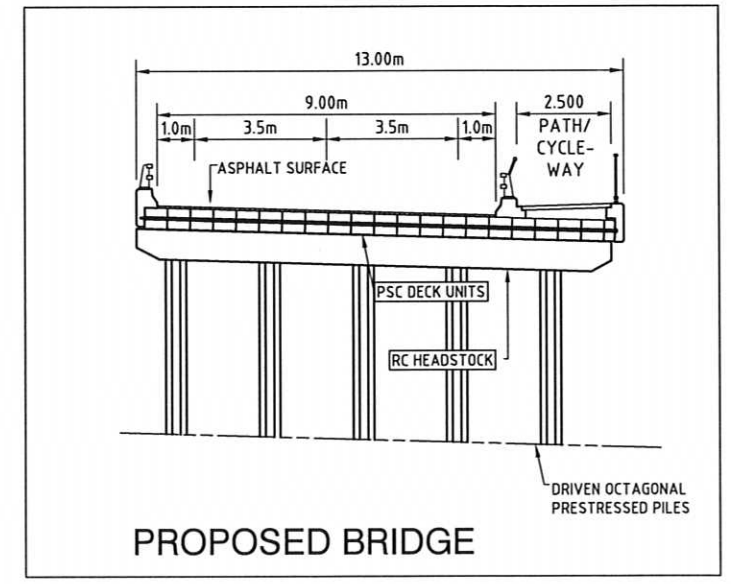
LEGEND:

- EXISTING ALIGNMENT
- PROPOSED CURVE RE-ALIGNMENT AT DESIRABLE MIN RADII
- CURVE RE-ALIGNMENT AT ABSOLUTE MIN RADII
- PROPOSED NEW BRIDGE STRUCTURE



LAYOUT PLAN
SCALE 1:2000

FOR INFORMATION ONLY



PROPOSED BRIDGE



SCALE BEFORE REDUCTION

Rev.	DATE	ISSUED FOR ESTIMATES	REVISIONS	REC.	APPR.
A	02/2009	ISSUED FOR ESTIMATES			

© Cardno (Qld) Pty Ltd All Rights Reserved 2002.
Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.

This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

DESIGNED:	BSC	A1	DATUM: A.H.D.
DRAWN:	NS		
CHECKED:	TS	RECOMMENDED:	PROJ. MAN. SK
		APPROVED:	PROJ. DIR.

Cardno

Cardno (Qld) Pty Ltd ACN: 051 074 992
Commercial Centre, Isle of Capri
Gold Coast City, Queensland 4217
Email: gco@gold.cardno.com.au

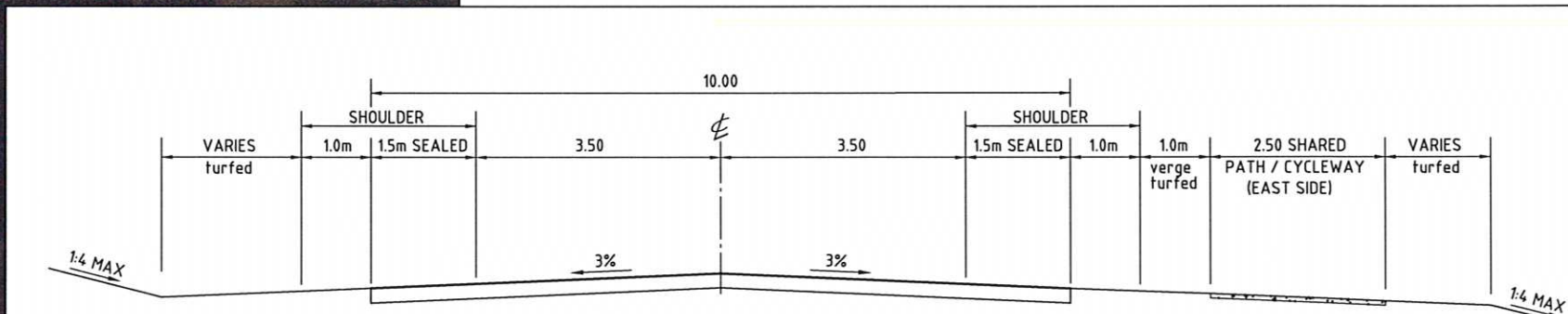
OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 9333	(07) 5538 4647
Brisbane	(07) 3369 9822	(07) 3369 9722
Sydney	(02) 9416 8233	(02) 9416 8529
Sunshine Coast	(07) 5443 2555	(07) 5443 5642
Townsville	(07) 4772 1166	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2558	(02) 4324 3251
Port Moreaby	(0011675) 325 2322	(0011675) 325 0951
Philippines	(0011632) 910 5146	(0011632) 910 5146

BALLINA SHIRE COUNCIL
BALLINA SHIRE COUNCIL ROAD UPGRADES
NORTH CREEK ROAD - LAYOUT & CROSS SECTION Sh 2 of 3

DATE:	FEBRUARY 2009
DRAWING No:	CE008667-18

LEGEND:

- EXISTING ALIGNMENT
- PROPOSED CURVE RE-ALIGNMENT AT DESIRABLE MIN RADII
- CURVE RE-ALIGNMENT AT ABSOLUTE MIN RADII



TYPICAL CROSS SECTION
 10.0m WIDE ROAD
NORTH CREEK ROAD
 SCALE 1:50

LAYOUT PLAN
 SCALE 1:2000



© Cardno (Qld) Pty Ltd All Rights Reserved 2002. Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.	
DESIGNED: BSC	DRAWN: NS
CHECKED: TS	RECOMMENDED: PROJ. MAN. SK
This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.	
A 02/2009 ISSUED FOR ESTIMATES	REC. APPR.
Rv. DATE REVISIONS	

DESIGNED: BSC	A1 DATUM: A.H.D.
DRAWN: NS	
CHECKED: TS	
RECOMMENDED: PROJ. MAN. SK	APPROVED: PROJ. DIR.

Cardno
 Cardno (Qld) Pty Ltd ACN: 051 074 992
 Commercial Centre, Isle of Capri
 Gold Coast City, Queensland 4217
 Email: gco@gold.cardno.com.au

OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 9333	(07) 5536 4647
Brisbane	(07) 3369 9822	(07) 3369 9722
Sydney	(02) 9416 8233	(02) 9416 8529
Sunshine Coast	(07) 5443 2555	(07) 5443 5642
Townsville	(07) 4772 1166	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2558	(02) 4324 3251
Port Moresby	(0011875) 325 2322	(0011875) 325 0951
Philippines	(0011632) 910 5146	(0011632) 910 5146

BALLINA SHIRE COUNCIL
 BALLINA SHIRE COUNCIL ROAD UPGRADES
NORTH CREEK ROAD - LAYOUT & CROSS SECTION Sh 3 of 3

DATE: FEBRUARY 2009
DRAWING No: CE008667-18

Item 19

Skennars Head Distributor

BALLINA SHIRE COUNCIL

SECTION 94 CONTRIBUTIONS

COST ESTIMATE – FINAL STATUS

ITEM 19

20-Aug-09

Skennars Head Distributor

Included in estimate:

- Upgrade of Skennars Head Distributor from Angels Beach Dr to North Creek Rd including upgrade of North Creek Rd (CH.00 – 600)
- Southern dual-lane roundabout at intersection with Angels Beach Dr

Summary of assumptions and exclusions:

1. Land acquisition costs have been provided by Council and are included within the estimate.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have not been allowed for.
4. Streetlighting has not been allowed for as the road has a rural character and is located between two rural roads currently unserved by streetlights.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans.
7. All costs indicated exclude GST
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. The estimate is based on the proposed construction of Skennars Head Distributor from Angels Beach Dr to North Creek Rd. At the Southern intersection with Angels Beach Dr, allowance has been made for the construction of a dual lane roundabout.

10. Based on advice from Council the cross-section of the proposed road is to include 2 x 3.5m lanes with shoulders as detailed on the attached sketch. There is also a 2.5m cycleway included along the length of the upgrade, nominally on the eastern side.
11. At the proposed intersection with existing North Creek Rd it is assumed that the distributor will flow onto North Creek Rd as the main thoroughfare continuing North. (see attached sketch) A T-intersection has been implemented to accommodate the limited amount of traffic arriving at this intersection from the southern section of North Creek Rd. (It is assumed that the southern section of North Creek Road would not be upgraded and that no bridge would be built along the North Creek Road alignment if Skennars Head Distributor is constructed)
12. The upgrade of the existing section of North Creek Rd from CH.0-600 is included in this estimate. The Northern roundabout intersection with Skennars Head Rd is not included with the estimate as it was included as part of Works Package 14.
13. Some of the existing road bends on the northern section of North Creek Road will require a new alignment based on the minimum design radius for specific speeds as defined in the relevant Austroads guide for the design of rural roads (refer to sketch). The estimate has been carried out assuming that bends requiring a new radius alignment will be constructed to the desirable minimum radius. The absolute minimum radius and existing radius are also shown for reference where necessary. The assessment is based on a posted speed limit of 80km/h.
14. Allowance has been made for environmental bioretention basins to accommodate stormwater runoff.

Skennars Head Distributor + North Creek Road (CH.00-600)

Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section A - Skennars Head Distributor	\$4,856,100.00
Section B - North Creek Road (CH.0-600)	\$1,396,100.00
Section C - Roundabout	\$468,000.00
Sub Total Estimate (excl. GST) \$6,720,200.00	
SUB TOTAL ESTIMATE (excl. GST) \$6,720,200.00	
CONTINGENCY (20%) \$1,344,040.00	
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$322,569.60
Engineering Detailed Design (8%)	\$645,139.20
Project Management (4%)	\$322,569.60
Total Estimate (excl. GST) \$9,354,518.40	
Public Utility Relocation costs provided by Council	\$101,000.00
Property Acquisition costs provided by Council	\$15,750.00
TOTAL ESTIMATE (excl. GST) \$9,471,268	

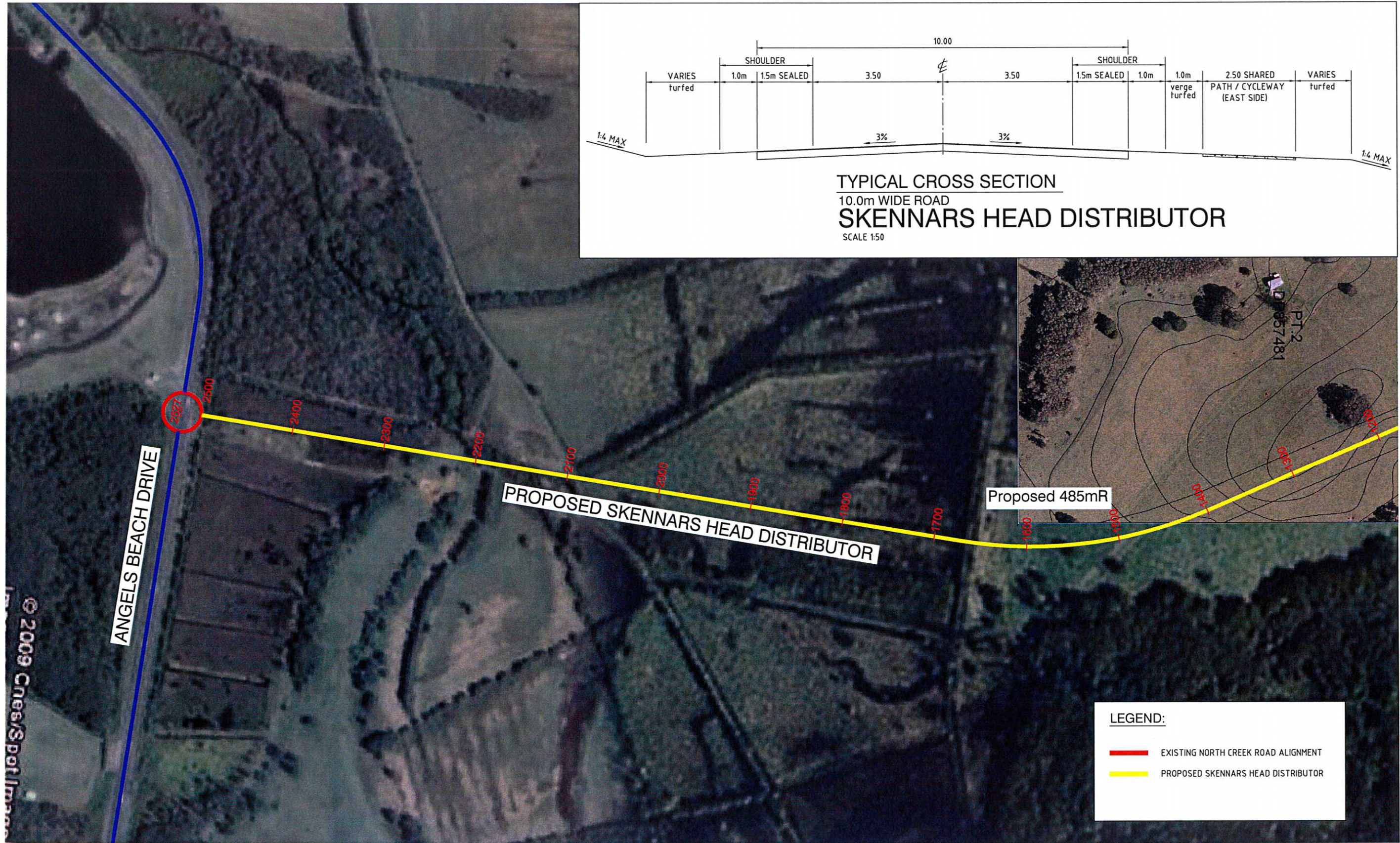
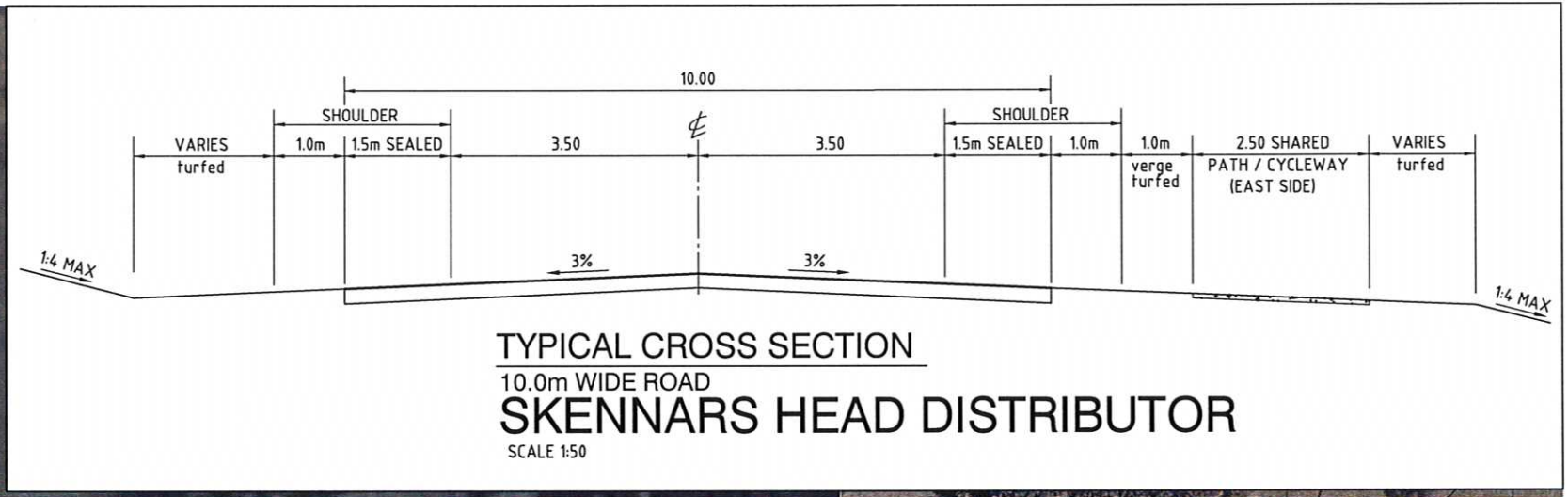
1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Description	Unit	Qty	Rate	Amount
SECTION A - Skennars Head Distributor					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$20,000.00	\$20,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$20,000.00	\$20,000.00
b)	Stripping and stockpiling of topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	4,000	\$3.00	\$12,000.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	2,000	\$10.00	\$20,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	20,000	\$25.00	\$500,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	4,000	\$10.00	\$40,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	1,900	\$126.00	\$239,400.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	21,000	\$150.00	\$3,150,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb to be constructed	m		\$40.00	
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²		\$30.00	
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	1,900	\$150.00	\$285,000.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²	4,750	\$100.00	\$475,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	1,900	\$5.00	\$9,500.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	1,900	\$8.00	\$15,200.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	20,000	\$0.50	\$10,000.00
b)	Turfing to footpaths and designated areas	m ²	4,000	\$5.00	\$20,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$30,000.00	\$30,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION A - Skennars Head Distributor - Total					\$4,856,100.00

