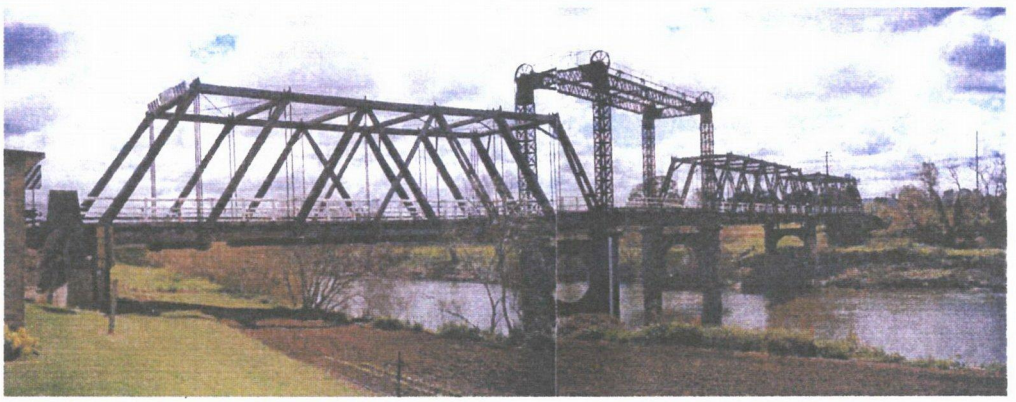
Statement of Environmental Effects

Proposed Replacement of Lift Span, Dunmore Bridge

Shire of Port Stephens



Prepared for
RTA Hunter Region

Prepared By
RTA Operations
Environmental Technology

Level 5, Pod D
99 Phillip Street
Parramatta, NSW, 2150
Telephone: (02) 8837 0589
Facsimile: (02) 8837 0053
E-mail: Jesse_Death@rta.nsw.gov.au

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Prepared by RTA Operations – Environmental Technology Branch

Prepared for:	**Prepared by:**
Peter Goodwin RTA Client Services, Hunter Region	Environmental Technology Branch RTA Operations Directorate Level 5, Pod D 99 Phillip Street Parramatta, NSW 2150

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1.4 Introduction

The NSW Roads and Traffic Authority (RTA) proposes to replace the lift span and timber decking on the Dunmore Bridge over the Patterson River at Dunmore.

This Statement of Environmental Effects (SEE) has been prepared by Environmental Technology Branch (RTA Operations Directorate) on behalf of RTA Hunter Region.

For the purposes of these works, the RTA is the proponent and Port Stephens Council is the determining authority under Part 4 of the *Environmental Planning and Assessment* (*EP&A*) *Act* 1979. For further information on statutory information, please refer to section 2.1 of this SEE.

This SEE has been prepared to assist Port Stephens Shire Council. It presents details of the Proposal, assesses the existing natural and social environments, describes the potential impacts on the environment and presents safeguards to minimise and/or remove identified impacts.

The description of the proposed works and the associated environmental impacts have been undertaken in the context of Clause 228 of the *Environmental Planning and Assessment Regulation* 2000, the *Threatened Species Conservation* (*TSC*) *Act* 1995, the *Fisheries Management* (*FM*) *Act* 1994, and the (Commonwealth) *Environment Protection and Biodiversity Conservation* (*EPBC*) *Act* 1999.

The findings of the SEE would be considered when assessing:

- whether the Proposal is likely to have any significant impact on the environment and therefore the necessity for an Environmental Impact Statement (EIS) under Section 112 of the EP&A Act;
- the significance of any impact on threatened species as defined by the TSC Act 1995, in Section 5A of the EP&A Act and therefore the requirement for a Species Impact Statement (SIS); and
- whether the Proposal, under Section 20 of the Environmental Protection and Biodiversity Conservation Act 1999, is a "controlled action", thereby requiring referral to the Federal Minister for the Environment.

1.5 Background

The Dunmore Bridge over the Paterson River at Woodville is one of twenty-six (26) Bridges to be rehabilitated or replaced under the Country Bridge Improvement Program in the Hunter Region. The Dunmore Bridge has been assessed as being of State Heritage significance. The fabric of the lift spans has deteriorated to the extent that the load carrying capacity of the Bridge has been considerably reduced. A Statement of Heritage Impact (SOHI) to assess the potential impacts of the Proposal on the Dunmore Bridge has also been written.

1.6 Methodology

The method in which this document has been prepared is as follows:

1. A site visit was held with the Project Manager and RTA's Heritage Consultant to discuss the proposal and assess the site.

2. Consultation was undertaken with the following authorities and RTA personnel:

- Environment Protection Authority;
- Department of Land and Water Conservation;
- Port Stephens Shire Council;
- Network Integrity Services (Telstra);
- Maitland City Council;
- NSW Heritage Office; and
- NSW Fisheries.

3. A search was conducted on the following databases to identify any potential issues:

- Council Heritage Listings;
- RTA's Section 170 Register;
- NPWS Aboriginal Sites Register;
- NPWS Wildlife Atlas flora records;
- NPWS Wildlife Atlas fauna records; and
- Environment Australia Databases.

Heritage searches have been undertaken by the RTA's Heritage Consultant, and form part of the Statement of Heritage Impact report. See **Section 5.2** of this SEE.

4. A literature review and review of documentation was undertaken to determine issues relating to:

- Local Environment Plan zoning;
- State Environmental Planning Policies; and
- Regional Environmental Plans.

Assessment was undertaken in line with the RTA's *Environmental Impact Assessment Policy Guidelines Procedures*, 2001 and current RTA policies.

1.7 Location

The Proposal site is located on Paterson Road (an unclassified local Road), the Dunmore Bridge spans the Paterson River approximately 0.6km south-west of Woodville.

Refer to **Appendix A** for Site Location. Refer **Appendix B** for photographs of site. Refer to **Appendix C** for Concept Design.

1.8 Site Description

Bridge: The Dunmore Bridge was constructed in 1899. It is the sixth oldest existing lift Bridge in Australia. It incorporates a lift system designed by Percy Allan in 1894. This lift system allows for one-man operation, with the winch at deck level. The Dunmore Bridge has lifting sheaves which run on axles that are parallel to stream flow, which give the Bridge considerable technological significance. The large timber approach trusses are also historically significant.

The Bridge carries a 5.3m roadway and the 17.8m lift span that (when in operation) provided for a 16.7m horizontal clearance for river traffic and has metal trusses and metal towers.

Topography: The proposal site spans the Paterson River with the land in the surrounding area predominantly low-lying floodplains, therefore subject to flooding. It is an extensive alluvial plain, with narrow to broad (500 – 1000m) upper reaches, and extending to over 4000m in the lower reaches. Slope gradients are <1%, elevation is commonly 2-4m, but may range to 11m on isolated higher levee deposits. Common landform elements include levees, ox-bows, backswamps and pointbar deposits. The lands are not classified as 'Protected Lands' by the Department of Land and Water Conservation.

Soils: The site is located within the soil landscapes of the Newcastle 1:100 000 sheet. The "Hunter soil profile" dominates the area surrounding the proposal site. This landscape is described as an "extensive alluvial plain on recent alluvium derived from the Hunter and Paterson Rivers, in the Hunter Plain Region" (Soil landscapes of the Newcastle 1:100 000 sheet).

Drainage and Watercourses: The Paterson River is the major watercourse in the vicinity of the proposed works. It is a tributary of the Hunter River. Any rainwater falling in the vicinity of the proposal site would consequently flow into the Paterson River and downstream into the Hunter River. The Proposal site is located entirely within a flood plain area, with a number of levee bank systems constructed in the area.

Water Supply: The water supply source for the Lower Hunter area is sourced from Chichester Dam.

Vegetation: Vegetation diversity and abundance in the vicinity of the Proposal is minimal due to the high level of agricultural land use in the area. Pasture grasses therefore dominate the site, while small remnants of tall open-forest are scattered along the river banks. Occasional isolated closed-forest species occur, including the Whalebone Tree (*Streblus brunonianus*) and Hard Quandong (*Elaecarpus obovatus*), while stands of Prickley-leaved Paperbark (*Melaleuca styphelioides*) also occur in some poorly drained areas. Riverbank vegetation is dominated by introduced species such as English Willow (*Salix Babylonica*) and Giant Reed (*Arundo Donax*).

Wetlands: Howes Lagoon is listed under schedule 2 of the Hunter Regional Environmental Plan as a wetland of regional significance. The Lagoon is located approximately 20km from the study area, and it is therefore unlikely that any impact on this wetland would occur as a result of the proposed works.

Land Uses: The area in the vicinity of the proposal site is zoned 1(b) – Non-Urban. This is the case for both Port Stephens and Maitland Councils, with the Paterson River the designated border between the two shires. Lucerne cropping is common, also sorghum, pumpkin, potatoes and some irrigated vegetables are grown. Dairy farming is common around the margins adjacent to hill slopes.

Residences: There are two residences in the vicinity of the proposed works. On the southern side of the Paterson river, the old Bridge operator's cottage immediately adjacent to Paterson Road within 10 meters of the Bridge is still used. A second residence is located within 300 meters of the Bridge on the northern side of the river.

Sensitive Noise Sites: The two residences described above are considered the only sensitive noise sites in the vicinity of the proposed works. For further information on noise and vibration, please refer to Section 5.3 of this SEE. The RTA would undertake consultation with affected residents prior to commencement of construction.

Accesses and Bus Stops: There are three accesses in the vicinity of the Dunmore Bridge. Access to the dwelling located on the southern side of the river is within 100m of the Bridge, while access to agricultural land on the northern side of the river is within 50m of the Bridge. Access to the residence located to the north-west is roughly 200m from the Bridge.

During construction, the Bridge would be closed to traffic however there would be alternate routes to all townships during this time. Access to residences and agricultural land would not be impacted upon by the Proposal. There are no bus stops in the vicinity of the Proposal.

Contaminated Land: No contaminated land is known to exist in the area. Port Stephens Council was consulted regarding this issue and it was found that the Dunmore Bridge was not listed on Port Stephens Council's Contaminated Sites Register (pers. comm. Paul Minett). For information on potential contaminated waste issues, please refer to Section 5.3 of this SEE.

Visual Amenity: The Dunmore Bridge and the Paterson River dominate the visual landscape of the area. The surrounding environment is zoned 1(b) – Non-Urban, giving the area a distinctly rural character.

Traffic Data: The following project statistics are relevant to this works:

- AADT (1984) 1,190
- AADT (1998) 2,853
- Heavy Vehicles (1998) 7.6%

1.9 Proposal Description

General: All proposed works would be carried out on the Bridge and are required due to traffic safety considerations. The works would involve the replacement of the lift span of the Dunmore Bridge due to the substantial deterioration of the wrought iron fabric which has severely impaired the structural fabric of the Bridge.

Bridge Decking: The existing timber Bridge decking would be upgraded and replaced with stress laminated timbers sourced from Boral's Herons Creek Depot.

Drainage: There would be no impact on drainage as a result of the proposed works.

Grubbing/ Vegetation Removal: It is not anticipated that any vegetation would need to be removed as a result of the proposed works.

Compound and Stockpile Site: A compound site incorporating a stockpile area and site office would be established. The compound site would be located in an area that has been previously cleared, would be appropriately fenced and bunded and where possible, would not be located within 50m of a watercourse or 200m of a residence. All plant would be stored in this area while not in use. Pre-fabricated steel Bridge components, stress laminated timber decking and old Bridge components would be stockpiled within this compound / stockpile area.

Bridge Decking: The Bridge decking within the lift span would be upgraded and replaced with new timbers that would be stress laminated. The new timber decking would be obtained from renewable sources / plantation.

Property Acquisition: No property acquisition would be required for the Proposal. Works would be carried out wholly within the road reserve.

1.10 Construction Process

Plant and Equipment to be used:

- Cranes
- Trucks
- Barge
- Welding Plant

Construction Process: It is anticipated that the Bridge would be closed for up to one week, with work scheduled before and after the closure to complete the construction. The works would take place using the following methodology:

1. Introduce controls such as sediment fencing and traffic management infrastructure as per the CEMP.
2. Set up temporary portal frames at the lift span towers on the existing piers. Install jacks on the portals.
3. Assembly of the lift span truss and the SLT deck to be finalised on the bridge approach approx. 350m south and within the road reserve...
4. Travel the fabricated lift span truss and SLT deck complete (with underslung monorail traveller beams) on to the bridge and over the lift span using the Trabosa platforms or similar bogie axle concept.
5. Connect the new span and deck to the jacks and lift off the bogies.
6. Attach the old trusses and deck (after removal of handrails etc) to the slung monorail beams such that the old span can slide longitudinally when the old span is disconnected and lifted off the piers.
7. Cut the old deck and raise it slightly off the piers with flat jacks to "break" the old lift span from the bridge.
8. Raise the old span (with the new span) to a sufficient height above the level of the waiting bogies on the adjacent southern deck.
9. Slide the old span to place its southern end on to the most southern bogie. Travel the southern bogie with the northern end of the old span supported by the monorail beams until the northern end can be lowered on to the northern bogie. The old span is then completely detached from the new span and wheeled off the bridge for dismantling and disposal off site.
10. After removal of the underslung lifting gear and preparation of new bearings, the new span is lowered into place.
11. Remove temporary portals. .
12. Install Kerbs and Rails.
13. Seal deck.

Source of Material: Roadbase and other quarried materials should they be required, would be sourced from legally operating businesses and the correct permits would be acquired. The replacement beams would be obtained from existing stockpiles of pre fabricated steel beams available at Boral's Herons Creek Depot.

Waste Management:
Waste materials such as removed timber decking and trusses would require disposal at an appropriately licensed waste facility should recycling of the materials be inappropriate. Please refer to Section 5.3 of this SEE for further information.

Additional Truck Movements: It is anticipated that the proposal would generate less than 10 additional truck movements per day as an indicative average.

Workforce and Working Hours: The workforce would comprise of 10 workers on 12 hour shifts for the 24 hr days and a variable number of workers in the other periods of construction (outside the total closure).

Work would be performed outside standard working hours. The procedures for working outside normal working hours are discussed as part of Noise and Vibration within Section 5.3 of this SEE.

1.11 Source of Funds

As per the Strategic Estimate outlined in the Proposal brief, the Proposal would cost approximately $ 890,000. The NSW Government would fund this Proposal.

1.12 Commencement of Work

Construction is expected to begin in June 2003. The successful contractor would inform the local council of exact dates.

1.13 Period of Construction

The expected duration of works would be up to7 days, 24 hours a day and additional periods of work before and after the 24 hr period (total closure)

2 Statutory Position

2.1 Relationship to Planning and Environmental Background

Zoning

This Proposal is subject to the Port Stephens Shire Council LEP. The following zoning applies to the subject site:
Road: The road is an un-classified road.
Adjacent areas: Non-Urban 1(b).

In many cases, where zoning under a Local Environmental Plan allows RTA activities to proceed subject to obtaining development consent from Council, the RTA relies on the provisions of SEPP No. 4 Clause 11C(2) to exempt it from these requirements. However Clause 11C(2) does not apply if the work involves "alteration of, addition to, extension or demolition of a building or work of environmental heritage". The Bridge is listed as a heritage item on the Port Stephens LEP.

Clause 55(2), Division 3 (Heritage Provisions) of the LEP states that "*Development consent is not required by this clause if the consent authority (in this case Port Stephens Council) is of the opinion that the proposed development would not adversely affect the heritage significance of the heritage item*" (Port Stephens Shire Council LEP, 2000). A Statement of Heritage Impact and confirmation of approval pursuant to a Section 60 Application to the Heritage Office of NSW under the Heritage Act of NSW were forwarded to Council on the 26th of July 2002. In addition to this information, an accompanying letter advised council that in the RTA's opinion the proposed works would not adversely affect the heritage significance of the heritage item.

Port Stephens Shire Council's position was in contradiction to the RTA's opinion that the heritage significance of the heritage item would not be adversely affected, and advised on the 29th July that a Crown Development Application would need to be lodged to Council (pers comm. Bo Mosage, 29/7/02). Therefore, the Proposal would be assessed by Port Stephens Council under Part 4 of the *Environmental Planning and Assessment Act, 1979*. This correspondence can be found in **Appendix D** of this SEE.

Regional Environmental Plans

Hunter REP 1989

The Dunmore Bridge and areas surrounding fall within the boundary of the Hunter Regional Environmental Plan. Pers comm. Rob Dwyer, Port Stephens Council's Planning adviser, the Dunmore Bridge is not listed on this plan because in recent time, items of heritage significance have been transferred to, and therefore managed under the Port Stephens LEP.

There are no requirements that apply specifically to this site. However, objectives of the Hunter REP include maximising accessibility and optimising the use of the existing road system. The Proposal would meet these objectives by maintaining the existing Bridge structure and ensuring safe access across the Paterson River.

State Environmental Planning Policies

SEPP No.44 (Koala Habitat Protection) applies to the Port Stephens Shire Council area. As such, the impacts of any development undertaken in this LGA should consider the assessment criteria provided in this planning document. These criteria relate to the percentages of tree cover, particularly trees listed under Schedule 2 – Known Feed Trees. No potential koala feed trees would be removed as a result of the Proposal. The Proposal would not impact on Koalas or Koala feed trees as listed in SEPP 44.

Confirmation of Part 4 Position

All relevant statutory planning instruments have been examined for the proposed rehabilitation of the Dunmore Bridge. The Bridge is listed under Schedule 2 of the Port Stephens Shire Council LEP as an item of State Heritage Significance. Therefore the Proposal has been referred to Council on the basis of Clause 55(2) Division 3 (Heritage Provisions) of the LEP for a decision as to whether the Proposal would adversely affect the Dunmore Bridge. Council found that there would be an adverse affect as a result of the works and confirmed that a Crown Development Application would need to be lodged to Council and assessment would be required under Part 4 of the *Environmental Planning and Assessment Act, 1979.*

3 Strategic Stage

3.1 Strategic Planning

The Dunmore Bridge over the Paterson River at Woodville is one of twenty-six (26) Bridges to be rehabilitated or replaced under the Country Bridge Improvement Program in the Hunter Region. Under the Government's Country Timber Bridge Program, the Bridge rehabilitation is to be completed by 2003.

The Dunmore Bridge has been assessed as being of state heritage significance and is listed on a number of heritage registers, including the Heritage Council of NSW's State Heritage Register. The fabric of the lift spans has deteriorated to the extent that the load carrying capacity of the Bridge has been considerably reduced. The RTA proposes to remove the existing lift span and replace it with a new lift span designed to be as similar in appearance as possible to the original span. The new span would be made from steel rather than wrought iron, and the steel elements would be welded, rather than riveted, together.

This activity is also undertaken in line with the RTA's mission to "manage road related transport infrastructure and provide safe and efficient access to the road network for the people of NSW".

Further, the Proposal incorporates RTA's environmental policy (2001), which states that:

> *The RTA will demonstrate due diligence in the provision of its services, manage its work activities in a manner that is consistent with the principles of ecologically sustainable development, and will deliver continuous improvement in environmental performance.*

3.2 Need for the Proposal

The Proposal is required to maintain the Bridge crossing to a safe condition and to retain unrestricted (including heavy vehicle) access for rural activities for the community as well as local and regional industry.

4 Concept Stage

4.1 Proposal Objectives

- Provide a strengthened, low maintenance cost steel span to current structural standards;
- Provide low maintenance deck on steel span, and allow provision for the installation of smoother surfaced, low maintenance cost deck for the entire length of the Bridge;
- Restore protective coating of piers and lift towers; and
- Maintain the Bridge in a safe condition for legally loaded transport.

4.2 Constraints

- Consultation and necessary heritage approval from the Heritage Council of NSW and Port Stephens Shire Council so as to retain the heritage features and status of the Bridge;
- Minimise construction timeframe and therefore Bridge closure; and
- Maintain the heritage value of the Bridge.

4.3 Options Considered

Do Nothing

This would not achieve the necessary improvements to the Bridge structure or provide better road safety. The current unacceptable level of safety and lift span strength would be maintained and would eventually worsen.

Alternative Options

Replace the steel lift span of the Bridge to current structural standards. Replace degraded timber deck with a smoother surfaced low maintenance cost deck for the entire length of the Bridge.

Option Selected

The option of replacing the steel lift span of the Bridge to current structural standards has been selected because it realises the stated project objectives.

5 Assessment Stage

5.1 Background Searches

The following results were obtained regarding the proposal from database searches and correspondence with Authorities. (Refer to **Appendix D** for copies of the database searches).

Register of National Estate

The Dunmore Bridge, Woodville NSW was placed on the Australian Heritage Commission's Register of the National Estate in 1989. The proposed works would directly impact upon this item.

NSW Heritage Office

The Dunmore Bridge, Woodville NSW is listed on the State Heritage Office's State Heritage Register. The proposed works would directly impact upon this item. Therefore, a Statement of Heritage Impact was written and approval for the proposal would be sought from the NSW Heritage Office prior to the commencement of construction.

LEP Heritage List

The Port Stephens Shire Council LEP has provisions for the protection of items of environmental heritage. The Dunmore Bridge was first listed on the Port Stephens LEP in December of 2000. The proposed works would directly impact upon this item.

National Trust of Australia

The Dunmore Bridge is listed on the National Trust of Australia Register.

NPWS Aboriginal Sites Register

The National Parks and Wildlife Service (NPWS) Aboriginal Sites Register has two recorded sites in the vicinity of the Dunmore Bridge. One of these sites is approximately 200m from the Bridge, however due to the restricted nature of the proposal, it is not anticipated that either of the sites would be affected in any way as a result of the proposed works.

Della Yarnold was the Hunter Region's Aboriginal Programs Consultant and was contacted with regard to the Proposal and asked to liaise with the Local Aboriginal Lands Council.

Native Title Claims Search

Contact was made with Gary Dowse, the DLWC's Native Titles Officer, regarding Native Title Land Claims the Port Stephens and Maitland LGAs. The closest Native Title Claim application area is located at Stager on the Stockton Bight just north of Newcastle, approximately 40km southeast of the Proposal. This area would not be affected by the Proposal.

NPWS Wildlife Atlas - Flora

There are two records on the NPWS Wildlife Atlas flora database which indicate the presence of (1) endangered species (*Eucalyptus glaucina*) and (1) vulnerable species (*Diuris pedunculata*) in the vicinity of the study area. Since the proposed works are limited to the Bridge and would be carried out wholly within the road reserve, it is not anticipated that there would be any impact on these species.

NPWS Wildlife Atlas - Fauna

There are eight vulnerable species listed on the NPWS Wildlife Atlas fauna database potentially located within 1km of the study area. Included in the NPWS database results for the Dunmore Bridge area are the following species:

- Magpie Goose;
- Powerful Owl;
- Turquoise Parrot;
- Spotted-tailed Quoll;
- Koala;
- Brush-tailed Phascogale;
- Little Bent-wing Bat; and
- Common Bent-wing Bat.

Since the proposed works are limited to the Bridge and would be carried out wholly within the road reserve, it is not anticipated that there would be any impact on these species. For further information on Flora and Fauna, please refer to Section 5.3 of this SEE.

Environment Protection and Biodiversity Conservation Act:

a) Conservation Reserves: None found.
b) Regional Forest Agreements: Lower North East NSW RFA.
c) Migratory Species: 8 potentially occurring.
d) Threatened Species: 10 potentially occurring.
e) Marine Protected Species: 8 potentially occurring.
f) World Heritage Areas: None found.
g) RAMSAR sites: Within catchment of Kooragang Nature Reserve.

Although there have been 8 migratory species, 10 threatened species and 8 marine protected species recorded within a 20km search area around the proposed works, it is not anticipated that the proposal would impact on any of these species.

There are no Conservation Reserves or World Heritage Areas in the vicinity of the proposed works that would be impacted upon by the proposal. However, the nature of the Proposal is such that it has the potential to impact on the water quality of the Paterson River, which is within the catchment of Kooragang Nature

Reserve, a listed Ramsar site. Stringent mitigation measures would be put in place to ensure the risk of sedimentation of the Paterson River is kept to an absolute minimum. The Proposal would not impact on the forests of the Lower North East NSW RFA.

Soils and Acid Sulphate Soils

The Proposal is not located within a potential acid sulphate soils area.

5.2 Consultation

NSW National Parks and Wildlife Service

The NSW NPWS was contacted by letter (12/09/01) and has no specific issues to raise with regard to the Proposal.

Department of Land and Water Conservation

The Department was contacted via letter (12/09/01) and has no issues to raise with regard to the Proposal.

NSW Fisheries

A letter from NSW Fisheries was received on the 4th of December 2001 regarding the Proposed rehabilitation of Lift Span on the Dunmore Bridge. In this letter, NSW Fisheries state that it is unlikely that the Department would have any concerns in regard to the Proposal provided that;

- Water quality in the Paterson River not be degraded in any manner as a result of the construction works; and
- Fish migration is not prevented during the installation of the replacement structures.

Water Quality of the Paterson River would be maintained through the introduction of mitigation measures outlined in Sections 5.3 and 7.1 of this SEE.

Fish migration would not be prevented during the maintenance activities as there would be no in-creek works required. A barge would be located under the Bridge to catch and transport debris from the site, this would not prevent fish migration.

NSW Environment Protection Authority

NSW EPA was contacted via letter (12/09/01) and has no issues to raise with regard to the Proposal.

NSW Heritage Office

The NSW Heritage Office was contacted via letter (12/09/01) and at the time of writing this report no response was received with regard to the Proposal.

Port Stephens Council

Council was contacted via letter (12/09/01). A letter was received from council on the 6th of December, 2001 stating that the Dunmore Bridge is listed in the Port Stephens LEP 2000 as being of regional significance. Division 3 of the LEP outlines the associated

heritage provisions.

Council advised that development consent would be required prior to undertaking the works.

Maitland City Council

A letter from Maitland City Council was received on 11 December 2001, regarding the Proposed rehabilitation of Lift Span on the Dunmore Bridge. Maitland City Council wishes to advise that the Dunmore Bridge has major significance on a regional basis. As such, Council would like to be satisfied that the program for road closure would be advertised extensively to the communities that use it, and that the length of closure would be minimised. It is also suggested that if possible, timing of the closure be in line with school holidays so disruption to school bus services utilising the Bridge is minimised.

Issues with regard to traffic management have been assessed in Section 5.3 of this SEE, advertising of the timing and duration of the Proposal would be undertaken in local and regional media sources. If possible, timing of the closure would be in line with school holidays so disruption to school bus services utilising the Bridge is minimised.

Utilities

Network Integrity Services (NIS): Details of NIS infrastructure was received by fax on 27 November 2001. The Proposal would not impact on any NIS assets. NIS would be contacted again prior to works being undertaken.

Hunter Water Corporation: A fax was received from the Hunter Water Corporation in regard to the Proposal on 27 November 2001. As at that date, Hunter Water Corporation's records indicate that there are no assets in the vicinity of the Proposed works. Hunter Water Corporation would be contacted again prior to works being undertaken.

Energy Australia: A fax was received from Energy Australia in regard to the Proposal on 29 November 2001. No Energy Australia assets are located in the vicinity of the Dunmore Bridge. Energy Australia would be contacted again prior to works being undertaken.

Agility: A fax was received from Agility in regard to the Proposal on 27 November 2001. Agility has no gas mains at the location of the works on the Dunmore Bridge. Agility would be contacted prior to works being undertaken.

5.3 Environmental Issues

General

The proposed rehabilitation works are relatively minor in nature and are likely to have little adverse effect on the local community or environment with the introduction of controls as outlined in Section 7 of this SEE.

The main environmental concerns have been identified as:

Non - Indigenous Heritage

The RTA's Heritage consultant, Claire Everett, has written a Statement of Heritage Impact (SOHI) to assess the potential impacts of the Proposal on the Dunmore Bridge. The SOHI is attached at **Appendix E**.

In summary, the Dunmore Bridge has been assessed as being of State Heritage significance. The Bridge is one of only seven timber truss Bridge and lift span combinations remaining in NSW. The Bridge is significant for its historical associations with the development of the NSW road network.

The Bridge is of aesthetic significance through its aesthetically pleasing lines and its dominance of the otherwise fairly uniform river flats around Dunmore.

The Proposal would result in the removal and replacement of substantial original fabric from the Dunmore Bridge. Whilst removing and replacing deteriorated elements is standard practice in maintaining the timber elements of timber truss Bridges, it is not considered routine maintenance to replace components that are considered to be permanent elements of the structure.

While it is generally desirable to avoid removal of original fabric, in this instance the heritage impact would be lesser than other potential options which could allow for retention of original fabric but which could change the function of the Bridge. Thus the proposed works would have a lesser heritage impact upon the heritage significance of the Dunmore Bridge than installing a Bailey truss or removing the Bridge from service.

Proposed Mitigation Measures:

- Workers would be made aware of the Heritage significance of the Bridge prior to works being undertaken;
- The RTA would submit an application under Section 60 of the NSW Heritage Act 1977 to the Heritage Council of NSW to replace the lift span of the Dunmore Bridge. The SEE and SOHI would be attached in support of the application; and
- The management of Non-Indigenous heritage would be in accordance with Section 6.15 (Non-indigenous Heritage) of the RTAs QA Specification G35 (Appendix F).

Socio-economic Effects

Closure of the Dunmore Bridge for up to 1 week would induce a short term negative socio-economic effect on the local communities and the transport industries that use the Bridge as access to townships such as Maitland. It is not anticipated that the Proposal would induce any other negative effects.

The Proposal would provide an increased level of service for local and through traffic, improving local and regional travel conditions. The use of local materials and labour during construction would be a positive social and economic gain for local and regional industry. In addition, the rehabilitation (and continued use) of the Dunmore Bridge so as to maintain its heritage value would recognise its importance as an item of state heritage significance and encourage tourism in the area.

Traffic Management

The works associated with the rehabilitation of the Dunmore Bridge would be undertaken 24 hours a day over a period of up to 1 week. During this time the Bridge would be closed to all traffic. During Bridge closure, traffic would be required to cross the Paterson River over the Hinton Bridge. Vehicles travelling north would leave Paterson Road and travel east and link up with Hinton Road. Vehicles travelling south along Clarencetown Road would turn into High Street through Hinton and then right onto Hinton Road and over the Bridge. During construction, the alternate route (and Hinton Bridge) would support an additional AADT of 2853 approximately, of which 7.6% would be heavy vehicles.

Proposed Mitigation Measures:

It is anticipated that the Proposal would maintain and to some extent enhance the long-term aesthetic, heritage and utility values of the Dunmore Bridge. The mitigation measures outlined in **Section 7** of this SEE would assist in the realisation of these positive values.

Traffic Management

- Traffic would be managed during the reconstruction works in accordance with Section 6.4 "Access and Traffic Management" of the RTA's QA Specification G35 (Appendix F).;
- The proposed rehabilitation works would be adequately advertised in local and regional media sources;
- Consultation would be undertaken with Maitland and Port Stephens Councils prior to works being undertaken; and
- Signage would be provided to inform the public of the Proposal for the duration of the works and a contact number would be made available.

