CALDERWOOD URBAN DEVELOPMENT PROJECT

ALBION PARK BYPASS / TRIPOLI WAY EXTENSION

Report on Impact Assessment

Concept Plan and State Significant Site Listing

Delfin Lend Lease

August 2010

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CONCEPT PLAN AND STATE SIGNIFICANT SITE LISTING

OVERVIEW

The Department of Planning has requested in its letter dated 15 July 2010 that Delfin Lend Lease (DLL) assess the impact of the Calderwood project prior to and after the completion of the Albion Park Bypass / Tripoli Way Extension. On the basis of the assessment set out below, DLL has revised the Calderwood Project as follows:

- The Concept Plan has been amended to specifically assist the implementation of the bypass, including estimates of contributions towards its construction (refer **revised Concept Plan and revised Statement of Commitments**);
- A series of additional commitments that are designed to specifically advance a concept and detailed design of the proposed TWE (refer **PPR revised Stage 1 Project Application and revised Statement of Commitments**).

The studies undertaken by DLL and Calderwood consultant team show that the Tripoli Way Extension is required irrespective of whether or not Calderwood is implemented. However, in the event that Calderwood is implemented, it contributes to the cost of the Albion Park Bypass / Tripoli Way Extension (refer TMAP recommended Upgrade Items 14, 15 and 16). The documentation lodged with the EAR acknowledged the bypass and did not unduly fetter its implementation, at some point in the future (refer **EAR Appendix T – Concept plan Transport Accessibility Study and Transport Management and Accessibility Plan** (TMAP); **the Concept Plan** and **the Stage 1 PA**).

CURRENT STATUS OF THE ALBION PARK BYPASS

The Albion Park Bypass (APB) is a proposed bypass north of the town of Albion Park, Shellharbour, linking the Illawarra Highway west of Albion Park to the Illawarra Highway north east of Albion Park and ultimately connecting into the proposed F6 Freeway (refer **Attachment A**). The APB comprises a number of stages including the Tripoli Way Extension (TWE). The TWE forms the western arm of the bypass linking the Illawarra Highway west of Albion Park with the existing section(s) of Tripoli Way.

The APB / TWE is an established local road project of Shellharbour City Council (SCC) and has been subject to a significant level of study over a number of years. A "preferred option" for the proposed APB / TWE has been endorsed by the City Council for the purpose of public exhibition, as set out in the following documents:

- Shellharbour City Council, Report to Ordinary Council Meeting dated 14 August 2007: Item 11.7 Albion Park Traffic Study – Public Exhibition; extracts of Minutes of Ordinary Council Meetings, dated 14 August 2007, 13 November 2007 and 22 July 2008; and Media Release dated 23 July 2008 (refer **Attachment B**); and
- Albion Park Traffic Study Final Report, May 2006 (Maunsell AECOM)[1].

The "preferred option" and the local road reservation for the TWE both traverse the south eastern corner of the Calderwood project (refer **Attachment A**). The indicative alignment of the "preferred option" differs from a 9(c) Local Roads Reservation Zone identified in the Shellharbour LEP 2000 or the Shellharbour Rural LEP 2004, as can be seen from the following documents:

- Shellharbour Local Environmental Plan 2000;
- Shellharbour Rural Local Environmental Plan 2004; and
- Tripoli Way Extension, July 2010 (Delfin Lend Lease) (refer **Attachment C**).

[1] A copy of the Maunsell AECOM report can be provided upon request

DESIGN ATTRIBUTES AND CONSIDERATIONS OF THE EXISTING SHELLHARBOUR CITY COUNCIL PROPOSAL

In July 2010, DLL commissioned Cardno Forbes Rigby to prepare an illustrative plan of the APB / TWE for the section between the junction of the Illawarra Highway/Broughton Avenue west of Albion Park and the existing section of Tripoli Way north of Albion Park. This plan is based upon Council's endorsed "preferred option" and from the information contained in documents listed above and is set out in:

- Tripoli Way Extension to Illawarra Highway, July 2010 (Cardno Forbes Rigby) (refer **Attachment D**).