Item	Description	Unit	Qty	Rate	Amount
SECTION B - North Creek Rd (CH.0-600)					
A1	SITE ESTABLISHMENT	Item		\$10,000.00	
A1	PROVISION FOR TRAFFIC CONTROL	PC Item		\$20,000.00	
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$2,000.00	\$2,000.00
b)	Stripping and stockpiling of topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	400	\$3.00	\$1,200.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	500	\$10.00	\$5,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	1,200	\$10.00	\$12,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	600	\$126.00	\$75,600.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	6,600	\$150.00	\$990,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb to be constructed	m		\$40.00	
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²	1,500	\$30.00	\$45,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	600	\$150.00	\$90,000.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²	1,500	\$100.00	\$150,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	600	\$5.00	\$3,000.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	600	\$8.00	\$4,800.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	5,000	\$0.50	\$2,500.00
b)	Turfing to footpaths and designated areas	m ²	1,000	\$5.00	\$5,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION B - North Creek Rd (CH.0-600) - Total					\$1,396,100.00

Item	Description	Unit	Qty	Rate	Amount
SECTION C - Roundabout					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$2,000.00	\$2,000.00
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	50	\$3.00	\$150.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	50	\$10.00	\$500.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	200	\$10.00	\$2,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	150	\$126.00	\$18,900.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	2,500	\$120.00	\$300,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb - construct or replace as necessary	m	400	\$40.00	\$16,000.00
d)	Concrete Infill of roundabout, medians	m ²	250	\$90.00	\$22,500.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	1,000	\$30.00	\$30,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	150	\$150.00	\$22,500.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$60.00	
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	150	\$5.00	\$750.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	150	\$8.00	\$1,200.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	1,000	\$0.50	\$500.00
b)	Turfing to footpaths and designated areas	m ²	200	\$5.00	\$1,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION C - Roundabout - Total					\$468,000.00



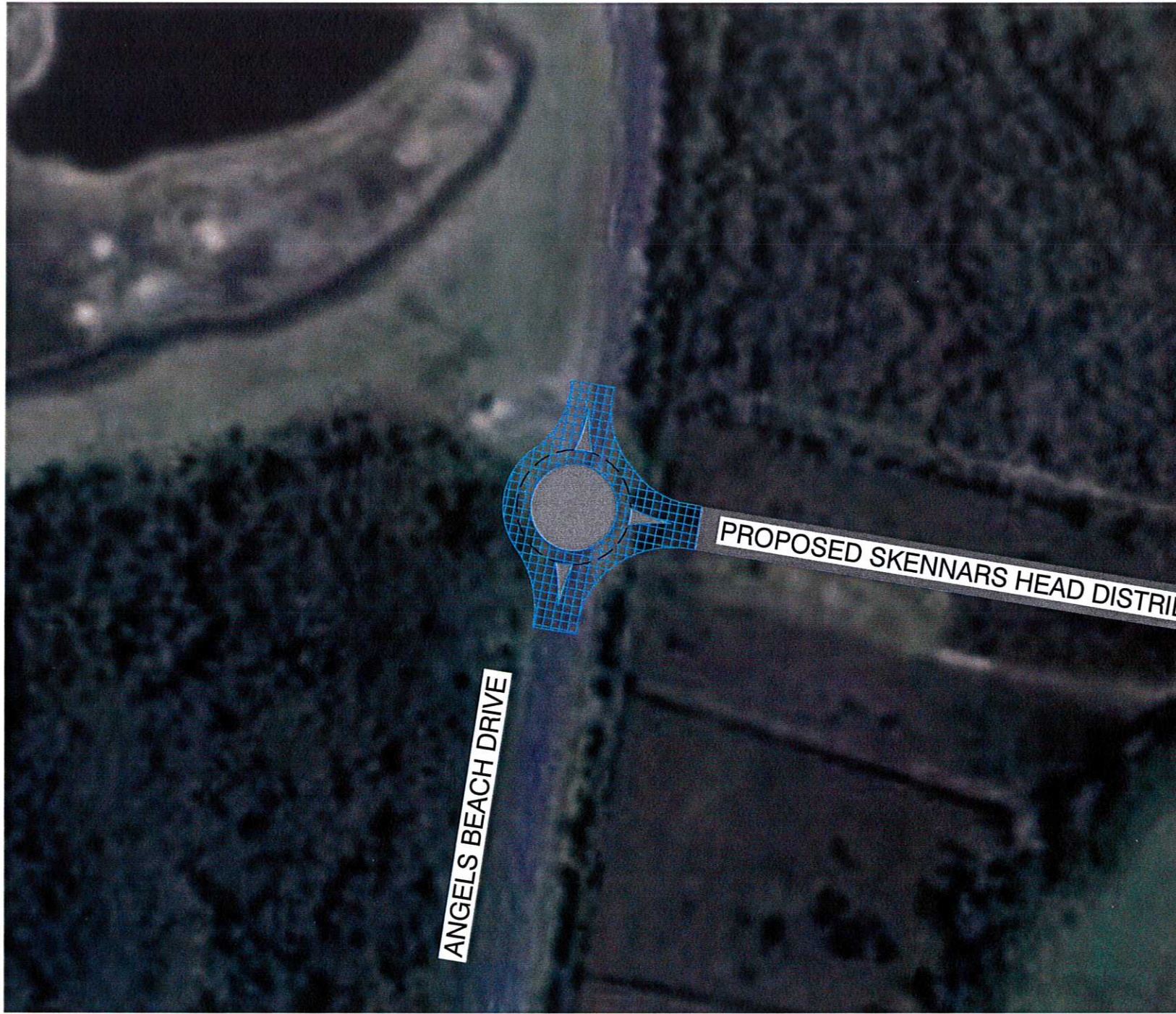
LEGEND:

	EXISTING NORTH CREEK ROAD ALIGNMENT
	PROPOSED SKENNARS HEAD DISTRIBUTOR

LAYOUT PLAN
SCALE 1:2000



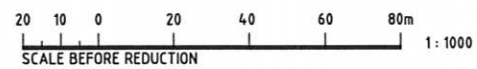
© Cardno (Qld) Pty Ltd All Rights Reserved 2002. Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.		DESIGNED: BSC DRAWN: NS CHECKED: TS RECOMMENDED: PROJ. MAN. SK APPROVED: PROJ. DIR.	A1 DATUM: A.H.D.		OFFICES: Gold Coast (07) 5539 9333 Brisbane (07) 3369 9822 Sydney (02) 9416 8233 Sunshine Coast (07) 5443 2555 Townsville (07) 4772 1166 Hervey Bay (07) 4124 5455 Central Coast (02) 4323 2558 Port Moresby (0011675) 325 2322 Philippines (0011632) 910 5146	TELEPHONE: (07) 5538 4647 (07) 3369 9722 (02) 9416 8229 (07) 5443 5642 (07) 4721 2508 (07) 4124 5155 (02) 4324 3251 (0011675) 325 0951 (0011632) 910 5146	BALLINA SHIRE COUNCIL BALLINA SHIRE COUNCIL ROAD UPGRADES SKENNARS HEAD DISTRIBUTOR - ROAD LAYOUT & CROSS SECTIONS Sh 2 of 2	DATE: FEBRUARY 2009 DRAWING No: CE008667-19
A 02/2009 ISSUED FOR ESTIMATES Rv. DATE REVISIONS REC. APPR	This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.		Cardno (Qld) Pty Ltd ACN: 051 074 992 Commercial Centre, Isle of Capri Gold Coast City, Queensland 4217 Email: gco@gold.cardno.com.au					



LAYOUT PLAN
SCALE 1:1000

LEGEND:

 PROPOSED NEW AC PAVEMENT



		© Cardno (Qld) Pty Ltd All Rights Reserved 2002. Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.		DESIGNED: BSC	A1	DATUM: A.H.D.	 Cardno (Qld) Pty Ltd ACN: 051 074 992 Commercial Centre, Isle of Capri Gold Coast City, Queensland 4217 Email: gco@gold.cardno.com.au	OFFICES:	TELEPHONE	FAX	BALLINA SHIRE COUNCIL	BALLINA SHIRE COUNCIL ROAD UPGRADES ANGELS BEACH DRIVE & SKENNARS HEAD DISTRIBUTOR INTERSECTION	DATE: FEBRUARY 2009			
		This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.		DRAWN: NS				RECOMMENDED: PROJ. MAN. SK	APPROVED: PROJ. DIR.	Gold Coast (07) 5539 9333 (07) 5536 4647			Brisbane (07) 3369 9822 (07) 3369 9722	Sydney (02) 9418 8233 (02) 9418 8229	Sunshine Coast (07) 5443 2555 (07) 5443 2542	Townsville (07) 4772 1166 (07) 4721 2508	Hervey Bay (07) 4124 5455 (07) 4124 5155	Central Coast (02) 4323 2558 (02) 4324 3251	Port Moresby (0011875) 325 2322 (0011875) 325 0951	Philippines (0011632) 910 5146 (0011632) 910 5146	DRAWING No: CE008667-19
Rv.	DATE	REVISIONS	REC.	APPR.									Rv.			

Item 20

Ross Lane Improvements

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 20

20-Aug-09

**Ross Lane Improvements
(2 Sections)**

Included in estimate:

- Upgrade existing sections of Ross Lane to the East and West of the proposed Cumbalum North-South link.

Summary of assumptions and exclusions:

1. Land acquisition costs have been provided by Council and are included within the estimate.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have not been allowed for.
4. Streetlighting has not been allowed for as the road has a rural character and is not currently lit.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans.
7. All costs indicated exclude GST
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. The estimate is based on a road design which varies in cross section. West of the Cumbalum Way intersection through to the Pacific Highway, the estimate allows for the addition of two extra traffic lanes to the existing cross section to provide 4 x 3.5m traffic lanes, and 2 x 2.5m shoulders of which 1.5m is sealed.

East of the Cumbalum Way intersection through to The Coast Rd, the estimate allows for additional pavement width to provide 2 x 3.5m traffic lanes and 2 x 2.5m shoulders of which 1.5m is sealed.

10. The proposed roundabout intersection between Ross Lane and the proposed Cumbalum North-South Link is not included in this estimate. Refer to Works Package 31 (Cumbalum Nth-Sth Link) for this estimate.
11. Some of the existing road bends will require a new alignment based on the minimum design radius for specific speeds as defined in the relevant Austroads guide for the design of rural roads (refer to sketch). The estimate has been carried out assuming that bends requiring a new radius alignment will be constructed to the desirable minimum radius. The absolute minimum radius and existing radius are also shown for reference. The assessment is based on existing posted speed limits of 80km/h and 100km/h West and East of CH.2050 respectively (as shown on the attached sketch).
12. In some cases, particularly at the Western end of Ross Lane, the existing radius is close to or exceeds the absolute minimum radius. While this is less than the desirable minimum radius, it is considered to be acceptable in the context of the property impacts that would otherwise arise to provide an alignment that meets the desirable standard. In these particular cases, no allowance for improving the alignment has been made.
13. Allowance has been made for the construction of concrete box culverts at approximate CH.3820 (assumed individual culvert sizes 3m leg x 3m span) to collectively bridge a total drainage width of approximately 21m. The width of road across this drainage span is assumed to be 9m (2 x 3.5m lanes + 2 x 1m shoulders) with additional allowance made for the construction of parapets on either side.

Ross Lane Improvements

Preliminary Estimate of Construction Costs - Final Status

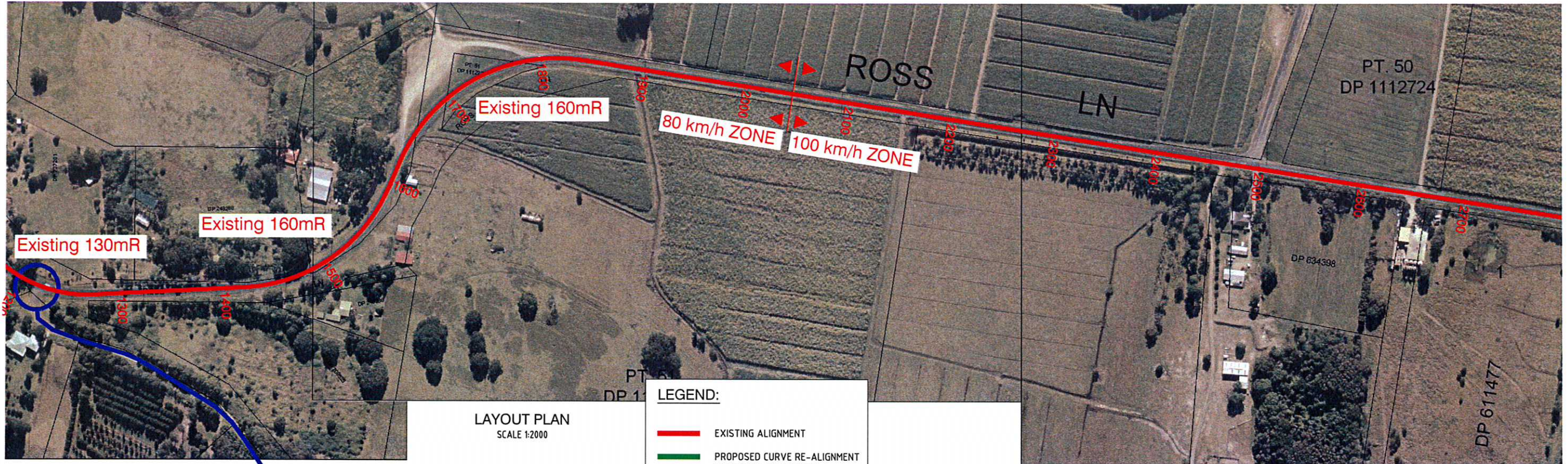
Summary		Total Estimate
Section A - General Construction	.....	\$7,841,300.00
Section B - Specific Drainage	.....	\$360,000.00
Sub Total Estimate (excl. GST)		\$8,201,300.00
SUB TOTAL ESTIMATE (excl. GST)		\$8,201,300.00
CONTINGENCY (20%)		\$1,640,260.00
PROFESSIONAL COSTS -	Route Concept / EIS (4%)	\$393,662.40
	Engineering Detailed Design (8%)	\$787,324.80
	Project Management (4%)	\$393,662.40
Total Estimate (excl. GST)		\$11,416,209.60
Public Utility Relocation costs provided by Council		\$254,500.00
Property Acquisition costs provided by Council		\$77,000.00
TOTAL ESTIMATE (excl. GST)		\$11,747,710

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
SECTION A - General					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$50,000.00	\$50,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$60,000.00	\$60,000.00
b)	Stripping and stockpiling of topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	2,500	\$3.00	\$7,500.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	30,000	\$10.00	\$300,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³	2,000	\$25.00	\$50,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	10,000	\$10.00	\$100,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	5,800	\$126.00	\$730,800.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	35,000	\$150.00	\$5,250,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb to be constructed	m		\$40.00	
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²	5,000	\$30.00	\$150,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	5,800	\$150.00	\$870,000.00
g)	Reinforced concrete parapet to culvert crossing (1.2m high)	m	42	\$300.00	\$12,600.00
h)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$100.00	
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	5,800	\$5.00	\$29,000.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPm's as specified <i>(per meter of carriageway)</i>	m	5,800	\$8.00	\$46,400.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	50,000	\$0.50	\$25,000.00
b)	Turfing to footpaths and designated areas	m ²	20,000	\$5.00	\$100,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$50,000.00	\$50,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION A - General - Total					\$7,841,300.00