Water Quality

Rehabilitation of the Dunmore Bridge may require the removal of parts of the existing structure such as the decking by crane. Material could be placed onto barges in the river below for

removal. To minimise the amount of material entering the Paterson River during disassembling of the structure, the above-mentioned barges (which would cover the total span of the Bridge) would act as a physical barrier between the works and the river. A "drop sheet" would also be used to prevent material falling into the water. During re-construction, scaffolding may be required underneath the structure to allow for re-fitting of the stress-laminated timber (SLT) decking with the barges still in place at this time.

In addition, the Proposal has the potential, through runoff and fuel spillages, to locally reduce water quality and cause sedimentation in the Patterson River.

Proposed Mitigation Measures:

- Water Quality control would be managed through the implementation of safeguards detailed in Section 6.5.1 (Erosion and Sedimentation Control), and Section 6.5.3 (Water Quality) of the RTA's QA Specification G35 (Appendix F).; and
- The Contractors Environmental Management Plan (CEMP) for the site would address requirements for the Bridge works and drainage works separately.

Noise and Vibration

For the purposes of noise and vibration assessment, the proposed rehabilitation of Dunmore Bridge has been classified as road rehabilitation works. While **daytime** construction activities are expected to exceed the current EPA Criteria, it is not expected that these levels would cause adverse comment. However, it is recommended that best practice works methods be adopted to ensure that potential impacts would be minimised.

The NSW Government's "*Environmental Criteria for Road Traffic Noise*" (ECRTN) (May 1999) provides the assessment criteria for road traffic noise in NSW. Tables 1 and 2 of these Criteria contain various classifications for construction activities. According to the definitions supplied, the scope of this Proposal which does not provide for substantial changes in alignment or a design increase in traffic volumes or mix is such that it is not subject to noise level targets. This interpretation is confirmed by reference to the flow chart for selecting criteria given in Practical Note 1, (page 82) of the RTAs *Environmental Noise Management Manual.*

There are no set guidelines to limit peak particle velocity (PPV) which is a measure of vibration, however it is generally accepted that for continuous vibration, a level of 5mm/sec is considered safe for residential construction (German Standard DIN 4150 1986). It is predicted that normal construction techniques (excluding blasting) would not result in levels greater than 1.5 mm/sec at a distance of 30m.

The Proposal would be undertaken over a 4 week period, which would have up to one week of 24 hours a day construction. This would classify the works as being outside normal working hours and *Practice Note vii* of the *RTA Environmental Noise Management Manual* (**Appendix G**) would be adhered to at all times and would be incorporated into the CEMP for the Proposal. The impacts associated with the works would be temporary and it is anticipated that operational noise levels would be reduced with the introduction of new SLT Bridge decking. Specifically, the CEMP would include but is not limited to:

- Written consultation with affected residents at least 5 days prior to the works being undertaken;
- An after-hours contact number would be provided to affected residents; and
- The noisiest activities would be programmed to be undertaken during daylight hours, where possible.

Proposed Mitigation Measures:

- Noise and vibration associated with the proposed reconstruction activity would be managed through the implementation of controls as detailed in Section 6.7 (Noise Control) of the RTA's QA Specification G35; and
- The Noise Management Plan required by Section 6.7 of the RTAs QA Specification G35 would be prepared in accordance with the RTA's Environmental Noise Management Manual, practice note vii.

Flora and Fauna

The works would take place wholly within the road reserve, in the highly disturbed environment at the northern and southern Bridge abutments, the Proposal is considered unlikely to adversely impact upon fauna or flora diversity in the area.

Vegetation in the vicinity of the Proposal is dominated by introduced species such as the English Willow (*Salix babylonica*) and Giant Reed (*Arundo donax*). Herbaceous weed species such as Crofton Weed (*Ageratina adenophera*) and introduced grass species such as Kykuyu are also prevalent in the vicinity of the proposal site.

A specialist assessment has been recently undertaken by Ecotone Ecological Consultants on behalf of the RTA to assess the likelihood of threatened bat species using timber Bridges in the Hunter as roosting sites. The Dunmore Bridge was included in this study. "*The whole Bridge is constructed of cross girders and few potential roost sites were observed ..... No bats were observed although future colonies may form on the double beams following the completion of the Bridge repair work*" (Ecotone Ecological Consultants, 2002).

Threatened species listed on the NPWS Wildlife database or the EPBC Report on Matters of National Environmental Significance would also be considered unlikely to be adversely affected by the Proposal. Although there have been 6 migratory species, 10 threatened species and 5 marine species recorded within a 15km search area around the locality, these species are unlikely to be impacted by the proposed works. Refer to the EPBC Report on Matters of National Environmental Significance (Appendix D) for detailed lists of species.

Proposed Mitigation Measures:

- The Dunmore Bridge would be re-assessed for the presence of Bat species by a qualified ecologist immediately prior to works being undertaken;
- Should any Bat species be located during re-assessment, the National Parks and wildlife Service would be contacted for advice on short term management of the species;
- Safeguards as detailed in "Erosion and Sedimentation Control" would be implemented; and
- Measures detailed in Section 6.9 "Vegetation" and Section 6.10 "Fauna" of the RTAs QA Specification G35 would also be implemented.

Erosion and Sedimentation Control

The location of the proposed works, the topography of the proposal site, local soils characteristics and a moderate to high water erosion hazard combine to give a moderately high risk of erosion and sedimentation. However, it is anticipated that the works would not impact on soil in the area, as all the works would be undertaken on the Bridge itself. Appropriate mitigation measures would be introduced for the stockpile / compound area that may impact on land in the vicinity of the Bridge. See Section 7.1 of this SEE for further detail.

Proposed Mitigation Measures:

- Erosion and sediment control would be managed through the implementation of safeguards detailed in Section 6.5.1 (Erosion and Sedimentation Control), 6.5.2 (Stockpile management), and 6.5.3 (Water Quality) of the RTA's QA Specification G35.
- The Contractors Environmental Management Plan (CEMP) for the site would address requirements for the Bridge works and drainage works separately.

Indigenous Heritage

NPWS Aboriginal Sites Register has 2 recorded sites in the vicinity of the proposed area of works. However, because the proposed works would take place within the road reserve and on the Bridge only, it is not anticipated that the proposed works would adversely impact on these items of Indigenous Heritage.

Della Yarnold, the RTA Aboriginal Programs Consultant for the Hunter Region was contacted with regard to the proposal and

asked to liaise with the Mindaribba Local Aboriginal Lands Council. However, no issues had been raised at the time of writing this SEE.

Proposed Mitigation Measures:

- The management of Indigenous heritage would be in accordance with Section 6.14 (Indigenous Heritage) of the RTAs QA Specifications G35; and
- The Contractor commissioned to carry out the proposal would be made aware of the potential, however low, of archaeological remains occurring at the work locations.

Waste Minimisation and Management

The RTA is committed to ensuring the responsible environmental management of waste that cannot be avoided and to providing opportunities for promoting the re-use of these wastes through appropriate measures. In undertaking this commitment the RTA is following the Resource Management Hierarchy principles embodied in the *Waste and Resource Recovery Act* 2001 (WARR Act). The Resource Management Hierarchy principles of the WARR Act are as follows:

- Avoid unnecessary resource consumption as a priority;
- Avoidance is followed by resource recovery (including re-use of materials, reprocessing, recycling and energy recovery); and
- Disposal is undertaken as a last resort.

The Proposal would generate various types of waste that can be reused and recycled, however some wastes would require disposal. Sources of waste material would be identified and the material classified in accordance with the *EPA's Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes.*

The Resource Management Hierarchy principles would be applied as follows:

Avoidance: Where possible, resource use would be avoided through the ordering of materials in sufficient but not excessive quantities. Suppliers of construction materials would be required to reduce unnecessary packaging or to use durable reusable packaging, pallets, crates and drums, where possible.

Reuse: Where it is not possible to avoid an excess of materials, reuse on site would have priority over recycling. Materials which would be reused on site include excess construction materials and timber and steel from the existing Bridge. Any contaminated waste material would not be re-used on site.

Recycling: Where reuse is not possible, waste would be minimised through recycling progressively from the site. Wastes would be source-separated and sent to recycling outlets and recycling facilities would be made available to site staff operating from

temporary offices near the road or on the road corridor. Once construction was completed, partly used tanks of fuels and oils would be removed from the site for use in other RTA projects.

Disposal: As a last resort, materials would be disposed of to a local landfill. Other materials which would be used or produced on site include putrescent waste, sewage, fuels and oils, and possibly contaminated waste.

Putrescent waste from food scraps and rubbish would be removed from the site at regular intervals and checks for and removal of debris from the slopes would be undertaken on a daily basis. Sewage would be disposed of off-site.

Fuel and oils required during the construction period would be stored within secure areas and properly bunded. At the end of the construction period, unused fuel and oils would be removed from the site.

Contaminated or chemical waste is not anticipated. However, if this were to be generated as the result of any activity, the waste would be collected in accordance with NSW Statutes and RTA Policy.

Lead Painted Timbers: Bridge timber painted with Lead paint would not be reused or recycled as removal of lead paint in a sensitive environment is not considered feasible. Lead painted timbers and other Bridge structures are to be managed according to the Australian Standard AS4361.1 – 1995: Guide to Lead Paint Management – Industrial Applications.

Proposed Mitigation Measures:

To ensure waste is handled, stored and recycled or disposed of appropriately, the following mitigation measures would be implemented as part of the Proposal:

- The management of waste would be undertaken in accordance with Section 6.17 (Waste Management) of the RTAs QA Specification G35;
- Where feasible, waste suitable for recycling would be done so in accordance with the NSW Government's Waste Reduction and Purchasing Policy;
- Waste material would be classified in accordance with the EPA's Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes; and
- The Waste Management Plan, referred to in Section 6.17 of G35, would be prepared and implemented prior to construction in accordance with the Waste Avoidance & Resource Recovery Act 2001.

5.4 Summary of Beneficial Effects

The works would be beneficial as they would:

- Improve safety for motorists through increased structural safety of the Bridge.
- Maintain the heritage value of the Bridge.

5.5 Summary of Adverse Effects

The works would result in some short-term adverse effects which would include:

- Potential minor traffic delays during construction.
- Minor noise and dust during construction.

These potential impacts would be managed by safeguards listed in Section 7 of this SEE.

5.6 Protection of the Environment Policies

- No Protection of the Environment Policies currently exist.

6 Consideration of Environmental Factors

6.1 Clause 228 Checklist (NSW Legislation)	Factor	Impact
	a) Any environmental impact on a community? **Comments:**	
	Short-term negative impacts would include construction noise, dust and traffic delays throughout the construction period. Overall however, the risks are low and the impacts would be minimised through the implementation of controls and measures described in Section 7 of this SEE.	Short term -ve
	Operational noise is not likely to increase as a result of the proposed works.	Nil
	In the long-term, traffic users of Paterson Road would benefit from an overall improvement to Bridge safety as a result of the proposed works.	Long term +ve
	b) Any transformation of a locality? **Comments:** There would be no major transformation of the locality as a result of the Proposal.	Nil
	c) Any environmental impact on the ecosystems of the locality? **Comments:** The proposed works are minor in nature and are not expected to have an impact on the ecosystems of the locality with the implementation of controls.	Nil
	d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? **Comments:** There would be no reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality.	Nil

e) Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?
Comments:

The works proposed are necessary repairs to the lift span and timber decking of the Dunmore Bridge. The repairs would enable the Bridge to continue its function as a river crossing for road traffic, and it is proposed to remove and replace the damaged elements only. The repair works would be mindful of the heritage significance of the Bridge structure. It is considered that there would be a positive impact on the Bridge as a result of the Proposal.	Long term +ve

f) Any impact on the habitat of any protected or endangered fauna (within the meaning of the National Parks and Wildlife Act 1974?
Comments:

The NPWS Wildlife Atlas search found that there is the potential for eight (8) vulnerable species to be found in the vicinity of the proposed works. However, no roosting sites were observed under the bridge and no bat species were observed during targeted surveys. In addition, the Proposal would not involve the removal of any key habitat. Therefore, no impacts are expected as a result of the Proposal on protected or endangered species, communities, feeding resources or habitats.	Nil

g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?
Comments:

The Proposal is unlikely to result in any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air.	Nil

h) Any long-term effects on the environment?
Comments:

The Proposal would result in long term improvements to the Bridge structure, functionality and aesthetics.	Long term +ve

i) Any degradation of the quality of the environment?

Comments:

There would be some potential short-term impacts on the environment as a result of the proposed works including sedimentation and erosion of the Paterson River, and waste / weed management issues. These would be minimised through the implementation of controls outlined in Section 7 of this SEE.	Short term – ve
In the long term there would be no degradation of the environment provided all safeguards are properly implemented.	Long term Nil

j) Any risk to the safety of the environment?

Comments:

There would be a short-term risk to worker safety during construction (Occupational Health and Safety Issues).	Short term - ve
In the long term the Proposal would increase the level of safety for road users and allow the Bridge to continue functioning as a river crossing for road vehicles.	Long term + ve

k) Any reduction in the range of beneficial uses of the environment?

Comments:

The proposal would not result in any reduction in the range of beneficial uses of the environment.	Nil

l) Any pollution of the environment?

Comments:

Water pollution through erosion, sedimentation, fuel / chemical spillages and materials falling into the water during construction have the potential to occur. This would be minimised through the implementation of safeguards outlined in Section 7 of this SEE.	Short term – ve
In the long term the risk of pollution of the environment through road spills would be reduced as a result of the improvements to the Bridge.	Long term nil

m) Any environmental problems associated with the disposal of waste?

Comments:

Minimal waste would be generated as a result of the proposal. All waste would be disposed of at approved waste disposal sites.	Nil

n) Any increased demands on resources, natural or otherwise which are, or are likely to become in short supply?

Comments:

There would not be any increased demand on resources, natural or otherwise which are, or are likely to become in short supply.	Nil

o) Any cumulative environmental effect with other existing or likely future activities?

Comments:

Maintenance works are taking place on the superstructure of the Dunmore Bridge. These works have the potential to contribute cumulatively to traffic delays in the short term on this route, particularly for long distance motorists.	Short term -ve
The Bridge rehabilitation would improve safety and accessibility to the region for road uses.	Long term + ve

6.2 EPBC Act 1999 (Commonwealth Legislation)

Factor	Impact
a) Any environmental impact on a World Heritage property? **Comments:** The Proposal would not have any impact on World Heritage Property. The closest World Heritage Property is at Barrington Tops National Park, located approximately 75km north of the Proposal	Nil
b) Any environmental impact on wetlands of international importance? **Comments:** The Proposal would not have any impact on wetlands of international importance. The Proposal is within the catchment area of Kooragang Nature Reserve, however stringent controls with regard to water quality and erosion and sedimentation would ensure that the water quality of the Paterson River is not compromised.	Nil
c) Any environmental impact on Commonwealth listed threatened species or ecological communities? **Comments:** The Proposal would not have any impact on Commonwealth listed threatened species or ecological communities. The Proposal involves minor works that would not require the removal of native vegetation.	Nil
d) Any environmental impact on Commonwealth listed migratory species? **Comments:** The Proposal would not have any impact on Commonwealth listed migratory species.	Nil
e) Does any part of the proposal involve a nuclear action? **Comments:** The Proposal would not involve a nuclear action.	Nil
f) Any environmental impact on a Commonwealth marine area? **Comments:** The Proposal would not impact on a Commonwealth marine area.	Nil

In addition: Any environmental impact on Commonwealth land?
Comments:

Commonwealth land would not be affected, indirectly or directly, as part of this Proposal.	Nil

7 Implementation Stage

7.1 Safeguards Process

In order that the potential impacts of the Proposal are minimised, the successful contractor would incorporate the relevant safeguards identified in the RTAs QA Specification G35 into their Construction Environmental Management Plan (CEMP). The following safeguards, in addition to those identified in the RTAs QA Specification G35, would be incorporated into the Contractors CEMP.

General

- A Project Environmental Management Plan (PEMP) and a Construction Environmental Management Plan (CEMP) would be prepared prior to the commencement of works; and
- The RTA Roadside Environmental Manual and Strategic Plan would be adhered to at all times.

Cultural Heritage

- The RTA would submit an application under Section 60 of the NSW Heritage Act 1977 to the Heritage Council of NSW to replace the lift span of the Dunmore Bridge. It is recommended that the SOHI be attached in support of the application;

Socio-Economic Effects

- The proposed rehabilitation works would be adequately advertised in local and regional media sources;
- Consultation would be undertaken with Maitland and Port Stephens Councils prior to works being undertaken; and
- Signage would be provided to inform the public of the Proposal for the duration of the works and a contact number would be made available.

Water Quality

- Water Quality control would be managed through the implementation of safeguards detailed in Section 6.5.1 (Erosion and Sedimentation Control), and Section 6.5.3 (Water Quality) of the RTA's QA Specification G35; and
- The Contractors Environmental Management Plan (CEMP) for the site would address requirements for the Bridge works and drainage works separately.

Noise and Vibration

- The Noise Management Plan required by Section 6.7 of the RTAs QA Specification G35 would be prepared in accordance with the RTAs Environmental Noise Management Manual, practice note vii.

Flora and Fauna

- The Dunmore Bridge would be re-assessed for the presence of Bat species by a qualified ecologist immediately prior to works being undertaken;
- Should any Bat species be located during re-assessment, the National Parks and wildlife Service would be contacted for advice on short term management of the species; and
- Safeguards as detailed in "Erosion and Sedimentation Control" would be implemented.

Erosion and Sedimentation

- The Contractors Environmental Management Plan (CEMP) for the site would address requirements for the Bridge works and drainage works separately.

Indigenous Heritage

- The Contractor commissioned to carry out the proposal would be made aware of the potential, however low, of archaeological remains occurring at the work locations.

Site Compound

- The area chosen for the site compound would not be located within 50m of a waterway or 200m of the closest residence.

Rubbish and Waste

To ensure waste is handled, stored and recycled or disposed of appropriately, the following mitigation measures would be implemented as part of the Proposal:

- Where feasible, waste suitable for recycling would be done so in accordance with the NSW Government's Waste Reduction and Purchasing Policy;
- Waste material would be classified in accordance with the EPA's Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes; and
- The Waste Management Plan, referred to in Section 6.17 of G35, would be prepared and implemented prior to construction in accordance with the Waste Avoidance & Resource Recovery Act 2001.

8 Certification

This Statement of Environmental Effects provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the Proposal.

Name: Jesse Death

Designation: Environmental Officer

Date: 1/5/03

I have examined this Statement of Environmental Effects and the certification by Jesse Death and accept the Statement of Environmental Effects on Behalf of the RTA.

Name: Peter Goodwin

Designation: Project Manager

Signature: 

Date: 1.05.03

9 References

9.1 RTA Policies and Guidelines

The following RTA Policies and Guidelines were directly relevant to the preparation of this document:

- ☒ RTA Environmental Impact Assessment Guidelines, Version 4, 2001
- ☒ Environmental Guidelines for the Management of RTA Stockpile Sites (temporary and permanent), June 1998
- ☒ Noise Management Manual
- ☒ Statutory Planning Guidelines, 1999
- ☒ RTA Code of Practice for Water Management, Road Development and Management
- ☒ *Waste Minimisation and Management Guidelines*, May 1998

For the full list of RTA Environmental Policies, use this hyperlink:
http://home.rta.nsw.gov.au/dts/cserv/os/original/cse/append_g.doc

9.2 Other NSW Government Policies

- ☒ Environment Protection Authority, *Environmental Noise Management: Environmental Criteria for Road Traffic Noise*, 1999

9.3 General

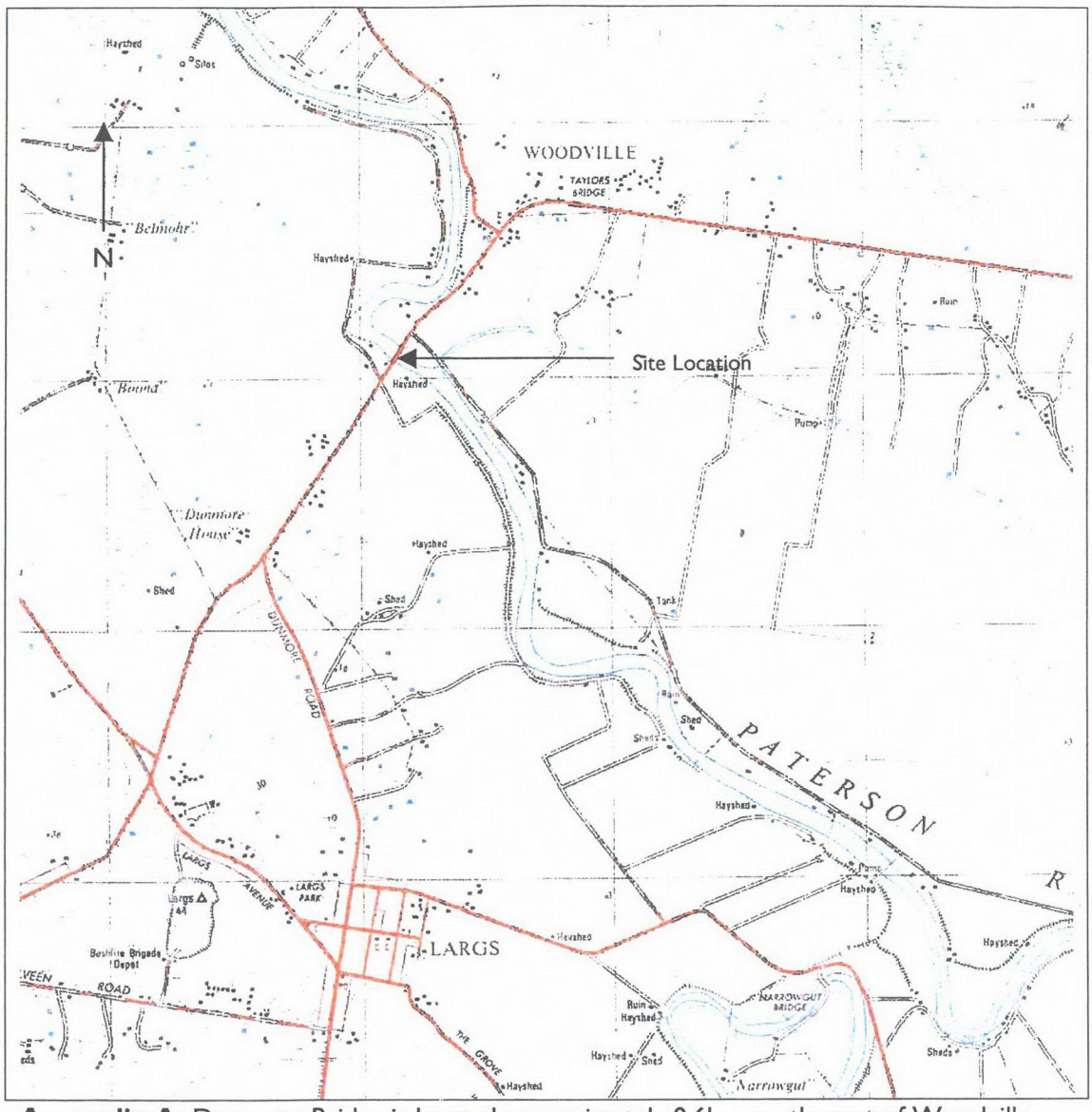
- ☒ Ecotone Ecological Consultants, *Bat Investigative Study for the Repainting of Twelve Timber Bridges, Hunter Region, NSW*, July 2002.

9.4 Maps and Books

- ☒ NSW Government, *Lower Portland Topographic Map 9031-2-S*, 1975
- ☒ NSW Department of Land and Water Conservation, Soil Landscapes of the St. Albans 1:100 000 sheet, 1997

APPENDIX A

SITE LOCATION



Appendix A: Dunmore Bridge is located approximately 0.6km south west of Woodville. Map extract from the *Maitland 1: 25 000 Map Sheet* (9232-IV-S).

APPENDIX B

PHOTOGRAPHS OF SITE

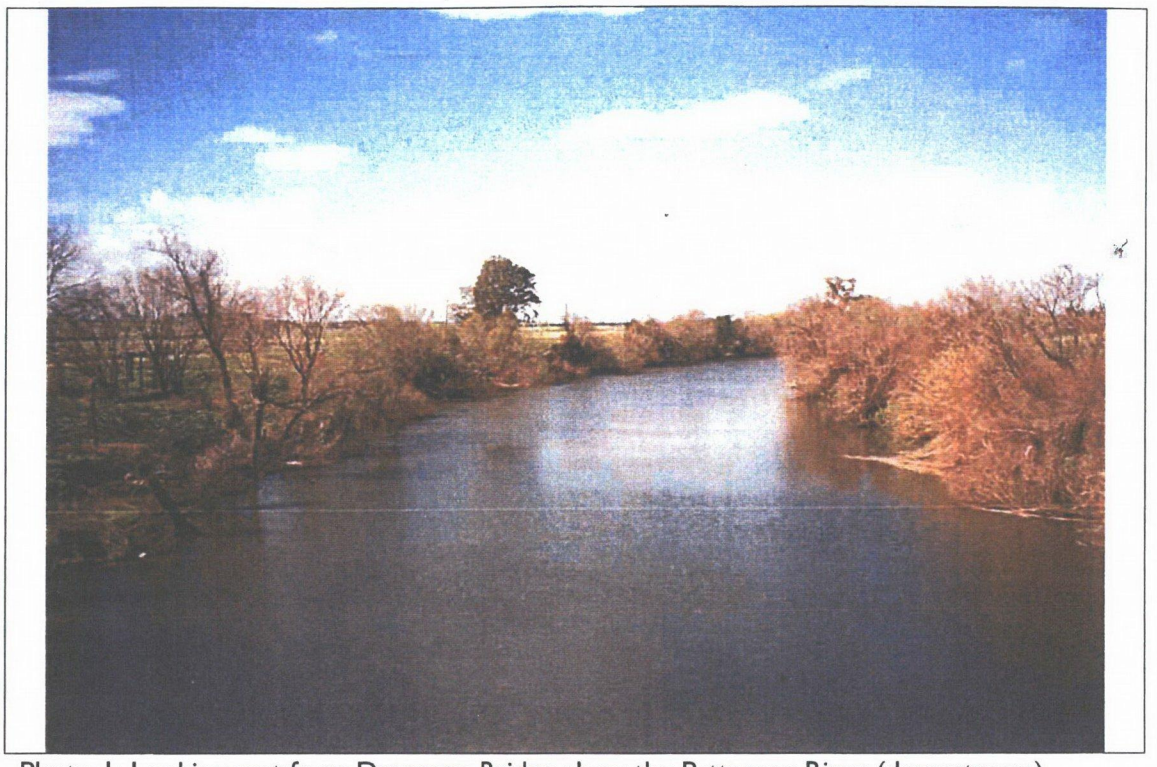


Photo 1: Looking east from Dunmore Bridge along the Patterson River (downstream).

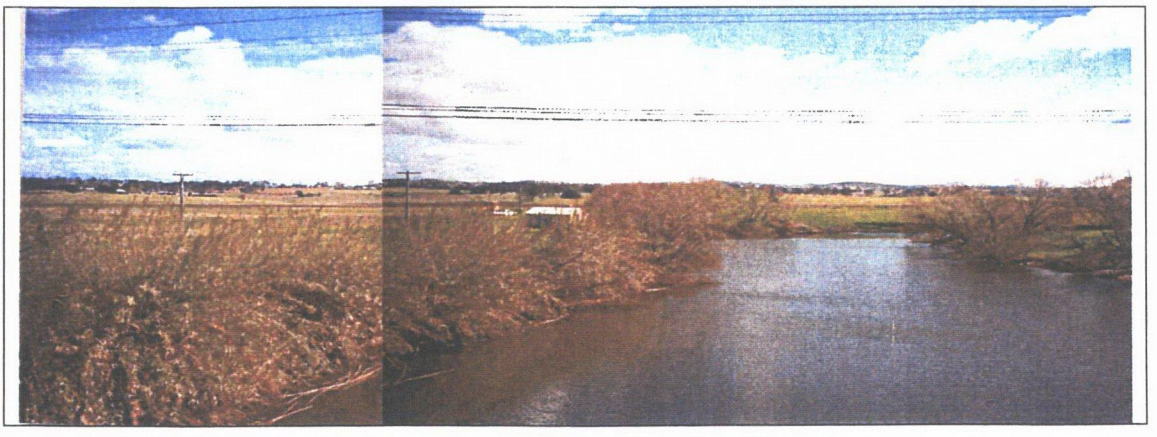


Photo 2: Looking west from Dunmore Bridge at the Patterson River (upstream).

Photo 3: Bridge operators cottage to the immediate south west of Dunmore Bridge.

Photo 4: Northern approach to Dunmore Bridge

Photo 5: Residence located approximately 300m to the north west of bridge.

Photo 6: Bridge approach from the south. Note Telstra Cables to the bottom right of photo.

Photo 7: Farm land and shed in background and Department of Public Works Data Station in foreground. Located to the immediate south east of the bridge.

Photo 8: Looking north at the bridge supports and part of the lift span.

Photo 9: Timber decking to be replaced

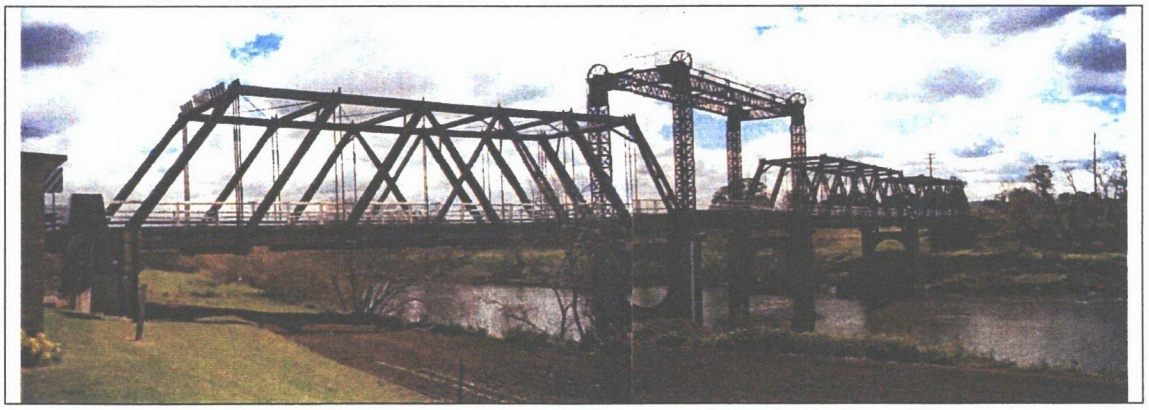


Photo 10: Bridge Panorama looking north west from southern bank (note lift span).

Photo 11: Bridge Panorama looking upstream (west) from the northern bank of the Patterson River.