The illustrative plan of the APB / TWE has the following principle design attributes:

- The proposed route conforms with the "preferred option";
- The proposed junctions conform with the "preferred option":
- The road is trafficable in 1% AEP;
- The road has a 70kph design speed; and
- The road comprises a Sub-Arterial specification providing for single 3.2m wide travel lanes in either direction and on street parking and footpath.

The illustrative plan of the APB / TWE has the following concept design considerations:

- c720m long section of new road between the existing section of Tripoli Way to the Broughton Avenue roundabout at Illawarra Highway;
- c400m long section of new road specifically within the Calderwood Project area (north from the Broughton Avenue roundabout at Illawarra Highway);
- Trafficable in 1% AEP (nom. depth 300mm) to provide appropriate "flood free" access and egress [**NOTE**: the existing Broughton Avenue roundabout is built to 1:5yr event and Tripoli Way Extension would rise from this level, as quickly as practicable, to 1% AEP];
- To provide appropriate flood free access and egress, the road requires embankments to be constructed to RL16.5;
- The embankments required for flood free access would average 3.5m above existing ground level (but range between c2.5m to c4.5m);
- The embankments would require importation of approx. 61,000m^3 of fill (of which 42,000 m^3 would be required within the Calderwood Project area);
- The embankments would create a 'weir' backing up flood waters from Hazleton Creek to the Illawarra Highway and existing residences in north west Albion Park, unless adequately addressed;
- To address the probable 'weir' effect, two separate crossings of Hazleton Creek are required, for example:
  1. A 90m bridge clear span; and
  2. A 40m culvert adjacent to Illawarra Highway.
- No specific allowance has been made for compensatory extraction (on and/or off site of the Calderwood Project) required for loss of floodplain storage;
- The embankments would require a road reservation in excess of the current 30m reservation identified in the Shellharbour LEP 2000 and Rural LEP 2004;
- A road reservation of 50m+ is considered more likely, both for acquisition and construction;
- No specific allowance has been made in the road reservation for any additional cycle access, although it is considered possible the route would prove desirable for commuter cyclists (and may form part of the SCC Cycle Plan – currently in preparation);
- The embankments would require relocation / raising / undergrounding of two 132KV and one 33KV high voltage power lines;
- No specific allowance has been made for any consequential relocation / undergrounding the high voltage power lines that may also be required as a result of crossing the Hazelton Creek; and
- Hazleton Creek is a 3rd Order+ Stream under DWE Guidelines (2008) Strahler system and a 1st Order (Environmental) Stream under the RCMS (2004). Without being part of a holistic approach to water management (as per the Calderwood Project) it is assumed that the APB / TWE would follow the requirements of the RCMS without much variance. Under the RCMS, this creek would have a c100m Core

Riparian Zone (CRZ), 2 x 10m Vegetated Buffers (VB) and an additional Asset Protection Zone (APZ) on each side of the creek outside of the CRZ and VB. New road crossings over Hazleton Creek are likely to be required to locate all infrastructure and any required floodplain storage works, generally outside of the CRZ and VB and be constructed off-line.

POTENTIAL IMPACTS OF THE EXISTING SHELLHARBOUR CITY COUNCIL PROPOSAL

This assessment shows that implementation of the APB / TWE creates a series of potential impacts that would need to be addressed in detailed design and implementation. These include the following:

Issue	Potential Impact
Statutory	• Proposed design cannot fit within existing 30m wide road reservation. • Acquisition restricted to existing 9(c) local road reserve *unless* the new requirement is enforced with landowners. • Likely to require rezoning (spot rezoning or part of Comprehensive LEP).
Land Ownership	• Probable land fragmentation.
Traffic Access	• Sub-arterial road conditions automatically grant priority to road users. • Existing access and egress to numerous driveways in Albion Park requires resolution.
Flooding	• Significant redirection of floodwaters requires two creek crossings (preliminary findings suggest one major crossing and one minor crossing). • Compensatory exaction required for loss of flood plain storage requires resolution and potential additional land acquisition.
Riparian	• Requires resolution (subject to detailed design and extent of Agency requirements / suggestions).
Groundwater	• Road works generally above water table and minimal impact on ground water accessions. • Bridge foundations and compensatory exaction works will need to be managed to militate any potential impacts on groundwater / salinity.
Visual	• Major embankments required (c3.5m high and c50m wide). • Major bridge crossing required (c4m high and c90m span). • Impact from high voltage power lines (assumes relocation).
Landscape Character	• Potential mitigation through landscaping requires resolution and potential further land acquisition.
Utilities and Services	• Requires investigation (subject to detailed design and extent of Agency requirements / suggestions).
Timing	• Uncertain in absence of contribution from Calderwood.
Funding	• Currently restricted to existing S.94 Contributions Plan (unlikely to meet required costs of acquisition and/or implementation). • New S.94 Plan (and/or alternative borrowing regime and/or State Government grants) likely to be required to fund proposal. • Cost planning needs to consider: o Costs of increased land acquisition (reservation and flood compensation etc) o Costs of 2 x creek crossings o Costs of land raising / embankments / compensatory extraction o Cost of physical construction o Additional briefs, concept design and detailed design work to confirm route selection; junction location / layout; address existing driveways; pedestrian and cycle requirements etc

CALDERWOOD AS PART OF A COMPREHENSIVE SOLUTION

The assessment by DLL and Cardno provides a comprehensive, coordinated and practical approach to implementation as the Calderwood project has the potential to resolve a number of the issues raised by the APB / TWE. This includes the following:

Issue	Potential assistance as a result of the Calderwood Project
Statutory	• Integrated land use, planning and implementation outcome. • Land acquisition - can be addressed via a Statement of Commitments (SoC) and/or a Voluntary Planning Agreement (VPA). • Rezoning - can be addressed via Calderwood Concept Plan and SEPP Amendment.
Land Ownership	• Land fragmentation and implementation addressed on site via comprehensive master planned solution. • Landowner support for integrated solution.
Traffic Access	• Proportion of flow (and thus level of contribution) - can be addressed via VPA. • Existing driveways are an off-site design issue for others to resolve (eg SCC) - but could be incorporated into a comprehensive brief prepared by DLL via SoC.
Flooding	• Smaller creek crossing and compensatory excavation can be designed as part of part of urban community – can be addressed via SoC / VPA. • Major bridge crossing is required off-site - but could be incorporated into a comprehensive brief prepared via SoC. • Incorporated into a comprehensive brief prepared via SoC.
Riparian	• Resolved as part of broader Calderwood Project approach to riparian enhancement and water management. • Detailed design (on and off site) - could be incorporated into a comprehensive brief prepared via an SoC.
Groundwater	Groundwater impacts - could be incorporated into a comprehensive brief prepared via SoC .
Visual	• Impact of an “elevated” road development “in isolation” transformed into part of comprehensive master planned solution. • Integration of the major bridge crossing, street lighting and High voltage power lines.
Landscape Character	• Part of comprehensive master planned solution. • Incorporation of new embankment into broader urban design - can be addressed via SoC / VPA. • Further improvements as part of overall landscaping treatment of open space and project gateways.
Utilities and Services	• Impact on utilities or services, if any, identified as part of integrated solution.
Timing	• Negotiated outcome – refer Preferred Project Report (PPR). • The Calderwood project offers a specific opportunity to advance the brief(s) for preferred route selection, concept design and detailed design and implementation through Project Development Contributions. • The Calderwood project offers a specific opportunity to advance implementation of APB / TWE works within Calderwood Project lands.
Funding	• The Calderwood project offers a specific opportunity to contribute towards the preparation of required brief(s) for preferred route selection, concept design and detailed design and to assess potential cost of works for staged implementation of specific stages of the bypass. • Specific works could be undertaken as ‘Works in Kind’ – refer PPR.

ZONING AND PROCESS ARRANGEMENTS

The land use zones proposed in the EAR for the Calderwood project would permit the implementation of the APB / TWE – on the basis that "roads" are either permissible, or not prohibited, in all zones. However, the "preferred" route option of Council and the two existing LEP road reservations are clearly two of a number of potential options (refer: **Attachments C and D**).