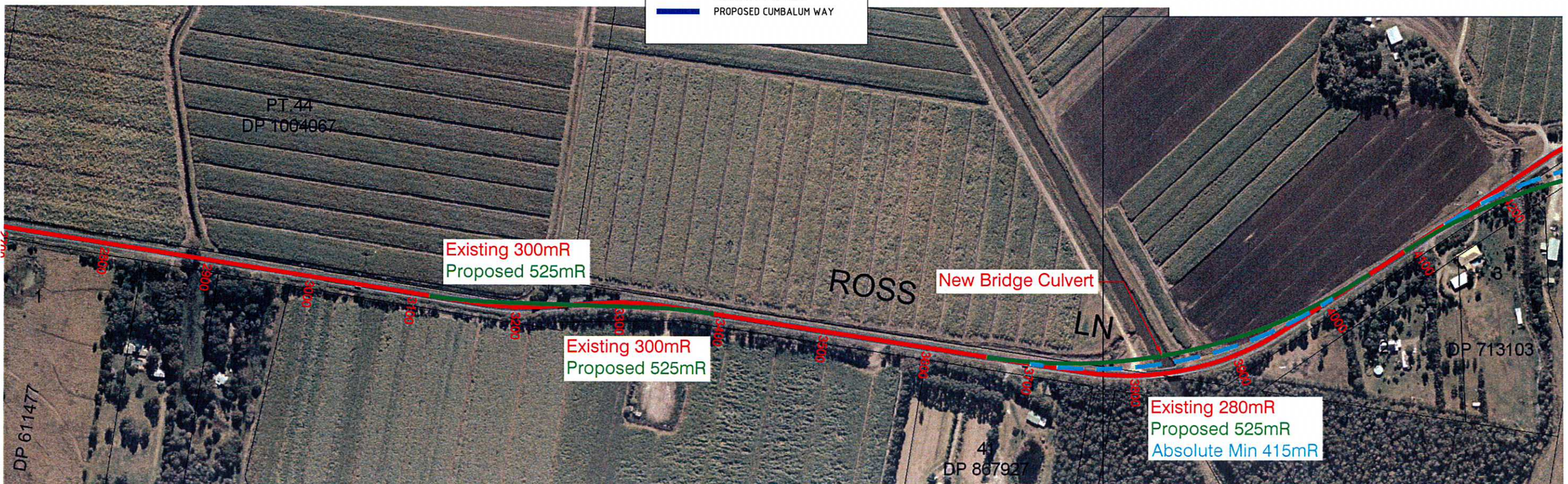
Item	Description	Unit	Qty	Rate	Amount
SECTION B - Specific Drainage					
1	Box culverts @ CH.3820 Assume box culvert size 3m x 3m (opening) Drainage channel length - 21m (linked culverts) Road width - 9m	m	9	\$40,000.00	\$360,000.00
SECTION B - Specific Drainage - Total					\$360,000.00



LAYOUT PLAN
SCALE 1:2000

LEGEND:

- EXISTING ALIGNMENT
- PROPOSED CURVE RE-ALIGNMENT TO DESIRABLE MIN RADII
- CURVE RE-ALIGNMENT TO ABSOLUTE MIN RADII
- PROPOSED CUMBALUM WAY



LAYOUT PLAN
SCALE 1:2000



Rv.	DATE	REVISIONS	REC.	APPR.
A	02/2009	ISSUED FOR ESTIMATES		

© Cardno (Qld) Pty Ltd All Rights Reserved 2002.
Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.

This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

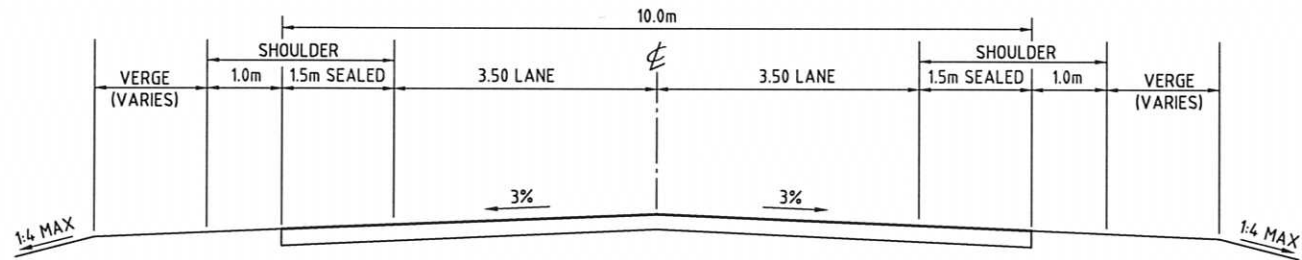
DESIGNED: BSC	DRAWN: NS	CHECKED: TS	RECOMMENDED: PROJ. MAN. SK	APPROVED: PROJ. DIR.
A1 DATUM: A.H.D.				

Cardno
Cardno (Qld) Pty Ltd ACN: 051 074 992
Commercial Centre, Isle of Capri
Gold Coast City, Queensland 4217
Email: gco@gold.cardno.com.au

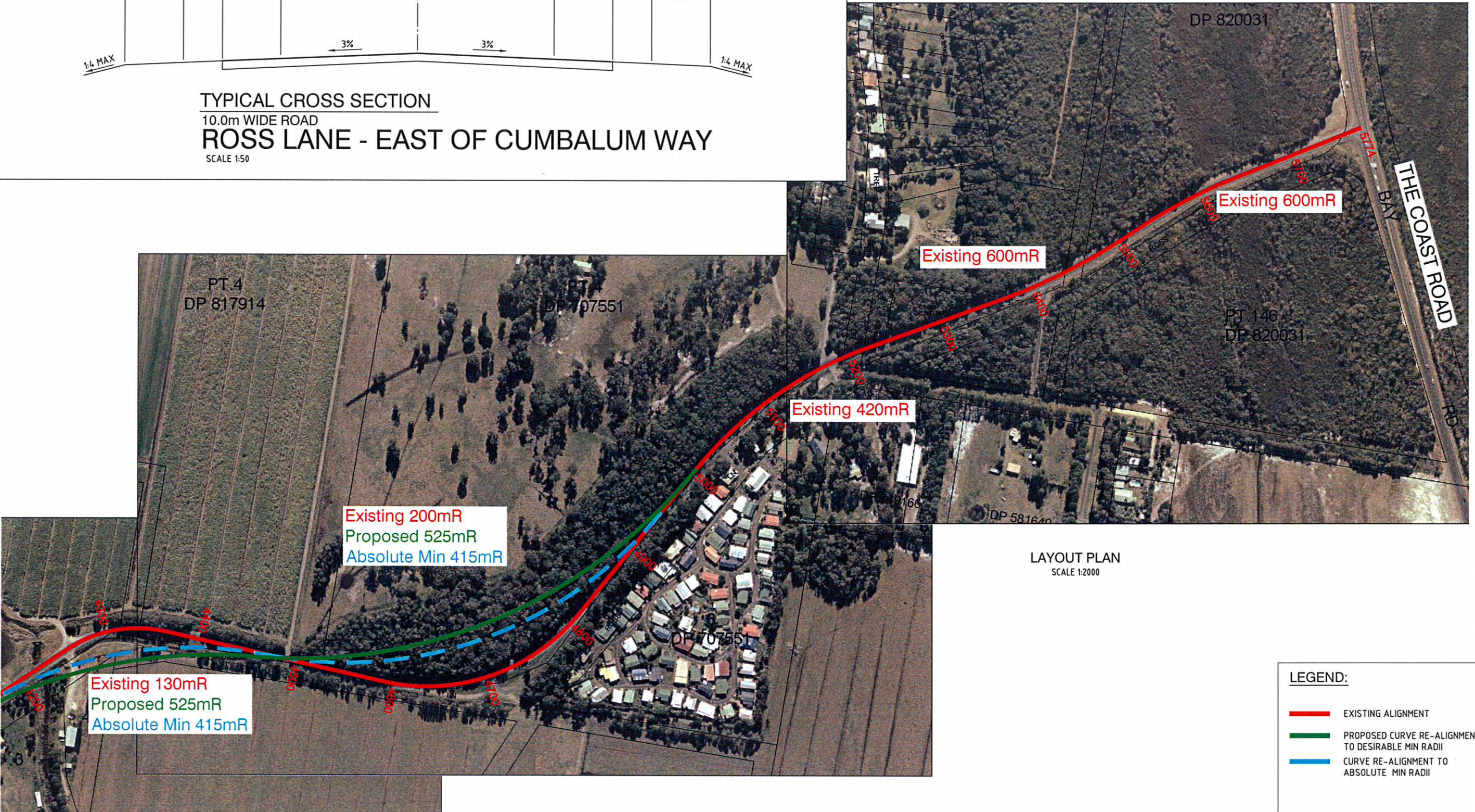
OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 3333	(07) 5538 4647
Brisbane	(07) 3369 9822	(07) 3369 9722
Sydney	(02) 9416 8233	(02) 9416 8529
Sunshine Coast	(07) 5443 2555	(07) 5443 5642
Townsville	(07) 4772 1166	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2558	(02) 4324 3251
Port Moresby	(0011675) 325 2322	(0011675) 325 0951
Philippines	(0011632) 910 5148	(0011632) 910 5146

BALLINA SHIRE COUNCIL
BALLINA SHIRE COUNCIL ROAD UPGRADES
**ROSS LANE - ROAD LAYOUT
& CROSS SECTIONS Sh 2 of 3**

DATE: FEBRUARY 2009
DRAWING No: **CE008667-20**



TYPICAL CROSS SECTION
 10.0m WIDE ROAD
ROSS LANE - EAST OF CUMBALUM WAY
 SCALE 1:50



LAYOUT PLAN
 SCALE 1:2000

LEGEND:

- EXISTING ALIGNMENT
- PROPOSED CURVE RE-ALIGNMENT TO DESIRABLE MIN RADII
- CURVE RE-ALIGNMENT TO ABSOLUTE MIN RADII



© Cardno (Qld) Pty Ltd All Rights Reserved 2002. Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.		DESIGNED: BSC DRAWN: NS CHECKED: TS	A1 DATUM: A.H.D.	 Cardno (Qld) Pty Ltd ACN: 051 074 992 Commercial Centre, Isle of Capri Gold Coast City, Queensland 4217 Email: gco@gold.cardno.com.au	OFFICES: Gold Coast (07) 5539 9333 Brisbane (07) 3369 9822 Sydney (02) 9416 8233 Sunshine Coast (07) 5443 2555 Townsville (07) 4772 1166 Hervey Bay (07) 4124 5455 Central Coast (02) 4323 2556 Port Moreeby (0011675) 325 2322 Philippines (0011632) 910 5146	FAX: 5538 4647 3369 9722 9418 6529 5443 5642 4721 2508 4124 5155 4324 3251 (0011675) 325 0951 (0011632) 910 5146	BALLINA SHIRE COUNCIL BALLINA SHIRE COUNCIL ROAD UPGRADES ROSS LANE - ROAD LAYOUT & CROSS SECTIONS Sh 3 of 3	DATE: FEBRUARY 2009 DRAWING No: CE008667-20
This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.		RECOMMENDED: PROJ. MAN. SK APPROVED: PROJ. DIR.	REVISIONS Rv. DATE REVISIONS REC. APPR.		A 02/2009 ISSUED FOR ESTIMATES Rv. DATE REVISIONS REC. APPR.			

Item 21

Construction of Tintenbar Road / Teven Road Climbing Lanes

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 21

20-Aug-09

Tintenbar Rd / Teven Rd Climbing Lanes

Included in estimate:

- Passing Lane – Tintenbar Rd
- Passing Lane – Teven Rd

Summary of assumptions and exclusions:

1. Land acquisition costs have been provided by Council and are included within the estimate.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have not been allowed for.
4. Streetlighting has not been allowed for as this is a rural area currently unserved by streetlighting.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. Details of the length and alignment of the proposed passing lanes have been provided by Ballina Shire Council for the purposes of this costing exercise.
7. Widening lanes assumed to be flexible pavement to match existing pavement.
8. Passing lane width assumed to be 3.5m for pavement.
9. Earthworks (cut/fill) assumed to extend 5-6m in cross section from existing road verge edge to allow for 3.5m lane width for Tintenbar Rd.
10. Earthworks (cut/spoil) assumed to be in excess of 5m deep through proposed road diversion alignment as highlighted on the attached plan for Teven Rd.

11. All costs indicated exclude GST.
12. Contingencies have been allowed for at a rate of 20% of the total construction costs.
13. An allowance has been made for both climbing lane road upgrades to include kerb on the low side of one way crossfall, serviced by gully pits at assumed intervals of 40m.

**Tintenbar Rd / Teven Rd Climbing Lanes
 Construction of Passing Lanes**

Preliminary Estimate of Construction Costs - Final Status

Summary		Total Estimate
Section A - Tintenbar Rd	.....	\$739,185.00
Section B - Teven Rd	.....	\$1,446,230.00
Sub Total Estimate (excl. GST)		\$2,185,415.00
SUB TOTAL ESTIMATE (excl. GST)		\$2,185,415.00
CONTINGENCY (20%)		\$437,083.00
PROFESSIONAL COSTS -	Route Concept / EIS (4%)	\$104,899.92
	Engineering Detailed Design (8%)	\$209,799.84
	Project Management (4%)	\$104,899.92
Total Estimate (excl. GST)		\$3,042,097.68
Public Utility Relocation costs provided by Council		\$100,000.00
Property Acquisition costs provided by Council		\$1,484.00
TOTAL ESTIMATE (excl. GST)		\$3,143,582

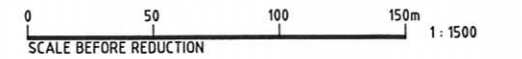
1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
SECTION A - Tintenbar Rd					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$40,000.00	\$40,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$20,000.00	\$20,000.00
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	500	\$3.00	\$1,500.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	3,000	\$10.00	\$30,000.00
d)	Cut to Spoil from site including disposal	m ³	2,000	\$25.00	\$50,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	465	\$10.00	\$4,650.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	465	\$126.00	\$58,590.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	1,860	\$150.00	\$279,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb - construct or replace as necessary	m	465	\$40.00	\$18,600.00
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²		\$30.00	
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	465	\$150.00	\$69,750.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$60.00	
h)	Stormwater Gully Pits incl. pipes <i>Assume gully pit every 40m</i>	m	465	\$270.00	\$125,550.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	465	\$5.00	\$2,325.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	465	\$8.00	\$3,720.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	6,000	\$0.50	\$3,000.00
b)	Turfing to footpaths and designated areas	m ²	500	\$5.00	\$2,500.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$20,000.00	\$20,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION A - Tintenbar Rd - Total					\$739,185.00

Item	Description	Unit	Qty	Rate	Amount
SECTION B - Teven Rd					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$40,000.00	\$40,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$20,000.00	\$20,000.00
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³		\$3.00	
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Cut to Spoil from site including disposal	m ³	20,000	\$25.00	\$500,000.00
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	470	\$10.00	\$4,700.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m	470	\$126.00	\$59,220.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m	3,750	\$150.00	\$562,500.00
b)	Rigid Pavement (Reinforced Concrete)	m		\$3,000.00	
c)	Kerb - construct or replace as necessary	m	470	\$40.00	\$18,800.00
d)	Concrete Infill of roundabout, medians	m ²		\$90.00	
e)	Remove and dispose of existing pavement, kerb, medians	m ²		\$30.00	
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	470	\$150.00	\$70,500.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$60.00	
h)	Stormwater Gully Pits incl. pipes <i>Assume gully pit every 40m</i>	m	470	\$270.00	\$126,900.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	470	\$5.00	\$2,350.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPm's as specified <i>(per meter of carriageway)</i>	m	470	\$8.00	\$3,760.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	5,000	\$0.50	\$2,500.00
b)	Turfing to footpaths and designated areas	m ²	1,000	\$5.00	\$5,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$20,000.00	\$20,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION B - Teven Rd - Total					\$1,446,230.00



LAYOUT PLAN
SCALE 1:1500



REV.	DATE	ISSUED FOR ESTIMATES	REVISIONS	REC.	APPR.
A	02/2009	ISSUED FOR ESTIMATES			

© Cardno (Qld) Pty Ltd All Rights Reserved 2002.
Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.