APPENDIX C

CONCEPT DESIGN

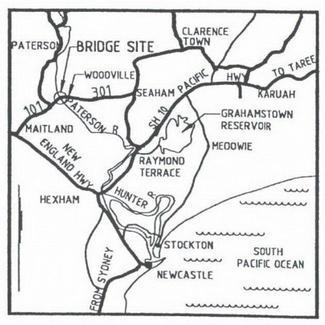
ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301

CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER
AT WOODVILLE (DUNMORE BRIDGE)
REPLACEMENT OF LIFTSPAN

SCHEDULE OF DRAWINGS



LOCALITY PLAN

0 10 20 30km

10 5

THE BRIDGE SITE IS APPROXIMATELY
200 km BY ROAD FROM SYDNEY

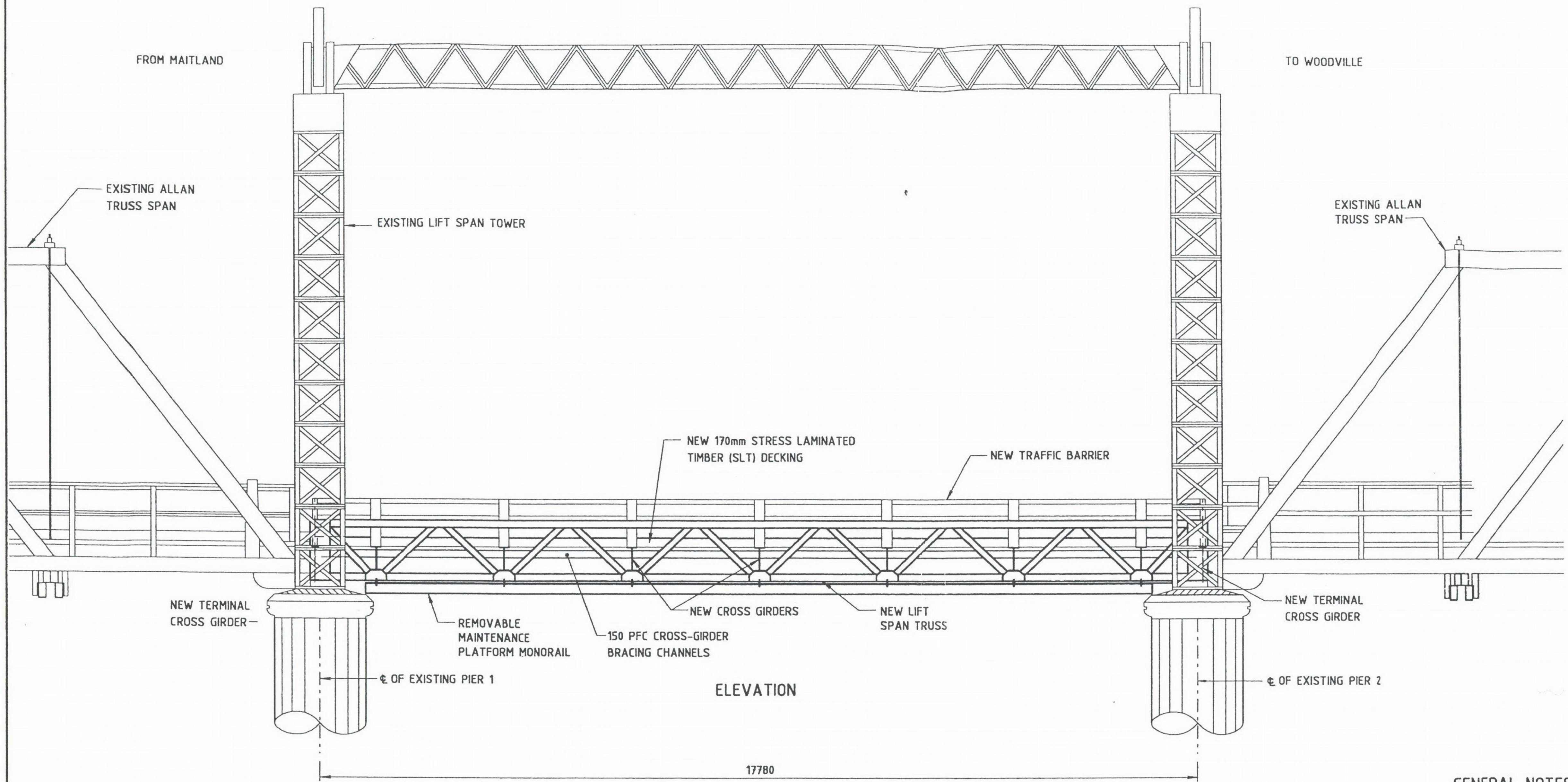
1	COVER SHEET
2	GENERAL ARRANGEMENT
3	DETAILS - SHEET A
4	DETAILS - SHEET B
5	DETAILS - SHEET C
6	DETAILS - SHEET D
7	DETAILS - SHEET E
8	DETAILS - SHEET F
9	TRAFFIC BARRIER DETAILS - SHEET A
10	TRAFFIC BARRIER DETAILS - SHEET B
11	CONSTRUCTION SEQUENCE
12	DECK DETAILS - SHEET A
13	DECK DETAILS - SHEET B
14	DECK DETAILS - SHEET C
15	DECK DETAILS - SHEET D
16	DECK DETAILS - SHEET E

EXISTING BRIDGE: 1897
REGISTRATION No OF PLANS: 0101 362 BC 0106
GENERAL FILE: 307.142
DESIGN LOADING:
AUSTRALIAN BRIDGE DESIGN CODE - 1996

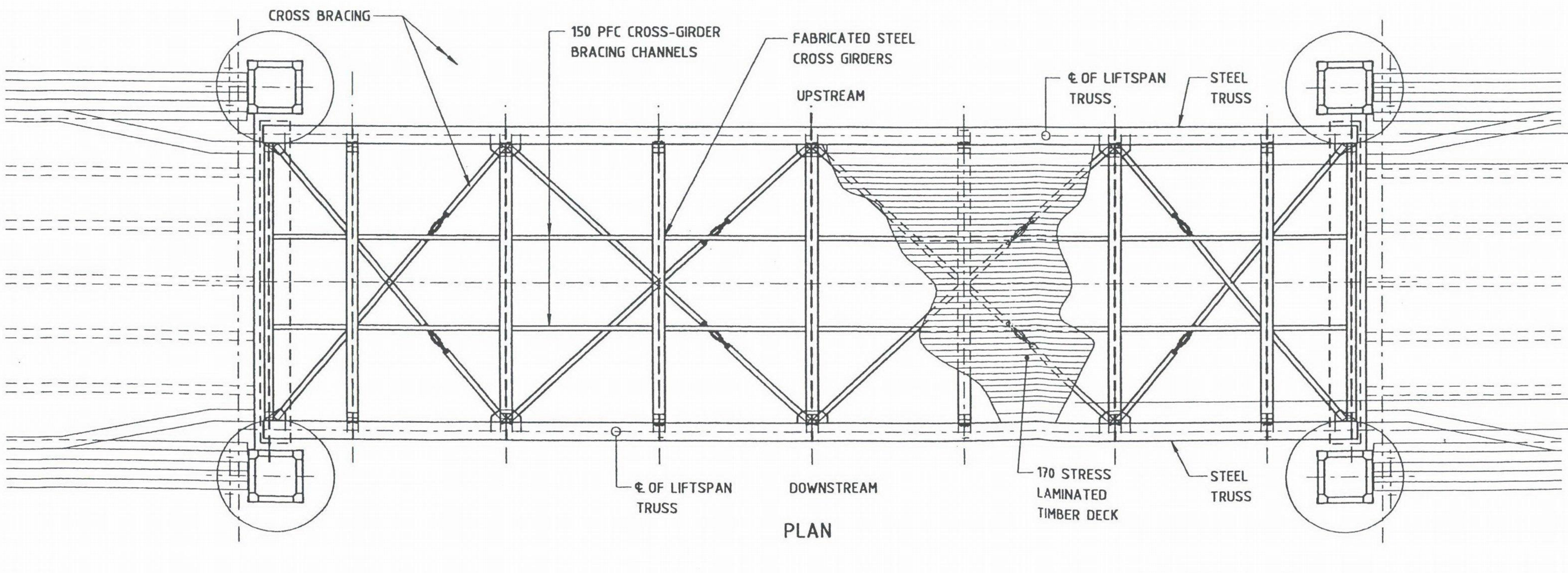
REGISTRATION No OF PLANS

0301 307 BC 0910

CAD No A216CS



ELEVATION



PLAN

GENERAL NOTES

SCALE 1000 500 0 1000 2000 3000mm OR AS SHOWN

DIMENSIONS ARE IN MILLIMETRES

ISSUE	DATE	REVISION	PREP	CHECK	AUTH

ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301 CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER
AT WOODVILLE (DUNMORE BRIDGE)
REPLACEMENT OF LIFTSPAN

GENERAL ARRANGEMENT

RTA

PREPARED BY
BRIDGE SECTION
99 PHILLIP STREET
PARRAMATTA NSW 2150
PHONE (02) 8837-0830
FACSIMILE (02) 8837-0054

CLIENT
HUNTER REGIONAL OFFICE
59 DARBY STREET NEWCASTLE
LOCKED BAG 30 NEWCASTLE NSW 2300
PHONE (02) 4924-0240
FACSIMILE (02) 4924-0344

PREPARED: DESIGN [signature] DRAWING GB
CHECKED: RM [signature]
MANAGER, BRIDGE REHABILITATION PROJECTS [signature] 7-5-02

REGISTRATION No OF PLANS: 0301 307 BC 0910

SHEET No 2 | No OF SHEETS 16

CAD No A216GA

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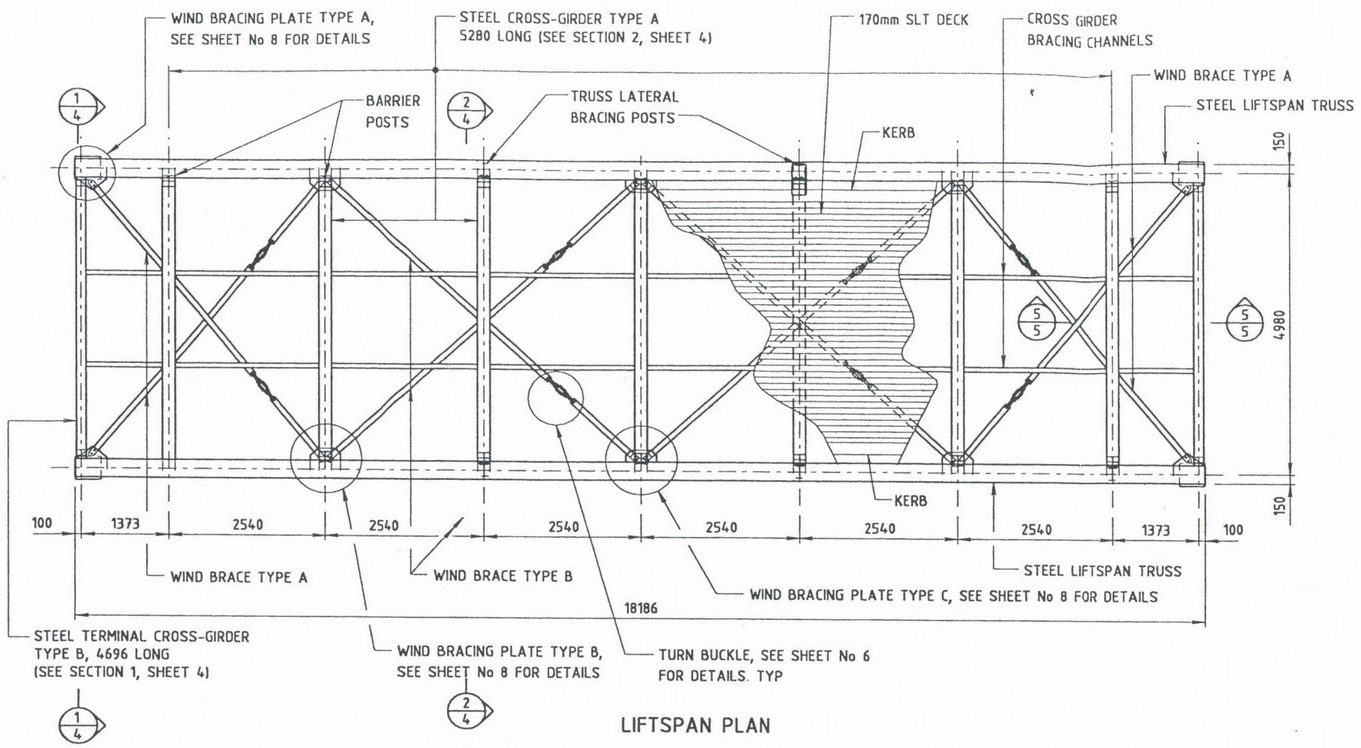
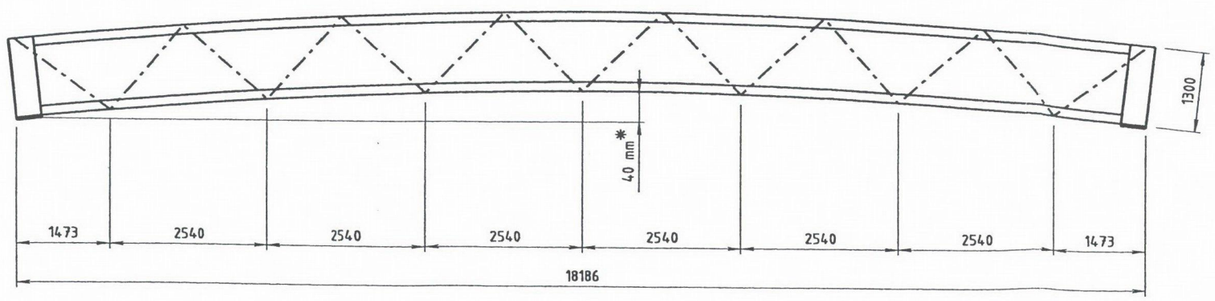
RTA DRAWING No RTAB001 ISSUE 4 SEP 2000



LIFTSPAN PLAN



PRECAMBER DIAGRAM

NOT TO SCALE

GENERAL NOTES

SCALE: 0 1000 2000 3000mm OR AS SHOWN.
1000 500

STEEL PLATE SHALL BE GRADE 300 TO AS/NZS 3678.
STEEL SECTIONS SHALL BE GRADE 300 TO AS/NZS 3679.1
STEEL DOWELS SHALL BE GRADE 250R TO AS 1302.
RECTANGULAR HOLLOW SECTIONS SHALL BE GRADE C350LO TO AS 1163.
HIGH STRENGTH STEEL BOLTS SHALL BE PROPERTY CLASS 8.8 TO AS/NZS 1252.
HIGH STRENGTH STEEL NUTS SHALL BE PROPERTY CLASS 8 TO AS/NZS 1252.
HIGH STRENGTH STEEL WASHERS SHALL CONFROM TO AS/NZS 1252.
BOLTING CATEGORY FOR HIGH STRENGTH STEEL BOLTS SHALL BE 8.8/S IN ACCORDANCE WITH AS 4100.
ISO METRIC COMMERCIAL BOLTS SHALL BE PROPERTY CLASS 4.6 TO AS 1111.1.
ISO METRIC COMMERCIAL NUTS SHALL BE PROPERTY CLASS 5 TO AS1112.3.
ISO METRIC COMMERCIAL THIN NUTS SHALL BE PROPERTY CLASS 04 TO AS1112.4.
BOLTING CATEGORY FOR COMMERCIAL BOLTS SHALL BE 4.6/S IN ACCORDANCE WITH AS 4100.
BLACK STEEL WASHERS (NORMAL AND LARGE SERIES) SHALL CONFORM TO AS 1237.
ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF AS/NZS 1554 PART 1.
THE WELD CATEGORY SHALL BE SP IN ACCORDANCE WITH AS/NZS 1554 PART 1 IF NO OTHER CATEGORY SPECIFIED.
WELDING SYMBOLS COMPLY WITH AS 1101 PART 3.
EDGES TO BE PROTECTIVE TREATED SHALL BE ROUNDED TO A RADIUS OF 1.5mm UNLESS SPECIFIED OTHERWISE.
ALL COMPONENTS EXCEPT STAINLESS STEEL ITEMS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE SPECIFICATION.
BOLTS, NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AS 1214.
* PER CAMBER OF TRUSS LAYING ON SIDE
ALL JOINTS WITH UNSPECIFIED WELDS TO BE 6mm SEAL WELDED

ISSUE	DATE	REVISION	PREP	CHECK	AUTH

ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301 — CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER
AT WOODVILLE (DUNMORE BRIDGE)
REPLACEMENT OF LIFTSPAN

DETAILS - SHEET A

PREPARED BY
BRIDGE SECTION
99 PHILLIP STREET
PARRAMATTA NSW 2150
PHONE (02) 8837-0830
FACSIMILE (02) 8837-0054

CLIENT
HUNTER REGIONAL OFFICE
59 DARBY STREET NEWCASTLE
LOCKED BAG 30 NEWCASTLE NSW 2300
PHONE (02) 4924-0240
FACSIMILE (02) 4924-0344

PREPARED DESIGN GB DRAWING GB
CHECKED
REGISTRATION No OF PLANS
0301 307 BC 0910

ANG No RTA1001 ISSUE 4 SEP 2000

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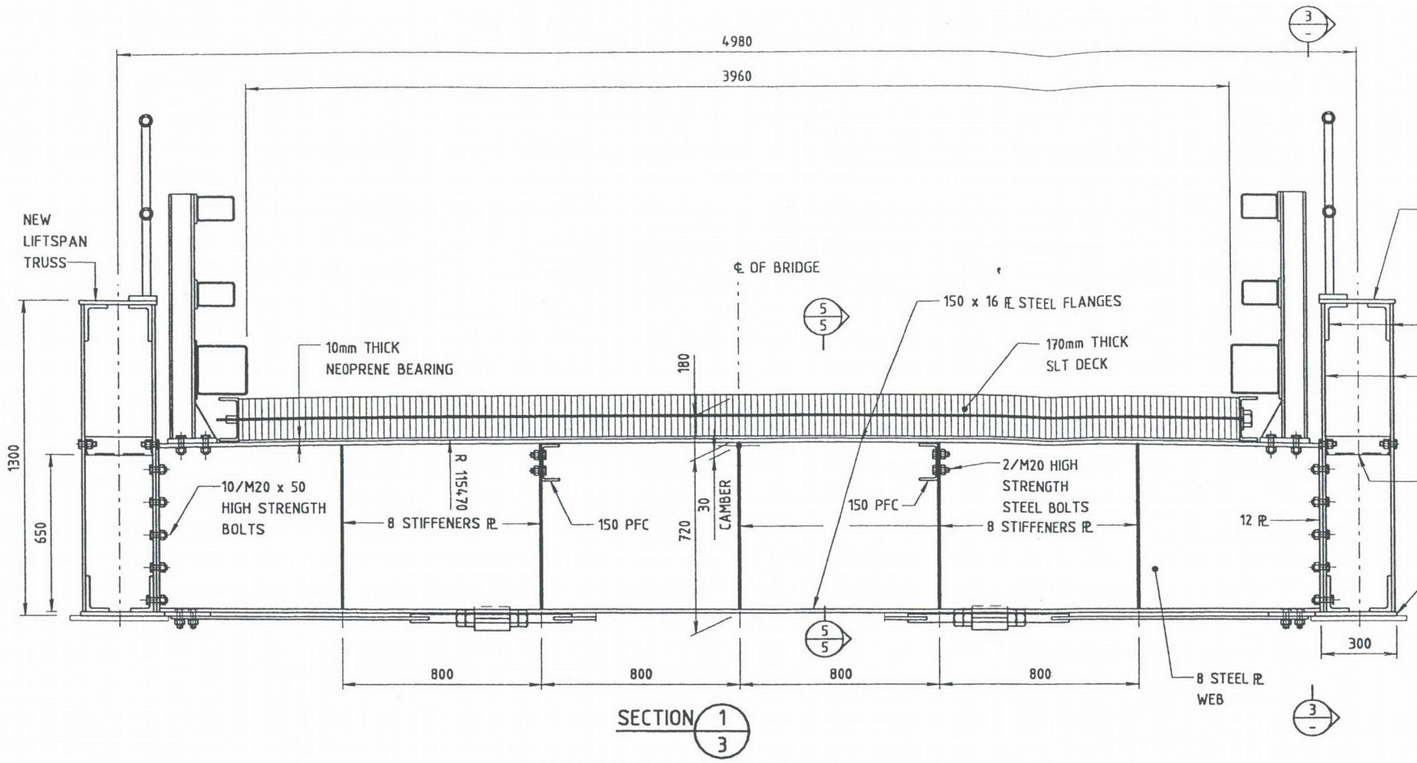
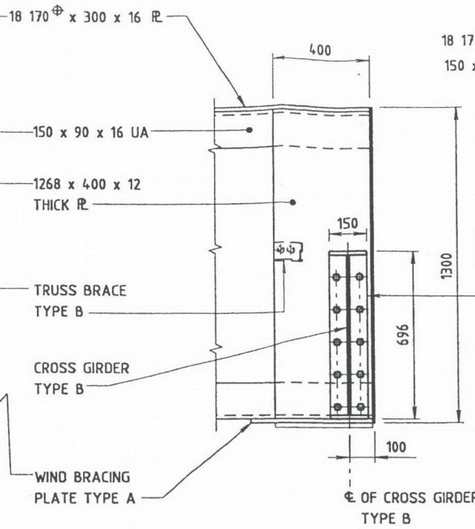


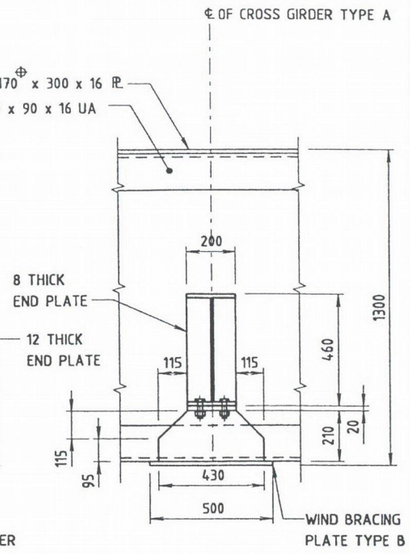
SECTION 1/3

FABRICATED STEEL TERMINAL CROSS GIRDER (TYPE B)



SECTION 3/-

HANDRAIL NOT SHOWN



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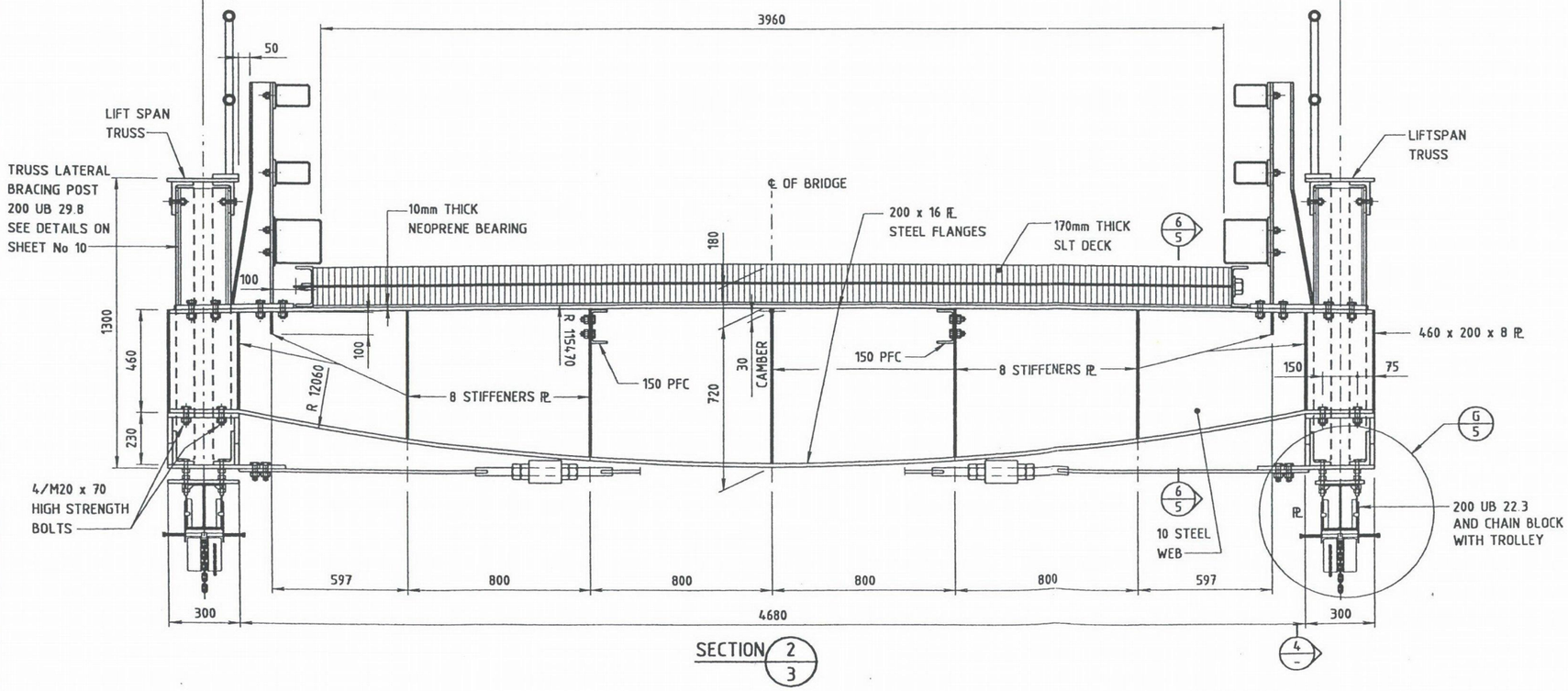

SECTION 2/3

FABRICATED STEEL CROSS GIRDER (TYPE A)

GENERAL NOTES

SCALE 0 250 500 750mm (250 125) OR AS SHOWN

FOR FURTHER GENERAL NOTES RELATING TO THIS DRAWING SEE SHEET No 3

⊕ LENGTH TO BE ADJUSTED IF NECESSARY FOR CAMBER

ISSUE	DATE	REVISION	PREP	CHECK	AUTH

ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301 — CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER AT WOODVILLE (DUNMORE BRIDGE) REPLACEMENT OF LIFTSPAN

DETAILS - SHEET B

RTA

PREPARED BY
BRIDGE SECTION
99 PHILLIP STREET
PARRAMATTA NSW 2150
PHONE (02) 8837-0830
FACSIMILE (02) 8837-0054

CLIENT
HUNTER REGIONAL OFFICE
59 DARBY STREET NEWCASTLE
LOCKED BAG 30 NEWCASTLE NSW 2300
PHONE (02) 4924-0240
FACSIMILE (02) 4924-0344

PREPARED DESIGN G. Wu
DRAWING Y. CHEN 22/05/02

CHECKED RM G. Wu 7-5-06
MANAGER, BRIDGE REHABILITATION PROJECTS

REGISTRATION No OF PLANS 0301 307 BC 0910

SHEET No 4 | No OF SHEETS 16

CAD No A216DB

RTA DRAWING No RTA8001 ISSUE 4 SEP 2000

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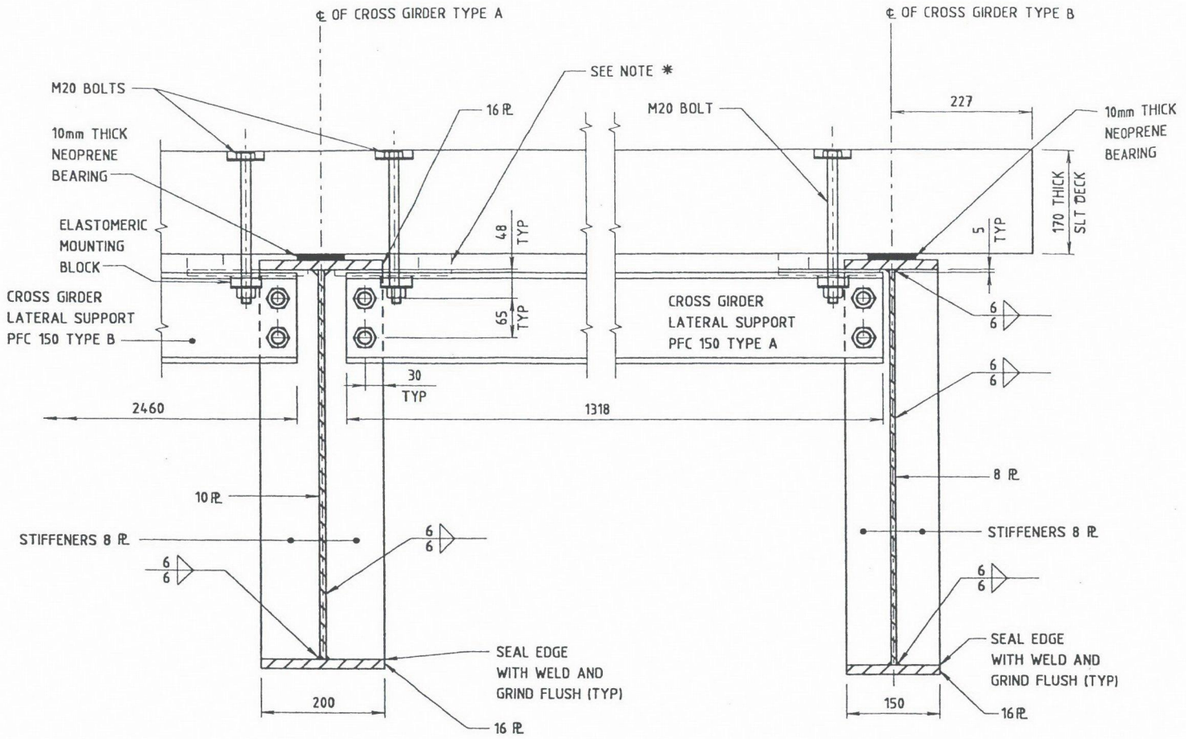
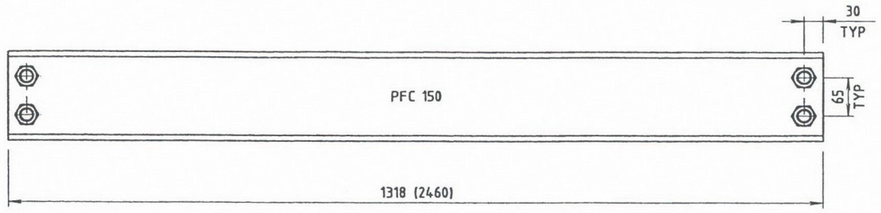
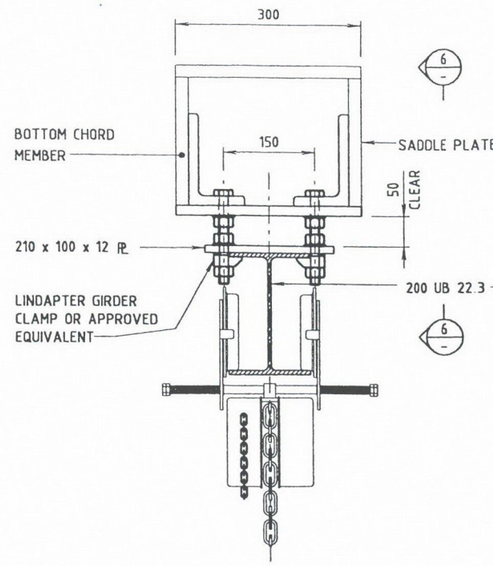


SECTION 5 / 3,4

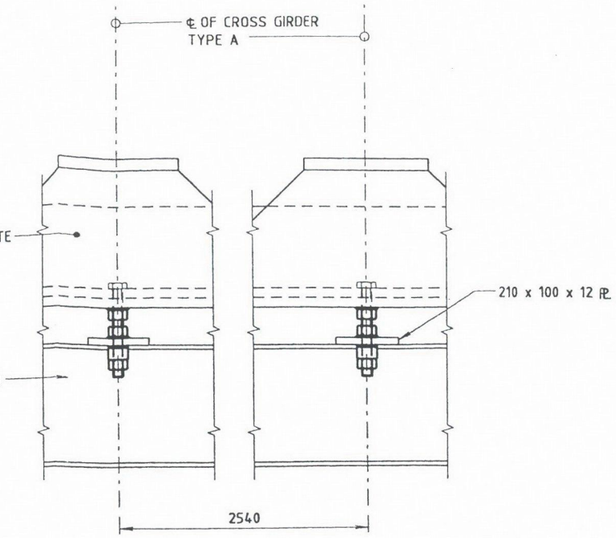


CROSS GIRDER LATERAL SUPPORT

TYPE A SHOWN 4 REQUIRED
TYPE B SIMILAR EXCEPT IN BRACKET 12 REQUIRED



DETAIL G / 4



VIEW 6 / -

GENERAL NOTES

SCALE 0 100 200 300mm (100 50) OR AS SHOWN

FOR FURTHER GENERAL NOTES RELATING TO THIS DRAWING SEE SHEET No 3

* FOR FURTHER DETAILS TO CONNECTIONS BETWEEN SLT DECK & GIRDERS, REFER TO SLT DECK DRAWINGS BY R. J. TAYLOR CONSULTING P/L.