Confirmation of the preferred route and/or other route options should be studied in greater detail, taking into account the issues identified in the above tables and assessing the specific opportunities of being implemented, comprehensively, as part of the Calderwood project. These opportunities include the following:

- Currently, the physical extent of the proposed subdivision of the eastern residential lands results from homes being: above the PMF; a suitable distance from identified riparian corridors; and a suitable distance from high voltage power lines. Implementation of the bypass is likely to have an impact on the extent of land raising and compensatory extraction required; a potential impact on the identified riparian corridors; and require potential relocation / raising / undergrounding of High voltage power lines. Further studies would be required to confirm the potential impact of the above. However, at the conclusion of these studies, the physical extent of proposed subdivision of the eastern residential lands may be the same, greater or lesser than currently sought.
- The major determining factor to the physical extent of development of the eastern residential lands is the PMF, which itself is largely determined by the management of floodwaters within the Calderwood site. The final route alignment of the bypass may permit a different configuration of floodwater management within this area of the Calderwood site and thus suggest a different / more suitable subdivision layout.
- The areas of greatest potential change in PMF (within the Calderwood site, as a result of implementation of the bypass) are:
    - between the two areas of proposed subdivision (currently zoned RE1 and proposed to become a new riparian corridor carrying flood waters to Macquarie Rivulet); and
    - the area immediately southeast of the eastern residential lands (currently zoned RE1 and under the existing 132 kV High voltage power lines).

  For the purposes of this report, these two areas have been identified by DLL as "Flood Planning Areas" (refer **Attachment E**).
- To achieve maximum flexibility (and to minimise / avoid the need to seek an additional spot rezoning) it would be prudent and appropriate for the land use zones to be amended to permit a redesign of the proposed subdivision following confirmation of the route alignment and junction arrangement(s) for the APB / TWE – but subject to the outcomes of a flood study associated with the concept / detailed design of the bypass. This study would help determine the physical limits of residential development and at the same time identify the requirements for land raising / compensatory storage for both residential development and the new bypass across the eastern residential lands and the Flood Planning Areas identified above (refer: **Attachment E**).
- This issue is addressed in greater detail in the Stage 1 PPR (lodged under separate cover) where specific recommendations are made.

A PROPOSED WAY FORWARD

Delfin Lend Lease considers a more pragmatic solution to the implementation of the APB / TWE can be facilitated via the Calderwood Project. This includes the following steps:

Concept Plan items:

- The Calderwood Project (Concept Plan) be revised to specifically accommodate the APB / TWE, generally in accordance with the indicative layout endorsed by Shellharbour Council in July 2008 (refer **Attachment B**).
- DLL revise the Statement of Commitments to contribute towards the preparation of a brief for an "Albion Park Bypass / Tripoli Way Extension - Route Selection Study" within twelve (12) months of Concept Plan and Project Application approval.
- DLL revise the Statement of Commitments to contribute towards the "Albion Park Bypass / Tripoli Way Extension - Route Selection Study", with the study to be undertaken within twelve (12) months of the brief being completed. The Route Selection Study to recommend a specific route alignment and preferred option(s) for access and egress for that part of the bypass between the Illawarra Highway (west of Albion Park) and Calderwood Road.
- DLL revise the Statement of Commitments to contribute towards an "Albion Park Bypass / Tripoli Way Extension – Concept Design", with the design to be undertaken within four (4) months of the Route Selection Study being completed.
- DLL revise the Statement of Commitments to contribute towards an "Albion Park Bypass / Tripoli Way Extension – Detailed Design", with the design to be undertaken within four (4) months of the Concept Design being completed / endorsed.
- DLL revise the Statement of Commitments to agree that, if within three to five (3 - 5) years from the approval of the Concept Plan, substantive steps have been taken towards implementation of the Albion Park Bypass / Tripoli Way Extension (ie obtained all necessary approvals, acquired the necessary land, proceeded to point of tender etc), DLL will accommodate the design of the proposed road into the residential subdivision of the Calderwood project.
- As part of the Development Contributions for the Project, DLL to dedicate land under its control, as necessary, to facilitate implementation of the Albion Park Bypass / Tripoli Way Extension and provide suitable point(s) of access and egress to the Calderwood project. Timing of contributions towards TMAP Upgrades Items 14, 15 and 16 to be negotiated in good faith as part of this process (refer PPR).
- DLL revise the Statement of Commitments to amend the Stage 1 Project Application to acknowledge the current 'preferred' alignment of the APB / TWE and make specific recommendations for its inclusion / progression, in line with the above.