This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

DESIGNED:	BSC	A1	DATUM: A.H.D.
DRAWN:	NS		
CHECKED:	TS		
RECOMMENDED:	PROJ. MAN.	APPROVED:	PROJ. DIR.
	SK		

Cardno (Qld) Pty Ltd ACN: 051 074 992
Commercial Centre, Isle of Capri
Gold Coast City, Queensland 4217
Email: gco@gold.cardno.com.au

OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 9333	(07) 5539 4647
Brisbane	(07) 3369 9822	(07) 3369 9722
Sydney	(02) 9416 8233	(02) 9416 6529
Sunshine Coast	(07) 5443 2555	(07) 5443 5642
Townsville	(07) 4772 1166	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2558	(02) 4324 3251
Port Moresby	(0011675) 325 2322	(0011675) 325 0951
Philippines	(0011632) 910 5146	(0011632) 910 5146

BALLINA SHIRE COUNCIL
BALLINA SHIRE COUNCIL ROAD UPGRADES
TINTENBAR & TEVEN ROAD
CLIMBING LANES

DATE:	FEBRUARY 2009
DRAWING No:	CE008667-21
Rev.	A

Item 23

Southern Cross Precinct – Construction of Right Turn Ban

From Pacific Highway to Southern Cross Drive

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 23

20-Aug-09

Right Turn Ban – Pacific Highway to Southern Cross Drive

Included in estimate:

- Right Turn Ban Pacific Highway to Southern Cross Drive

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Based on advice from Council, no service relocations are envisaged to be required as part of the proposed works.
3. Landscaping (street trees) have not been allowed for.
4. Streetlighting has not been allowed for. There are streetlights currently in place which will be unaffected by the works in the centre of road.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans. Provision of the kerbed central median has been made within the existing painted central median. Therefore no road widening is required to accommodate these works.
7. All costs indicated exclude GST.
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. Central median assumed to be concrete infill with standard broom finish.

**Package 23 - Southern Cross Precinct
 Right Turn Ban Pacific Highway to Southern Cross Drive**

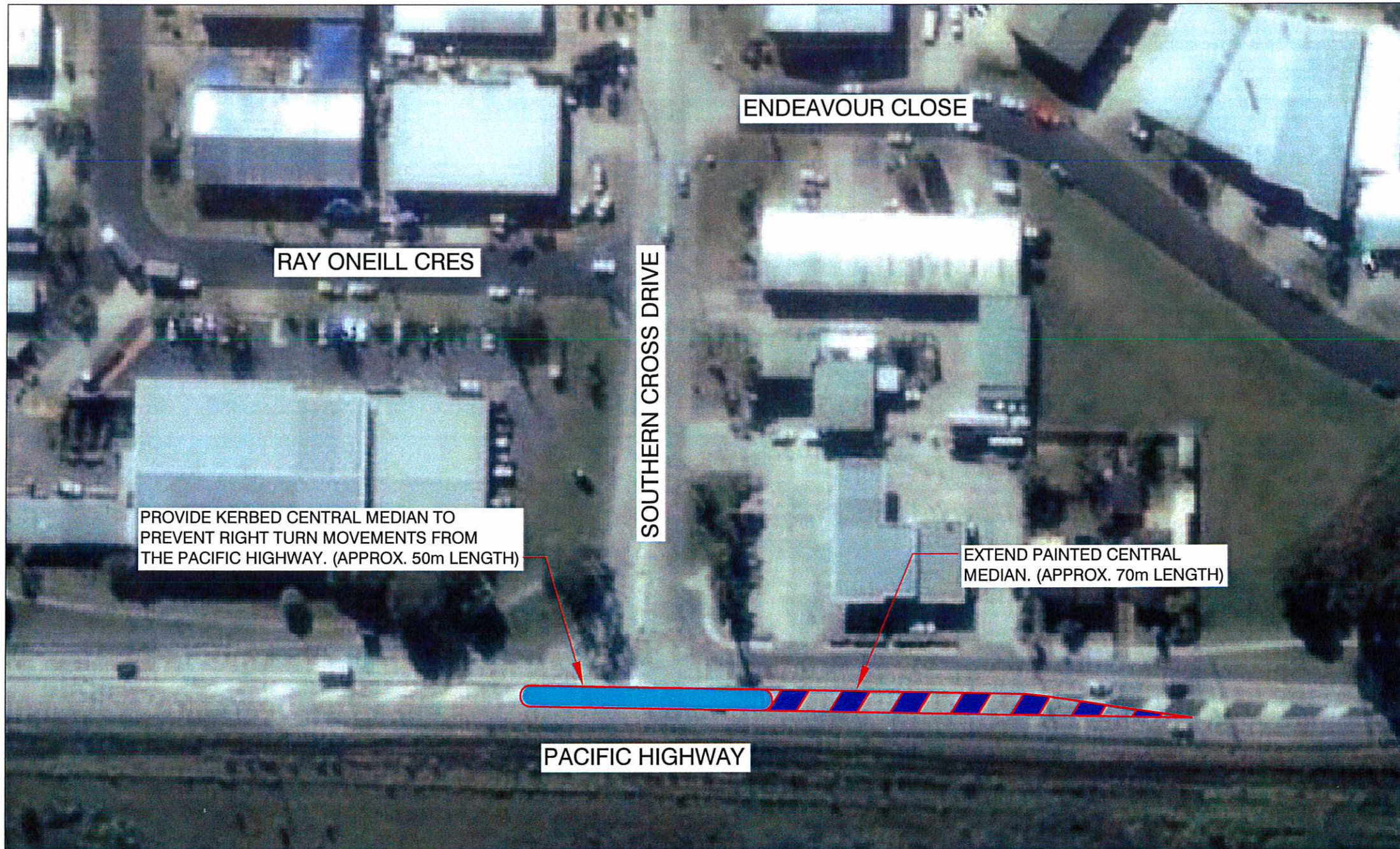
Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section A - General Construction	\$92,250.00
Sub Total Estimate (excl. GST) \$92,250.00	
SUB TOTAL ESTIMATE (excl. GST) \$92,250.00	
CONTINGENCY (20%) \$18,450.00	
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$4,428.00
Engineering Detailed Design (8%)	\$8,856.00
Project Management (4%)	\$4,428.00
TOTAL ESTIMATE (excl. GST) \$128,412	

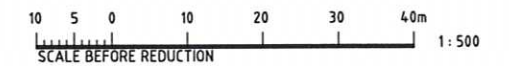
1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Description	Unit	Qty	Rate	Amount
SECTION A - Right Turn Ban Pacific Highway to Southern Cross Drive					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$20,000.00	\$20,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item		\$5,000.00	
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³		\$3.00	
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	50	\$10.00	\$500.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC)	m		\$1,400.00	
b)	Rigid Pavement (Reinforced Concrete)	m		\$2,500.00	
c)	Kerb - construct or replace as necessary	m	110	\$40.00	\$4,400.00
d)	Concrete Infill of roundabout, medians	m ²	250	\$90.00	\$22,500.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	250	\$30.00	\$7,500.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	100	\$150.00	\$15,000.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$100.00	
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place (Prov. Qty) <i>(per meter of carriageway)</i>	m	150	\$5.00	\$750.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	200	\$8.00	\$1,600.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²		\$0.50	
b)	Turfing to footpaths and designated areas	m ²		\$5.00	
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION A - Right Turn Ban Pacific Highway to Southern Cross Drive					\$92,250.00



LAYOUT PLAN
SCALE 1:500



© Cardno (Qld) Pty Ltd All Rights Reserved 2002. Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.		DESIGNED: BSC DRAWN: NS CHECKED: TS RECOMMENDED: PROJ. MAN. SK	A1 DATUM: A.H.D. APPROVED: PROJ. DIR.	 Cardno (Qld) Pty Ltd ACN: 051 074 992 Commercial Centre, Isle of Capri Gold Coast City, Queensland 4217 Email: gco@gold.cardno.com.au	OFFICES: TELEPHONE FAX Gold Coast (07) 5539 9333 (07) 5538 4647 Brisbane (07) 3369 9822 (07) 3369 9722 Sydney (02) 9418 8233 (02) 9418 8539 Sunshine Coast (07) 5443 2555 (07) 5443 5842 Townsville (07) 4772 1166 (07) 4721 2508 Harvey Bay (07) 4124 5455 (07) 4124 5155 Central Coast (02) 4323 2558 (02) 4324 3251 Port Moresby (0011875) 325 2322 (0011875) 325 0951 Philippines (0011832) 910 5146 (0011832) 910 5146	BALLINA SHIRE COUNCIL BALLINA SHIRE COUNCIL ROAD UPGRADES PACIFIC HIGHWAY - SOUTHERN CROSS DRIVE RIGHT TURN BAN	DATE: FEBRUARY 2009 DRAWING No: CE008667-23
A 02/2009 ISSUED FOR ESTIMATES Rv. DATE REVISIONS REC. APPR.							

Item 24

***Construction of Links Avenue/
Angels Beach Drive Roundabout***

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 24

20-Aug-09

Links Ave / Angels Beach Dr Roundabout

Included in estimate:

- Roundabout – Intersection between Links Avenue and Angels Beach Drive

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) had not been allowed for.
4. Streetlighting has been allowed for. There are streetlights currently in place but we have assumed that more will be required to light the complete roundabout.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. Infill to roundabout assumed to be stamped concrete.
7. All costs indicated are exclusive of GST.
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. Existing footpaths and other related infrastructure adjacent to the existing carriageway (street furniture etc) should not be affected by the proposed road works.
10. Allowance has been made for reconstruction of gully pits to suit new pavement.

**Links Ave - Angels Beach Dr Roundabout
 Construction of Roundabout and Intersection Upgrade**

Preliminary Estimate of Construction Costs - Final Status

Summary		Total Estimate
Section A - General Construction	.....	\$537,100.00
Section B - Specific Drainage + Structures	.....	\$8,000.00
Sub Total Estimate (excl. GST)		\$545,100.00
SUB TOTAL ESTIMATE (excl. GST)		\$545,100.00
CONTINGENCY (20%)		\$109,020.00
PROFESSIONAL COSTS -	Route Concept / EIS (4%)	\$26,164.80
	Engineering Detailed Design (8%)	\$52,329.60
	Project Management (4%)	\$26,164.80
Total Estimate (excl. GST)		\$758,779.20
Public Utility Relocation costs provided by Council		\$139,000.00
TOTAL ESTIMATE (excl. GST)		\$897,779

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Description	Unit	Qty	Rate	Amount
SECTION A - Roundabout					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item		\$5,000.00	
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	50	\$3.00	\$150.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	50	\$10.00	\$500.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	200	\$10.00	\$2,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	2,500	\$120.00	\$300,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb - construct or replace as necessary	m	400	\$40.00	\$16,000.00
d)	Concrete Infill of roundabout, medians	m ²	250	\$90.00	\$22,500.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	2,000	\$30.00	\$60,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	150	\$150.00	\$22,500.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$60.00	
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	150	\$5.00	\$750.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	150	\$8.00	\$1,200.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	1,000	\$0.50	\$500.00
b)	Turfing to footpaths and designated areas	m ²	200	\$5.00	\$1,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.	4	\$15,000.00	\$60,000.00
SECTION A - Roundabout - Total					\$537,100.00



Item	Description	Unit	Qty	Rate	Amount
SECTION B - Specific Drainage					
1	Raising of gully pits to suit new road level Assume gully pit every 50m	No.	4	\$2,000.00	\$8,000.00
SECTION B - Specific Drainage - Total					\$8,000.00



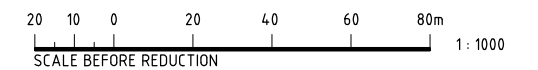
ANGELS BEACH DRIVE

LINKS AVENUE

LAYOUT PLAN
SCALE 1:1000

LEGEND:

 PROPOSED NEW AC PAVEMENT



© Cardno (Qld) Pty Ltd All Rights Reserved 2002.
Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.

This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

DESIGNED:	BSC	A1	DATUM: A.H.D.
DRAWN:	NS		
CHECKED:	TS	RECOMMENDED: PROJ. MAN.	APPROVED: PROJ. DIR.
		SK	



Cardno (Qld) Pty Ltd ACN: 051 074 992
Commercial Centre, Isle of Capri
Gold Coast City, Queensland 4217
Email: gco@gold.cardno.com.au

OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 9333	(07) 5538 4647
Brisbane	(07) 3369 9822	(07) 3369 9722
Sydney	(02) 9416 8233	(02) 9416 6529
Sunshine Coast	(07) 5443 2555	(07) 5443 5842
Townsville	(07) 4772 1166	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2558	(02) 4324 3251
Port Moresby	(0011675) 325 2322	(0011675) 325 0951
Philippines	(0011632) 910 5146	(0011632) 910 5146

BALLINA SHIRE COUNCIL
BALLINA SHIRE COUNCIL ROAD UPGRADES
ANGELS BEACH DRIVE AND LINKS AVENUE INTERSECTION

DATE:	FEBRUARY 2009
DRAWING No:	CE008667-24
Rv.	A

Item 26

Construction of Skennars Head Road/The Coast Road/

Rocky Point Road Roundabout

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 26

20-Aug-09

Skennars Head Rd - The Coast Rd - Rocky Point Rd Roundabout
--

Included in estimate:

- Roundabout – Intersection between Skennars Head Rd, The Coast Rd, and Rocky Point Rd

Summary of assumptions and exclusions:

1. Land acquisition costs have been provided by Council and are included within the estimate.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have not been allowed for.
4. Streetlighting has been allowed for. There is currently streetlighting in place but we have assumed more may be necessary.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. Infill to roundabout assumed to be stamped concrete.
7. All costs indicated are exclusive of GST.
8. A contingency rate of 40% has been applied to the construction costs due to the variable terrain in the local area. We have assumed that the difference in terrain will add to the difficulty of the construction process and that the 40% margin will cover any intricate design proposals which may arise.

**Skennars Head Rd - The Coast Rd - Rocky Point Rd Roundabout
 Construction of Roundabout and Intersection Upgrade**

Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section A - General Construction	\$694,750.00
Section B - Specific Drainage + Structures	\$12,000.00
<hr/>	
Sub Total Estimate (excl. GST)	\$706,750.00
<hr/>	
SUB TOTAL ESTIMATE (excl. GST)	\$706,750.00
CONTINGENCY (40%)	\$282,700.00
<hr/>	
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$39,578.00
Engineering Detailed Design (8%)	\$79,156.00
Project Management (4%)	\$39,578.00
<hr/>	
Total Estimate (excl. GST)	\$1,147,762.00
<hr/>	
Public Utility Relocation costs provided by Council	\$155,000.00
Property Acquisition costs provided by Council	\$119,000.00
<hr/>	
TOTAL ESTIMATE (excl. GST)	\$1,421,762