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ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301 — CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER
AT WOODVILLE (DUNMORE BRIDGE)
REPLACEMENT OF LIFTSPAN

DETAILS - SHEET C

RTA

PREPARED BY
BRIDGE SECTION
99 PHILLIP STREET
PARRAMATTA NSW 2150
PHONE (02) 8837-0830
FACSIMILE (02) 8837-0054

CLIENT
HUNTER REGIONAL OFFICE
59 DARBY STREET NEWCASTLE
LOCKED BAG 30 NEWCASTLE NSW 2300
PHONE (02) 4924-0240
FACSIMILE (02) 4924-0344

PREPARED	CHECKED	REGISTRATION No OF PLANS
DESIGN		0301 307 BC 0910
DRAWING Y. CHEN		
22/04/02		SHEET No 5 / No OF SHEETS 16
MANAGER, BRIDGE REHABILITATION PROJECTS		

CAD No A216DC

RTA DRAWING No RTA8001 ISSUE 4 SEP 2000

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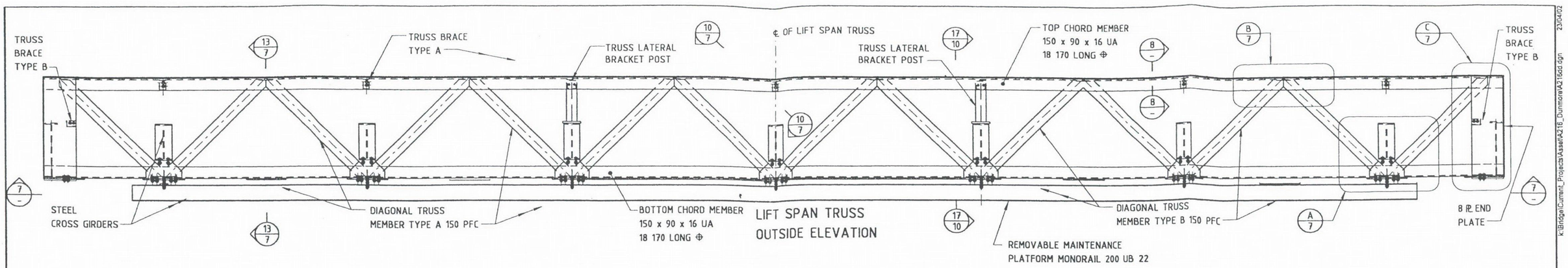
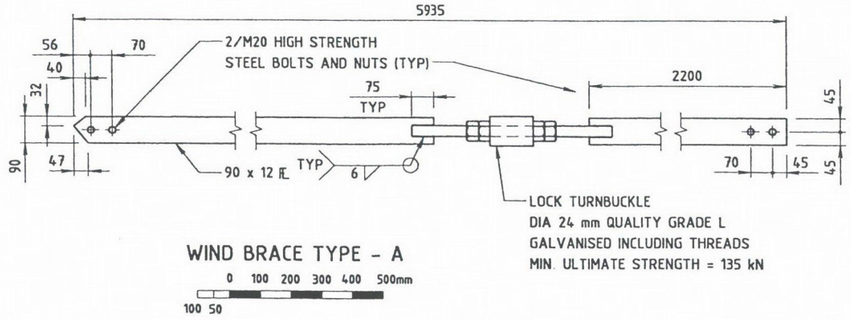
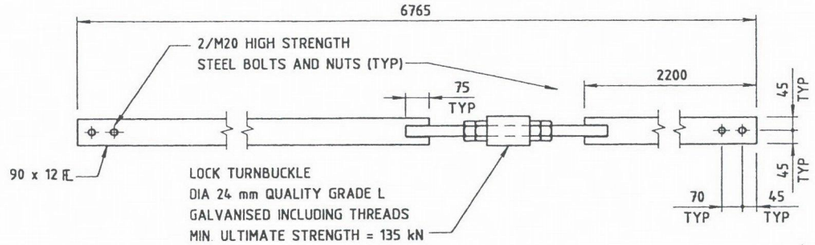




WIND BRACE TYPE - A

0 100 200 300 400 500mm
100 50



WIND BRACE TYPE - B

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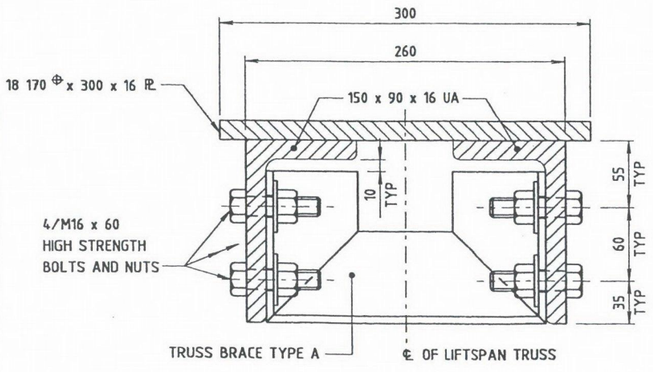
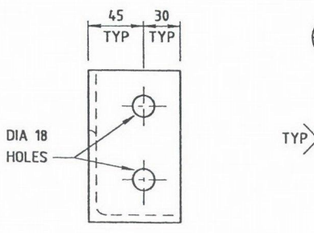
100 50



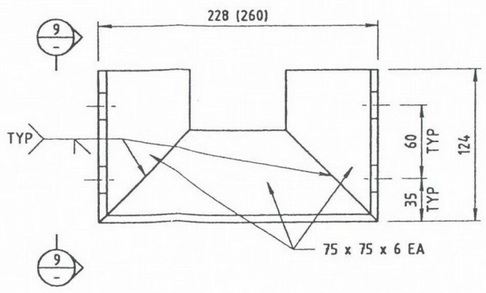
SECTION 8

0 50 100 150mm
50 25



VIEW 9

0 50 100 150mm
50 25



TRUSS BRACE TYPE A AND B

TRUSS BRACE TYPE B SIMILAR EXCEPT WHERE IN BRACKETS

0 50 100 150mm
50 25

GENERAL NOTES

SCALE 0 500 1000 1500mm
500 250
OR AS SHOWN

FOR FURTHER GENERAL NOTES RELATING TO THIS DRAWING SEE SHEET No 3

⊕ LENGTH TO BE ADJUSTED IF NECESSARY FOR CAMBER

ISSUE	DATE	REVISION	PREP	CHECK	AUTH

ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301 — CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER AT WOODVILLE (DUNMORE BRIDGE) REPLACEMENT OF LIFTSPAN

DETAILS - SHEET D

PREPARED BY
BRIDGE SECTION
99 PHILLIP STREET
PARRAMATTA NSW 2150
PHONE (02) 8837-0830
FACSIMILE (02) 8837-0054

CLIENT
HUNTER REGIONAL OFFICE
59 DARBY STREET NEWCASTLE
LOCKED BAG 30 NEWCASTLE NSW 2300
PHONE (02) 4924-0240
FACSIMILE (02) 4924-0344

PREPARED DESIGN
DRAWING Y. CHEN 23/04/02
CHECKED
MANAGER, BRIDGE REHABILITATION PROJECTS 7-5-02

REGISTRATION No OF PLANS 0301 307 BC 0910

SHEET No 6 | No OF SHEETS 16

CAD No A216DD

RTA DRAWING No RTA8001 ISSUE 4 SEP 2000

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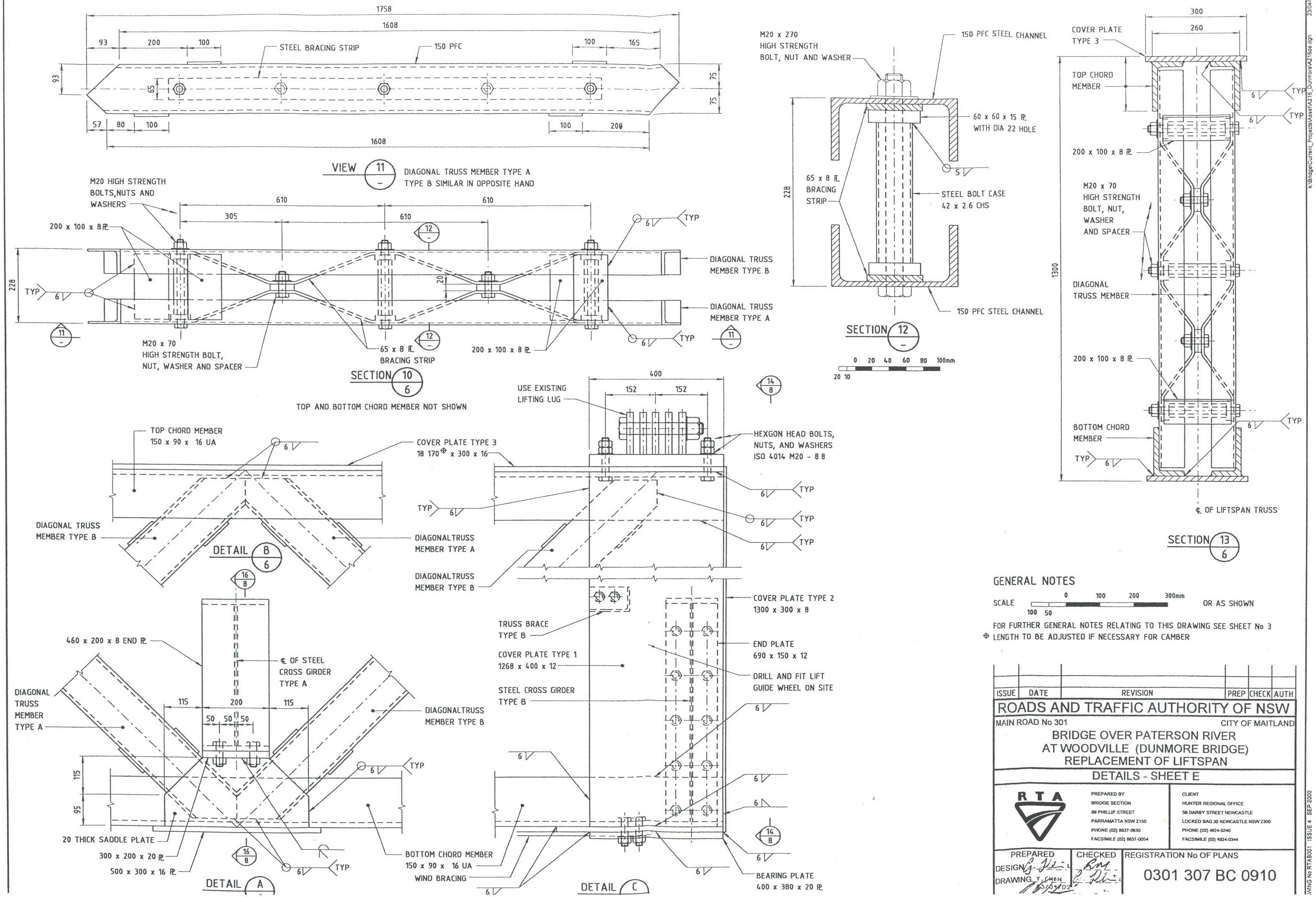


GENERAL NOTES

SCALE 0 100 200 300mm OR AS SHOWN (100 50)

FOR FURTHER GENERAL NOTES RELATING TO THIS DRAWING SEE SHEET No 3

⊕ LENGTH TO BE ADJUSTED IF NECESSARY FOR CAMBER

ISSUE	DATE	REVISION	PREP	CHECK	AUTH

ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301 — CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER AT WOODVILLE (DUNMORE BRIDGE) REPLACEMENT OF LIFTSPAN

DETAILS - SHEET E

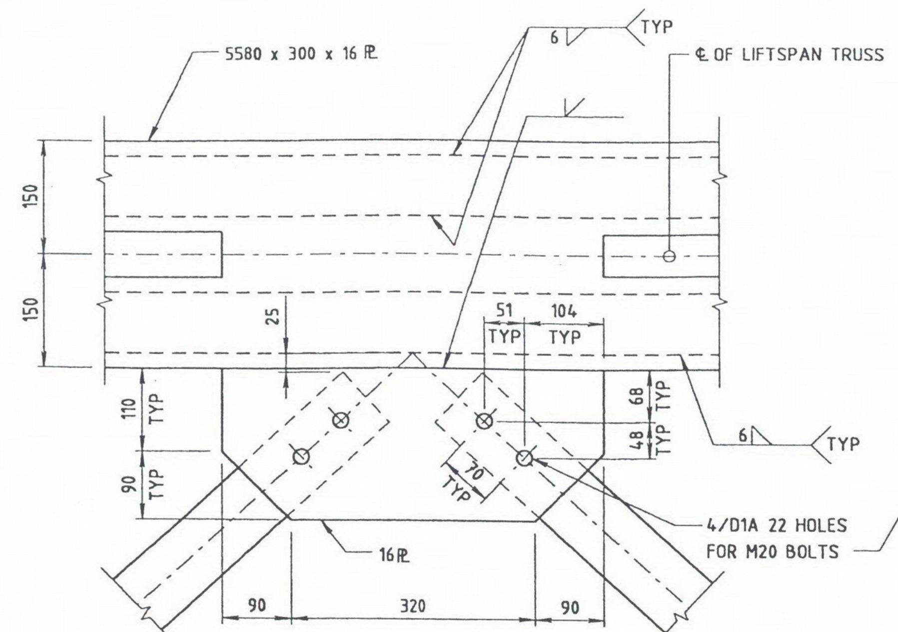
RTA

PREPARED BY BRIDGE SECTION 99 PHILLIP STREET PARRAMATTA NSW 2150 PHONE (02) 8837-0830 FACSIMILE (02) 8837-0054

CLIENT HUNTER REGIONAL OFFICE 59 DARBY STREET NEWCASTLE LOCKED BAG 30 NEWCASTLE NSW 2300 PHONE (02) 4924-0240 FACSIMILE (02) 4924-0344

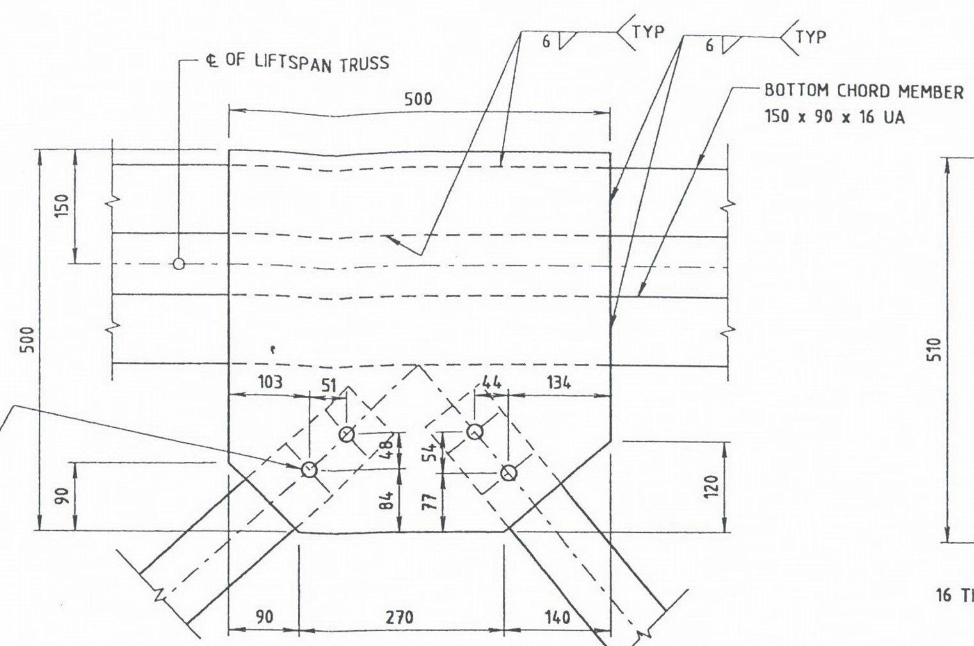
PREPARED — DESIGN — DRAWING Y. CHEN 23/04/02 | CHECKED | REGISTRATION No OF PLANS: 0301 307 BC 0910

DRAWING No RTAB001 ISSUE 4 SEP 2000



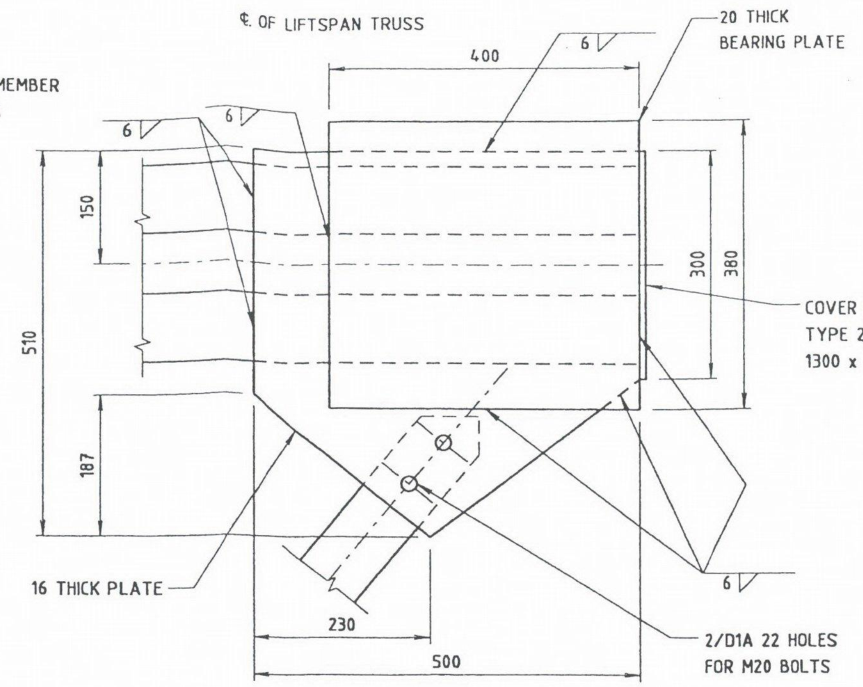
WIND BRACING PLATE TYPE C

DETAIL D/6



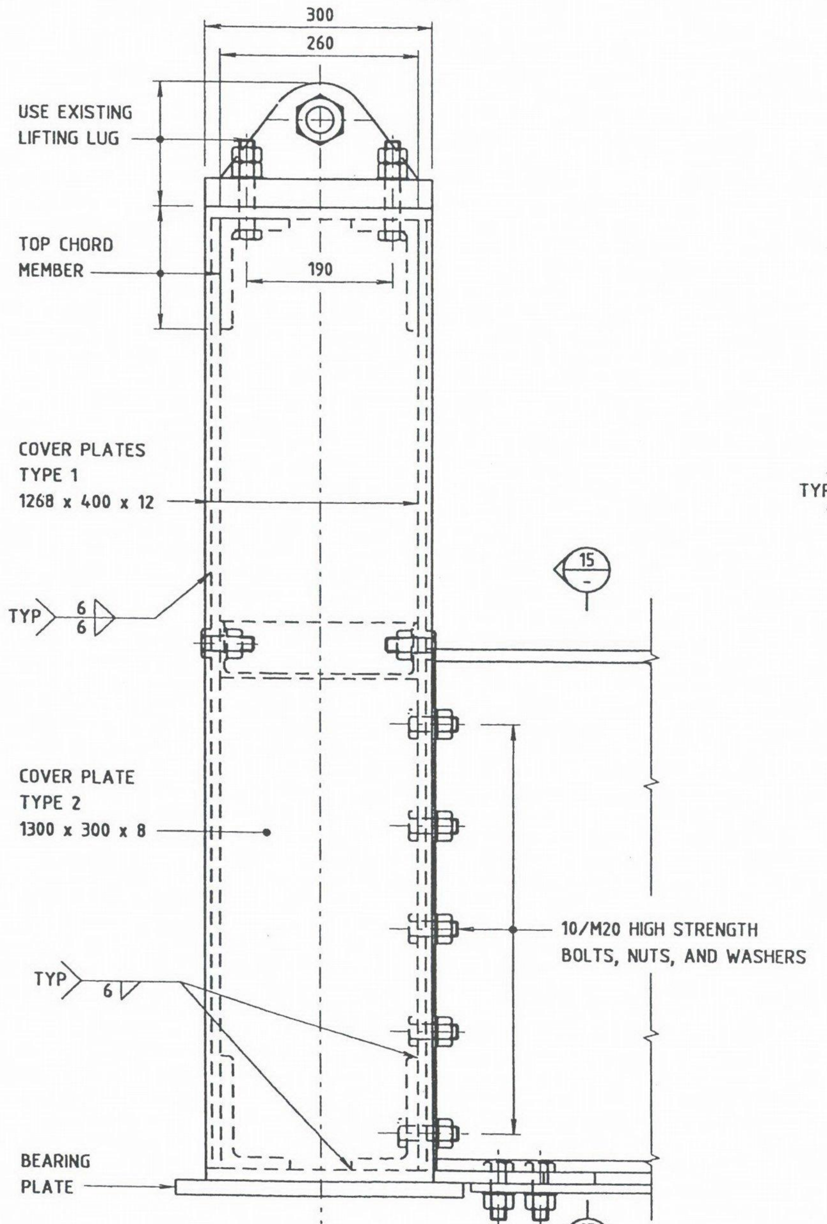
WIND BRACING PLATE TYPE B

DETAIL E/6

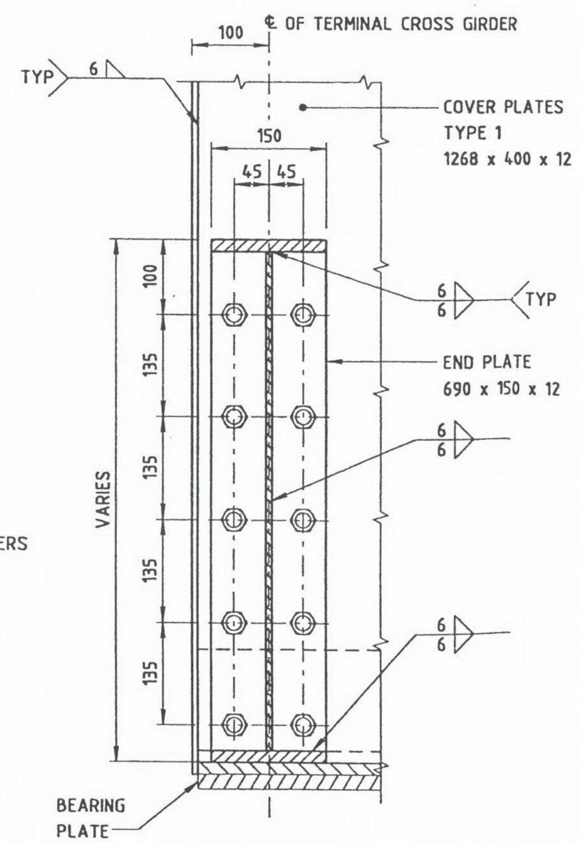


WIND BRACING PLATE TYPE A

DETAIL F/6



VIEW 14/7



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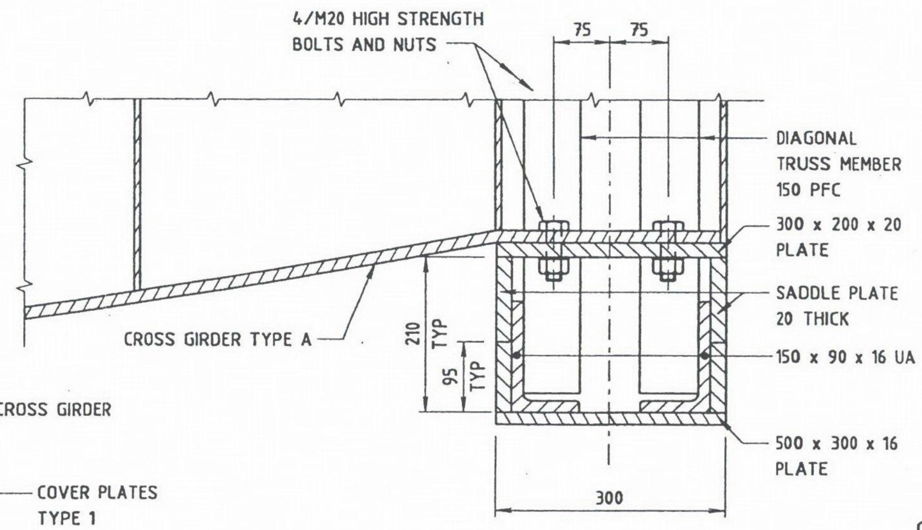

SECTION 16/7

GENERAL NOTES

SCALE 0 100 200 300mm (100 50) OR AS SHOWN

FOR FURTHER GENERAL NOTES RELATING TO THIS DRAWING SEE SHEET No 3

ISSUE	DATE	REVISION	PREP	CHECK	AUTH

ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301 — CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER
AT WOODVILLE (DUNMORE BRIDGE)
REPLACEMENT OF LIFTSPAN

DETAILS - SHEET F

RTA

PREPARED BY
BRIDGE SECTION
99 PHILLIP STREET
PARRAMATTA NSW 2150
PHONE (02) 8837-0830
FACSIMILE (02) 8837-0054

CLIENT
HUNTER REGIONAL OFFICE
59 DARBY STREET NEWCASTLE
LOCKED BAG 30 NEWCASTLE NSW 2300
PHONE (02) 4924-0240
FACSIMILE (02) 4924-0344

PREPARED: DESIGN [signature] DRAWING Y. CHEN 23/04/02
CHECKED [signature]
MANAGER, BRIDGE REHABILITATION PROJECTS
CAD No A216DF

REGISTRATION No OF PLANS: 0301 307 BC 0910

SHEET No 8 | No OF SHEETS 16

RTA DRAWING No RTA8001 ISSUE 4 SEP 2000
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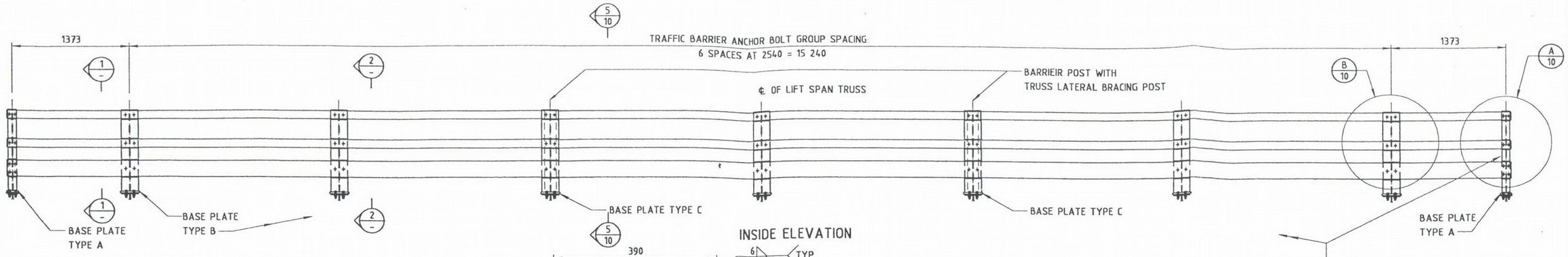