In progressing the above items, DLL commit to using reasonable endeavours to obtain SCC, RTA and DoP endorsement of the brief, studies and designs listed above.

CONCLUSIONS

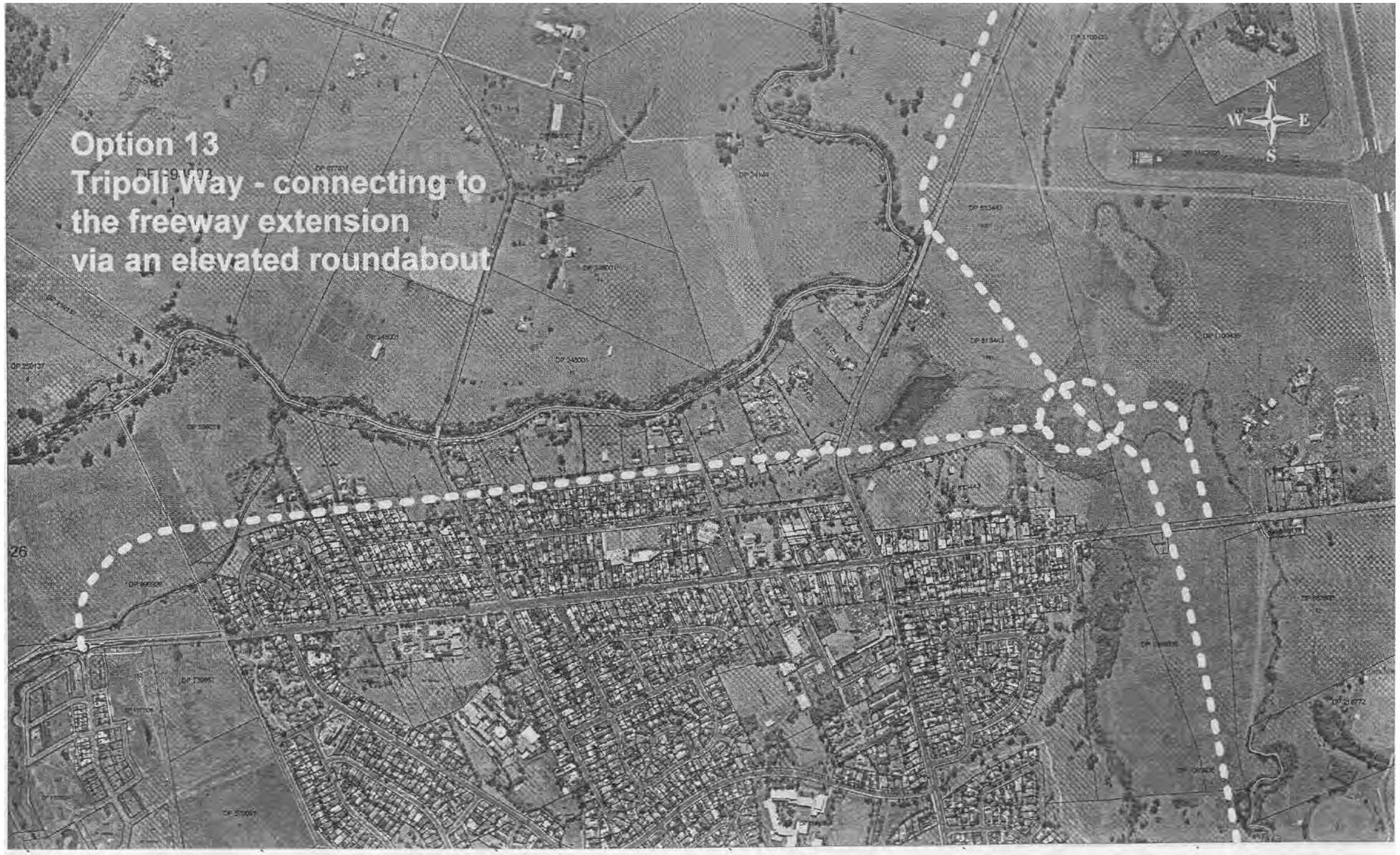
This analysis demonstrates that Calderwood has the potential to incorporate the Albion Park Bypass / Tripoli Way Extension as part of a comprehensive and integrated implementation strategy.