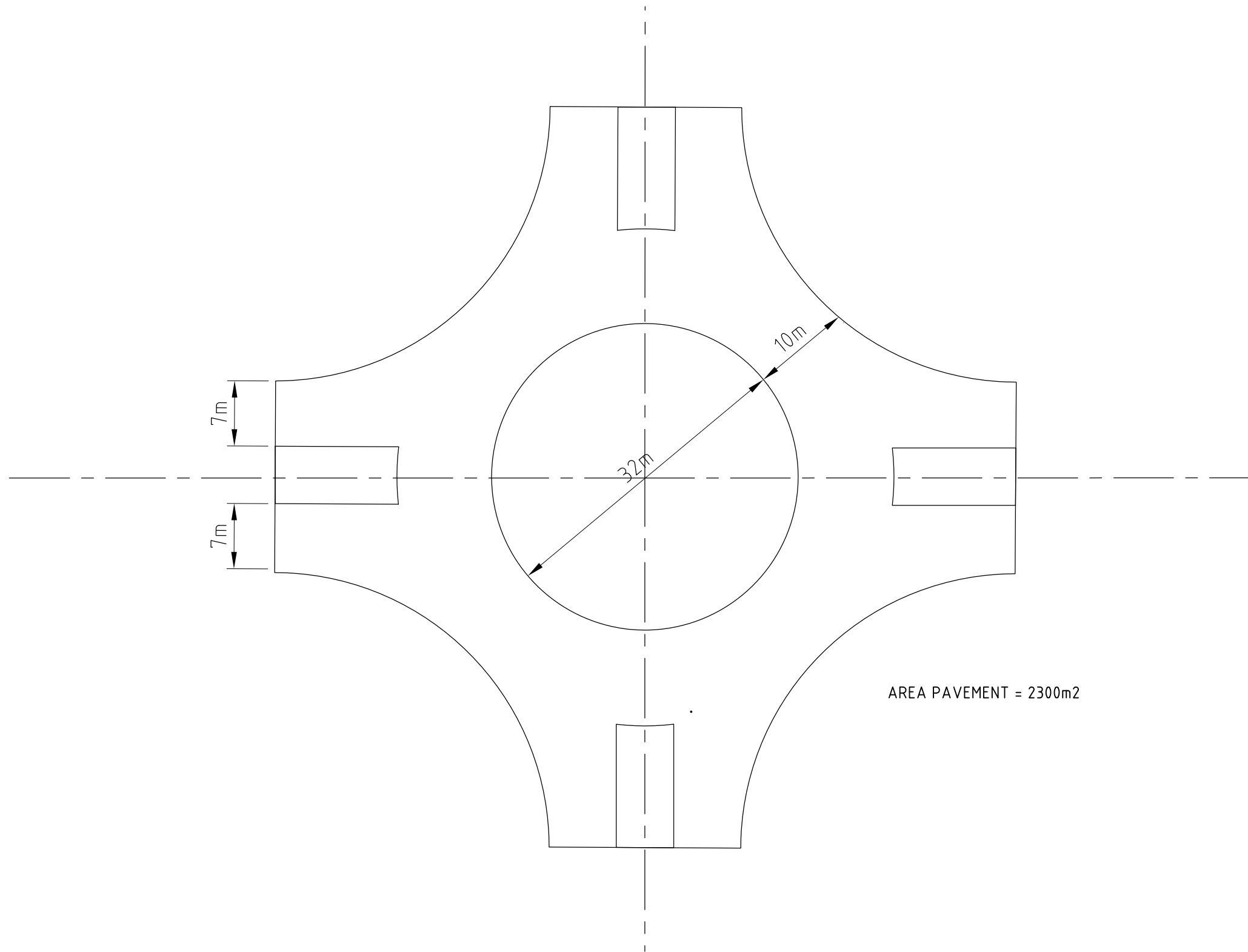
1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Description	Unit	Qty	Rate	Amount
SECTION A - Roundabout					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$500.00	\$500.00
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	100	\$3.00	\$300.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	500	\$10.00	\$5,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	400	\$10.00	\$4,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	3,500	\$120.00	\$420,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²		\$300.00	
c)	Kerb - construct or replace as necessary	m	400	\$40.00	\$16,000.00
d)	Concrete Infill of roundabout, medians	m ²	250	\$90.00	\$22,500.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	3,000	\$30.00	\$90,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	150	\$150.00	\$22,500.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²		\$60.00	
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	150	\$5.00	\$750.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	150	\$8.00	\$1,200.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	2,000	\$0.50	\$1,000.00
b)	Turfing to footpaths and designated areas	m ²	200	\$5.00	\$1,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m		\$100.00	
c)	Electrical - Streetlights	No.	4	\$15,000.00	\$60,000.00
SECTION A - Roundabout - Total					\$694,750.00



Item	Description	Unit	Qty	Rate	Amount
SECTION B - Specific Drainage					
1	Raising of gully pits to suit new road level Assume gully pit every 50m	No.	6	\$2,000.00	\$12,000.00
SECTION B - Specific Drainage - Total					\$12,000.00



AREA PAVEMENT = 2300m2

© Cardno (Qld) Pty Ltd All Rights Reserved 2002.
 Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.

This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

DESIGNED:	BSC	A1	DATUM: A.H.D.
DRAWN:	NS		
CHECKED:	TS	RECOMMENDED:	PROJ. MAN.
		SK	APPROVED:
			PROJ. DIR.
XREF ATTACHED:	G:\2970\02\38\XREFS\...		
CAD FILE NAME:	G:\EPPPELL OLSEN\CE008667\ROUNDABOUT DETAIL.dwg		

Cardno

Cardno (Qld) Pty Ltd ACN: 051 074 992

Commercial Centre, Isle of Capri
 Gold Coast City, Queensland 4217
 Email: gco@gold.cardno.com.au

OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 9333	(07) 5538 4647
Brisbane	(07) 3369 9822	(07) 3369 9722
Sydney	(02) 9416 8233	(02) 9416 8529
Sunshine Coast	(07) 5443 2555	(07) 5443 5842
Townsville	(07) 4772 1166	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2558	(02) 4324 3251
Port Moresby	(0011675) 325 2322	(0011675) 325 0951
Philippines	(0011632) 910 5146	(0011632) 910 5146

BALLINA SHIRE COUNCIL ROAD UPGRADES DUAL LANE ROUNDABOUT STANDARD DESIGN		DATE: NOVEMBER 2008 DRAWING No: CE008667-26		
		<table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 25px;">A</td> <td style="width: 25px;">Rv.</td> </tr> </table>	A	Rv.
A	Rv.			

Item 27

Traffic Calming along North Creek Road/

Reservoir Road/Hutley Drive

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE–FINAL STATUS

ITEM 27

20-Aug-09

Traffic Calming
North Creek Rd – Reservoir Rd – Hutley Dr

Included in estimate:

- Implementation of proposed traffic calming devices along North Creek Road, Reservoir Road, and Hutley Drive.

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Based on advice from Council, no service relocations are envisaged to be required as part of the proposed works.
3. Landscaping (street trees) has not been allowed for.
4. Professional costs for engineering design have been included based on percentage of estimated construction costs.
5. All estimates are based on the information provided on the attached concept plan.
6. All costs indicated exclude GST
7. Contingencies have been allowed for at a rate of 20% of the total construction costs.
8. The proposed concept incorporates a number of traffic calming devices along the existing and proposed sections of Hutley Drive, the new Reservoir Road link and the existing North Creek Road alignment to the north of Skennars Head Road. These devices include threshold treatments accompanied by directional signage at the entry points to this part of the road network (i.e. at the proposed Skennars Head Road/North Creek Road/Hutley Drive roundabout and the North Creek

Road/Ballina Street/The Coast Road roundabout), slow points or blister treatments, raised pavements and painted medians. Typical examples of these types of treatment are illustrated on the attached plan.

9. The estimate rates for each of the traffic calming devices have been derived to include an allowance for any minor works which may be required to improve the localised section of road to accommodate the calming device. (eg. kerb, topsoil, turf, signage)
10. The traffic calming scheme has been developed with the primary objective of discouraging through traffic from using the subject road network in the event that either the North Creek Road upgrade or the new Skennars Head Distributor link road are constructed. Instead this traffic would be directed to use the upgraded Skennars Head Road and The Coast Road to travel through the south Lennox Head precinct area. It is not anticipated that the scheme would need to be implemented in the absence of these upgrades. A secondary objective is to seek to ensure that the proposed scheme maintains and enhances road safety in the area.
11. The concept scheme has been developed from first principles having regard to the information provided in the *Austrroads Guide to Traffic Management, Part 8: Local Area Traffic Management*, and in particular the desire to provide for a maximum spacing of 150m between adjacent devices where possible. The purpose of this is to seek to ensure that continuity of the scheme is maintained and that the proposed devices do not in themselves lead to unsafe driving practices or create new road safety hazards.
12. It is important to recognise that the proposed scheme is conceptual only and is considered to represent a likely worst case for S94 costing purposes in terms of the level of treatment that might be required along the subject roads. The scheme has been developed without consultation and in particular without consideration of the potential impacts on access for individual properties, which would require a much more detailed assessment than has been possible here.
13. A key consideration in developing the scheme was whether street lighting was available or not. For example, the midblock sections of North Creek Road do not generally have streetlighting at present and it is also absent from some of the intersections at its southern end. Similarly, the current proposal for the new section of Hutley Drive between Ch. 3350 and Ch. 4500 does not include streetlighting. For these areas it has been necessary to either provide streetlighting in conjunction with the proposed traffic calming device, or alternatively to restrict the treatment to painted medians and associated measures to achieve the desired traffic management without providing a physical obstruction that would otherwise constitute a hazard under unlit conditions.
14. The section of North Creek Road south of Montwood Drive is currently very narrow. As a result the proposed treatments on this section have been limited to raised pavements at intersections and the use of red inlay on the hatching associated with the existing right-turn bays in this area (refer to plan) to provide

continuity with the painted median treatments proposed on other parts of the network.

Traffic Calming - North Creek Rd / Reservoir Rd / Hutley Dr

Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section A - Traffic Calming	\$1,651,000.00
<hr/>	
Sub Total Estimate (excl. GST)	\$1,651,000.00
<hr/>	
SUB TOTAL ESTIMATE (excl. GST)	\$1,651,000.00
CONTINGENCY (20%)	\$330,200.00
<hr/>	
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$79,248.00
Engineering Detailed Design (8%)	\$158,496.00
Project Management (4%)	\$79,248.00
<hr/>	
TOTAL ESTIMATE (excl. GST)	\$2,298,192

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Description	Unit	Qty	Rate	Amount
SECTION A - Traffic Calming					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$80,000.00	\$80,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item		\$30,000.00	
b)	Stripping and stockpiling of topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³		\$3.00	
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m		\$10.00	
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m		\$126.00	
A5	ROADWORKS				
a)	Slow Point / Blister Treatment	Item	10	\$30,000.00	\$300,000.00
b)	Raised Pavement	Item	19	\$50,000.00	\$950,000.00
c)	Threshold Treatment	Item	3	\$40,000.00	\$120,000.00
d)	Painted Median with Red inlay	m ²	5,800	\$20.00	\$116,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	MISCELLANEOUS				
a)	Survey setout	PC Item			included
b)	Electrical - Streetlights	No.	5	\$15,000.00	\$75,000.00
SECTION A - Traffic Calming - Total					\$1,651,000.00

TYPICAL EXAMPLES:



SLOW POINT



BLISTER TREATMENT



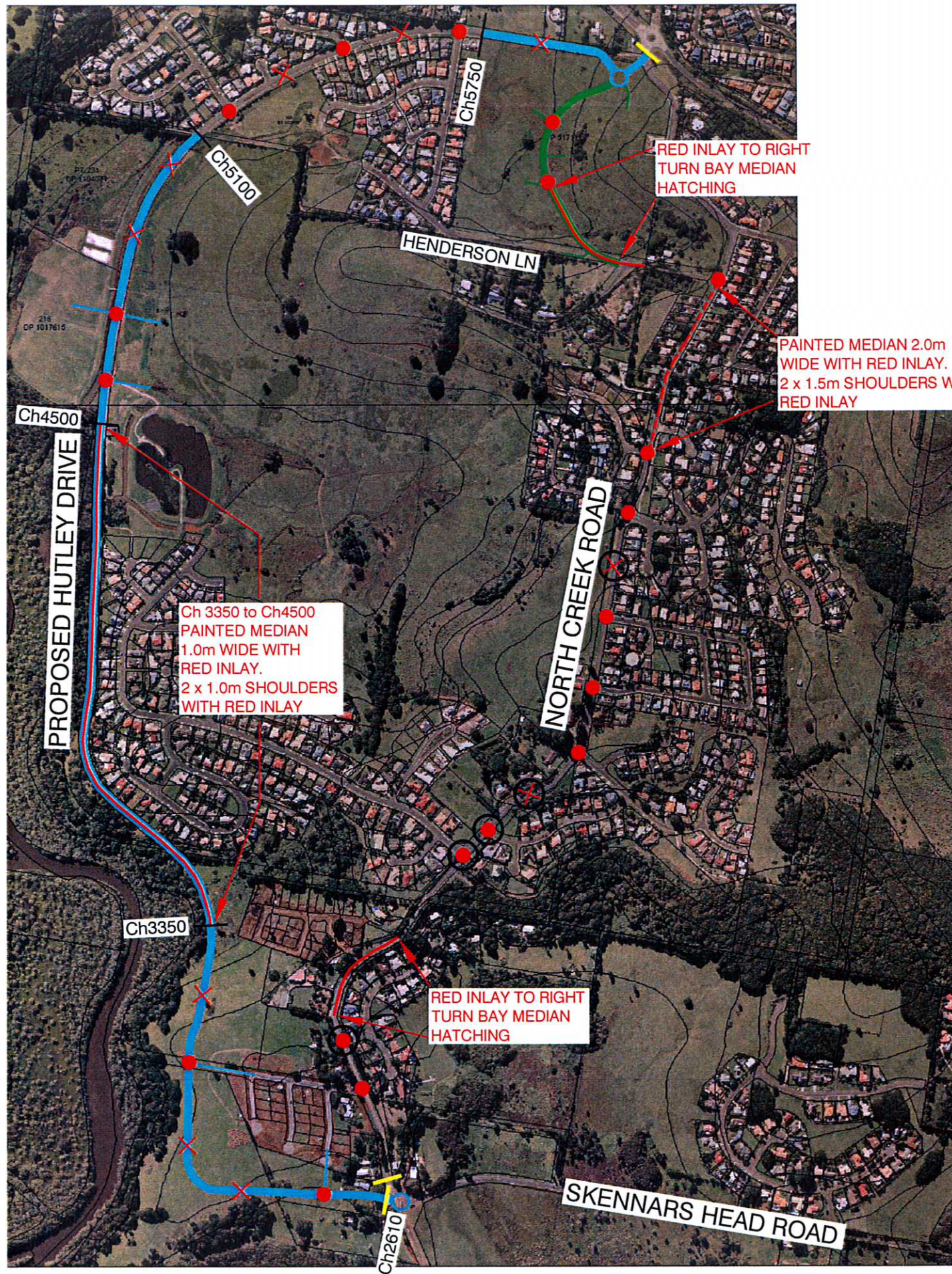
RAISED PAVEMENT



THRESHOLD TREATMENT



PAINTED MEDIAN TREATMENT



LEGEND:

- PROPOSED HUTLEY DRIVE ALIGNMENT
- PROPOSED RESERVOIR ROAD ALIGNMENT
- ✕ SLOW POINT OR BLISTER TREATMENT
- ⊗ SLOW POINT OR BLISTER TREATMENT INCLUDING STREET LIGHTING
- RAISED PAVEMENT
- ⊙ RAISED PAVEMENT INCLUDING STREET LIGHTING
- THRESHOLD TREATMENT

LAYOUT PLAN
SCALE 1:5000 @ A1



Rv.	DATE	ISSUED FOR ESTIMATES	REVISIONS	REC.	APPR.
A	02/2009	ISSUED FOR ESTIMATES			

© Cardno (Qld) Pty Ltd All Rights Reserved 2002.
Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.

This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

DESIGNED: SM	A1	DATUM: A.H.D.
DRAWN: RO		
CHECKED: TS		
RECOMMENDED: PROJ. MAN. SK	APPROVED: PROJ. DIR.	

Cardno
Cardno (Qld) Pty Ltd ACN: 051 074 992
Commercial Centre, Isle of Capri
Gold Coast City, Queensland 4217
Email: gco@gold.cardno.com.au

OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 9333	(07) 5538 4647
Brisbane	(07) 3369 9822	(07) 3369 9722
Sydney	(02) 9416 8233	(02) 9416 8529
Sunshine Coast	(07) 5443 2555	(07) 5443 2642
Townsville	(07) 4772 1166	(07) 4721 2508
Harvey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2558	(02) 4324 3251
Port Moresby	(0011675) 325 2322	(0011675) 325 0951
Philippines	(0011632) 910 5146	(0011632) 910 5146

BALLINA SHIRE COUNCIL
BALLINA SHIRE COUNCIL ROAD UPGRADES
HUTLEY DRIVE & NORTH CREEK /
RESERVOIR ROAD TRAFFIC CALMING

DATE: FEBRUARY 2009	
DRAWING No: CE008667-27	

Item 28

***Construction of River Street/Cherry Street and
River Street/Moon Street Roundabouts***

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 28

20-Aug-09

River St/Moon St + River St/Cherry St Roundabouts
--

Included in estimate:

- 2 x Roundabouts – Intersections between River Street/Moon Street and River Street/Cherry Street

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has not been allowed for. There are streetlights currently in place which we have assumed will not be effected by the proposed works.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. The proposed roundabout designs have been supplied by Ballina Shire Council for the purposes of this cost estimate. The Council provided plans are attached to this estimate for reference.
7. Infill to roundabouts assumed to be stamped concrete to match existing median infill in River St upgrade.
8. Replace existing flexible pavement with reinforced concrete pavement to the following areas: both roundabouts in full including legs to the extent as highlighted on the attached plan, 50m Nth of Cherry St Roundabout to join with proposed reinforced concrete pavement upgrade of Tamar St/Cherry St intersection as advised by Ballina Shire Council.