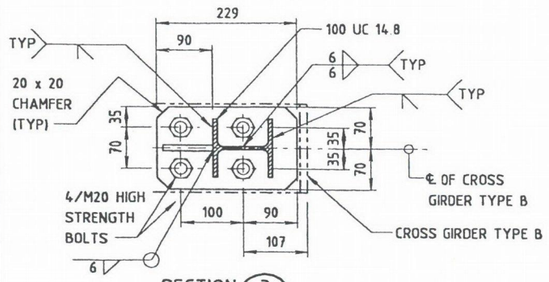

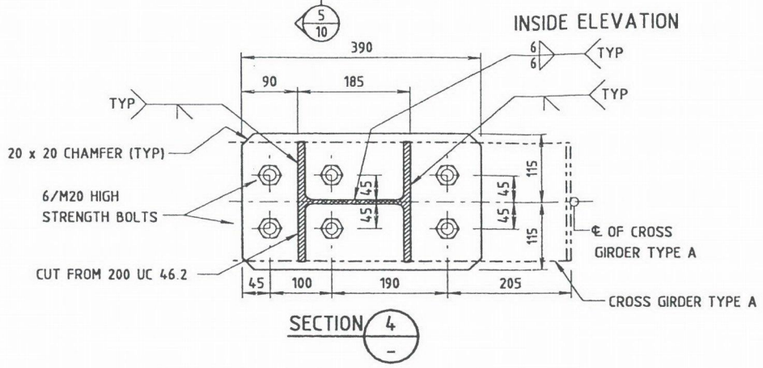

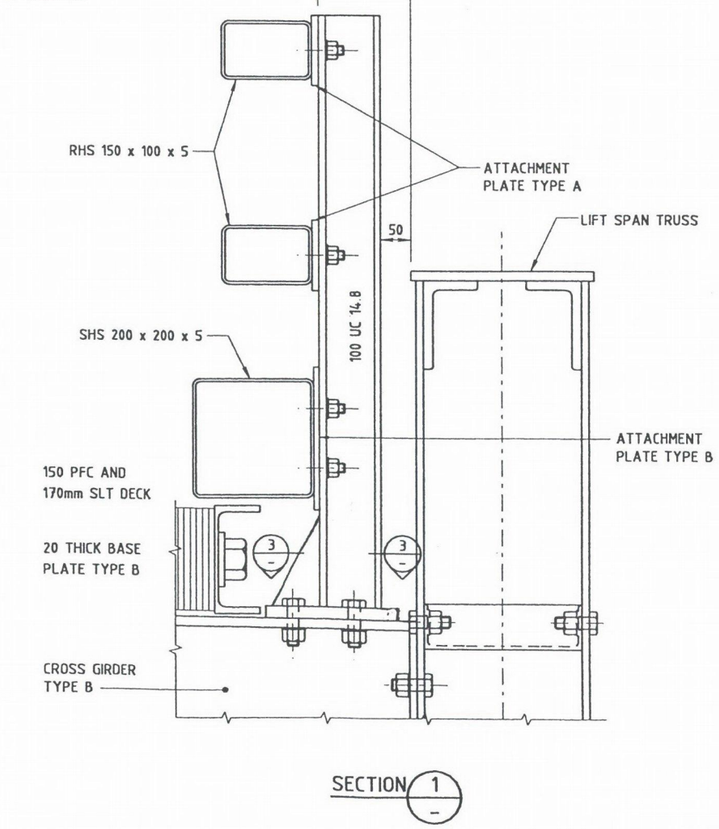

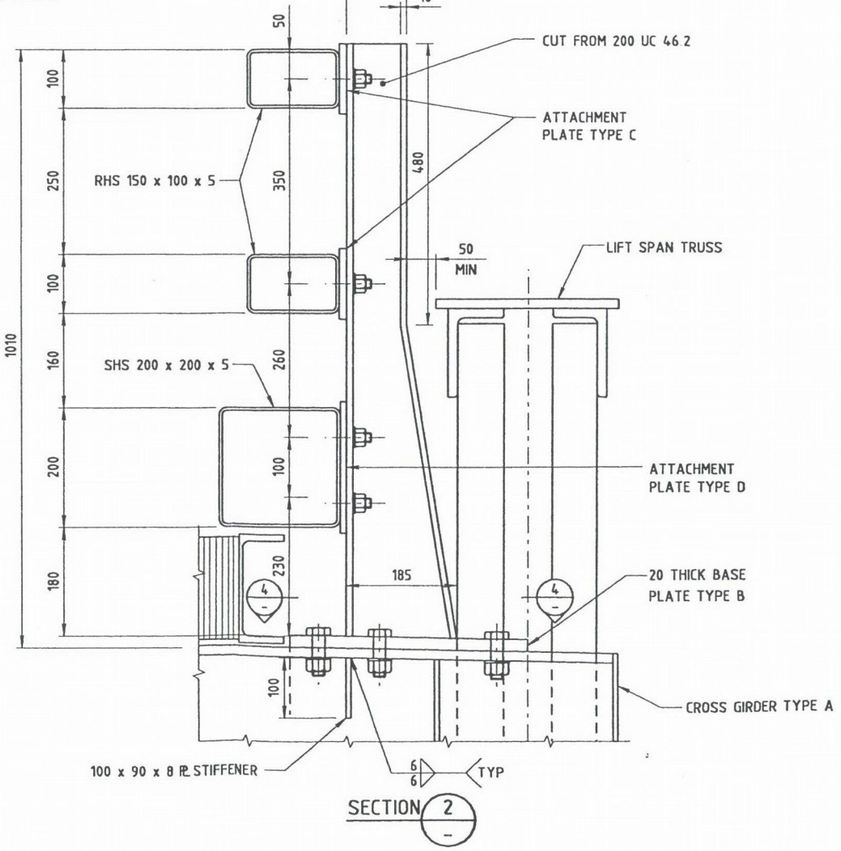

GENERAL NOTES

SCALE 0 100 200 300mm
100 50
OR AS SHOWN

FOR FURTHER GENERAL NOTES RELATING TO THIS DRAWING SEE SHEET No 3

ISSUE	DATE	REVISION	PREP	CHECK	AUTH

ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301 — CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER
AT WOODVILLE (DUNMORE BRIDGE)
REPLACEMENT OF LIFTSPAN

TRAFFIC BARRIER DETAILS - SHEET A

PREPARED BY
BRIDGE SECTION
99 PHILLIP STREET
PARRAMATTA NSW 2150
PHONE (02) 8837-0830
FACSIMILE (02) 8837-0054

CLIENT
HUNTER REGIONAL OFFICE
59 DARBY STREET NEWCASTLE
LOCKED BAG 30 NEWCASTLE NSW 2300
PHONE (02) 4924-0240
FACSIMILE (02) 4924-0344

PREPARED DESIGN
DRAWING Y. CHEN 23/04/02
MANAGER, BRIDGE REHABILITATION PROJECTS 7-5-02

CHECKED

REGISTRATION No OF PLANS
0301 307 BC 0910

SHEET No 9 | No OF SHEETS 16

CAD No A215TBDA

RTA DRAWING No RTA8001 | ISSUE 4 SEP 2000

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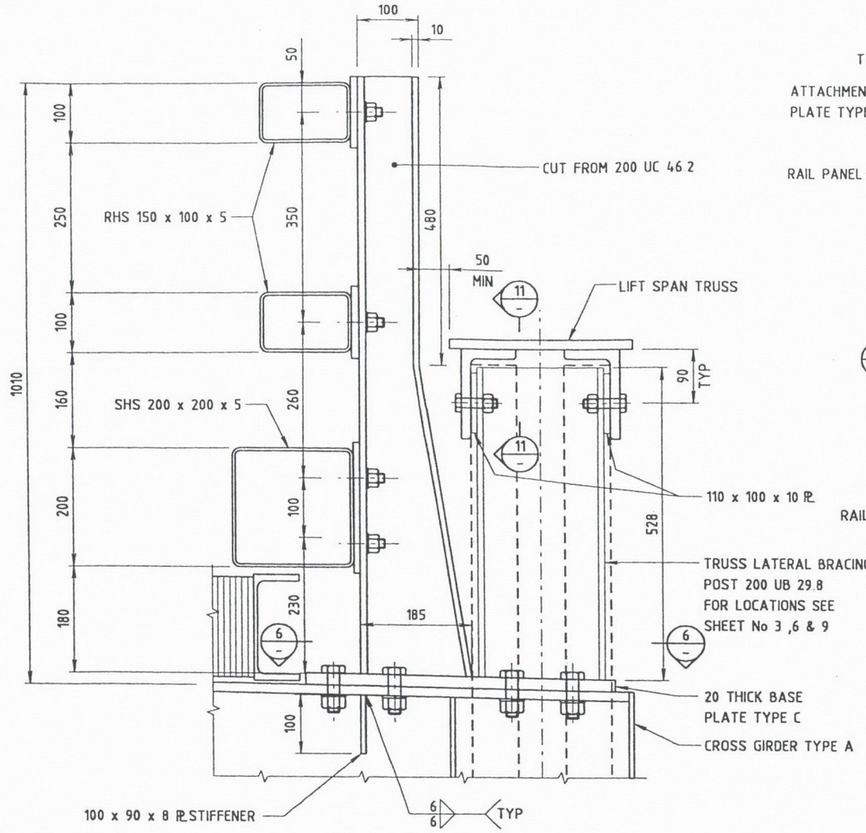
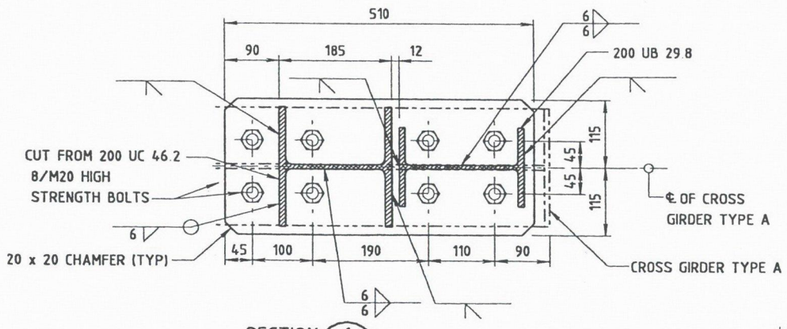
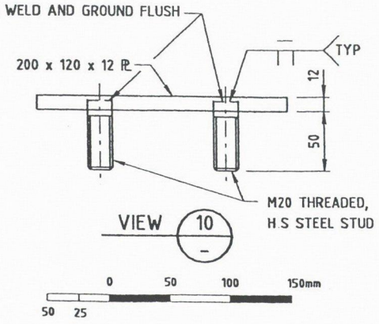


SECTION 5/9 17/6



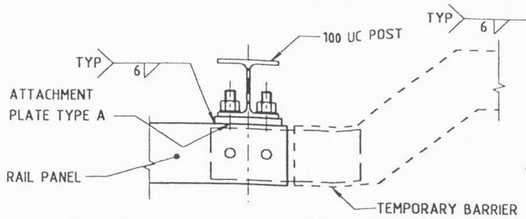
SECTION 6/- BASE PLATE TYPE C 4 REQUIRED

DRILL Ø20 HOLES AND PUSH OR FORCE
FIT STUDS 2/3 DEEP INTO HOLES.
THEN PLUG WELD AND GROUND FLUSH

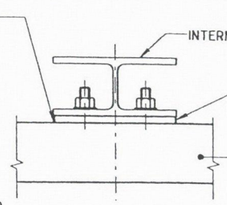


VIEW 10/-

0 50 100 150mm
50 25



VIEW 7/-



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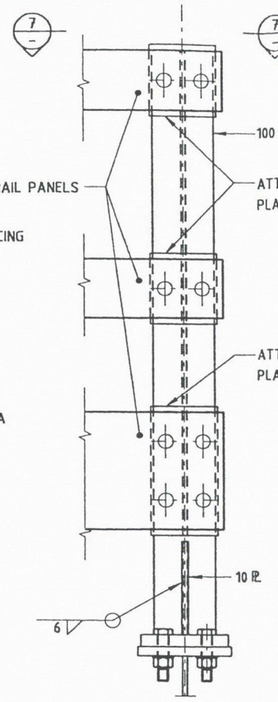
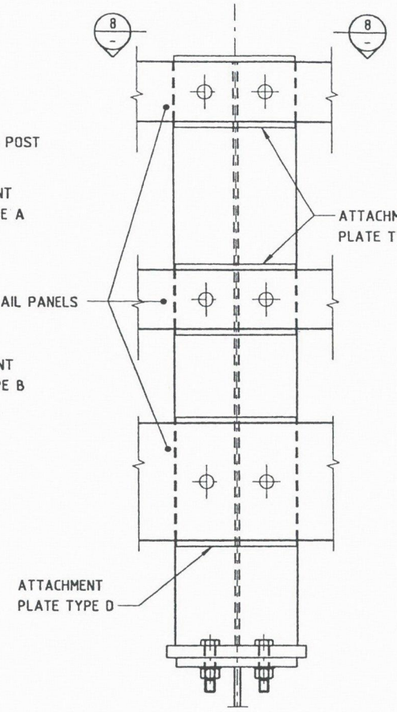
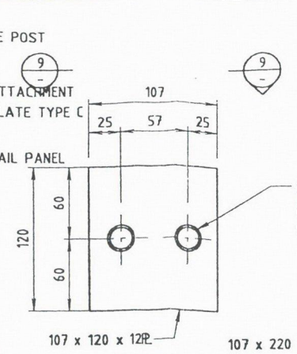
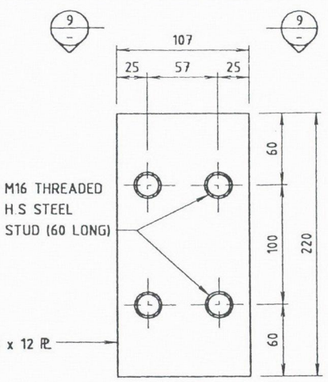


DETAIL A/9



DETAIL B/9



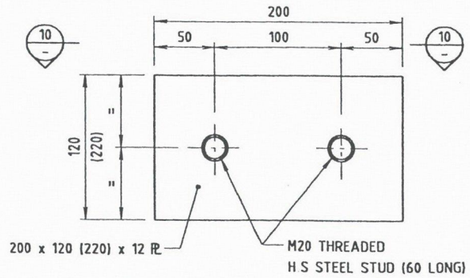


ATTACHMENT PLATE TYPE A
8 REQUIRED

0 50 100 150mm
50 25

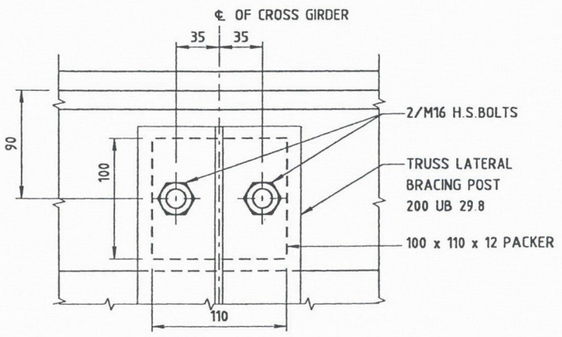
ATTACHMENT PLATE TYPE B
4 REQUIRED

0 50 100 150mm
50 25



ATTACHMENT PLATE TYPE C AND D
TYPE C SHOWN, 28 REQURIED
TYPE D SIMILAR EXCEPT WHERE IN BRACKETS, 14 REQUIRED

0 50 100 150mm
50 25



SECTION 11/-

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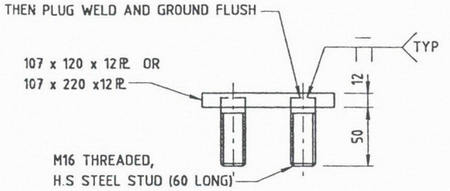
50 25

DRILL Ø16 HOLES AND PUSH OR FORCE
FIT STUDS 2/3 DEEP INTO HOLES.
THEN PLUG WELD AND GROUND FLUSH



VIEW 9/-

0 50 100 150mm
50 25

GENERAL NOTES

SCALES 0 100 200 300mm (100 50) OR AS SHOWN

FOR FURTHER GENERAL NOTES RELATING TO THIS DRAWING SEE SHEET No 3

ISSUE	DATE	REVISION	PREP	CHECK	AUTH

ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301 — CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER
AT WOODVILLE (DUNMORE BRIDGE)
REPLACEMENT OF LIFTSPAN

TRAFFIC BARRIER DETAILS - SHEET B

RTA

PREPARED BY
BRIDGE SECTION
99 PHILLIP STREET
PARRAMATTA NSW 2150
PHONE (02) 8837-0830
FACSIMILE (02) 8837-0054

CLIENT
HUNTER REGIONAL OFFICE
59 DARBY STREET NEWCASTLE
LOCKED BAG 30 NEWCASTLE NSW 2300
PHONE (02) 4924-0240
FACSIMILE (02) 4924-0344

PREPARED DESIGN G. Allen
CHECKED Roy G. Allen
DRAWING Y. CHEN 23/04/02

MANAGER, BRIDGE REHABILITATION PROJECTS 7-5-02

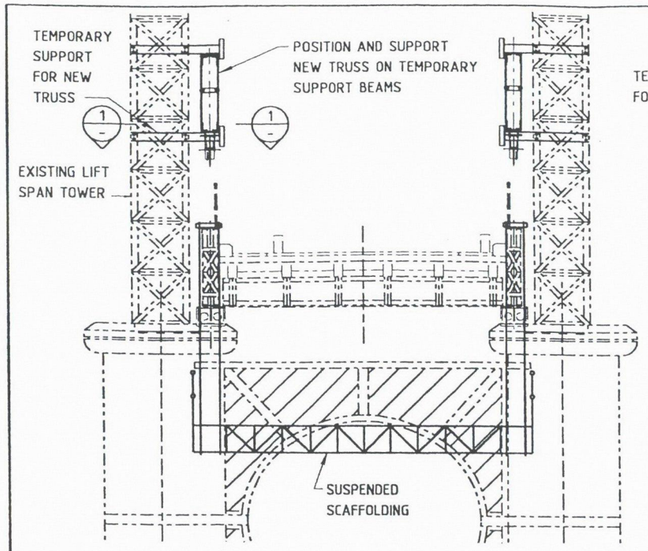
REGISTRATION No OF PLANS
0301 307 BC 0910

SHEET No 10 | No OF SHEETS 16

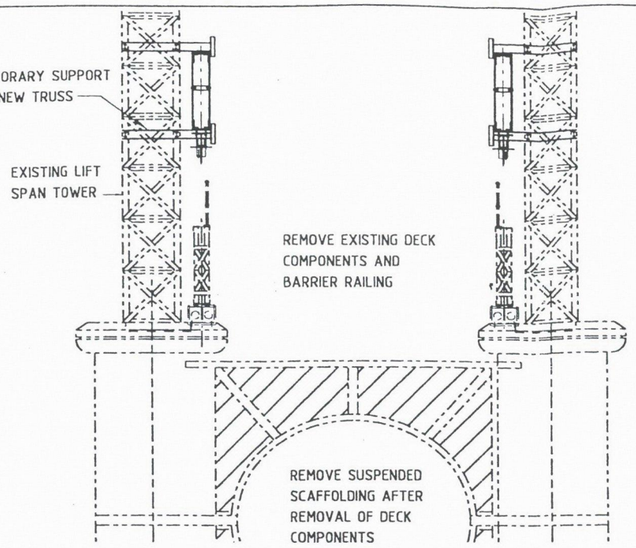
CAD No A216TBDB

RTA DRAWING No RTA8001 ISSUE 4 SEP 2000

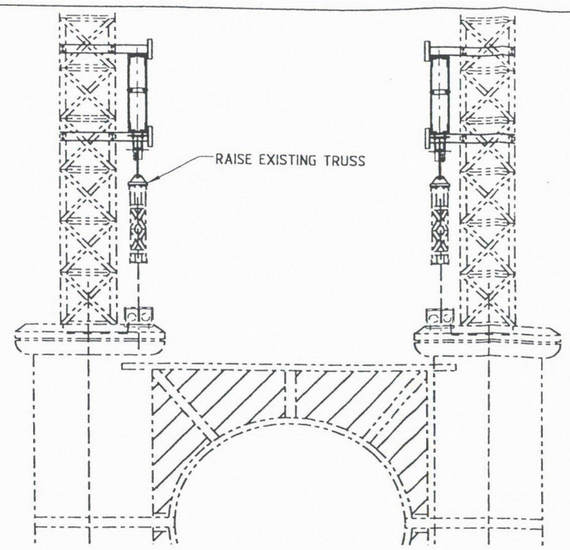
k:\Bridges\Current_Projects\Asset\A216_Dunmore\A216TBDB.dgn 23/04/02



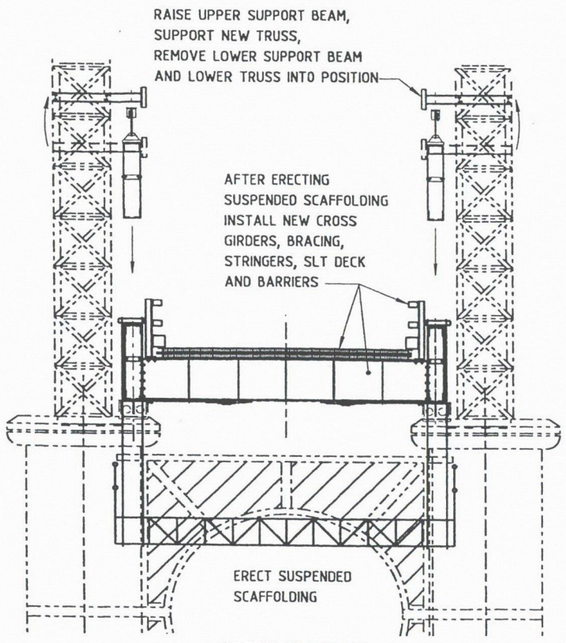
STEPS 1, 2, 3



STEPS 4 TO 8

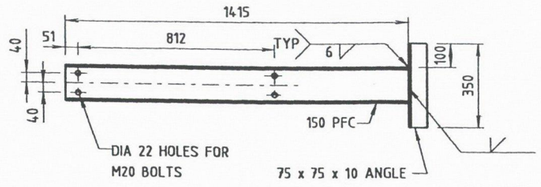


STEP 9



STEPS 10 TO 17

FINALLY REMOVE TEMPORARY SUPPORT BEAMS AND SCAFFOLDING

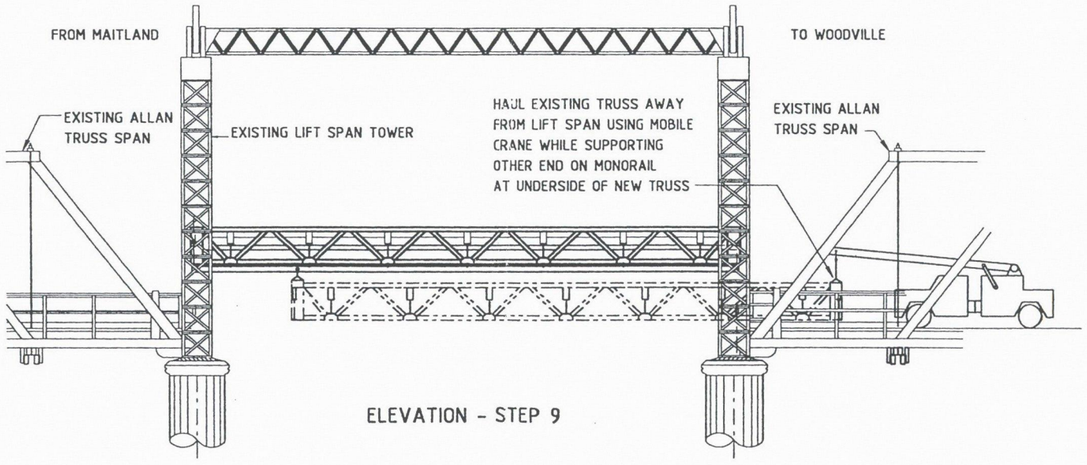


TEMPORARY SUPPORT BEAM

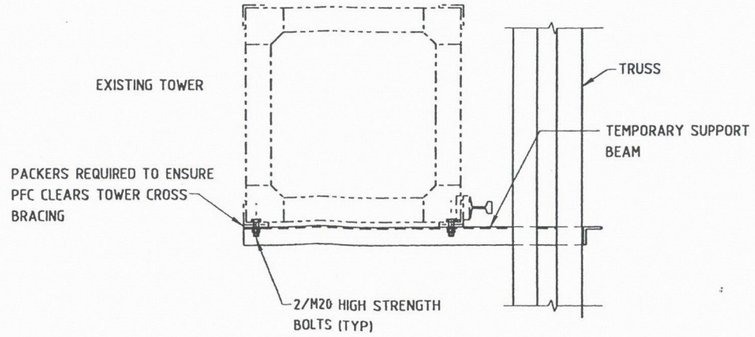
16 REQUIRED

0 250 500 750mm

250 125



ELEVATION - STEP 9



SECTION 1

0 250 500 750mm

250 125

1. INSTALL SCAFFOLDING UNDER EXISTING LIFT SPAN DECK
2. TRANSPORT NEW LIFT SPAN TRUSSES ONTO EXISTING DECK
3. LIFT AND FIX THE NEW TRUSSES ONTO TOWERS APPROXIMATELY 2m ABOVE THE DECK
4. REMOVE EXISTING TIMBER DECK AND STRINGERS
5. REMOVE EXISTING INTERMEDIATE CROSS GIRDERS
6. REMOVE EXISTING UNDERDECK CROSS BRACING
7. REMOVE SUSPENDED SCAFFOLDSTABILISE EXISTING TRUSSES
8. AND REMOVE EXISTING END CROSS GIRDERS
9. REMOVE EACH EXISTING TRUSS BY HOISTING IT UP TO THE UNDERSIDE OF THE NEW TRUSS OVER AND WHEELING IT OUT
10. LOWER NEW TRUSSES INTO POSITION AND STABILISE
11. INSTALL NEW END CROSS GIRDERS
12. INSTALL NEW UNDERDECK BRACING
13. INSTALL UNDERDECK SCAFFOLD
14. INSTALL NEW INTERMEDIATE CROSS GIRDERS
15. INSTALL NEW SLT DECK
16. INSTALL NEW BARRIER AND OTHER ACCESSORIES
17. REMOVE SCAFFOLD

ISSUE	DATE	REVISION	PREP	CHECK	AUTH

ROADS AND TRAFFIC AUTHORITY OF NSW

MAIN ROAD No 301 — CITY OF MAITLAND

BRIDGE OVER PATERSON RIVER AT WOODVILLE (DUNMORE BRIDGE) REPLACEMENT OF LIFTSPAN

CONSTRUCTION SEQUENCE

RTA

PREPARED BY
BRIDGE SECTION
99 PHILLIP STREET
PARRAMATTA NSW 2150
PHONE (02) 8837-0830
FACSIMILE (02) 8837-0054

CLIENT
HUNTER REGIONAL OFFICE
59 DARBY STREET NEWCASTLE
LOCKED BAG 30 NEWCASTLE NSW 2300
PHONE (02) 4924-0240
FACSIMILE (02) 4924-0344

PREPARED	CHECKED	REGISTRATION No OF PLANS
DESIGN P. Wu	RMY	0301 307 BC 0910
DRAWING Y. CHEN	P. Wu	
25/07/02		
MANAGER, BRIDGE REHABILITATION PROJECTS	2-5-02	SHEET No 11 / No OF SHEETS 16

CAD No A216CSQ

RTA DRAWING No RTA8001 ISSUE 4 SEP 2000

K:\Bridges\Current_Projects\Asset\A216_DunmoreA216sq.dgn 23/04/02

APPENDIX D

CORRESPONDENCE AND RESULTS OF DATABASE SEARCHES

EPHONE: (02) 4934 9700
CSIMILE: (02) 4933 3209
21613 MAITLAND
AIL: mcc@maitland.nsw.gov.au
B ADDRESS: www.maitland.infohunt.nsw.gov.au

MAITLAND CITY COUNCIL

All correspondence should be addressed to:

General Manager
PO. BOX 220,
MAITLAND, N.S.W. 2320

Administration Building,
285 - 287 High Street
MAITLAND, N.S.W.

Your Ref. 198876 : 122/940 : wr
Our Ref. CMS No : 000465

Telephone Enquiries: W. Randall
(02) 49349803
(02) 49348459 (fax)

3 December 2001

Jesse Death
Environmental Officer
Octagon Building
Level 5, 99 Phillip Street
Parramatta, NSW 2124

Dear Sir,

RE: DUNMORE & HINTON BRIDGE WORKS

Thank you for your letter on 26 November 2001 regarding the above projects. Unfortunately, Council has no record of the previous letter you sent to us, however I thank you for following up to obtain our comment. My comments on these projects are as follows:

1. I am unclear as to the scope of works proposed to the Hinton Bridge. Would you please clarify this issue.
2. These two bridges have major significance on a regional basis, and I would like to be satisfied that the programme of closures proposed to the two bridges will be advertised extensively the communities that use them, and that the length of closures will be minimised. Would you please address this issue in the REF?
3. Is it possible to assign a design life for the works proposed?

Thankyou for the opportunity to comment.

Yours faithfully,

W. R. Randall
MANAGER, ASSETS & INFRASTRUCTURE PLANNING

FACSIMILE

Port Stephens
C·O·U·N·C·I·L
...a community partnership

TO: Jessie Death

FAX No: (02) 8837 0053

No. OF PAGES 6 (inc. header)

FROM: Bo Moshage
Land Use Planning
DATE: 17/01/02
FAX NUMBER: 4987 3612
PHONE NUMBER: 4980 0255

MESSAGE:

Dear Jessie

Further to our telephone discussion yesterday, please find attached a copy of the advise sent to your office on 6 December 2001.

Regards
Bo

FILE COPY

Telephone Inquiries:
Bo Moshage
Development & Building Section
Please Quote File No:
S9620-003
Your Reference:
cms no. 000465

Jesse Death
Level 5, 99 Phillip Street
PARRAMATTA NSW 2124

Dear Sir,

Re: **Proposed Replacement of Lift Span, Dunmore and Hinton Bridges over the Patterson River**

I refer to your facsimile correspondence dated 26 November 2001 and to our telephone discussion of 5 December 2001 and confirm the following advice.

Both the Dunmore and Hinton Bridges are listed in the Port Stephens Local Environmental Plan 2000 schedule of heritage items as Regionally Significant.

Division 3 of the Port Stephens Local Environmental Plan 2000 outlines the associated heritage provisions and is enclosed for your information.

You will note that the development consent of Council is required to replace the lift spans of each Bridge unless it can be determined by Council (on application accompanied by supporting documentation) that the proposed development would not adversely affect the heritage significance of the Bridges.

I thank you for the opportunity to provide comment. If clarification of the above information is required, please contact Council's Development and Building Section.

Yours faithfully,

BO MOSHAGE
LAND USE PLANNING
Bm01.

Division 3 Heritage Provisions

55 Protection of heritage items, heritage conservation areas and relics

(1) The following development may be carried out only with development consent:

(a) demolishing, defacing, damaging or moving a heritage item or a building, work, relic, tree or place within a heritage conservation area,

(b) altering a heritage item or a building, work or relic within a heritage conservation area by making structural changes to its exterior,

(c) altering a heritage item or a building, work or relic within a heritage conservation area by making non-structural changes to the detail, fabric, finish or appearance of its exterior, except changes resulting from any maintenance necessary for its ongoing protective care which does not adversely affect its heritage significance,

(d) moving a relic, or excavating land for the purpose of discovering, exposing or moving a relic,

(e) erecting a building on, or subdividing, land on which a heritage item is located or which is within a heritage conservation area.

(2) Development consent is not required by this clause if the consent authority is of the opinion that the proposed development would not adversely affect the heritage significance of the heritage item or heritage conservation area.

(3) When determining a development application required by this clause, the consent authority must take into consideration the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area.

(4) The consent authority may refuse to grant consent to a development application required by this clause unless it has considered a conservation plan that assesses the impact of the proposal on the heritage significance of the item and its setting, or of the heritage conservation area. A *conservation plan* is a document establishing the heritage significance of a heritage item or a heritage conservation area and identifying conservation policies and management mechanisms that are appropriate to enable that significance to be retained.