In the absence of the Calderwood project, the bypass creates a series of significant impacts and implementation challenges that require resolution, in isolation and without a clear source of funding.

Following the reassessment requested by the DoP, the Calderwood Project is now able to suggest a more comprehensive response:

- The Concept Plan be amended to specifically assist implementation of the Albion Park Bypass / Tripoli Way Extension (refer **revised Concept Plan and revised Statement of Commitments**).
- Commitment to a series of actions within a specific program and that are designed to advance route selection / confirmation, concept design, detailed design and implementation of the proposed TWE (refer **PPR revised Stage 1 project Application and revised Statement of Commitments**).

ATTACHMENT A



Stage/Phase
Stage 1

Project
Calderwood

Drawing Title
Option 13 - SHCC

Development Team
Joint venture managed by Delfin for Calderwood Properties Pty Ltd

Delfin Lend Lease

Consultants
Cardno Shaping the Future
Environmental Partnership
Douglas Partners
eco logical AUSTRALIA
JBA Urban Planning Consultants

Notes

Issue	Date	Amendment
A	04 | 03 | 2010	DOP Part 3A Submission

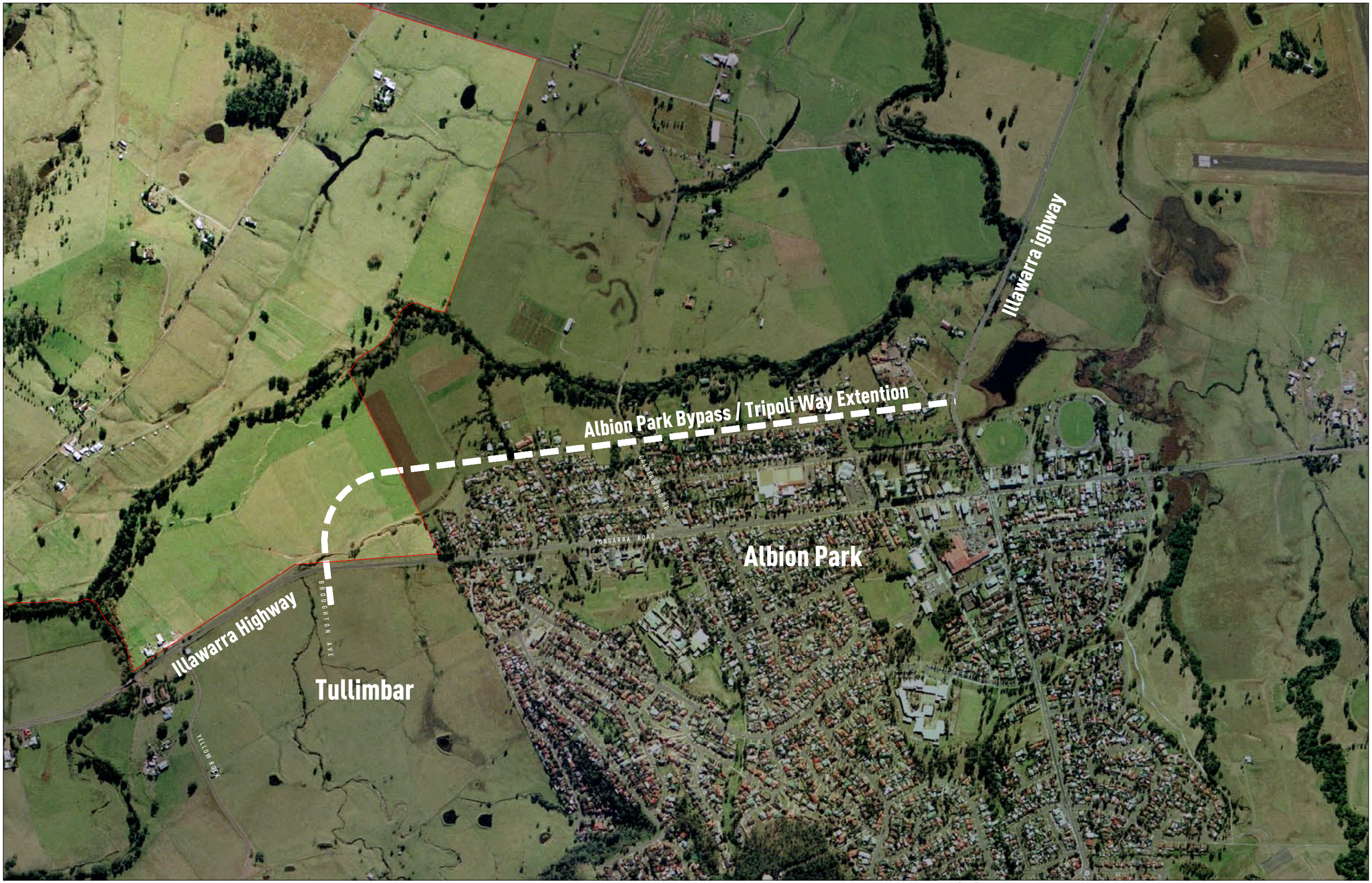
Key Plan

Scale n.t.s

Drawn	DB
Checked	RB
Job No	105152
Drawing Number	At A

Issue
A - DOP Part 3a

Plan Number
At A



Stage/Phase
Stage 1

Project
Calderwood

Drawing Title
Location Plan

Development Team
Joint venture managed by Delfin for Calderwood Properties Pty Ltd

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JBA Urban Planning Consultants

Notes

Issue	Date	Amendment
A	04 | 03 | 2010	DOP Part 3A Submission

Key Plan

Scale n.t.s

Drawn	DB
Checked	RB
Job No	105152
Drawing Number	At A

N

Issue
A - DOP Part 3a

Plan Number
At A

Delfin
Lend Lease

ATTACHMENT B

Subject 11.7Albion Park Traffic Study - Public Exhibition (8765590)

To the General Manager

Division: **Operations & Services Division**
Department: **Development and Technical Services**

Manager: Max Boenisch – Group Manager Development & Technical Services
Author: Luke Preston – Traffic Engineer

Summary

Council has commissioned a consultant traffic study of the Albion Park area. The consultant study assesses the current and future traffic management and road infrastructure needs of the area. In doing so the consultant study recommends a number of options to address those needs.