9. The area between these roundabouts (highlighted in green on the attached plan) has previously been constructed as advised by Ballina Shire Council.
10. All costs indicated exclude GST.
11. Contingencies have been allowed for at a rate of 20% of the total construction costs.
12. Footpath replacement has been allowed for at the two roundabouts as shown on attached plans to match the existing River street upgrade between the two roundabouts.
13. Allowance has been made for reconstruction of gully pits to suit new pavement.

**(River St - Cherry St) + (River St - Moon St) Roundabouts
 Construction of Roundabout and Intersection Upgrade**

Preliminary Estimate of Construction Costs - Final Status

Summary		Total Estimate
Section A - General Construction	.....	\$1,343,400.00
Section B - Specific Drainage + Structures	.....	\$20,000.00
Sub Total Estimate (excl. GST)		\$1,363,400.00
SUB TOTAL ESTIMATE (excl. GST)		\$1,363,400.00
CONTINGENCY (20%)		\$272,680.00
PROFESSIONAL COSTS -	Route Concept / EIS (4%)	\$65,443.20
	Engineering Detailed Design (8%)	\$130,886.40
	Project Management (4%)	\$65,443.20
Total Estimate (excl. GST)		\$1,897,852.80
Public Utility Relocation costs provided by Council		\$ 24,000.00
TOTAL ESTIMATE (excl. GST)		\$1,921,853

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Description	Unit	Qty	Rate	Amount
SECTION A - General Construction					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$50,000.00	\$50,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item		\$5,000.00	
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³		\$3.00	
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	100	\$10.00	\$1,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC)	m		\$1,400.00	
b)	Rigid Pavement (Reinforced Concrete)	m ²	3,000	\$300.00	\$900,000.00
c)	Kerb for traffic diversion, roundabout, medians	m	600	\$40.00	\$24,000.00
d)	Concrete Infill of roundabout, medians	m ²	500	\$90.00	\$45,000.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	5,000	\$30.00	\$150,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	300	\$150.00	\$45,000.00
g)	Construct footpath (varying widths) <i>(stamped concrete finish)</i>	m ²	800	\$80.00	\$64,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	300	\$5.00	\$1,500.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	300	\$8.00	\$2,400.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²		\$0.50	
b)	Turfing to footpaths and designated areas	m ²	100	\$5.00	\$500.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$20,000.00	\$20,000.00
b)	Landscaping	m	300	\$100.00	\$30,000.00
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION A - General Construction - Total					\$1,343,400.00



Item	Description	Unit	Qty	Rate	Amount
SECTION B - Specific Drainage					
1	Raising of gully pits to suit new road level Assume gully pit every 50m	No.	10	\$2,000.00	\$20,000.00
SECTION B - Specific Drainage - Total					\$20,000.00

NO.	DESCRIPTION
1	PLAN
2	SECTION
3	DETAILS
4	GENERAL NOTES
5	APPENDICES
6	INDEX

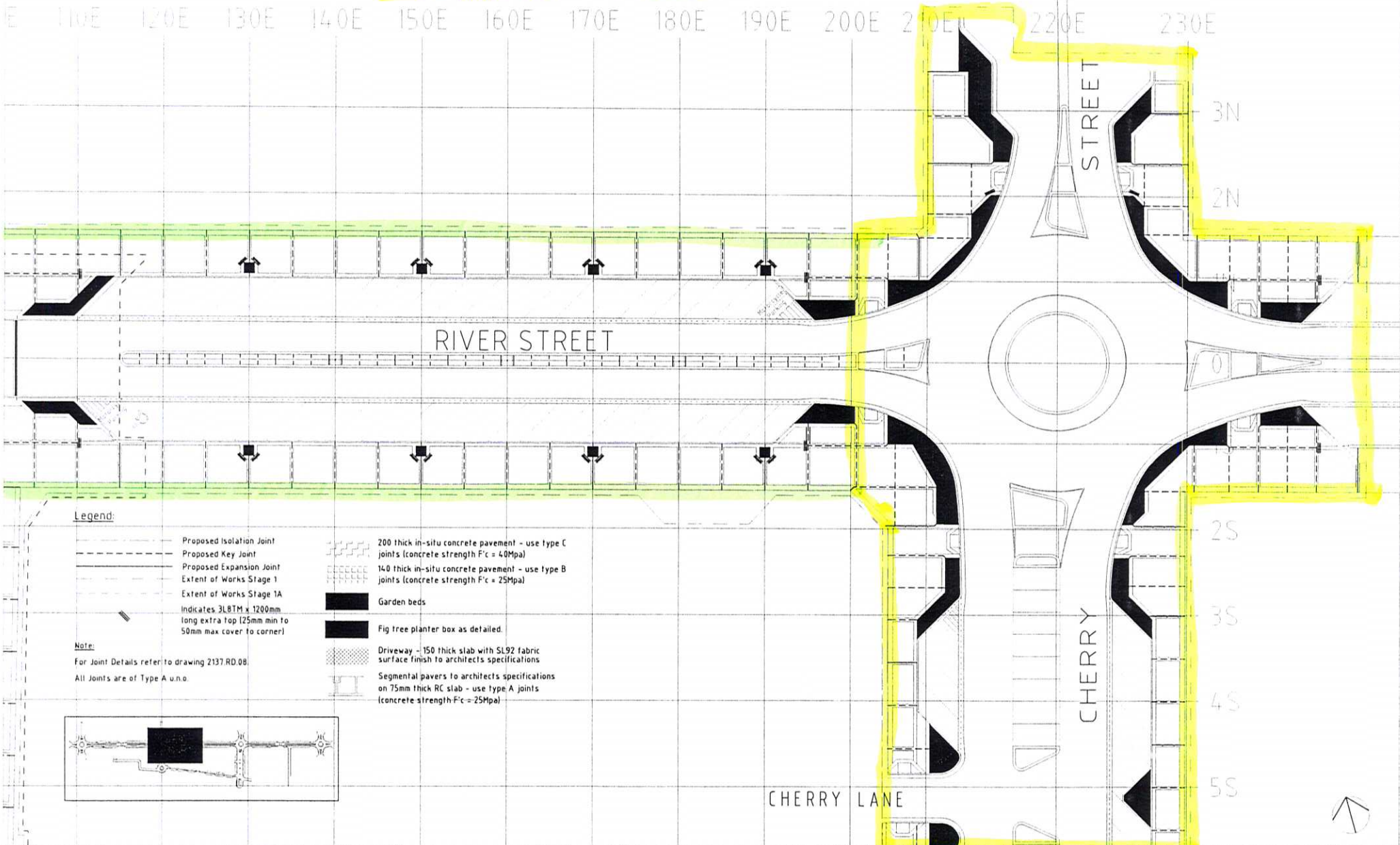
DATE	11/02/2002
PROJECT	MOON STREET
CLIENT	BALLINA SHIRE COUNCIL
SCALE	AS SHOWN
DRAWN BY	...
CHECKED BY	...
APPROVED BY	...

River Street Beautification Project Ballina Stage One













Ballina Shire Council
 Cnr Tambar & Cherry Streets
 PO Box 450
 Ballina NSW 2478
 Phone: (02) 6686 4444 Fax: (02) 6686 7035

ARCHITECTS
 LINDSEY ARCHITECTS & ASSOCIATES
 111/113/115/117/119/121/123/125/127/129/131/133/135/137/139/141/143/145/147/149/151/153/155/157/159/161/163/165/167/169/171/173/175/177/179/181/183/185/187/189/191/193/195/197/199/201/203/205/207/209/211/213/215/217/219/221/223/225/227/229/231/233/235/237/239/241/243/245/247/249/251/253/255/257/259/261/263/265/267/269/271/273/275/277/279/281/283/285/287/289/291/293/295/297/299/301/303/305/307/309/311/313/315/317/319/321/323/325/327/329/331/333/335/337/339/341/343/345/347/349/351/353/355/357/359/361/363/365/367/369/371/373/375/377/379/381/383/385/387/389/391/393/395/397/399/401/403/405/407/409/411/413/415/417/419/421/423/425/427/429/431/433/435/437/439/441/443/445/447/449/451/453/455/457/459/461/463/465/467/469/471/473/475/477/479/481/483/485/487/489/491/493/495/497/499/501/503/505/507/509/511/513/515/517/519/521/523/525/527/529/531/533/535/537/539/541/543/545/547/549/551/553/555/557/559/561/563/565/567/569/571/573/575/577/579/581/583/585/587/589/591/593/595/597/599/601/603/605/607/609/611/613/615/617/619/621/623/625/627/629/631/633/635/637/639/641/643/645/647/649/651/653/655/657/659/661/663/665/667/669/671/673/675/677/679/681/683/685/687/689/691/693/695/697/699/701/703/705/707/709/711/713/715/717/719/721/723/725/727/729/731/733/735/737/739/741/743/745/747/749/751/753/755/757/759/761/763/765/767/769/771/773/775/777/779/781/783/785/787/789/791/793/795/797/799/801/803/805/807/809/811/813/815/817/819/821/823/825/827/829/831/833/835/837/839/841/843/845/847/849/851/853/855/857/859/861/863/865/867/869/871/873/875/877/879/881/883/885/887/889/891/893/895/897/899/901/903/905/907/909/911/913/915/917/919/921/923/925/927/929/931/933/935/937/939/941/943/945/947/949/951/953/955/957/959/961/963/965/967/969/971/973/975/977/979/981/983/985/987/989/991/993/995/997/999/1001/1003/1005/1007/1009/1011/1013/1015/1017/1019/1021/1023/1025/1027/1029/1031/1033/1035/1037/1039/1041/1043/1045/1047/1049/1051/1053/1055/1057/1059/1061/1063/1065/1067/1069/1071/1073/1075/1077/1079/1081/1083/1085/1087/1089/1091/1093/1095/1097/1099/1101/1103/1105/1107/1109/1111/1113/1115/1117/1119/1121/1123/1125/1127/1129/1131/1133/1135/1137/1139/1141/1143/1145/1147/1149/1151/1153/1155/1157/1159/1161/1163/1165/1167/1169/1171/1173/1175/1177/1179/1181/1183/1185/1187/1189/1191/1193/1195/1197/1199/1201/1203/1205/1207/1209/1211/1213/1215/1217/1219/1221/1223/1225/1227/1229/1231/1233/1235/1237/1239/1241/1243/1245/1247/1249/1251/1253/1255/1257/1259/1261/1263/1265/1267/1269/1271/1273/1275/1277/1279/1281/1283/1285/1287/1289/1291/1293/1295/1297/1299/1301/1303/1305/1307/1309/1311/1313/1315/1317/1319/1321/1323/1325/1327/1329/1331/1333/1335/1337/1339/1341/1343/1345/1347/1349/1351/1353/1355/1357/1359/1361/1363/1365/1367/1369/1371/1373/1375/1377/1379/1381/1383/1385/1387/1389/1391/1393/1395/1397/1399/1401/1403/1405/1407/1409/1411/1413/1415/1417/1419/1421/1423/1425/1427/1429/1431/1433/1435/1437/1439/1441/1443/1445/1447/1449/1451/1453/1455/1457/1459/1461/1463/1465/1467/1469/1471/1473/1475/1477/1479/1481/1483/1485/1487/1489/1491/1493/1495/1497/1499/1501/1503/1505/1507/1509/1511/1513/1515/1517/1519/1521/1523/1525/1527/1529/1531/1533/1535/1537/1539/1541/1543/1545/1547/1549/1551/1553/1555/1557/1559/1561/1563/1565/1567/1569/1571/1573/1575/1577/1579/1581/1583/1585/1587/1589/1591/1593/1595/1597/1599/1601/1603/1605/1607/1609/1611/1613/1615/1617/1619/1621/1623/1625/1627/1629/1631/1633/1635/1637/1639/1641/1643/1645/1647/1649/1651/1653/1655/1657/1659/1661/1663/1665/1667/1669/1671/1673/1675/1677/1679/1681/1683/1685/1687/1689/1691/1693/1695/1697/1699/1701/1703/1705/1707/1709/1711/1713/1715/1717/1719/1721/1723/1725/1727/1729/1731/1733/1735/1737/1739/1741/1743/1745/1747/1749/1751/1753/1755/1757/1759/1761/1763/1765/1767/1769/1771/1773/1775/1777/1779/1781/1783/1785/1787/1789/1791/1793/1795/1797/1799/1801/1803/1805/1807/1809/1811/1813/1815/1817/1819/1821/1823/1825/1827/1829/1831/1833/1835/1837/1839/1841/1843/1845/1847/1849/1851/1853/1855/1857/1859/1861/1863/1865/1867/1869/1871/1873/1875/1877/1879/1881/1883/1885/1887/1889/1891/1893/1895/1897/1899/1901/1903/1905/1907/1909/1911/1913/1915/1917/1919/1921/1923/1925/1927/1929/1931/1933/1935/1937/1939/1941/1943/1945/1947/1949/1951/1953/1955/1957/1959/1961/1963/1965/1967/1969/1971/1973/1975/1977/1979/1981/1983/1985/1987/1989/1991/1993/1995/1997/1999/2001/2003/2005/2007/2009/2011/2013/2015/2017/2019/2021/2023/2025/2027/2029/2031/2033/2035/2037/2039/2041/2043/2045/2047/2049/2051/2053/2055/2057/2059/2061/2063/2065/2067/2069/2071/2073/2075/2077/2079/2081/2083/2085/2087/2089/2091/2093/2095/2097/2099/2101/2103/2105/2107/2109/2111/2113/2115/2117/2119/2121/2123/2125/2127/2129/2131/2133/2135/2137/2139/2141/2143/2145/2147/2149/2151/2153/2155/2157/2159/2161/2163/2165/2167/2169/2171/2173/2175/2177/2179/2181/2183/2185/2187/2189/2191/2193/2195/2197/2199/2201/2203/2205/2207/2209/2211/2213/2215/2217/2219/2221/2223/2225/2227/2229/2231/2233/2235/2237/2239/2241/2243/2245/2247/2249/2251/2253/2255/2257/2259/2261/2263/2265/2267/2269/2271/2273/2275/2277/2279/2281/2283/2285/2287/2289/2291/2293/2295/2297/2299/2301/2303/2305/2307/2309/2311/2313/2315/2317/2319/2321/2323/2325/2327/2329/2331/2333/2335/2337/2339/2341/2343/2345/2347/2349/2351/2353/2355/2357/2359/2361/2363/2365/2367/2369/2371/2373/2375/2377/2379/2381/2383/2385/2387/2389/2391/2393/2395/2397/2399/2401/2403/2405/2407/2409/2411/2413/2415/2417/2419/2421/2423/2425/2427/2429/2431/2433/2435/2437/2439/2441/2443/2445/2447/2449/2451/2453/2455/2457/2459/2461/2463/2465/2467/2469/2471/2473/2475/2477/2479/2481/2483/2485/2487/2489/2491/2493/2495/2497/2499/2501/2503/2505/2507/2509/2511/2513/2515/2517/2519/2521/2523/2525/2527/2529/2531/2533/2535/2537/2539/2541/2543/2545/2547/2549/2551/2553/2555/2557/2559/2561/2563/2565/2567/2569/2571/2573/2575/2577/2579/2581/2583/2585/2587/2589/2591/2593/2595/2597/2599/2601/2603/2605/2607/2609/2611/2613/2615/2617/2619/2621/2623/2625/2627/2629/2631/2633/2635/2637/2639/2641/2643/2645/2647/2649/2651/2653/2655/2657/2659/2661/2663/2665/2667/2669/2671/2673/2675/2677/2679/2681/2683/2685/2687/2689/2691/2693/2695/2697/2699/2701/2703/2705/2707/2709/2711/2713/2715/2717/2719/2721/2723/2725/2727/2729/2731/2733/2735/2737/2739/2741/2743/2745/2747/2749/2751/2753/2755/2757/2759/2761/2763/2765/2767/2769/2771/2773/2775/2777/2779/2781/2783/2785/2787/2789/2791/2793/2795/2797/2799/2801/2803/2805/2807/2809/2811/2813/2815/2817/2819/2821/2823/2825/2827/2829/2831/2833/2835/2837/2839/2841/2843/2845/2847/2849/2851/2853/2855/2857/2859/2861/2863/2865/2867/2869/2871/2873/2875/2877/2879/2881/2883/2885/2887/2889/2891/2893/2895/2897/2899/2901/2903/2905/2907/2909/2911/2913/2915/2917/2919/2921/2923/2925/2927/2929/2931/2933/2935/2937/2939/2941/2943/2945/2947/2949/2951/2953/2955/2957/2959/2961/2963/2965/2967/2969/2971/2973/2975/2977/2979/2981/2983/2985/2987/2989/2991/2993/2995/2997/2999/3001/3003/3005/3007/3009/3011/3013/3015/3017/3019/3021/3023/3025/3027/3029/3031/3033/3035/3037/3039/3041/3043/3045/3047/3049/3051/3053/3055/3057/3059/3061/3063/3065/3067/3069/3071/3073/3075/3077/3079/3081/3083/3085/3087/3089/3091/3093/3095/3097/3099/3101/3103/3105/3107/3109/3111/3113/3115/3117/3119/3121/3123/3125/3127/3129/3131/3133/3135/3137/3139/3141/3143/3145/3147/3149/3151/3153/3155/3157/3159/3161/3163/3165/3167/3169/3171/3173/3175/3177/3179/3181/3183/3185/3187/3189/3191/3193/3195/3197/3199/3201/3203/3205/3207/3209/3211/3213/3215/3217/3219/3221/3223/3225/3227/3229/3231/3233/3235/3237/3239/3241/3243/3245/3247/3249/3251/3253/3255/3257/3259/3261/3263/3265/3267/3269/3271/3273/3275/3277/3279/3281/3283/3285/3287/3289/3291/3293/3295/3297/3299/3301/3303/3305/3307/3309/3311/3313/3315/3317/3319/3321/3323/3325/3327/3329/3331/3333/3335/3337/3339/3341/3343/3345/3347/3349/3351/3353/3355/3357/3359/3361/3363/3365/3367/3369/3371/3373/3375/3377/3379/3381/3383/3385/3387/3389/3391/3393/3395/3397/3399/3401/3403/3405/3407/3409/3411/3413/3415/3417/3419/3421/3423/3425/3427/3429/3431/3433/3435/3437/3439/3441/3443/3445/3447/3449/3451/3453/3455/3457/3459/3461/3463/3465/3467/3469/3471/3473/3475/3477/3479/3481/3483/3485/3487/3489/3491/3493/3495/3497/3499/3501/3503/3505/3507/3509/3511/3513/3515/3517/3519/3521/3523/3525/3527/3529/3531/3533/3535/3537/3539/3541/3543/3545/3547/3549/3551/3553/3555/3557/3559/3561/3563/3565/3567/3569/3571/3573/3575/3577/3579/3581/3583/3585/3587/3589/3591/3593/3595/3597/3599/3601/3603/3605/3607/3609/3611/3613/3615/3617/3619/3621/3623/3625/3627/3629/3631/3633/3635/3637/3639/3641/3643/3645/3647/3649/3651/3653/3655/3657/3659/3661/3663/3665/3667/3669/3671/3673/3675/3677/3679/3681/3683/3685/3687/3689/3691/3693/3695/3697/3699/3701/3703/3705/3707/3709/3711/3713/3715/3717/3719/3721/3723/3725/3727/3729/3731/3733/3735/3737/3739/3741/3743/3745/3747/3749/3751/3753/3755/3757/3759/3761/3763/3765/3767/3769/3771/3773/3775/3777/3779/3781/3783/3785/3787/3789/3791/3793/3795/3797/3799/3801/3803/3805/3807/3809/3811/3813/3815/3817/3819/3821/3823/3825/3827/3829/3831/3833/3835/3837/3839/3841/3843/3845/3847/3849/3851/3853/3855/3857/3859/3861/3863/3865/3867/3869/3871/3873/3875/3877/3879/3881/3883/3885/3887/3889/3891/3893/3895/3897/3899/3901/3903/3905/3907/3909/3911/3913/3915/3917/3919/3921/3923/3925/3927/3929/3931/3933/3935/3937/3939/3941/3943/3945/3947/3949/3951/3953/3955/3957/3959/3961/3963/3965/3967/3969/3971/3973/3975/3977/3979/3981/3983/3985/3987/3989/3991/3993/3995/3997/3999/4001/4003/4005/4007/4009/4011/4013/4015/4017/4019/4021/4023/4025/4027/4029/4031/4033/4035/4037/4039/4041/4043/4045/4047/4049/4051/4053/4055/4057/4059/4061/4063/4065/4067/4069/4071/4073/4075/4077/4079/4081/4083/4085/4087/4089/4091/4093/4095/4097/4099/4101/4103/4105/4107/4109/4111/4113/4115/4117/4119/4121/4123/4125/4127/4129/4131/4133/4135/4137/4139/4141/4143/4145/4147/4149/4151/4153/4155/4157/4159/4161/4163/4165/4167/4169/4171/4173/4175/4177/4179/4181/4183/4185/4187/4189/4191/4193/4195/4197/4199/4201/4203/4205/4207/4209/4211/4213/4215/4217/4219/4221/4223/4225/4227/4229/4231/4233/4235/4237/4239/4241/4243/4245/4247/4249/4251/4253/4255/4257/4259/4261/4263/4265/4267/4269/4271/4273/4275/4277/4279/4281/4283/4285/4287/4289/4291/4293/4295/4297/4299/4301/4303/4305/4307/4309/4311/4313/4315/4317/4319/4321/4323/4325/4327/4329/4331/4333/4335/4337/4339/4341/4343/4345/4347/4349/4351/4353/4355/4357/4359/4361/4363/4365/4367/4369/4371/4373/4375/4377/4379/4381/4383/4385/4387/4389/4391/4393/4395/4397/4399/4401/4403/4405/4407/4409/4411/4413/4415/4417/4419/4421/4423/4425/4427/4429/4431/4433/4435/4437/4439/4441/4443/4445/4447/4449/4451/4453/4455/4457/4459/4461/4463/4465/4467/4469/4471/4473/4475/4477/4479/4481/4483/4485/4487/4489/4491/4493/4495/4497/4499/4501/4503/4505/4507/4509/4511/4513/4515/4517/4519/4521/4523/4525/4527/4529/4531/4533/4535/4537/4539/4541/4543/4545/4547/4549/4551/4553/4555/4557/4559/4561/4563/4565/4567/4569/4571/4573/4575/4577/4579/4581/4583/4585/4587/4589/4591/4593/4595/4597/4599/4601/4603/4605/4607/4609/4611/4613/4615/4617/4619/4621/4623/4625/4627/4629/4631/4633/4635/4637/4639/4641/4643/4645/4647/4649/4651/4653/4655/4657/4659/4661/4663/4665/4667/4669/4671/4673/4675/4677/4679/4681/4683/4685/4687/4689/4691/4693/4695/4697/4699/4701/4703/4705/4707/4709/4711/4713/4715/4717/4719/4721/4723/4725/4727/4729/4731/4733/4735/4737/4739/4741/4743/4745/4747/4749/4751/4753/4755/4757/4759/4761/4763/4765/4767/4769/4771/4773/4775/4777/4779/4781/4783/4785/4787/4789/4791/4793/4795/4797/4799/4801/4803/4805/4807/4809/4811/4813/4815/4817/4819/4821/4823/4825/4827/4829/4831/4833/4835/4837/4839/4841/4843/4845/4847/4849/4851/4853/4855/4857/4859/4861/4863/4865/4867/4869/4871/4873/4875/4877/4879/4881/4883/4885/4887/4889/4891/4893/4895/4897/4899/4901/4903/4905/4907/4909/4911/4913/4915/4917/4919/4921/4923/4925/4927/4929/4931/4933/4935/4937/4939/4941/4943/4945/4947/4949/4951/4953/4955/4957/4959/4961/4963/4965/4967/4969/4971/4973/4975/4977/4979/4981/4983/4985/4987/4989/4991/4993/4995/4997/4999/5001/5003/5005/5007/5009/5011