56 Potential heritage items

(1) A person must not demolish a potential heritage item except with the consent of the consent authority.

(2) The consent authority shall not grant consent to a development application required by subclause (1) unless it has made an assessment of:

(a) the significance of the item as a potential heritage item,

(b) the extent to which the carrying out of the development in accordance with the consent would affect the heritage significance of the item and its site,

(c) whether the setting of the item and, in particular, whether any stylistic, horticultural or archaeological features of the setting should be retained,

(d) whether the item constitutes a danger to the users or occupiers of that item or to the public, and

(e) measures to be taken to conserve potential heritage items, including any conservation plan prepared by the applicant.

57 Notice of certain heritage development applications

Sections 79 of the Act (which provide for the giving of notice, and for the making and consideration of submissions, about proposed development) apply to the demolishing, defacing or damaging of a heritage item, a potential heritage item or a building, work, relic, tree or place within a heritage conservation area (and to the use of a building or land referred to in clause 61 for a purpose which, but for that clause, would be prohibited by this plan) in the same way as those provisions apply to designated development.

58 Notice to Heritage Council

Before granting development consent to the demolishing, defacing or damaging of a heritage item of State significance or potential heritage item of State significance, the consent authority must notify the Heritage Council of its intention to do so and take into consideration any comments received from the Heritage Council within 28 days after the notice is sent.

59 Development of known or potential archaeological sites

(1) The consent authority may grant consent to the carrying out of development on an archaeological site that has Aboriginal heritage significance (such as a site that is the location of an Aboriginal place or a relic, within the meaning of the *National Parks and Wildlife Act 1974*) or a potential archaeological site that is reasonably likely to have Aboriginal heritage significance only if:

(a) it has considered an assessment of how the proposed development would affect the conservation of the site and any relic known or reasonably likely to be located at the site, being an assessment prepared in accordance with any guidelines for the time being notified to it by the Director-General of National Parks and Wildlife, and

(b) it has notified the Director-General of its intention to do so and taken into consideration any comments received from the Director-General within 28 days after the notice was sent.

(2) The consent authority may grant consent to the carrying out of development on an archaeological site that has non-Aboriginal heritage significance or a potential archaeological site that is reasonably likely to have non-Aboriginal heritage significance only if:

(a) it has considered an assessment of how the proposed development would affect the conservation of the site and any relic known or reasonably likely to be located at the site, being an assessment prepared in accordance with any guidelines for the time being notified to it by the Heritage Council, and

(b) it has notified the Heritage Council of its intention to do so and taken into consideration any comments received from the Heritage Council within 28 days after the notice was sent.

60 Development in the vicinity of heritage items, heritage conservation areas, archaeological sites or potential archaeological sites

The consent authority must take into consideration the likely effect of the proposed development on the heritage significance of a heritage item, heritage conservation area,

archaeological site or potential archaeological site, and on its setting, when determining an application for consent to carry out development on land in its vicinity.

61 Conservation incentives

(1) The consent authority may grant consent to the use, for any purpose, of a building that is a heritage item or is within a heritage conservation area, or of the land on which the building is erected, even though the use would otherwise be prohibited by this plan, if it is satisfied that:

(a) the proposed use would not adversely affect the heritage significance of the item or heritage conservation area, and

(b) the conservation of the building depends on the granting of the consent.

(2) When considering an application for consent to erect a building on land on which a heritage item is located or on land within a heritage conservation area, the consent authority may, for the purpose of determining:

(a) the floor space ratio, and

(b) the number of parking spaces to be provided on the site,

exclude the floor space of the building from its calculation of the floor space of the buildings erected on the land, but only if the consent authority is satisfied that the conservation of the building depends on it making the exclusion.

Level 5, Pod D
99 Phillip St
Parramatta NSW 2124
Telephone: (02) 8837 0589
Fax: (02) 8837 0053

Our Reference: *WBS No: H/36276*
Our Contact: *Jesse Death*

Bo Moshage
Port Stephens Shire Council
Planning and Land Use
PO Box 42
Raymond Terrace, NSW, 2324.

Replacement of Lift Spans,
and Installation of SLT Decking and Continuous Steel Safety Barriers on
Dunmore and Hinton Bridges over the Paterson River.

Dear Sir,

The Roads and Traffic Authority of New South Wales (RTA) proposes to undertake the above works on Dunmore Bridge (unclassified local road) and Hinton Bridge (unclassified local road) which are listed as Heritage items on Schedule 2 of Council's Local Environment Plan, 2000. For Further detail regarding the Proposal, I refer you to previous correspondence from the RTA to Council on the 12/09/01 and 26/11/01 (Our Reference: CMS No. 000465).

The RTA is of the opinion that the proposed works would not adversely affect the heritage significance of the heritage items, and formally request Council's opinion (as the Consent Authority) on this matter in accordance with Clause 55(2), Division 3 (Heritage Provisions) of the LEP. A Statement of Heritage Impact undertaken by RTA Operations, Environment Technology and the Heritage Office of New South Wales' response to the RTA's Section 60 Application under the Heritage Act, which supports this view, are attached for your information.

A facsimiled response on (02) 8837 0053, as soon as possible, would assist in the early resolution of this issue. Timing in relation to this project is paramount, should you envisage difficulties responding by the 30th July 2002 or require any further information, please do not hesitate to contact me on (02) 8837 0589.

Yours faithfully,

Jesse Death
Environmental Officer
30 July 2002

DEATH Jesse

From: Bo Moshage [bo.moshage@portstephens.nsw.gov.au]

Sent: Monday, 29 July 2002 14:31

To: DEATH Jesse

Subject: Dunmore and Hinton Bridges

Dear Jesse,

Further to our telephone discussion of 29 July 2002 regarding the proposed replacement of the lift span on the Dunmore and Hinton Bridges I provide the following advice.

On review of the Statement of Heritage Impact for both proposal, Council concurs with the recommendation that the RTA submit a development application to PSC to replace the lift span and associated works.

Given the nature of the proposed works, use of Clause 55(2) of the LEP exempting the need for development approval if the works proposed were not to adversely affect the heritage significance of the items was considered inappropriate in this case.

Please note that the Dunmore Bridge is only listed on the PS LEP Heritage Schedule NOT also the Maitland LEP as refer to on page 8 Section 2.6.2 Maitland LEP of the Dunmore SOHI.

Thank you for the opportunity to provide comments on the proposed developments.

Bo Moshage
Land Use Planner

Received 4/12/01

N S W FISHERIES
OFFICE OF CONSERVATION CENTRAL REGION
PORT STEPHENS FISHERIES CENTRE
Private Bag 1 Nelson Bay NSW 2315
Tel: (02) 4916 3929 Fax: (02) 4982 2306

TO - Jane Deak. Env. Officer.

FAX NO - 02 8837 0053

FROM - Roland Boo

DATE - 4/12/01 PAGES TO FOLLOW: 3.

RE -

Pls see attached.

Pls call on 0408 480 768. if you have any questions

RBoo.

Our ref: 01-105-RB
Your ref: CMS No 000465

NSW Fisheries

4 December 2001

Jesse Death
Environment Officer
Roads and Traffic Authority
Level 5, 99 Phillip St
PARRAMATTA NSW 2124

Facsimile: (02) 8837 0053

Dear Sir / Madam

Re: Dunmore and Hinton Bridge Replacement.

Thank you for your letter faxed 26 November 2001 requesting comment from NSW Fisheries for the proposal cited above and current preparation of a Review of Environmental Factors.

It is unlikely that the Department will have any concerns for replacement of the bridges (lift spans) with similar structures provided that;

1)Water quality in the Patterson River is not degraded in any manner as a result of construction works.
2) Fish migration is not prevented during the installation of the replacement structures.

Accordingly the Department encourages the RTA to consider the above points.

In addition, for your reference I have attached an abbreviated generic list or requirements that the Department usually requires to be addressed in order to assess the merits of any proposal. Should the works relate to any of the points, please consider these during the projects assessment.

Roland Bow
Conservation Manager (Central)
NSW Fisheries

PORT STEPHENS FISHERIES CENTRE
Taylors Beach Road, Taylors Beach 2316 - Private Bag 1 Nelson Bay 2315
Telephone: 4982 1232 Facsimile: 4982 1107
Website: www.fisheries.nsw.gov.au
ABN 56 287 047 871

General Requirements

- Area which may be affected either directly or indirectly by the development or activity should be identified and shown on an appropriately scaled map (and aerial photographs).
- All waterbodies and waterways within the proposed area of development are to be identified.
- Description of aquatic vegetation, snags, gravel beds and any other protected, threatened or dominant habitats should be presented.
- Area, density and species composition should be included and mapped.
- Identification of recognised recreational and commercial fishing grounds, aquaculture farms and/or other waterways users.
- Presented maps or plans
- Description of proposal and study area
- Details of the location of all component parts of the proposal, including any auxiliary infrastructure, timetable for construction of the proposal with details of various phases of construction
- Size of the area affected
- Aspects of the management of the proposal, both during construction and after completion, which relate to impact minimisation eg Environment Management Plans
- Plan of study area
- Locations and types of landuses present
- Locations of streams and other waterbodies
- Land tenure details for all land parcels
- For each freshwater body identified on the plan, the plan should include, either by annotation or by an accompanying table, hydrological and stream morphology information such as: flow characteristics, including any seasonal variations, bed substrate, and bed width
- For each marine or estuarine area identified on the plan, the plan should include, either by annotation or by an accompanying table, hydrological and stream morphology information such as: tidal characteristics, bed substrate, and depth contours

Dredging and Reclamation Activities

- Purpose of works
- Type(s) of marine vegetation in the vicinity of the proposed works
- Distance of adjacent marine vegetation from the outer boundary of the proposed works
- Method of dredging to be used
- Duration of dredging works
- Time of dredging works
- Dimension of area to be dredged
- Depth of dredging activities
- Nature of sediment to be dredged, including Acid Sulphate Soil
- Method of marking area subject to works
- Environmental safeguards to be used during and after works
- Measures for minimising harm to fish habitat under the proposal
- Spoil type and source location for reclamation activities
- Method of disposal of dredge material
- Location and duration of spoil stockpiling, if planned
- Volume of material to be extracted or placed as fill

Activities that Block Fish Passage

- Type of activity eg works in a stream that change flow or morphological characteristics
- Length of time fish passage is to be restricted
- Timing of proposed restriction
- Remediation works

Threatened Species

- Threatened aquatic species assessment (Section 5c, EP&A Act 1979)
- Eight Part Test

Likely Impacts

A REF must:

- describe and discuss significant habitat areas within the study area;
- outline the habitat requirements of threatened species likely to occur in the study area;
- indicate the location, nature and extent of habitat removal or modification which may result from the proposed action;
- discuss the potential impact of the modification or removal of habitat;
- identify and discuss any potential for the proposal to introduce barriers to the movement of fish species; and
- describe and discuss any other potential impacts of the proposal on fish species or their habitat.

For all species likely to have their lifecycle patterns disrupted by the proposal to the extent that individuals will cease to occupy any location within the subject site, the REF must describe and discuss other locally occurring populations of such species. The relative significance of this location for these species in the general locality must be discussed in terms of the extent, security and viability of remaining habitat in the locality.

Ameliorative Measures

The REF must consider how the proposal has been or may be modified and managed to conserve fisheries habitat on the subject site and in the study area.

In discussing alternatives to the proposal, and the measures proposed to mitigate any effects of the proposal, consideration must be given to developing long term management strategies to protect areas within the study area which are of particular importance for fish species. This may include proposals to restore or improve habitat.

Any proposed pre-construction monitoring plans or on-going monitoring of the effectiveness of the mitigation measures must be outlined in detail, including the objectives of the monitoring program, method of monitoring, reporting framework, duration and frequency.

In the event of a request for concurrence or consultation of the Director of NSW Fisheries, one (1) copy of the REF should be provided to NSW Fisheries in order for the request to be processed.

29 August 2001

RTA Operations- Environmental Technology
Level 3, 52 Rothschild Ave
Roseberry NSW 2018

Attention: Jesse Death

NSW
NATIONAL
PARKS AND
WILDLIFE
SERVICE
ABN 30 841 387 271

Our Ref: AHIMS#4756
Your Ref :

Dear Sir/Madam,

RE: Aboriginal sites search, Proposed Development for the Following Area Zone 56 Eastings: 369000-374000, Northings: 6379000-6384000

Reference is made to your recent enquiry in respect to whether any Aboriginal sites are registered at the above location.

A search of the National Parks and Wildlife Service's (NPWS) Aboriginal Sites Register database has shown that 2 known Aboriginal sites are currently recorded in or near the proposed development area (refer attached report for any site details & the area that was searched).

The following qualifications apply to the Aboriginal Sites Register database;

- The database only includes recorded sites.
- Large areas of New South Wales have not been the subject of systematic survey or the recording of Aboriginal history. These areas may contain sites which are not currently listed on the Aboriginal Sites Register.
- Site records come from a variety of sources and are variable in their accuracy. When a database search identifies sites in or near the area it is recommended that the exact location of the sites be determined by relocation on the ground.
- The criteria used to search the database are derived from information provided by the client and assume that this information is correct.
- This information can only be used for the purpose it was requested for not to made available to public.

You should be aware that all Aboriginal sites are protected under the *National Parks and Wildlife Act 1974,* regardless of their inclusion on the Sites Register, and it is an offence to damage or destroy them without the prior permission of the Director-General of the NPWS.

In determining development applications under the *Environmental Planning and Assessment Act 1979,* local councils must include matters relating to Aboriginal heritage in the decision making process. As part of this process, the NPWS may be asked for advice on whether an area proposed for development should be subject to Aboriginal heritage assessment. NPWS advice is broadly based on the following criteria;

1) The NPWS would normally recommend an Aboriginal heritage assessment under the following circumstances:

43 Bridge Street
PO Box 1967
Hurstville NSW
2220 Australia
Tel: (02) 9585 6444
Fax: (02) 9585 6555
www.npws.nsw.gov.au

- the Sites Register identifies sites in or near the development area, and these could be impacted during or after the development (this includes indirect impacts, such as increased run-off or sedimentation, changes in visitation, etc).

- the proposed development is likely to impact areas of bushland or undisturbed ground.

- the proposed development is likely to impact areas containing sandstone outcrops (greater than $1m^2$), rock shelters and overhangs, old growth trees, sand bodies, and ground adjacent to creeks, rivers, lakes and swamps.

- the proposed development is likely to impact an area of importance to the Aboriginal community not included in the above (eg. story places, buildings, missions, etc)

2) The NPWS would **not** normally recommend an Aboriginal heritage assessment under the following circumstances:

- the proposed development is within land previously subject to intensive ground disturbance, such as quarrying, repeated market gardening, earthworks for pipelines, roads, sports fields etc. However it should be noted that sites could still occur in these context for example, ploughing generally impacts the top 20cm of ground and there is potential that *undisturbed archaeological deposit may occur* in areas where soil depth exceeds 20cm. *Scarred trees* may be located within road reserves and adjacent sport fields, etc.

- the development is within an existing residential or industrial area, or the redevelopment of an existing building is proposed, and the above criteria (listed in section 1) do not apply.

An Aboriginal heritage assessment would provide you with information about the location and significance of sites or sensitive areas, as well as advice on appropriate management options for these areas. It is recommended that an Aboriginal heritage assessment be carried out by a person qualified in undertaking Aboriginal heritage assessments. It is also recommended that the Aboriginal community (Local Aboriginal Land Council, Tribal Council etc) is contacted and its views sought on possible impacts to Aboriginal heritage.

If the proposed development area is found to contain an Aboriginal site, reference should be made to the NPWS requirements for Aboriginal heritage under the Integrated Development Approval Process (*Environmental Planning & Assessment Amendment Act 1997*).

If you wish to discuss this further, please contact Archaeologist, Kathryn Przwyolnik (02) 95856677

Yours faithfully

Paul Houston
Aboriginal Sites Registrar
Cultural Heritage Service Division

RCL

Aboriginal Heritage Information Management System

National Park and Wildlife Services, NSW

List of Sites (Partial)

AHIMS # 4756

Grid Reference Type = AMG Zone = 56 Easting From = 369000 Easting to = 374000 Northing From = 6379000 Northing to = 6384000

Site Id	AMG / GDA	Zone	Easting	Northing	Access Restrictions			Further Site Information Contact	Report ID
					Gender	General	Location		
8-4-0337	AMG	56	371500	6381500	None				1333
8-4-0178	AMG	56	372200	6383100	None				1333

National Trust of Australia (NSW)
GPO Box 518
SYDNEY NSW 2001
Phone (02) 9258 0123
Fax (02) 9251 1110

NATIONAL TRUST
- conserving our heritage

FAX COVER SHEET

DATE: 09 October 2001

TO: Attention: **Jesse**
RTA Environmental Technology
Level 3, 53 Rothschild Avenue
ROSEBERY NSW 2013

FROM: Marlene Strecker, Classifications Officer

FAX NO: 02 9662 5045

SUBJECT: Re: **Port Stephens & Maitland LGAs**

No of Pages: (10) including this cover sheet

MESSAGE:

As per your phone call, I am faxing the data printouts for the above LGAs. I have also enclosed a draft of the Industrial Archaeology Sites List Index for both LGAs (please forgive the changes to this document as we are in the process of updating).

Our invoice 6173 for $50.60 follows. Please let me know if I can assist further.

Sincerely,

Marlene Strecker
Classifications Officer
Ph (02) 9258 0164
Fax (02) 9251 1110
mstrecker@nsw.nationaltrust.org.au

ID	LGA	Locality	Address	Name
3037	PORT STEP	HINTON	PATERSON STREET	ST JOHN'S CHURCH OF ENGLAND CHURCH AND CE
3038	PORT STEP	HINTON	MAIN STREET, SOUTH OF, ON A SIDE STREET	BAPTIST CHURCH
3039	PORT STEP	HINTON	PATERSON STREET CORNER MORPETH ROAD	VICTORIA HOTEL
3040	PORT STEP	HINTON	MAIN STREET, SOUTH SIDE, 1/2KM EAST OF POST OFFICE	ROSEMOUNT
3041	PORT STEP	HINTON	MAIN STREET	ST JOHN THE EVANGELIST CHURCH
3042	PORT STEP	HINTON	MAIN STREET	HOUSE
3043	PORT STEP	HINTON	MAIN STREET	POLICE STATION
3044	PORT STEP	HINTON	MAIN STREET	SCHOOL OF ARTS
3045	PORT STEP	HINTON	HINTON ROAD: 400m SOUTH EAST OF POST OFFICE ON NORTHE	GENERAL CEMETERY
3046	PORT STEP	HINTON	HINTON ROAD OVER PATTERSON RIVER, JUST WEST OF HINTON	HINTON BRIDGE
3036	PORT STEP	HINTON	MAIN STREET: 50m SOUTH EAST OF POST OFFICE: ADJACENT T	ST JOHN'S ANGLICAN CEMETERY+
4780	PORT STEP	PORT STEPHE	NELSON HEAD	NELSON HEAD LIGHTSTATION
4785	PORT STEP	PORT STEPHE	PORT STEPHENS LANDSCAPE CONSERVATION AREA: Including a	PORT STEPHENS LANDSCAPE CONSERVATION ARE
4784	PORT STEP	PORT STEPHE	~	LIGHTHOUSE KEEPER'S HOUSE
4783	PORT STEP	PORT STEPHE	POINT STEPHENS ISLAND ~	POINT STEPHENS LIGHTHOUSE GROUP: #
4781	PORT STEP	PORT STEPHE	~	LIGHTHOUSE (OUTER)
4782	PORT STEP	PORT STEPHE	TANILBA BAY	TANILBA HOUSE
4885	PORT STEP	RAYMOND TER	GLENELG STREET ~	ST JOHN'S ANGLICAN CHURCH
4877	PORT STEP	RAYMOND TER	WILLIAM STREET 37	ST BRIGID'S ROMAN CATHOLIC PRESBYTERY
4878	PORT STEP	RAYMOND TER	WILLIAM STREET CORNER PACIFIC HIGHWAY	COURTHOUSE
4879	PORT STEP	RAYMOND TER	SWAN STREET 12	TWO STOREY TIMBER HOUSE
4880	PORT STEP	RAYMOND TER	PORT STEPHENS STREET 63	VETERINARY CLINIC FORMERLY HOTEL
4881	PORT STEP	RAYMOND TER	KING STREET 15-17 ~	SHOPS & HOUSE
4882	PORT STEP	RAYMOND TER	KING STREET 9-13 ~	SHOPS & HOUSE
4895	PORT STEP	RAYMOND TER	KING STREET 14 ~	SHOPS FORMER
4902	PORT STEP	RAYMOND TER	PORT STEPHENS STREET 61	POST OFFICE (FORMER)
4901	PORT STEP	RAYMOND TER		GENERAL CEMETERY (INCLUDES OLD AND NEW CE
4900	PORT STEP	RAYMOND TER	WILLIAM STREET	ST BRIGID'S ROMAN CATHOLIC CHURCH
4899	PORT STEP	RAYMOND TER	WILLIAM STREET 2 CORNER HUNTER STREET	JUNCTION INN HOTEL
4898	PORT STEP	RAYMOND TER	WAHROONGA STREET OFF	KINROSS ETC*
4883	PORT STEP	RAYMOND TER	HUNTER STREET 7	GEER HOUSE/CADELL COTTAGE
4896	PORT STEP	RAYMOND TER	KING STREET 19-21 ~	TERRACE & SHOP FORMER
4884	PORT STEP	RAYMOND TER	GLENELG STREET 6	COTTAGE FORMERLY SCHOOL & RECTORY
4894	PORT STEP	RAYMOND TER	KING STREET 5-7 ~	SHOPS & HOUSE
4893	PORT STEP	RAYMOND TER	KING STREET 5-21; 14 ~	TIMBER SHOPS & HOUSES GROUP:
4892	PORT STEP	RAYMOND TER	KING STREET	BRICK WAREHOUSE
4891	PORT STEP	RAYMOND TER	HUNTER STREET 33	HOUSE
4890	PORT STEP	RAYMOND TER	HUNTER STREET 3	HOUSE

ID	LGA	Locality	Address	Item
4889	PORT STEP	RAYMOND TER	JACARANDA STREET 48 -	ST JOHN'S RECTORY
4888	PORT STEP	RAYMOND TER	GLENELG STREET -	ST JOHN'S CHURCH GROUP:
4887	PORT STEP	RAYMOND TER	KING STREET URBAN CONSERVATION AREA: Comprises all propert	KING STREET URBAN CONSERVATION AREA
4886	PORT STEP	RAYMOND TER	GLENELG STREET CORNER JACARANDA STREET	ST JOHN'S PARISH HALL FORMERLY CHURCH
4897	PORT STEP	RAYMOND TER	STURGEON STREET 28 CORNER NEW LANE	EURIPIDES/BROWN'S COTTAGE
5039	PORT STEP	SEAHAM		ST ANDREW'S PRESBYTERIAN CHURCH
5321	PORT STEP	TOMAGO		TOMAGO HOUSE ETC & CHAPEL
5765	PORT STEP	WALLALONG	HINTON-WOODVILLE ROAD	WALLALONG ETC*
5768	PORT STEP	WOODVILLE		ALL SAINTS' CHURCH
5766	PORT STEP	WOODVILLE	PATERSON ROAD	STRADBROKE
5767	PORT STEP	WOODVILLE	PATERSON ROAD	TRESSINGFIELD

ID				
1234	MAITLAND	BOLWARRA	WESTBOURNE ROAD 20	SHENSTONE
1235	MAITLAND	BOLWARRA	WESTBOURNE AVENUE 2	DAREEL
1236	MAITLAND	BOLWARRA	KENSINGTON ROAD 34 (PART OF BOLWARRA HOUS	BARN FORMER OF BOLWARRA HOUSE
1237	MAITLAND	BOLWARRA	BAYSWATER ROAD 35 (PART OF BOLWARRA HOUS	BOLWARRA HOUSE
1238	MAITLAND	BOLWARRA	BAYSWATER ROAD 35 & KENSINGTON ROAD 34 (B	BOLWARRA HOUSE & BARN GROUP: comprising BOLWARRA HOUSE AND
1239	MAITLAND	BOLWARRA	BOLWARRA URBAN CONSERVATION AREA: Projectio	BOLWARRA URBAN CONSERVATION AREA
1233	MAITLAND	BOLWARRA	BOLWARRA FLATS LANDSCAPE CONSERVATION A	BOLWARRA FLATS LANDSCAPE CONSERVATION AREA
2125	MAITLAND	DUCKENFIE	DUCKENFIELD ROAD	BERRY HOUSE, ALSO KNOWN AS BERRY POMEROY HOUSE
2126	MAITLAND	DUCKENFIE	DUCKENFIELD ROAD 5km EAST OF MORPETH 100	EALES FAMILY CEMETERY
2206	MAITLAND	EAST MAITL	BANKS STREET 18	EAST MAITLAND LITERARY INSTITUTE FORMERLY THE MAITLAND MECH
2205	MAITLAND	EAST MAITL	BANKS STREET, LAWES STREET, GRANT STREET A	KING EDWARD PARK FORMERLY EAST MAITLAND MARKET RESERVE, O
2275	MAITLAND	FARLEY	FARLEY, 1km SOUTH EAST OF, FROM TURNOFF NE	FONT HILL
3457	MAITLAND	LOCHINVAR	STATION STREET	CLIFTON INCLUDING GARDENS, FENCE AND GATES, GARDEN FURNITUR
3446	MAITLAND	LOCHINVAR	NEW ENGLAND HIGHWAY: 50m SOUTH OF CHURCH	ROMAN CATHOLIC CEMETERY
3453	MAITLAND	LOCHINVAR		KALUDAH/LOCHINVAR HOUSE
3455	MAITLAND	LOCHINVAR	NEW ENGLAND HIGHWAY	ST HELENA COTTAGE
3456	MAITLAND	LOCHINVAR		DUNOON
3454	MAITLAND	LOCHINVAR	WILDERNESS ROAD	WINDERMERE
3447	MAITLAND	LORN	ROXBURGH STREET	INGLEBURN INCLUDING DEODAR TREE
3448	MAITLAND	LORN	NILLO STREET 14	NILLO HOUSE INCLUDING SLAB SHED
3449	MAITLAND	LORN	BRISBANE STREET 6	HOUSE
3450	MAITLAND	LORN	BELMORE ROAD 92 CORNER MELROSE STREET	WARRANE AND GROUNDS
3451	MAITLAND	LORN	BELMORE ROAD 72 CORNER WARRANE STREET	NIARA INCLUDING GARDEN
3452	MAITLAND	LORN	LORN URBAN CONSERVATION AREA: Bounded by Sh	LORN URVAN CONSERVATION AREA
3787	MAITLAND	MAITLAND	REGENT STREET 30	BENHOME (MAITLAND BENEVOLENT SOCIETY BUILDING)
3775	MAITLAND	MAITLAND	ABERGLASSLYN ROAD OFF, 4km north of New Engla	ABERGLASSLYN
3776	MAITLAND	MAITLAND	ANAMBAH ROAD, EAST SIDE, 5km NORTH WEST OF	ANAMBAH INCLUDING WINGS AND OUTBUILDINGS
3777	MAITLAND	MAITLAND		POLICE STATION & SERGEANT'S RESIDENCE
3778	MAITLAND	MAITLAND	VICTORIA STREET (PART OF VICTORIA ST GROUP -	CONVENT BUILDING
3779	MAITLAND	MAITLAND	VICTORIA STREET 9 (PART OF VICTORIA STREET G	DOMINICAN CONVENT & TRAINING COLLEGE
3780	MAITLAND	MAITLAND	VICTORIA STREET 7 (PART OF VICTORIA STREET G	TERRACE TYPE HOUSING
3781	MAITLAND	MAITLAND	VICTORIA STREET NOS, 7 & 9 (VICTORIA STREET G	VICTORIA STREET GROUP: COMPRISING: TERRACE TYPE HOUSE, DOMI
3782	MAITLAND	MAITLAND	VICTORIA STREET 5	MASONIC LODGE
3783	MAITLAND	MAITLAND	STATION STREET	RAILWAY STATION
3784	MAITLAND	MAITLAND	REGENT STREET 109	ALABAMA INCLUDING PICKET FENCE
3681	MAITLAND	MAITLAND	REGENT STREET	BENEVOLENT SOCIETY BUILDING
3786	MAITLAND	MAITLAND	REGENT STREET 34	CINTRA AND STABLES
3689	MAITLAND	MAITLAND	CULTIVATION, TRAPPAUD AND EVANS ROADS (MAI	MAITLAND SHOWGROUND GROUP