This report seeks the Council's approval to place the traffic study on public exhibition. Public comment will help Council refine the options presented in the study and subsequently inform the review of Council's Section 94 Plan, the preparation of the urban fringe and comprehensive local environmental plans and forward planning associated with future capital works programs.

Recommendation

It is recommended that Council:

1. **endorse the Albion Park Traffic Study for the purpose of placing it on public exhibition**

2. **exhibit the study for a minimum of 28 days**

3. **require that a further report on the submissions resulting from the public exhibition be submitted to the Council.**

Background

On 20 September 2005, the Council resolved to undertake a review of traffic management options in Albion Park for consideration as part the next Section 94 review. This followed public submissions about the need and justification for various facilities identified in the plan. The study was completed in May 2006 and since that time discussions have been held with the RTA in regard to the study's recommendations, in particular the location of the future Albion Park interchange. The next comprehensive review of the Section 94 Plan is scheduled for 2008 and the Council needs to decide which options and recommendations contained in the study it wishes to incorporate into the draft Section 94 Plan.

The study aims to assess the validity of future strategic road links in the Albion Park area that will form part of the Section 94 Plan. In addition the study will help inform work currently being carried out in relation to the draft urban fringe and comprehensive local environmental plans. The assessment is strategic in nature and focuses on the medium to long-term

impacts of alternative road network/land-use development options, with the view to identifying clear recommendations for future road infrastructure in Albion Park.

The study examines the following issues:

- the need for the Albion Park West Collector – and any preference for a proposed northern or southern route
- the potential future use of a north/south road link (A1), north-west of Albion Park (through Calderwood Valley)
- the need and timing for the Tripoli Way extension
- the location of the F6 interchange in Albion Park.