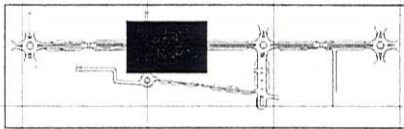
 - Built
 - Area estimate based on.



Legend:

-  Proposed Isolation Joint
-  Proposed Key Joint
-  Proposed Expansion Joint
-  Extent of Works Stage 1
-  Extent of Works Stage 1A
-  Indicates 3LBTM x 1200mm long extra top (25mm min to 50mm max cover to corner)
-  200 thick in-situ concrete pavement - use type C joints (concrete strength F_c = 40Mpa)
-  140 thick in-situ concrete pavement - use type B joints (concrete strength F_c = 25Mpa)
-  Garden beds
-  Fig tree planter box as detailed.
-  Driveway - 150 thick slab with SL92 fabric surface finish to architects specifications
-  Segmental pavers to architects specifications on 75mm thick RC slab - use type A joints (concrete strength F_c = 25Mpa)

Note:
 For Joint Details refer to drawing 2137.RD.08
 All Joints are of Type A u.n.o.



D TITLE SHEET C SECOND SHEET K NOT BOUND A FIRST SHEET R010 RECALCULATE		DRAWN BY: WP DATE: 11.02.2003 APPROVED BY: WP DATE: 11.02.2003	PROJECT: River Street Beautification Project Ballina Stage One CLIENT: Ballina Shire Council Cnr Tamar & Cherry Streets PO Box 450 Ballina NSW 2478 Phone: (02) 6686 4444 Fax: (02) 6686 7035	LANDSCAPE ARCHITECTS & URBAN DESIGNERS: ENVIRONMENTAL DESIGN GROUP (Pty) Ltd Landscape Architects & Urban Planners 2 River Street (Bridgeway) Ballina NSW 2478 Phone: (02) 6686 1033 Fax: (02) 6686 1030 Email: envdesign@envdesign.com.au ENVIRONMENTAL DESIGN GROUP	ARCHITECTS: Peter Reed & Associates 41 South Street West Ballina NSW 2478 Phone: (02) 6686 4266 Fax: (02) 6686 4688 Email: peterreed@peterreed.com.au	ELECTRICAL & LIGHTING ENGINEERS: Lighting Art & Science 40 Park Crescent Pymble NSW 2103 Phone: (02) 9144 1164 Fax: (02) 9440 1236 Email: info@lightingartandscience.com.au	DRAWING TITLE: JOINT LAYOUT RIVER STREET EAST (STAGE 1) DATE: SEPTEMBER 2002 SCALE: 1:200 @ A1 DRAWING NO: 2137.JL.02
---	--	---	--	---	---	---	--

Item 29

Construction of Tamar Street/Cherry Street Roundabout

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE – FINAL STATUS

ITEM 29

20-Aug-09

Tamar St / Cherry St Roundabout
--

Included in estimate:

- Roundabout – Intersection between Tamar Street and Cherry Street

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has not been allowed for. There are streetlights currently in place which we have assumed will not be affected by the proposed works.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. The proposed roundabout design has been supplied by Ballina Shire Council for the purposes of this cost estimate. The plan provided by Council is attached to this estimate for reference.
7. Infill to roundabout assumed to be stamped concrete to avoid provision for subsoil drainage on existing pavement.
8. Replace existing flexible pavement (Sth of intersection along Cherry St) with Reinforced Concrete Pavement) (approx. 50m) to meet with proposed upgrade of River St/Cherry St intersection as advised by Ballina Shire Council.
9. All costs indicated are exclusive of GST.

10. Contingencies have been allowed for at a rate of 20% of the total construction costs.
11. Allowance has been made for footpath reconstruction where modification or replacement is necessary.
12. Allowance has been made for reconstruction of gully pits to suit new pavement.

**Cherry St - Tamar St Roundabout
 Construction of Roundabout and Intersection Upgrade**

Preliminary Estimate of Construction Costs - Final Status

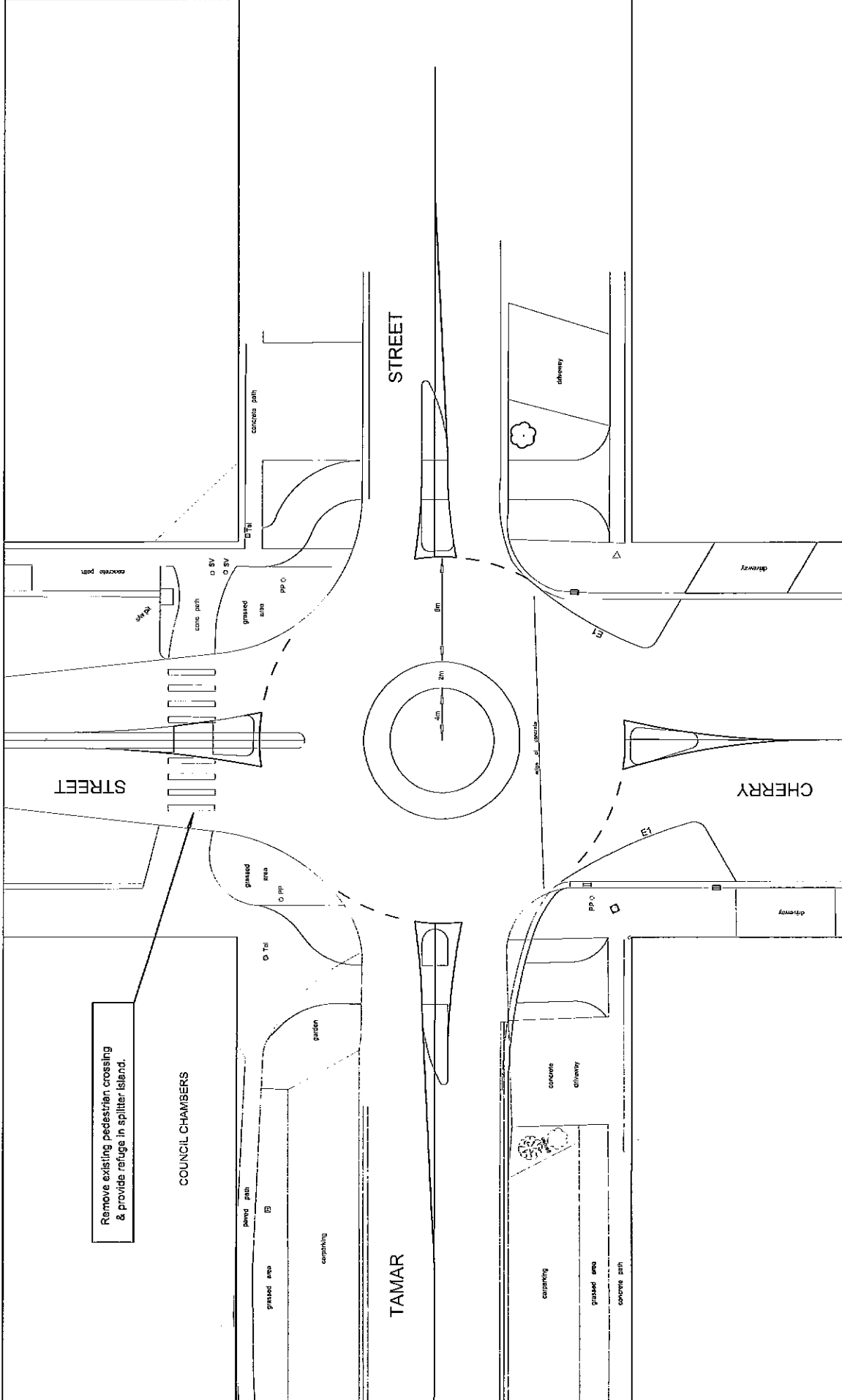
Summary		Total Estimate
Section A - General Construction	.....	\$357,750.00
Section B - Specific Drainage + Structures	.....	\$8,000.00
Sub Total Estimate (excl. GST)		\$365,750.00
SUB TOTAL ESTIMATE (excl. GST)		\$365,750.00
CONTINGENCY (20%)		\$73,150.00
PROFESSIONAL COSTS -	Route Concept / EIS (4%)	\$17,556.00
	Engineering Detailed Design (8%)	\$35,112.00
	Project Management (4%)	\$17,556.00
Total Estimate (excl. GST)		\$509,124.00
Public Utility Relocation costs provided by Council		\$ 21,000.00
TOTAL ESTIMATE (excl. GST)		\$530,124

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.