ID	LGA	Locality		
3788	MAITLAND	MAITLAND	REGENT STREET 16	HOUSE
3789	MAITLAND	MAITLAND	NEW ENGLAND HIGHWAY CORNER LEDSAM STREE	HOUSE
3790	MAITLAND	MAITLAND	LOUTH PARK ROAD 112 & 114: ACCESS BETWEEN:	MAITLAND JEWISH CEMETERY
3791	MAITLAND	MAITLAND	HIGH STREET	TOWN HALL
3785	MAITLAND	MAITLAND	REGENT STREET 76	HELYHURST INCLUDING ORIGINAL GARDEN AND PICKET FENCE
3697	MAITLAND	MAITLAND	BOURKE STREET 60 CORNER OLIVE STREET (PART	SQUIRES HOUSE INCLUDING FENCE
3703	MAITLAND	MAITLAND	BOURKE STREET 32 (PART OF BOURKE STREET H	HOUSE
3704	MAITLAND	MAITLAND	BOURKE STREET 31 (PART OF BOURKE STREET H	HOUSE
3701	MAITLAND	MAITLAND	BOURKE STREET 35-37 (PART OF BOURKE STREET	TERRACE
3700	MAITLAND	MAITLAND	BOURKE STREET 36 (PART OF BOURKE STREET H	HOUSE
3705	MAITLAND	MAITLAND	BOURKE STREET 29 (PART OF BOURKE STREET H	HOUSE
3794	MAITLAND	MAITLAND	HIGH STREET OPPOSITE TOWN HALL	AUSTRALIAN JOINT STOCK BANK FORMER
3706	MAITLAND	MAITLAND	BOURKE STREET 29, 31 & 33 (PART OF BOURKE ST	TIMBER HOUSES GROUP
3687	MAITLAND	MAITLAND	ANAMBAH ROAD	ANAMBAH GARDENS
3698	MAITLAND	MAITLAND	BOURKE STREET 51 (PART OF BOURKE STREET H	HOUSE
3682	MAITLAND	MAITLAND	MAITLAND-CESSNOCK	SOUTH MAITLAND RAILWAYS
3696	MAITLAND	MAITLAND	BOURKE STREET 81 (PART OF BOURKE STREET H	FARLEIGH INCLUDING PICKET FENCE
3695	MAITLAND	MAITLAND	MELVILLE FORD ROAD ON WEST SIDE 8KN NORTH	MELVILLE HOUSE
3694	MAITLAND	MAITLAND	HIGH STREET (PART OF HINDER HOUSE GROUP)	CLASSROOM BUILDING NEXT TO R J HINDER MEMORIAL LIBRARY
3693	MAITLAND	MAITLAND	JOHN STREET	(EAST) MAITLAND RAILWAY STATION GROUP
3702	MAITLAND	MAITLAND	BOURKE STREET 33 CORNER MICHAEL STREET (P	HOUSE
3688	MAITLAND	MAITLAND	CULTIVATION, TRAPPAUD AND EVANS ROADS (PAR	MAITLAND SHOWGROUND GRANDSTAND AND MCDONALD PAVILION
3699	MAITLAND	MAITLAND	BOURKE STREET 40 (PART OF BOURKE STREET H	HOUSE INCLUDING GARDEN AND FRONT FENCE
3683	MAITLAND	MAITLAND	MELVILLE FORD ROAD	MELVILLE
3793	MAITLAND	MAITLAND	HIGH STREET	COURTHOUSE
3825	MAITLAND	MAITLAND	CATHEDRAL STREET CORNER HIGH STREET	ST JOHN'S PRO CATHEDRAL
3815	MAITLAND	MAITLAND	CROSS STREET CORNER DEVONSHIRE STREET (P	ST PAUL'S ANGLICAN CHURCH INCLUDING LYCH-GATE
3816	MAITLAND	MAITLAND	CROSS STREET CORNER DEVONSHIRE STREET (P	ST PAUL'S ANGLICAN CHURCH GROUP: COMPRISING - ST PAULS ANGLI
3817	MAITLAND	MAITLAND	CHURCH STREET OPPOSITE SCOTIA STREET (PAR	ST MARY'S RECTORY
3818	MAITLAND	MAITLAND	CHURCH STREET OPPOSITE SCOTIA STREET (PAR	ST MARY'S ANGLICAN CHURCH
3819	MAITLAND	MAITLAND	CHURCH STREET OPPOSITE SCOTIA STREET (ST M	ST MARY'S ANGLICAN CHURCH GROUP: COMPRISING: ST MARY'S ANGLI
3820	MAITLAND	MAITLAND	CHURCH STREET 47-49 CORNER BANFIELD STREE	JEWISH SYNAGOGUE FORMER
3821	MAITLAND	MAITLAND	CHURCH STREET (PART OF GROSSMAN HOUSE GR	GROSSMAN HOUSE
3795	MAITLAND	MAITLAND	HIGH STREET 473	BARDEN & RIBEE SHOP
3814	MAITLAND	MAITLAND	CROSS STREET (PART OF ST PAULS ANGLICAN CH	ST PAUL'S RECTORY
3792	MAITLAND	MAITLAND	HIGH STREET	MAITLAND REPERTORY PLAYHOUSE FORMERLY CONGREGATIONAL CH
3822	MAITLAND	MAITLAND	CHURCH STREET CORNER SCOTIA STREET (PART	BROUGH HOUSE FORMERLEY OWEN HOUSE
3830	MAITLAND	MAITLAND	Centreline Banfield Street from rear of properties west si	CENTRAL MAITLAND RESIDENTIAL URBAN CONSERVATION AREA

ID	LGA	Locality	Address	Item
3831	MAITLAND	MAITLAND	The space and the facades of High Street from the rear	HIGH STREET URBAN CONSERVATION AREA
3845	MAITLAND	MAITLAND	The length of Regent Street from the railway in the south	REGENT STREET URBAN CONSERVATION AREA
3846	MAITLAND	MAITLAND	BOURKE STREET	GRAND CENTRAL HOTEL
3847	MAITLAND	MAITLAND	BALLARD STREET 16	THE HERMITAGE including grounds and trees
3848	MAITLAND	MAITLAND	BOURKE STREET EAST SIDE FROM POST OFFICE C	BOURKE STREET HOUSES GROUP:
3849	MAITLAND	MAITLAND	BOURKE STREET 28 (PART OF BOURKE STREET H	HOUSE
3850	MAITLAND	MAITLAND	CATHEDRAL STREET	MARIST BROS PRIMARY SCHOOL HALL FORMERLY ST JOHN'S ROMAN C
3823	MAITLAND	MAITLAND	CHURCH STREET CORNER SCOTIA STREET (PART	GROSSMAN HOUSE GROUP: GROSSMAN HOUSE AND BROUGH HOUSE
3801	MAITLAND	MAITLAND	HIGH STREET 1	FOSTERS FARM AND OUTBUILDINGS FORMERLY THE BRIDGE HOUSE (
3824	MAITLAND	MAITLAND	CHURCH STREET CORNER OLIVE STREET	MAITLAND PUBLIC SCHOOL: 1899 BUILDING
3813	MAITLAND	MAITLAND	CROSS STREET (PART OF ST PAULS ANGLICAN CH	ST PAUL'S PARISH HALL
3797	MAITLAND	MAITLAND	HIGH STREET 315	NATIONAL AUSTRALIA FORMERLY CBC BANK
3798	MAITLAND	MAITLAND	HIGH STREET 226	COHEN'S WAREHOUSE, REMAINS OF
3799	MAITLAND	MAITLAND	HIGH STREET 224	CBC BANK FORMER
3800	MAITLAND	MAITLAND	HIGH STREET 3 (PART OF WALLI HOUSE GROUP - C	WALLI HOUSE AND OUTBUILDINGS
3796	MAITLAND	MAITLAND	HIGH STREET 437	ANZ BANK
3802	MAITLAND	MAITLAND	HIGH STREET 1 & 3 (WALLI HOUSE GROUP - CARD	WALLI HOUSE GROUP: comprising WALLI HOUSE AND OUTBUILDINGS AN
3803	MAITLAND	MAITLAND	HIGH STREET CORNER JAMES STREET	MAITLAND TECHNICAL COLLEGE
3804	MAITLAND	MAITLAND	HIGH STREET CORNER BOURKE STREET	POST OFFICE
3811	MAITLAND	MAITLAND	ELGIN STREET 24	HOUSE
3806	MAITLAND	MAITLAND	FREECHURCH STREET 12-14 (PART OF PRESBYTE	SCHOOLHOUSE FORMER
3807	MAITLAND	MAITLAND	FREECHURCH STREET (PART OF PRESBYTERIAN C	SCOTS PRESBYTERIAN CHURCH
3808	MAITLAND	MAITLAND	FREECHURCH STREET (PRESBYTERIAN CHURCH G	PRESBYTERIAN CHURCH GROUP: comprising PRESBYTERIAN CHURCH, F
3809	MAITLAND	MAITLAND	ELGIN STREET 87	ST ELMO
3810	MAITLAND	MAITLAND	ELGIN STREET 71	SOMERSET
3805	MAITLAND	MAITLAND	HANNAN STREET 14	MONCRIEFF ALSO KNOWN AS HANNAN HOUSE
3812	MAITLAND	MAITLAND	ELGIN STREET 18-22	HOUSES
3716	MAITLAND	MAITLAND (	PITNACREE ROAD 3	EKELENE
3717	MAITLAND	MAITLAND (	NEWCASTLE STREET	HORSLEY HOUSE AND OUTBUILDINGS AND GARDEN
3718	MAITLAND	MAITLAND (	NEWCASTLE STREET 64	HANKS HOUSE
3719	MAITLAND	MAITLAND (	NEWCASTLE ROAD 46	ROSE INN FORMER/PRINCE ALBERT INN ORIGINALLY BLACK HORSE INN
3720	MAITLAND	MAITLAND (	NEWCASTLE ROAD OPPOSITE FITZROY STREET	SMITHS FLOUR MILL FORMER
3721	MAITLAND	MAITLAND (	NEWCASTLE STREET CORNER WILLIAM STREET	EAST MAITLAND PUBLIC SCHOOL
3722	MAITLAND	MAITLAND (	NERONG STREET 67	HOUSE
3724	MAITLAND	MAITLAND (	MILL STREET 3	HOUSE FORMERLY CAROLINE CHISHOLM BARRACKS
3727	MAITLAND	MAITLAND (	MELBOURNE STREET CORNER NEWCASTLE STRE	FUNERAL PARLOUR FORMERLY AJS BANK
3726	MAITLAND	MAITLAND (	MELBOURNE STREET 48	THE GEORGE & DRAGON HOTEL
3725	MAITLAND	MAITLAND (	MELBOURNE STREET 82-84	SHOPS GROUP FORMER

ID	Loc	Locality		
3715	MAITLAND	MAITLAND (	PITNACREE ROAD 7	HOUSE
3723	MAITLAND	MAITLAND (	MORPETH ROAD 18	HILLSIDE
3714	MAITLAND	MAITLAND (	PITNACREE ROAD 38	HOUSE
3713	MAITLAND	MAITLAND (	ROUS STREET 40-42	HOUSE
3712	MAITLAND	MAITLAND (	VICTORIA STREET 86-88	ELLIMATTA GIRLS' HOME
3711	MAITLAND	MAITLAND (	WALLIS STREET 12	OLDHOLME: FACADE AND SETTING OF GARDEN WITH BUNYA PINES AN
3710	MAITLAND	MAITLAND (	WILLIAM STREET (PART OF ST PETERS ANGLICAN	ST PETER'S ANGLICAN CHURCH GROUP: COMPRISING - ST PETERS AN
3709	MAITLAND	MAITLAND (	WILLIAM STREET (PART OF ST PETERS ANGLICAN	ST PETER'S ANGLICAN CHURCH
3708	MAITLAND	MAITLAND (	WILLIAM STREET (PART OF ST PETERS ANGLICAN	ST PETER'S RECTORY
3756	MAITLAND	MAITLAND (	HIGH STREET CORNER HUNTER STREET (PART OF	BOYS' HIGH SCHOOL (FORMER HINDER HOUSE) GROUP:
3728	MAITLAND	MAITLAND (	MAIZE STREET CORNER HILAND CRESCENT	HILAND CRESCENT CEMETERY
3680	MAITLAND	MAITLAND (	KING STREET 44 ~	HOUSE FORMERLY WOODLANDS
3686	MAITLAND	MAITLAND (	BANKS STREET 36	MATTHEW TALBOT HOSTEL FORMER
3685	MAITLAND	MAITLAND (	MELBOURNE STREET 71	CHELSEY THEATRE FORMER ORIGINALLY PRINCE'S THEATRE
3684	MAITLAND	MAITLAND (	LINDESAY STREET ~	POLICE STATION FORMER SERGEANTS RESIDENCE AND POLICE BARRA
3707	MAITLAND	MAITLAND (	BANKS STREET (PART OF ST PETERS ANGLICAN C	ST PETER'S PARISH HALL
3729	MAITLAND	MAITLAND (	LINDESAY STREET (PART OF COURTHOUSE AND G	POLICE STATION, SERGEANT'S RESIDENCE, POLICE BARRACKS WITH O
3753	MAITLAND	MAITLAND (	HIGH STREET 60-62	HOUSES
3755	MAITLAND	MAITLAND (	HIGH STREET CORNER HUNTER STREET (PART OF	HIGH SCHOOL FORMER: 1891 WITHIN GROUNDS OF MAITLAND BOYS HI
3766	MAITLAND	MAITLAND (	DAY STREET 9	ROSENEATH FORMERLY VICTORIA HOTEL
3758	MAITLAND	MAITLAND (	GEORGE STREET BETWEEN 216 & 218	HOUSE
3760	MAITLAND	MAITLAND (	GEORGE STREET 113-115	HOUSES
3761	MAITLAND	MAITLAND (	FLINDERS STREET	MAGISTRATE'S HOUSE
3762	MAITLAND	MAITLAND (	FITZROY STREET 23	PRESBYTERIAN MANSE FORMER INCLUDING KITCHEN AT REAR
3763	MAITLAND	MAITLAND (	ELIZABETH STREET 1	HOUSE
3752	MAITLAND	MAITLAND (	HIGH STREET 64	HOUSE
3765	MAITLAND	MAITLAND (	DAY STREET 14	COTTAGE, INCLUDING PALM TREE LOCALLY KNOWN AS FOSTER HOUSE
3757	MAITLAND	MAITLAND (	GEORGE STREET: 450m FROM END OF	GLEBE GULLY OR ST PETER'S ANGLICAN CHURCH OLD BURIAL GROUN
3754	MAITLAND	MAITLAND (	HIGH STREET (PART OF HINDER GROUP - CARD 3	R.J. HINDER MEMORIAL LIBRARY FORMERLY HINDER HOUSE WITHIN GR
3767	MAITLAND	MAITLAND (	BRUNSWICK STREET 55	HOUSE FORMERLY WEEDONG INCLUDING GARDEN
3768	MAITLAND	MAITLAND (	BANKS STREET 40 (PART OF BANKS STREET GROU	RED LION INN FORMER
3769	MAITLAND	MAITLAND (	BANKS STREET 36 (PART OF BANKS STREET GRO	MATTHEW TALBOT HOTEL INCLUDING KITCHEN BLOCK AND 2 STOREY B
3770	MAITLAND	MAITLAND (	BANKS STREET 36 & 40 (PART OF BANKS STREET G	BANKS STREET GROUP: COMPRISING: MATTHEW TALBOT HOSTEL, FOR
3771	MAITLAND	MAITLAND (	BANKS STREET 18	LITERARY INSTITUTE FORMER
3772	MAITLAND	MAITLAND (	BANKS STREET 14	COTTAGE OF CONTENT INN FORMER
3773	MAITLAND	MAITLAND (	BANKS STREET CORNER NEWCASTLE STREET	EAST MAITLAND LANDS BOARD BUILDING
3774	MAITLAND	MAITLAND (	CENTRAL EAST MAITLAND URBAN CONSERVATION	CENTRAL EAST MAITLAND URBAN CONSERVATION AREA
3764	MAITLAND	MAITLAND (	DAY STREET 18	EAST MAITLAND POST OFFICE FORMER INCLUDING SANDSTONE FOOTP

ID	LGA	LOCALITY		
3738	MAITLAND	MAITLAND (	KING STREET & LAWES STREET (KING STREET/LA	KING/LAWES ST GROUP:
3730	MAITLAND	MAITLAND (	LINDESAY STREET 18	NENAGH
3731	MAITLAND	MAITLAND (	LAWES STREET 149	HOUSE, INCLUDING OUTBUILDINGS AND PICKET FENCE
3732	MAITLAND	MAITLAND (	LAWES STREET CORNER MELBOURNE STREET	FLATS FORMERLY HOTEL & STABLES
3733	MAITLAND	MAITLAND (	LAWES STREET CORNER WILLIAM STREET	JOSS HOUSE
3734	MAITLAND	MAITLAND (	KING STREET 49-53	HOUSES
3735	MAITLAND	MAITLAND (	LAWES STREET 55 CORNER KING STREET (PART O	HOUSE
3736	MAITLAND	MAITLAND (	KING STREET 50 (PART OF KING STREET/LAWES S	VILLA MARIA
3759	MAITLAND	MAITLAND (	GEORGE STREET 121	HOUSE
3737	MAITLAND	MAITLAND (	KING STREET 46-48 (PART OF KING STREET/LAWS	HOUSES
3751	MAITLAND	MAITLAND (	HIGH STREET 74	HOUSE
3739	MAITLAND	MAITLAND (	KING STREET 43-45	HOUSES
3740	MAITLAND	MAITLAND (	KING STREET 42 (PART OF KING STREET GROUP -	GOONOOBAH AND HOUSE, FORMERLY WOODLANDS
3748	MAITLAND	MAITLAND (	JOHN STREET 28	HOUSE INCLUDING KITCHEN AT REAR
3750	MAITLAND	MAITLAND (	HIGH STREET 80-84	HOUSES
3749	MAITLAND	MAITLAND (	HIGH STREET 166 REAR OF	HOUSE
3741	MAITLAND	MAITLAND (	KING STREET 34-40 (PART OF KING STREET GROU	TERRACE
3747	MAITLAND	MAITLAND (	JOHN STREET (COURTHOUSE AND GAOL PRECINC	COURTHOUSE & GAOL PRECINCT: GOAL, COURTHOUSE, WARDEN'S CO
3746	MAITLAND	MAITLAND (	JOHN STREET (PART OF COURT HOUSE AND GAOL	GAOL
3745	MAITLAND	MAITLAND (	JOHN STREET (PART OF COURTHOUSE AND GAOL	COURTHOUSE
3744	MAITLAND	MAITLAND (	JOHN STREET CORNER CUMBERLAND STREET (PA	WARDER'S COTTAGE & LOCK-UP
3743	MAITLAND	MAITLAND (	KING STREET CORNER NEWCASTLE STREET	ST JOSEPH'S ROMAN CATHOLIC CHURCH/PRESBYTERY/HALL INCLUDIN
3742	MAITLAND	MAITLAND (	KING STREET 34-44 (KING STREET GROUP - CARD	KING STREET GROUP: COMPRISING: TERRACE, GOONOOBAH, HOUSE, F
3834	MAITLAND	MORPETH	TANK STREET (ST JAMES' ANGLICAN CHURCH GRO	ST JAMES' ANGLICAN CHURCH GROUP: CONSISTING OF ST JAMES' ANG
3842	MAITLAND	MORPETH	HIGH STREET	FREEMASONS' HALL
3843	MAITLAND	MORPETH	HIGH STREET CORNER TANK STREET	ST JAMES' HALL/FORMERLY PARISH HALL/SCHOOL
3841	MAITLAND	MORPETH	HINTON ROAD OVER HUNTER RIVER	MORPETH BRIDGE
3840	MAITLAND	MORPETH	JAMES STREET	ROMAN CATHOLIC CHURCH
3839	MAITLAND	MORPETH	METFORD ROAD CORNER TANK STREET	ANGLICAN ROMAN CATHOLIC AND PRESBYTERIAN CEMETERY CONSER
3838	MAITLAND	MORPETH	MORPETH ROAD WITHIN GROUNDS OF ST JOHN'S	MORPETH HOUSE
3837	MAITLAND	MORPETH	SWAN STREET CORNER TANK STREET	CAMPBELL'S SHOPS FORMER
3836	MAITLAND	MORPETH	SWAN STREET	CBC RECEIVING OFFICE FORMER / BANK
3835	MAITLAND	MORPETH	SWAN STREET	PUBLIC LIBRARY FORMERLY COURTHOUSE
3844	MAITLAND	MORPETH	HIGH STREET CORNER GEORGE STREET	EMERGENCY SERVICES OFFICE FORMERLY POLICE BARRACKS
3691	MAITLAND	MORPETH	METFORD ROAD CORNER TANK STREET	MORPETH PRESYTERIAN CEMETERY
3690	MAITLAND	MORPETH	METFORD ROAD CORNER TANK STREET	MORPETH CATHOLIC CEMETERY
3692	MAITLAND	MORPETH	MELFORD ROAD CORNER TANK STREET	CHURCH OF ENGLAND CEMETERY
3833	MAITLAND	MORPETH	TANK STREET (PART OF ST JAMES' ANGLICAN CHU	ST JAMES' ANGLICAN CHURCH

ID	LGA	Locality	Address	Item
3826	MAITLAND	MORPETH	SWAN STREET	HOUSES (FORMERLY BOND STORES) GROUP
3679	MAITLAND	MORPETH	HIGH STREET	MORPETH SCHOOL OF ARTS
3678	MAITLAND	MORPETH	HIGH STREET 85	ASTOR PICTURE THEATRE & BALLROOM, PART OF THE BUILDING THE P
3677	MAITLAND	MORPETH	SWAN STREET CORNER ROBERT STREET	MORPETH'S FOURTH RAILWAY STATION (FORMER)
3827	MAITLAND	MORPETH	SWAN STREET 67-69	HOUSE
3828	MAITLAND	MORPETH	MORPETH ROAD WITHIN GROUNDS OF ST JOHN'S	CLOSEBOURNE
3829	MAITLAND	MORPETH	MORPETH URBAN CONSERVATION AREA: Comprise	MORPETH URBAN CONSERVATION AREA
3832	MAITLAND	MORPETH	TANK STREET (PART OF ST JAMES ANGLICAN CHU	RECTORY FORMERLY THE PARSONAGE
4578	MAITLAND	OAKHAMPT	OAKHAMPTON ROAD	OAKHAMPTON METHODIST CEMETERY
4579	MAITLAND	OAKHAMPT	OAKHAMPTON ROAD (3km NORTH OF WEST MAITL	PUMPING STATION / WALKA WATER WORKS
4577	MAITLAND	OSWALD	OSWALD ROAD 1km NORTH OF NEW ENGLAND HIG	OSWALD GENERAL CEMETERY
5251	MAITLAND	TELARAH	NEW ENGLAND HIGHWAY CORNER ALBERT STREE	THE FAMILY HOTEL
5252	MAITLAND	TELARAH	SOUTH STREET EAST SIDE: 250m SOUTH OF NEW	CAMPBELL'S HILL CEMETERY
5701	MAITLAND	WOODVILL	MAITLAND-WOODVILLE ROAD	DUNMORE HOUSE
5702	MAITLAND	WOODVILL	WIRRAGULLA ROAD OVER PATERSON RIVER	DUNMORE BRIDGE
5703	MAITLAND	WOODVILL	WOODVILLE ROAD SOUTH/EAST SIDE: 1.5km SOUT	LANG FAMILY GRAVE 'DUNMORE'

NATIONAL TRUST OF AUSTRALIA

INDUSTRIAL ARCHAEOLOGY SITES LIST INDEX

NSW COUNTRY

MAITLAND AND PORT STEPHENS LOCAL GOVERNMENT AREAS

Raymond Terr.	Pt. Stephens	Butter Factory	-	A. & P. T.	Pacific Highway	-	-
Raymond Terr.	Pt. Stephens	Irrawang Pottery	1004	Brickworks	Pacific Highway	-	5Km NE Ray.T.
Hinton	Pt. Stephens	Hinton Bridge	CL	Bridges	Hinton Road	-	Paterson R.
Eagleton	Pt. Stephens	Eagleton Shipyard	4006	~~M.B.T.~~ MARITIME	New Line Road	-	Williams R.
Raymond Terr.	Pt. Stephens	Smiths Shipyard	-	~~M.B.T.~~ MARITIME	Bourke Street		-
Seaham	Pt. Stephens	Seaham Quarry	-	L.S.Q.& C.W	Torrence Street	-	-
Pt. Stephens	Pt. Stephens	Pt. Stephens Light	CL	Lighthouses	Pt. Stephens Isld.	-	-
Pt. Stephens	Pt. Stephens	Nelson Head Light.	CL	Lighthouses	Nelson Head	-	-
Eagleton	Pt. Stephens	Sawpits/Eagl. Ship	4007	Sawmills	New Line Road	-	Williams R.
Seaham	Pt. Stephens	Porphry Winery	-	Win. & Dis.	0.5Km N J.Scott Br	-	Porphry Pt

Maitland	Maitland	Bacon Curing Works	-	A. & P. T.	High Street	264/8	-
Maitland	Maitland	Brick Kilns	-	Brickworks	-	-	-
Maitland East	Maitland	Fieldsend Pottery	-	~~Brickworks~~	Young Street	-	-
Maitland East	Maitland	P.G.Ceramics	-	Brickworks	Metford Road	-	
Thornton	Maitland	Thornton Brick Co	-	Brickworks	1Km W Thornton PO	-	
Thornton	Maitland	Four Mile Brick Co	-	Brickworks	2Km NW Thornton RS	-	-
Hinton	Maitland	Hinton Bridge	CL ~~2002~~	Bridges	Hinton Road	-	Paterson R.
Maitland	Maitland	Victoria Bridge	-	Bridges	New England Hwy	-	Wallis Creek
Maitland West	Maitland	Luskintyre Bridge	-	Bridges	Pywells Road	-	Hunter River
Morpeth	Maitland	Morpeth Bridge	CL ~~2001~~	Bridges	Hinton Road	-	Hunter River
Woodville	Maitland	Dunmore Bridge	CL ~~2003~~	Bridges	Wiragulla Road	-	Paterson R.
Maitland East	Maitland	Smiths Flour Mill	CL ~~4003~~	Flour Mills	Newcastle Road	-	Mill Street
Morpeth	Maitland	Furniture Factory	Former	I. B. & S.	Swan Street	-	Robert St.
Morpeth	Maitland	Taylors Bonded St.	-	I.B. & S.	Swan Street	-	Morpeth Br.
Rutherford	Maitland	Bradmill Textile	-	I.B. & S.	Kyle Street	-	-
Maitland	Maitland	Brownes Stonem.Wks	~~Dec 1002~~	L.S.Q.&C.W.	High Street	194	DEMOLISHED
Ravensfield	Maitland	Stone Quarry	-	L.S.Q.&C.W.	Quarry Road	-	Wollombi Rd
Ravensfield	Maitland	Stone Quarry	-	L.S.Q.&C.W.	1Km SSE Farley RS	-	Font Hill
Paterson	Maitland	Tocal Barracks	-	Mil.Estab.	Paterson Road	-	Tocal Prop.
Morpeth	Maitland	Hitching Post	-	~~Miscellan.~~ TOWN SERVICES	Swan Street	-	Courthouse
Morpeth	Maitland	Lamp Post	-	~~Miscellan.~~ TOWN SERVICES	Swan Street	-	Courthouse
East Greta	Maitland	East Greta Yard	~~3004~~	Railways	Junction Street	-	Mount Dee
East Greta	Maitland	Exchange Signals B		Railways	East Greta/Cess.Br	-	-
Farley	Maitland	Railway Station		Railways	Wollombi Road	-	Main North Ln
Lochinvar	Maitland	Railway Station		Railways	Mn North Rail Line	-	-
Maitland	Maitland	Sth Mait.Railw.P/L	CL group	Railways	East Greta/Cessn.	-	-
Maitland	Maitland	Railway Station	R 3009	Railways	Railway Street	-	Mn North Line
Maitland East	Maitland	Railway Station	-	Railways	Morpeth Road	-	Day Street
Morpeth	Maitland	Q. Wharf Rail Stat	-	Railways	Swan Street	-	-
Thornton	Maitland	Railway Buildings	-	Railways	Main North Line	-	-
Maitland	Maitland	Bakehouse	Former	Retailing	Moore Street	-	Albion St.
Lochinvar	Maitland	Kaludah Winery	-	W.D. & C.	New England Hwy	-	2Km W Lochin.
Lochinvar	Maitland	St Helena Winery	-	W. D. & C.	New England Hwy	-	1.5Km W Loch.
Lochinvar	Maitland	Windermere House	-	W. D. & C.	Wilderness Road	-	2Km N Lochin.
Morpeth	Maitland	Morpeth Wharves	~~4005~~	W. D. & C.	Near Morpeth Brge	-	Hunter River
Oakhampton	Maitland	Pumping Station	CL ~~6001~~	Water Supp.	Oakhampton Road	-	3Km N West M.

DEATH Jesse

From: Sarah.Kamarudin@npws.nsw.gov.au
Sent: Wednesday, 29 August 2001 15:29
To: DEATH Jesse
Subject: Atlas Data

Dear Jesse,

Please find attached threatened fauna and flora data for the areas:

Area 1 Wyalong/Marsden

Min E:	530000	Min N:	6260000
Max E:	560000	Max N:	6280000

Area 2 Maitland

Min E:	367000	Min N:	6377000
Max E:	677000	Max N:	6387000

There were very few or no threatened flora records found, so I extended the search area for the flora an extra 5km as well - Flora_area1_B.xls and Flora_area2_B.xls. Hope that makes sense, let me know if you're confused!

The records are saved in tab delimited files. If you have any problems opening or receiving data please contact me on 02 9585 6684.

Kind Regards,
Sarah Kamarudin
A/Data Exchange Officer
GIS Group
National Parks and Wildlife Service
02) 9585 6684 (direct phone)
02) 9585 6466 (fax)
sarah.kamarudin@npws.nsw.gov.au

FAUNA AREA (2)

The Atlas of New South Wales Wildlife contains data from sources including government agencies, non-g

These data are only indicative and cannot be considered as a comprehensive inventory, and may contain

Sighting Key	Scientific Name	Common Name	Species Cc	Legal Statu	Number
103534-035	Anseranas semipalmata	Magpie Goose	199	V	1
60629-HO	Neophema pulchella	Turquoise Parrot	302	V	2
57476-HO	Ninox strenua	Powerful Owl	248	V	1
6388-HU	Dasyurus maculatus	Spotted-tailed Quoll	1008	V	1
6256-HU	Dasyurus maculatus	Spotted-tailed Quoll	1008	V	1
6386-HU	Phascogale tapoatafa	Brush-tailed Phascogale	1017	V	1
6389-HU	Phascogale tapoatafa	Brush-tailed Phascogale	1017	V	1
6387-HU	Phascogale tapoatafa	Brush-tailed Phascogale	1017	V	1
SJBL96040400	Phascogale tapoatafa	Brush-tailed Phascogale	1017	V	4
SPXE96040300	Phascogale tapoatafa	Brush-tailed Phascogale	1017	V	4
3509-HU	Phascolarctos cinereus	Koala	1162	V	1
49-HU	Phascolarctos cinereus	Koala	1162	V	1
4096-HU	Phascolarctos cinereus	Koala	1162	V	1
SJKP980324BM	Miniopterus australis	Little Bent-wing Bat	1346	V	
SJKP980324BN	Miniopterus schreibersii	Common Bent-wing Bat	1341	V	

government organisations and private individuals.

n errors and omissions.

Obs Type	First Date	Last Date	Observer	Rel Type	Zone	Easting	Northing	Map No
O	########	########	D'Ombrain	4	56	369500	6383500	9232
O	########	########	Callaghan,	4	56	373336	6385602	9232
O	########	########	Callaghan,	4	56	373218	6386103	9232
O	########	########	SCOTT, C	5	56	375000	6383300	9232
O	########	########	GREENFIE	5	56	375600	6385600	9232
O	########	########	SCOTT, C	5	56	373600	6383100	9232
O	########	########	SCOTT, C	5	56	375500	6383500	9232
O	########	########	SCOTT, C	5	56	374600	6381900	9232
O	########	########	Antcliff, P	5	56	374800	6382700	9232
O	########	########	Antcliff, P	5	56	374800	6382700	9232
O	########	########	MANN, N	5	56	373700	6378900	9232
O	########	########	UNKOWN,	5	56	369200	6385000	9232
O	########	########	UNKNOWI	5	56	369000	6385100	9232
W	########	########	Ecotone Ec	5	56	373000	6382000	9232
W	########	########	Ecotone Ec	6	56	373000	6382000	9232

Acc Idx	Reserve N	Reserve Type
2		
2		
3		
3		
3		
3		
3		
3		
2		
2		
3		
3		
3		
3		
3		

FLORA AREA (2)

The Atlas of New South Wales Wildlife contains data from sources including government agencies, non-

These data are only indicative and cannot be considered as a comprehensive inventory, and may contai

Sighting Key	Family Name	Scientific Name	Legal Status	First Date	Last Date	Observer
2285R	Myrtaceae	Eucalyptus glaucina	V	########	########	Forth, P
SPXEI0212224	Myrtaceae	Eucalyptus glaucina	V	########	########	Copeland,
SPXEI0212232	Myrtaceae	Eucalyptus glaucina	V	########	########	Copeland,
87R	Orchidaceae	Diuris pedunculata	E1	########	########	Kesteven, I

·government organisations and private individuals.

n errors and omissions.