One of the key objectives is to determine the need for Tripoli Way and its potential to relieve congestion levels on Tongarra Road in Albion Park CBD.

The report identifies a set of 'preferred' infrastructure options for each of the forecast years, based on an assessment of midblock traffic volumes from Council's TRACKS model, intersection performance and economic feasibility. The 'preferred' options for each modelled year are

- 2010 – Option 4
- 2020 – Option 13
- 2030 – Option 18

Details of these development options are as follows.

2010 - Option 4

This 'preferred' option includes the full construction of Tripoli Way, linking Illawarra Highway east to the highway west of the township subsequently providing a bypass of Tongarra Road. However, it is recommended that this be deferred until at least 2018, as its construction can be deferred by the implementation of peak hour clearways on Tongarra Road and improvements to the Terry Street/Illawarra Highway intersection.

2020 - Option 13

The 'preferred' 2020 option builds on the 2010 Option 4, incorporating a third stage of Tripoli Way connecting to an elevated roundabout interchange with the F6 east of Illawarra Highway. It assumes that the F6 is built by 2020 and the capacity and lane configuration for Tongarra Road is as exists.

2030 - Option 18

The 'preferred' 2030 option includes the full construction of Tripoli Way and new access roads to Calderwood Valley (termed E2 and A3). Whilst Council was previously opposed to urban development within Calderwood Valley at the time of writing this study it was necessary to examine the potential implications of alternative arterial road strategies identified by development proponents, using the assumption that development could occur in Calderwood Valley by 2030.

That approach was shown to be prudent given that Council now supports investigating Calderwood for its urban development potential.

Albion Park West Collector

A midblock traffic analysis of both Albion Park West Collector route options indicated that it will have minimal impact to traffic volumes along key road sections in the township, particularly along the critical Tongarra Road shopping strip. Both route options would attract relatively small amounts of traffic and will have similar traffic impacts.

Economic analyses indicated that both options appear to be economically viable from a wider regional benefit context (with BCR from 2.4 to 4.7). From a local perspective the Albion Park West Collector would greatly enhance access to Western Valley and improve linkages to Shellharbour City Centre and Shell Cove. It would also provide an alternative access in case of emergency (eg bushfire).

The northern option is preferable in terms of providing greater opportunities for improved access to existing and future communities in Albion Park, without significantly affecting local amenity. A more detailed engineering and environmental assessment of this route is required to ensure that any impacts are minimised and properly managed.

The construction of the Albion Park West Collector will increase traffic volumes along Ashburton Drive near the school (to 4,000 – 5,000 per day), but well within the roads design capacity. It is recommended that periodic monitoring of the road volumes and speeds is undertaken to determine any need for ameliorative local area traffic management measures noting that some measures have already been installed.

North/South Road Link (A1)

The North/South Road Link (A1) would essentially run parallel with the F6 (upon completion) and provide improved access between the Calderwood Valley and Tullimbar Village. It would primarily provide a traffic distributor/access function for potential future development in Calderwood Valley (if it occurs). Given that this road would provide controlled local access to development in that area, its speed environment and intersection controls would not provide an attractive route for external through-traffic from Albion Park. Thus, it would not provide an alternative to the F6 for carrying inter-regional traffic, nor would it offer a replacement/alternative to the F6 freeway extension between Yallah and Oak Flats.

Its construction will have some limited benefits to road sections through Albion Park. Both Tongarra Road (shopping strip) and Calderwood Road would benefit from a reduction in traffic with A1, but the benefits would be relatively minor and insignificant compared to other options (ie Tripoli Way). Also, the economic assessment of the road link identified a BCR of between –0.1 and 0.4, indicating that the road cannot be economically justified.

Tripoli Way Extension

The construction of the Tripoli Way Extension in any form will provide significant relief to traffic levels along the Tongarra Road shopping strip, enabling opportunities to implement verge and streetscape improvements in the shopping strip. A summary of the recommendations for the stage construction of Tripoli Way Extension follows.

2010

- Stage 1 construction of Tripoli Way should be commenced between 2010 and 2020 in preparation for future upgrades.