Item	Description	Unit	Qty	Rate	Amount
SECTION A - Roundabout					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item		\$5,000.00	
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³		\$3.00	
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³		\$10.00	
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	100	\$10.00	\$1,000.00
b)	Stormwater quality (Bio Retention Basins) <i>(Allow 400sq.m @ \$315/sq.m for 1000m road)</i>	m		\$126.00	
A5	ROADWORKS				
a)	Flexible pavement (AC)	m		\$1,400.00	
b)	Rigid Pavement (Reinforced Concrete)	m ²	700	\$300.00	\$210,000.00
c)	Kerb for traffic diversion, roundabout, medians	m	250	\$40.00	\$10,000.00
d)	Concrete Infill of roundabout, medians	m ²	120	\$90.00	\$10,800.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	700	\$30.00	\$21,000.00
f)	Safety Barrier and reflective markers <i>(per meter of carriageway)</i>	m	150	\$150.00	\$22,500.00
g)	Construct footpath (varying widths) <i>(100mm thick reinforced plain concrete)</i>	m ²	250	\$60.00	\$15,000.00
A6	TRAFFIC SIGNALS - Intersection	Item		\$250,000.00	
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place <i>(Prov. Qty)</i> <i>(per meter of carriageway)</i>	m	150	\$5.00	\$750.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified <i>(per meter of carriageway)</i>	m	150	\$8.00	\$1,200.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²		\$0.50	
b)	Turfing to footpaths and designated areas	m ²	100	\$5.00	\$500.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$10,000.00	\$10,000.00
b)	Landscaping	m	150	\$100.00	\$15,000.00
c)	Electrical - Streetlights	No.		\$15,000.00	
SECTION A - Roundabout - Total					\$357,750.00



Item	Description	Unit	Qty	Rate	Amount
SECTION B - Specific Drainage					
1	Raising of gully pits to suit new road level Assume gully pit every 50m	No.	4	\$2,000.00	\$8,000.00
SECTION B - Specific Drainage - Total					\$8,000.00



SHIRE OF BALLINA		Designed	G,JH
PROPOSED ROUNDABOUT		Drawn	
CHERRY ST / TAMAR ST INTERSECTION		Checked	
BALLINA		Approved	
		Date	
		Scale	1 : 200
		Plan No.	SR 20.004/3
		Sheet 1 of 1	Sheets
		X'd	
No.	Date	By	Change
Amendments			

Item 30

***Signalisation of Angels Beach Drive/Bangalow Road
Intersection plus 4-laning Bangalow Road to Kerr Street***

BALLINA SHIRE COUNCIL
SECTION 94 CONTRIBUTIONS
COST ESTIMATE–FINAL STATUS

ITEM 30

21-Aug-09

Road Lane Extensions Angels Beach Drive / Bangalow Road
--

Included in estimate:

- Road Lane Extensions at Angels Beach Dr / Bangalow Rd including roundabout intersection upgrade to traffic signals

Summary of assumptions and exclusions:

1. Based on advice from Council, no land acquisition will be required as part of the proposed works.
2. Service Relocation costs have been provided by Council and are included within the estimate.
3. Landscaping (street trees) have been allowed for.
4. Streetlighting has been allowed for. Specifically on the industrial (Nth) side of the Bangalow Rd upgrade works, as the existing streetlighting on the shopping centre (Sth) side should not be affected.
5. Professional costs for engineering design have been included based on percentage of estimated construction costs.
6. All estimates are based on the information provided by the attached plans.
7. All costs indicated exclude GST.
8. Contingencies have been allowed for at a rate of 20% of the total construction costs.
9. Based on advice from Council, flexible pavement is to be used for the upgrade works. We have assumed the existing flexible pavement will remain and that additional pavement width will be constructed where necessary as indicated by

the overlay on the attached plan. The existing roundabout intersection between Bangalow Rd and Angels Beach Dr will remain as rigid pavement. A small quantity of full depth reinforced concrete has been allowed for in the estimate to fill the void created by central landscaped median.

10. Construction of footpaths has been included in this estimate for a small portion of Bangalow Rd and most of Angels Beach Dr where the current footpath alignment is likely to be affected.
11. The existing bus stop on the shopping centre side of Bangalow Rd will need to be relocated as part of the upgrade works and has been allowed for in the estimate.
12. Allowance has been made for the construction of stormwater gully pits and associated pipework.

**Angels Beach Dr / Bangalow Rd Intersection
Construction of road lane extensions and signalised intersection**

Preliminary Estimate of Construction Costs - Final Status

Summary	Total Estimate
Section A - General Construction	\$1,670,550.00
Section B - Specific Drainage + Structures	\$324,000.00
Sub Total Estimate (excl. GST) \$1,994,550.00	
SUB TOTAL ESTIMATE (excl. GST) \$1,994,550.00	
CONTINGENCY (20%) \$398,910.00	
PROFESSIONAL COSTS -	
Route Concept / EIS (4%)	\$95,738.40
Engineering Detailed Design (8%)	\$191,476.80
Project Management (4%)	\$95,738.40
Total Estimate (excl. GST) \$2,776,413.60	
Public Utility Relocation costs provided by Council	\$ 296,250.00
TOTAL ESTIMATE (excl. GST) \$3,072,664	

1. This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client, in accordance with the terms of the retainer, if agreed to. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.
2. This information is for the use of the client in relation to the subject land and extracts or quotations from the report are not to be made without our expressed written approval.
3. It should be understood that this indicative cost estimate is very preliminary in nature and it should be reviewed when further liaison/investigation is completed and approvals are obtained. We accept no liability or responsibility for interpretations made or use of the information for any other purpose. It should also be noted that the estimate may be affected by a number of factors outside the control of Cardno (Qld) Pty Ltd and we cannot warrant the accuracy of the information provided and recommend a further review of the information contained herein be undertaken by the client prior to use.
4. No geotechnical investigation has been available for review.
5. No preliminary or detailed design has been undertaken.
6. This assessment has been based on the information available at this time.
7. Further contingencies may be necessary based on issues identified during detailed design.
8. There are risks associated with preparing and using estimates prepared at such a preliminary stage of a development. Cardno will not be responsible for any decisions made based on the preliminary information provided.
9. There was no assessment of planning or environmental factors, which may influence the development costs & feasibility.
10. This estimate is based on current construction rates for similar Cardno projects. Further allowances should be made for rises with time.



Item	Item 16	Unit	Qty	Rate	Amount
SECTION A - Road Lane Extensions					
A1	SITE ESTABLISHMENT	Item	1	\$10,000.00	\$10,000.00
A1	PROVISION FOR TRAFFIC CONTROL	PC Item	1	\$30,000.00	\$30,000.00
A3	EARTHWORKS				
a)	Clearing and Grubbing	Item	1	\$10,000.00	\$10,000.00
b)	Stripping and stockpiling at topsoil to earthworks areas and respreading as directed (100mm nominal)	m ³	400	\$3.00	\$1,200.00
c)	Cut to Fill on site including compaction and Level 1 Geotech supervision & reporting	m ³	500	\$10.00	\$5,000.00
d)	Imported fill to road embankments including compaction and Level 1 Geotech supervision & Reporting	m ³		\$25.00	
A4	SILT MANAGEMENT				
a)	Sediment Control Fencing	m	500	\$10.00	\$5,000.00
b)	Stormwater quality (Bio Retention Basins) (Allow 400sq.m @ \$315/sq.m for 1000m road)	m	650	\$126.00	\$81,900.00
A5	ROADWORKS				
a)	Flexible pavement (AC)	m ²	3,000	\$150.00	\$450,000.00
b)	Rigid Pavement (Reinforced Concrete)	m ²	200	\$300.00	\$60,000.00
c)	Kerb - construct or replace as necessary	m	2,000	\$40.00	\$80,000.00
d)	Concrete Infill of medians	m ²	1,200	\$90.00	\$108,000.00
e)	Remove and dispose of existing pavement, kerb, medians	m ²	1,200	\$30.00	\$36,000.00
f)	Safety Barrier and reflective markers (per meter of carriageway)	m	650	\$150.00	\$97,500.00
g)	Construct footpath (varying widths) (100mm thick reinforced plain concrete)	m ²	400	\$100.00	\$40,000.00
h)	Relocate bus shelter (Bangalow Rd)and bus widening bay to new alignment	Item	1	\$20,000.00	\$20,000.00
A6	TRAFFIC SIGNALS - Intersection	Item	1	\$250,000.00	\$250,000.00
A7	SIGNAGE				
a)	Supply standard traffic control signs and devices, complete in place (Prov. Qty) (per meter of carriageway)	m	650	\$5.00	\$3,250.00
A8	LINEMARKING				
a)	Setout and apply all linemarking, pedestrian crossings and chevron marking including RRPM's as specified (per meter of carriageway)	m	650	\$8.00	\$5,200.00
A9	RESTORATION / REVEGETATION				
a)	Grass seeding to external earthworks	m ²	5,000	\$0.50	\$2,500.00
b)	Turfing to footpaths and designated areas	m ²	1,000	\$5.00	\$5,000.00
A10	MISCELLANEOUS				
a)	Survey setout	PC Item	1	\$30,000.00	\$30,000.00
b)	Landscaping	m	1,300	\$100.00	\$130,000.00
c)	Electrical - Streetlights	No.	14	\$15,000.00	\$210,000.00
SECTION A - Road Lane Extensions		Total			\$1,670,550.00



Item	Unit	Qty	Rate	Amount
<u>SECTION B - Specific Drainage</u>				
1 Stormwater Gully Pits including pipes Assume Gully Pit every 40m	m	1,200	\$270.00	\$324,000.00
SECTION B - Specific Drainage - Total				\$324,000.00

CONCEPT ONLY



LEGEND

- Works included in costing package
- Works not included in costing package



TIE INTO EXISTING ROADWAY

TIE INTO EXISTING ROADWAY

RV.	DATE	ISSUED FOR ESTIMATES	REVISIONS	REC.	APPR.
A	02/2009	ISSUED FOR ESTIMATES			

© Cardno (Qld) Pty Ltd All Rights Reserved 2002.
 Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.

This document is produced by Cardno (Qld) Pty Ltd solely for the benefit of and use by the client in accordance with the Terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

DESIGNED: BSC	A1	DATUM: A.H.D.
DRAWN: NS		
CHECKED: TS	RECOMMENDED: PROJ. MAN. SK	APPROVED: PROJ. DIR.

Cardno (Qld) Pty Ltd ACN: 051 074 992
 Commercial Centre, Isle of Copri
 Gold Coast City, Queensland 4217
 Email: gco@gold.cardno.com.au

OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 9333	(07) 5538 4847
Brisbane	(07) 3368 9522	(07) 3368 9722
Sydney	(02) 9418 8233	(02) 9416 8529
Sunshine Coast	(07) 5443 2555	(07) 5443 5842
Townsville	(07) 4772 1188	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Central Coast	(02) 4323 2558	(02) 4324 3251
Port Moresby	(0011875) 325 2322	(0011875) 325 0951
Philippines	(0011632) 910 5148	(0011632) 910 5146

BALLINA SHIRE COUNCIL
 BALLINA SHIRE COUNCIL ROAD UPGRADES
ANGELS BEACH DRIVE / BANGALOW
 ROAD LANE EXTENSION

DATE: FEBRUARY 2009
 DRAWING No: **CE008667-30**

RV.

Items 31 - 33

Construction of Cumbalum North-South Link (Stage 1 only)

BALLINA SHIRE COUNCIL
COST ESTIMATE – FINAL STATUS
ITEMS 31 - 33

02-Dec-09

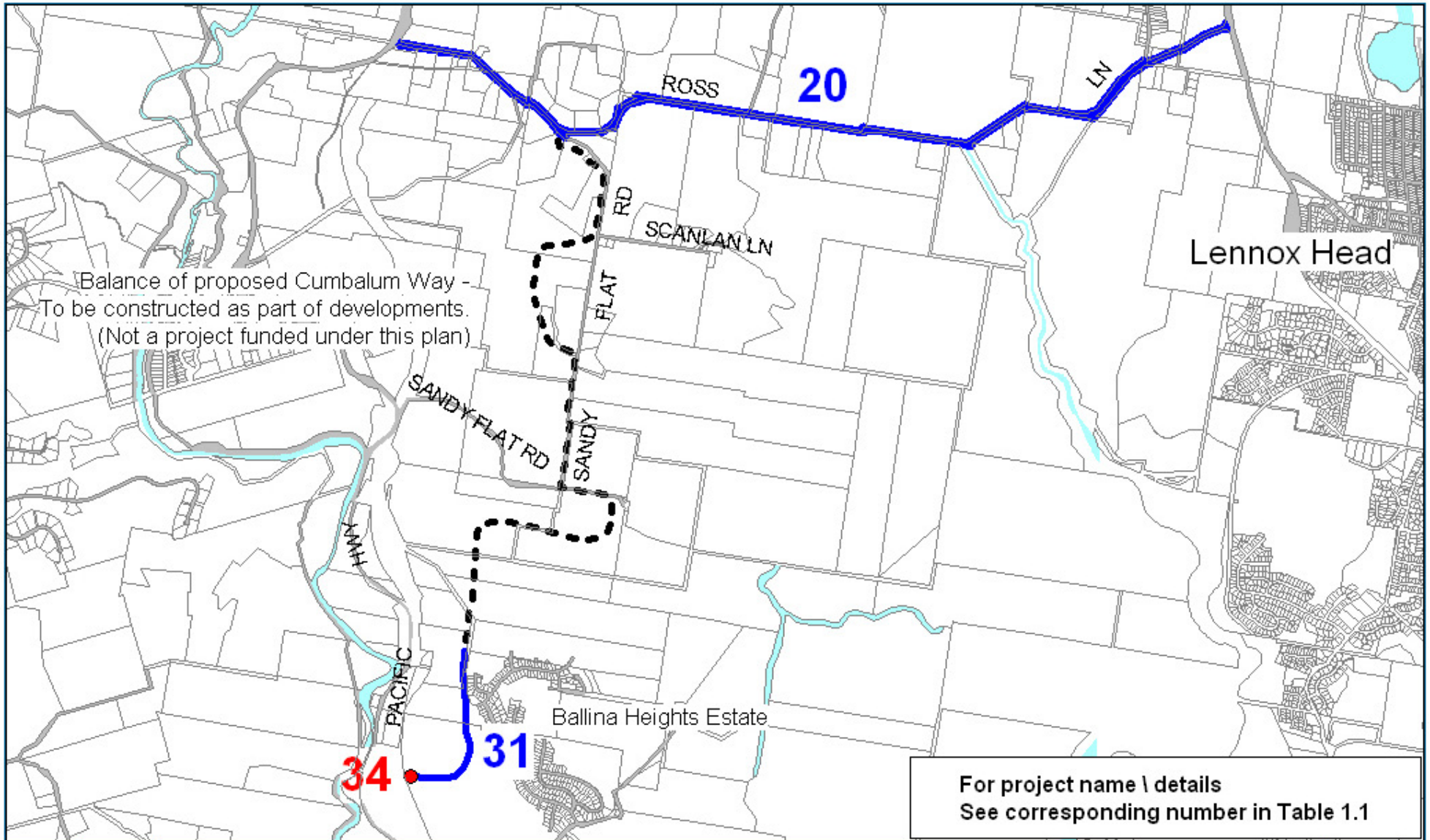
Cumbalum North – South Link (Stage 1 Only)

Included in estimate:

- Stage 1 only of Cumbalum North – South Link
-

Summary of assumptions and exclusions:

1. The cost estimate for this item was developed by Ardill Payne and Partners and includes only Stage 1 of the new link road within the vicinity of the Ballina Heights Estate.
2. A total cost of \$4M has been estimated for Stage 1. A detailed cost estimate breakdown is not available for this item.
3. A plan showing the approximate length of the link road included in Stage 1 is attached.
4. All costs indicated exclude GST.



Item 34

Construction of roundabout at Cumbalum Interchange

BALLINA SHIRE COUNCIL
COST ESTIMATE – FINAL STATUS

ITEM 34

02-Dec-09

Cumbalum Interchange – Eastern Roundabout
--

Included in estimate:

- Eastern roundabout at Ballina Bypass Cumbalum Interchange

Summary of assumptions and exclusions:

1. The cost estimate for this item was developed by the Ballina Bypass Alliance and includes for the construction of the new eastern roundabout at the Ballina Bypass Cumbalum Interchange.
2. A total cost of \$2.6M has been estimated for the eastern roundabout. A detailed cost estimate breakdown is not available for this item.
3. A plan showing the proposed roundabout design is attached.
4. All costs indicated exclude GST.