Rel Type	Zone	Easting	Northing	Map No	Acc Idx
1	56	369000	6391000	9232	3
4	56	369000	6391000	9232	2
4	56	372000	6383000	9232	2
1	56	369000	6391000	9232	3

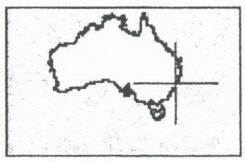
Environment Australia Online

Environment **P**rotection and **B**iodiversity **C**onservation Act

Online Database

Report created on : Monday, Aug 27 2001
Report on : threatened ecological communities, threatened species, marine protected species, migratory species and , Ramsar sites, Commonwealth areas, World Heritage Areas
Search type : area
Approx buffer : 2 km (minimum buffer is approx 1km)
Coordinates used :

Longitude	Latitude
151.581	-32.67
151.601	-32.67
151.623	-32.67
151.644	-32.67
151.656	-32.67
151.656	-32.68
151.656	-32.70
151.656	-32.72
151.656	-32.73
151.635	-32.73
151.613	-32.73
151.596	-32.73
151.580	-32.73
151.580	-32.71
151.580	-32.70
151.580	-32.68



view map

Threatened ecological communities
0 communities

Threatened species
10 species

Migratory species
8 species

Marine protected species
8 species

World Heritage Areas [dataset information]
None found
Ramsar sites [dataset information]
Within Catchment of Kooragang Nature Reserve

Commonwealth areas
Note: The database on Commonwealth areas is incomplete and includes only Commonwealth marine areas and Commonwealth reserves
None found

Extra Information

Conservation reserves [dataset information]
None found
Regional Forest Agreements
Note: all RFA areas including those still under consideration have been included [dataset information]
Lower North East NSW RFA

Species and Community Report

This report provides a general indication of the species and threatened communities that may occur in your nominated area

Threatened species

	Scientific Name	Common Name	Type of Presence	Status
Amphibia	Litoria aurea (1870)	Green and Golden Bell Frog	Species or species habitat likely to occur within area	Vulnerable
Amphibia	Mixophyes balbus (1942)	Stuttering Frog	Species or species habitat likely to occur within area	Vulnerable
Amphibia	Mixophyes iteratus (1944)	Southern Barred Frog	Species or species habitat likely to occur within area	Endangered
Aves	Lathamus discolor (744)	Swift Parrot	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree	Endangered
Aves	Xanthomyza phrygia (430)	Regent Honeyeater	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree	Endangered
Mammalia	Chalinolobus dwyeri (183)	Large-eared Pied Bat, Large Pied Bat	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree	Vulnerable
Mammalia	Dasyurus maculatus maculatus (64476)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeast mainland and Tasmanian subspecies)	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree	Vulnerable
Mammalia	Pseudomys oralis (98)	Hastings River Mouse	Species or species habitat likely to occur within area	Endangered

Plant	Cryptostylis hunteriana (19533)	Leafless Tongue-orchid	Species or species habitat likely to occur within area	Vulnerable
Plant	Eucalyptus glaucina (5670)	Slaty Red Gum	Species or species habitat likely to occur within area	Vulnerable

Terrestrial species covered by migratory provisions of the EPBC Act, 1999

	Scientific Name	Common Name	Type of Presence
Aves	Haliaeetus leucogaster (943)	White-bellied Sea-Eagle	Species or species habitat likely to occur within area
Aves	Hirundapus caudacutus (682)	White-throated Needletail	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree
Aves	Monarcha melanopsis (609)	Black-faced Monarch	Breeding or breeding habitat likely to occur within area - Derived from a general distribution map > 1 degree
Aves	Myiagra cyanoleuca (612)	Satin Flycatcher	Breeding or breeding habitat likely to occur within area
Aves	Rhipidura rufifrons (592)	Rufous Fantail	Breeding or breeding habitat likely to occur within area - Derived from a general distribution map > 1 degree
Aves	Xanthomyza phrygia (430)	Regent Honeyeater	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree

Wetland species covered by migratory provisions of the EPBC Act, 1999

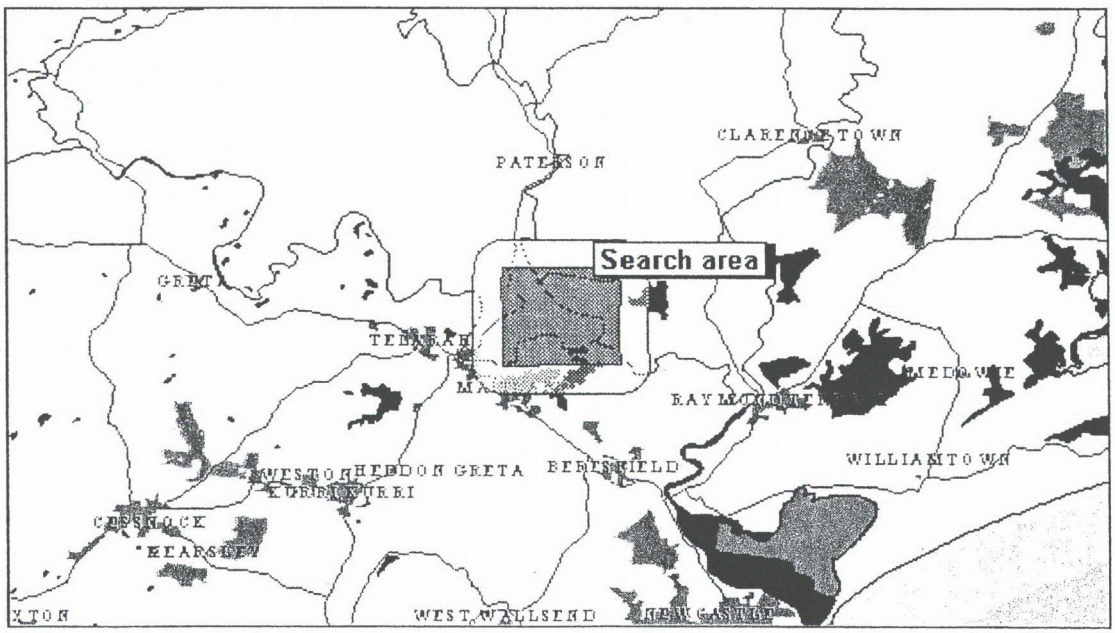
	Scientific Name	Common Name	Type of Presence
Aves	Gallinago hardwickii (863)	Latham's Snipe, Japanese Snipe	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree
Aves	Rostratula benghalensis (889)	Painted Snipe	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree

Species covered by marine provisions of the EPBC Act, 1999

	Scientific Name	Common Name	Type of Presence	Status
Aves	Gallinago hardwickii (863)	Latham's Snipe, Japanese Snipe	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree	Listed
Aves	Haliaeetus leucogaster (943)	White-bellied Sea-Eagle	Species or species habitat likely to occur within area	Listed

Aves Hirundapus caudacutus (682)	White-throated Needletail	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree	Listed
Aves Lathamus discolor (744)	Swift Parrot	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree	*
Aves Monarcha melanopsis (609)	Black-faced Monarch	Breeding or breeding habitat likely to occur within area - Derived from a general distribution map > 1 degree	Listed
Aves Myiagra cyanoleuca (612)	Satin Flycatcher	Breeding or breeding habitat likely to occur within area	Listed
Aves Rhipidura rufifrons (592)	Rufous Fantail	Breeding or breeding habitat likely to occur within area - Derived from a general distribution map > 1 degree	Listed
Aves Rostratula benghalensis (889)	Painted Snipe	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree	Listed

Map of area defined including buffer



Nominal scale

Km 10 20

Legend

- Builtup Areas
- Ramsar Sites
- Water Bodies
- World Heritage
- Roads

Aknowledgements

This database has been compiled from a range of data sources. Environment Australia acknowledges the following custodians who have contributed valuable data and advice:

- New South Wales National Parks and Wildlife Service
- Department of Natural Resources and Environment, Victoria (Secretary)
- Department of Primary Industries, Water and Environment, Tasmania
- Department of Environment and Heritage, South Australia Planning SA
- Parks and Wildlife Commission of the Northern Territory
- Queensland Environment Protection Agency
- Birds Australia
- Australian Bird and Bat Banding Scheme
- Australian National Wildlife Collection
- Natural history museums of Australia
- Queensland Herbarium
- Royal Botanic Gardens and National Herbarium of NSW
- Royal Botanic Gardens and National Herbarium of Victoria
- Tasmanian Herbarium
- State Herbarium of South Australia
- Northern Territory Herbarium
- Western Australian Herbarium
- Australian National Herbarium, Atherton and Canberra
- University of New England
- Other groups and individuals

ANUCLIM Version 1.8, Centre for Resource and Environmental Studies, Australian National University was used extensively for the production of draft maps of species distribution. Environment Australia is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

See log of system/dataset changes

For further information see http://www.environment.gov.au/epbc

Environment Australia
Department of the Environment

Heritage Listings

State Heritage Inventory - Item View

Dunmore Bridge over the Paterson River

Item

Name of Item: Dunmore Bridge over the Paterson River
Type of Item: Built
Group/Collection: Transport - Land
Category: Road Bridge
Address: MR 301 Maitland-Woodville Road, Woodville, NSW 2321
Local Government Area: Maitland City

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
Heritage Act - State Heritage Register		01467	20 Jun 00	-	-
Regional Environmental Plan			03 Nov 89		
Register of the National Estate			18 Apr 89	126	0010

Criteria for listing on the State Heritage Register (SHR)

References

None

Source of information for this entry

Name: NSW Heritage Office
Email: watters@heritage.nsw.gov.au
Web Page: www.heritage.nsw.gov.au

Administration

Heritage Database Number: 5051369

Every effort has been made to ensure that information contained in the State Heritage Inventory is correct. If you find any errors or omissions please send your comments to the Database Manager.

Home

Helping the community to conserve our heritage

NSW Heritage Office

Heritage Listings

State Heritage Inventory - Item View

Dunmore Bridge

Item

Name of Item: Dunmore Bridge
Type of Item: Built
Group/Collection: Transport - Land
Category: Road Bridge
Address: Paterson River, Woodville, NSW
Local Government Area: Port Stephens

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
Local Environmental Plan		Sch 2	29 Dec 00	170	14044

Criteria for listing on the State Heritage Register (SHR)

References

None

Source of information for this entry

Name: Local Government
Email: Contact Local Council
Web Page: www.dlg.nsw.gov.au/

Administration

Heritage Database Number: 2280038

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NSW Heritage Office

Heritage Listings

State Heritage Inventory - Item View

Dunmore Bridge

Item

Name of Item: Dunmore Bridge
Type of Item: Built
Group/Collection: Transport - Land
Category: Road Bridge
Address: Paterson River, Woodville, NSW
Local Government Area: Port Stephens

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
Local Environmental Plan		Sch 2	29 Dec 00	170	14044

Criteria for listing on the State Heritage Register (SHR)

References

None

Source of information for this entry

Name: Local Government
Email: Contact Local Council
Web Page: www.dlg.nsw.gov.au/

Administration

Heritage Database Number: 2280038

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NSW Heritage Office

Register of the National Estate Database

Dunmore Bridge, Woodville NSW

Class: Historic
Legal Status: Registered (18/04/1989)

Database Number: 015948
File Number: 1/09/062/0033

Statement of Significance : Completed in 1899, it is the sixth oldest existing Australian lift bridge after Bourke (1883), Brewarrina (1888), Wilcannia (1894), Tocumwal (1895) and Swan Hill (1896). In 1894 Percy Allan designed a new lift system, used first at Swan Hill and then at Woodville. As with some earlier bridges, it was designed for one man operation, with the winch at deck level. A different lift system, attributed to E M de Burgh, is fitted to the nearby Hinton Bridge (1904) and forms an interesting contrast to the bridge at Woodville. Woodville (Dunmore Bridge) has lifting sheaves which run on axles that are parallel to the stream flow. The large timber approach trusses are also significant. The bridge is of considerable technological significance.

Description : The bridge carries a 5.3m roadway and has spans of 34.2m, 17.8m, 34.4m, 33.8m and 9.1m. The 17.8m lift span provides for a 16.7m horizontal clearance for river traffic and has metal trusses and metal towers. The larger approach spans (33.8m-34.4m spans) are through type Allan trusses, with an upper lateral system, similar to the adjacent Hunter River Bridge at Morpeth (1898) and the earlier Wagga Wagga Road Bridge (1895). The spans of all these bridges (33.6m-34.4m) are large for their age. The remaining 9.1m span has timber girders. The four intermediate piers have twin metal cylinders.

Condition and Integrity : The bridge is in use and appears to be in good condition. The lifting ropes and counterweights have been removed, otherwise the bridge appears to be in its original state.

Location : Maitland-Woodville (Paterson) Road, 0.6km south-west of Woodville.

Bibliography:
C O'CONNOR, "REGISTER OF AUSTRALIAN HISTORIC BRIDGES" 1983.
C O'CONNOR, "SPANNING TWO CENTURIES" UQP 1985.
D J FRASER, "MOVABLE SPAN BRIDGES IN NEW SOUTH WALES PRIOR TO 1915"
IE AUST, MULTI-DISCIPLINARY ENG TRANS (1985), PP 71-81.
"MOVABLE BRIDGES ON MAIN ROADS IN NEW SOUTH WALES" MAIN ROADS, VOL 1
NO 2, DECEMBER 1953, PP 36-40.
P ALLAN, "HIGHWAY BRIDGE CONSTRUCTION - THE PRACTICE IN NEW SOUTH
WALES" INDUSTRIAL AUSTRALIAN AND MINING STANDARD, PART V, 11 SEP-
TEMBER 1924, PP 394-396; PART VI, 18 SEPTEMBER 1924, PP 432-436.

Report produced : 14/8/2001
RNEDB URL : http://www.ahc.gov.au/heritage/register/easydatabase/database.html

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Dunmore Bridge over the Paterson River

NOTE: ****** indicates that information is not supplied.**

Item

Name of Item:	Dunmore Bridge over the Paterson River
Item Number:	9544
Type of Item:	Built
Item Sub-Type:	NSW Allan Truss Bridges
Roadloc:	[R301,10,A1,3.176]
Address:	MR 301 Maitland-Woodville Road, Woodville 2321
Local Government Area:	Maitland City
Owner:	Local Government
Current Use:	Road Bridge
Former Use:	****

Statement of Significance

Completed in 1899, the Dunmore bridge is a representative example of an Allan truss road bridge, and is one of three surviving overhead braced timber truss road bridges in NSW. The bridge also has a lift span to allow river traffic under it, which is a rare feature that also contains much technical significance and information about engineering technology of the late 19th century. Most of its engineering details are intact, and the bridge is in good condition.

As a timber truss road bridge, it has many associational links with important historical events, trends, and people, including the expansion of the road network and economic activity throughout NSW, and Percy Allan, the designer of this type of truss.

Allan trusses were third in the five-stage design evolution of NSW timber truss bridges, and were a major improvement over the McDonald trusses which preceded them. Allan trusses were 20% cheaper to build than Mc Donald trusses, could carry 50% more load, and were easier to maintain.

The people who live in the area around the bridge (Woodville and the Hunter region) value the bridge highly, and as such it has social significance.

Dunmore Bridge is located in the Hunter region, which has 15 historic bridges each constructed before 1905, and it gains heritage significance from its proximity to the high concentration of other historic bridges in the area.

In 1998 there were 38 surviving Allan trusses in NSW of the 105 built, and 82 timber truss road

bridges survive from the over 400 built.

The Dunmore bridge is a rare and representative example of Allan timber truss road bridges, and is assessed as being Nationally significant, primarily on the basis of its technical and historical significance.

Date Significance Updated: 27 January 1999

Description

Designer: Percy Allan

Builder: S McGill, Morpeth

Construction Years: **** - 1899

Physical Description: Dunmore Bridge is an overhead braced Allan type timber truss road bridge. It has three timber truss spans, each of 34.2m (113ft), 34.4m (113ft), and 33.8m (111ft). It has an internal steel truss lift span of 17.8m (58ft). There is a single approach span at each end giving the bridge an overall length of 130.5m (428ft). The bridge has a height restriction of 4.6m because of the overhead bracing between the tops of the trusses.

The main spans of the superstructure are supported by twin cast iron cylinder piers. The bridge provides a single lane carriage way with a minimum width of 4.3m and a footpath. An Armco guardrail protects vehicular traffic, and a timber post and rail fence is provided on the footpath. The lifting mechanism is no longer in service following the removal of the lifting ropes and counter weights.

Physical Condition and/or Archaeological Potential: The bridge is in good condition, and has been well maintained by the RTA.

Modifications and Dates: Lifting mechanism for lift span has been removed.

Date Condition Updated: 19 January 1999

History

Historical Notes: Timber truss road bridges have played a significant role in the expansion and improvement of the NSW road network. Prior to the bridges being built, river crossings were often dangerous in times of rain, which caused bulk freight movement to be prohibitively expensive for most agricultural and mining produce. Only the high priced wool clip of the time was able to carry the costs and inconvenience imposed by the generally inadequate river crossings that often existed prior to the trusses construction.

Timber truss bridges were preferred by the Public Works Department from the mid 19th to the early 20th century because they were relatively cheap to construct, and used mostly local materials. The financially troubled governments of the day applied pressure to the Public Works Department to produce as much road and bridge work for as little cost as possible, using local materials. This condition effectively prohibited the use of iron and steel, as these, prior to the construction of the steel works at Newcastle in the early 20th century, had to be imported from England.

Allan trusses were the first truly scientifically engineered timber truss bridges, and incorporate American design ideas for the first time. This is a reflection of the changing mindset of the NSW people, who were slowly accepting that American ideas could be as good as or better than European ones. The high quality and low cost of the Allan truss design entrenched the dominance of timber truss bridges for NSW roads for the next 30 years.

Percy Allan, the designer of Allan truss and other bridges, was a senior engineer of the Public Works Department, and a prominent figure in late 19th century NSW.

Timber truss bridges, and timber bridges generally were so common that NSW was known to travellers as the "timber bridge state".

Listings

Heritage Listing	Reference Number	Gazette Number	Gazette Page
Register of the National Estate	015948		
Regional Environmental Plan			
National Trust of Australia register			

Assessment of Significance

Historical Significance: Through the bridge's association with the expansion of the NSW road network, its ability to demonstrate historically important concepts such as the gradual acceptance of NSW people of American design ideas, and its association with Percy Allan, it has historical significance.

Aesthetic Significance: The bridge exhibits the technical excellence of its design, as all of the structural detail is clearly visible. In the context of its landscape it is visually attractive. As such, the bridge has moderate aesthetic significance.

Social Significance: Timber truss bridges are prominent to road travellers, and NSW has in the past been referred to as the "timber truss bridge state". Through this, the complete set of bridges gain some social significance, as they could be said to be held in reasonable esteem by many travellers in NSW. The Dunmore bridge is valued by the people of the Hunter region.

Technical Significance: The bridge is highly technically significant because it is a rare example of an overhead Allan truss, and is representative of some major technical developments that were made in timber truss design by the Public Works Department.

Integrity/Intactness: Intact

Representativeness: Highly representative of overhead braced Allan trusses: in 1998 there were 38 surviving Allan trusses in NSW of the 105 built, and 82 timber truss road bridges survive from the over 400 built.

Rarity: Highly rare - only combination of overhead Allan truss and lift span

Endorsed Significance: State

References

Bibliography

Type	Author	Year	Title
Written	Department of Main Roads, NSW	1987	Timber Truss Bridge Maintenance Handbook
Written	Fraser, D J	1985	Timber Bridges of New South Wales
Written	Allan, Percy	1924	Highway Bridge Construction. The practice in New South Wales

Study Details

Title	Year	Number	Author	Inspected by	Guidelines Used
Relative Heritage Significance of all Timber Truss Bridges in NSW		5000092	McMillan Britton & Kell		No

Custom Fields

RTA Region: HUNTER

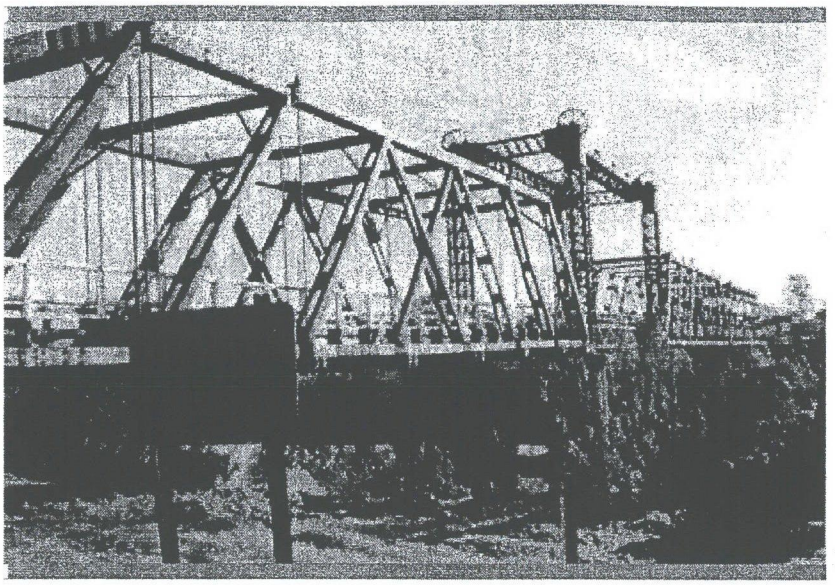
Bridge Number: 1683

CARMS File Number: ****

Property Number: ****

Conservation Management Plan: ****

Images



State Heritage Inventory Search Results

Statutory Listed Items

Information and items listed in the State Heritage Inventory come from a number of sources. This means that currently there may be several entries for the same heritage item in the database.

Your search results have been divided into two sections.

The first section contains items listed on the State Heritage Register, covered by an Interim Heritage Order or protected under section 130 of the NSW Heritage Act. This information is provided by the NSW Heritage Office.

Additional information on some of these items, provided by Local Councils & Shires and State Government Agencies, may also be found in the second section.

Item Name	Address	Suburb	LGA	State Heritage Register
Hinton Bridge over Paterson River	Hinton-Morpeth Road	Hinton	Maitland City	Yes

Item Name	Address	Suburb	LGA	Information Source

There was 1 record matching your search criteria.

Key:
LGA = Local Government Area
GAZ= NSW Government Gazette, HGA = Heritage Grant Application, LGOV = Local Government, SGOV = State Government Agency.

Note: The Heritage Office seeks to keep the State Heritage Inventory (SHI) up to date, however the latest listings in Local and Regional Environmental Plans (LEPs and REPs) may not yet be included. Always check with the relevant Local Council or Shire for the most recent listings.

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NSW Heritage Office

State Heritage Inventory - Item View

Hinton Bridge over Paterson River

Item

Name of Item: Hinton Bridge over Paterson River
Type of Item: Built
Group/Collection: Transport - Land
Category: Road Bridge
Address: Hinton-Morpeth Road, Hinton, NSW 2321
Local Government Area: Maitland City

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
Heritage Act - State Heritage Register		01470	20 Jun 00	-	-

Criteria for listing on the State Heritage Register (SHR)

References

None

Source of information for this entry

Name: NSW Heritage Office
Email: watters@heritage.nsw.gov.au
Web Page: www.heritage.nsw.gov.au

Administration

Heritage Database Number: 5051372

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NSW Heritage Office

Heritage Listings

State Heritage Inventory - Item View

Hinton Bridge over Paterson River

Item

Name of Item: Hinton Bridge over Paterson River
Address: Morpeth Road, Hinton, NSW 2321
Local Government Area: Port Stephens

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
Regional Environmental Plan			03 Nov 89		
Register of the National Estate			18 Apr 89	126	0010

Criteria for listing on the State Heritage Register (SHR)

References

None

Source of information for this entry

Name: Statutory Listings from NSW Gazette
Email: watters@heritage.nsw.gov.au
Web Page: www.heritage.nsw.gov.au

Administration

Heritage Database Number: 13194

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NSW Heritage Office

State Heritage Inventory - Item View

Hinton Bridge over Paterson River

Item

Name of Item: Hinton Bridge over Paterson River
Address: Morpeth Road, Hinton, NSW 2321
Local Government Area: Port Stephens

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
Regional Environmental Plan			03 Nov 89		
Register of the National Estate			18 Apr 89	126	0010

Criteria for listing on the State Heritage Register (SHR)

References

None

Source of information for this entry

Name: Statutory Listings from NSW Gazette
Email: watters@heritage.nsw.gov.au
Web Page: www.heritage.nsw.gov.au

Administration

Heritage Database Number: 13194

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NSW Heritage Office

Register of the National Estate Database

Hinton Bridge, Hinton NSW

Class: Historic
Legal Status: Registered (18/04/1989)

Database Number: 015950
File Number: 1/09/062/0041

Statement of Significance : Completed in 1904, it is eighth oldest of existing Australian lift bridges. It forms an interesting group with the adjacent Morpeth and Woodville Bridges. Morpeth (1898) has the deep Allan trusses used also as approaches to the Dunmore Lift Bridge at Woodville (1899). The Woodville and Hinton Bridges, although generally similar, are different in detail. The lifting mechanisms are different and Hinton has shorter, half through Allan truss spans for its approaches. The bridge has technological significance both individually and as part of a group of nearby bridges.

Description : The bridge carries a roadway that is 5m wide on the lift span, 5.6m wide elsewhere. The spans are 28.1m, 17.8m and 28.1m. The 28.1m spans are half through Allan trusses. The 17.8m lift span has metal trusses. It provides a 16.5m horizontal clearance and a minimum 14.3m height clearance above high water. The lift span rises a further 7.9m. The lifting mechanism is designed so that the bridge can be lifted by one man, operating from deck level. The sheaves at the tower tops are arranged so that their axles are parallel to the stream flow; that is, the lift mechanism differs from that on the nearby Dunmore Bridge at Woodville and appears to resemble that on the Murray River Bridge at Cobram (1902). The Hinton Bridge was designed by E M de Burgh. The lift span was fixed in 1940 and the counterweights removed in 1949.

Condition and Integrity : The bridge is in use and appears to be in good condition. The lifting ropes and counterweights have been removed

otherwise the bridge appears to be in its original state.

Location : Hinton-Morpeth Road over Paterson River, Hinton.

Bibliography:

C O'CONNOR, "REGISTER OF AUSTRALIAN HISTORIC BRIDGES" 1983.
C O'CONNOR, "SPANNING TWO CENTURIES" UQP 1985.
D J FRASER, "MOVABLE SPAN BRIDGES IN NEW SOUTH WALES PRIOR TO 1915"
IE AUST, MULTI-DISCIPLINARY ENG TRANS (1985), PP 71-81.
"MOVABLE BRIDGES ON MAIN ROADS IN NEW SOUTH WALES" MAIN ROADS, VOL 19 NO 2, DECEMBER 1953, PP 36-40.
P ALLAN, "HIGHWAY BRIDGE CONSTRUCTION - THE PRACTICE IN NEW SOUTH WALES" INDUSTRIAL AUSTRALIAN & MINING STANDARD, PART V, 11 SEPTEMBER 1924, PP 394-396; PART VI, 18 SEPTEMBER 1924, PP 432-436.
H H DARE, "RECENT ROAD-BRIDGE PRACTICE IN NEW SOUTH WALES" ICE MINUTES OF PROC, VOL 155 (1904), PP 382-400.

Report produced : 14/8/2001
RNEDB URL : http://www.environment.gov.au/heritage/register/easydatabase/database.html

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NOTE: ****** indicates that information is not supplied.**

Item

Name of Item:	Hinton Bridge over Paterson River
Item Number:	9528
Type of Item:	Built
Item Sub-Type:	NSW Allan Truss Bridges
Roadloc:	****
Address:	**** Hinton-Morpeth Road, Hinton 2321
Local Government Area:	Maitland City
Owner:	Local Government
Current Use:	Road Bridge
Former Use:	****

Statement of Significance

Completed in 1901, Hinton Bridge is an Allan timber truss road bridge, and has a lift span which in the past accomodated river steamers that travelled the Hunter River system. Hinton is one of only three lift bridges in the Hunter region. Most of its engineering details are intact, and the bridge is in good condition.

As a timber truss road bridge, it has many associational links with important historical events, trends, and people, including the expansion of the road network and economic activity throughout NSW, and Percy Allan, the designer of this type of truss.

Allan trusses were third in the five-stage design evolution of NSW timber truss bridges, and were a major improvement over the McDonald trusses which preceded them. Allan trusses were 20% cheaper to build than Mc Donald trusses, could carry 50% more load, and were easier to maintain.

The people who live in the area around the bridge value the bridge highly, and as such it has social significance.

Hinton bridge is in the Hunter Region, which has 15 historic road bridges each constructed before 1905. It gains heritage significance from its proximity to the high concentration of other historic bridges.

In 1998 there were 38 surviving Allan trusses in NSW of the 105 built, and 82 timber truss road

bridges survive from the over 400 built.

Hinton bridge is a representative example of Allan timber truss road bridges, and is assessed as being Nationally significant, primarily on the basis of its technical and historical significance.

Date Significance Updated: 27 January 1999

Description

Designer: Percy Allan

Builder: ****

Construction Years: **** - 1901

Physical Description: Hinton bridge is an Allan type timber truss road bridge. It has 2 external timber truss spans, each of 28.0m (92ft) and one internal steel truss lift span of 17.8m (58ft). There are 7 timber approach spans at one end and 3 at the other giving the bridge an overall length of 178.6m (586ft).

The bridge is 14.3m (47ft) above the high water line and the centre lift span previously rose another 7.90m (26ft). The lifting span was fixed in position in 1940 as the need for river steamers ceased.

The internal lift span is supported by twin cast iron cylinders. The timber truss spans are supported by timber trestles. The superstructure provides a carriageway with a minimum width of 5.1m.. Guard rails are of post and rail construction over the approach and timber truss spans.

Physical Condition and/or Archaeological Potential: Good

Modifications and Dates: 1940 - Lifting span fixed in position.

Date Condition Updated: 23 October 1998

History

Historical Notes: Timber truss road bridges have played a significant role in the expansion and improvement of the NSW road network. Prior to the bridges being built, river crossings were often dangerous in times of rain, which caused bulk freight movement to be prohibitively expensive for most agricultural and mining produce. Only the high priced wool clip of the time was able to carry the costs and inconvenience imposed by the generally inadequate river crossings that often existed prior to the trusses construction.

Timber truss bridges were preferred by the Public Works Department from the mid 19th to the early 20th century because they were relatively cheap to construct, and used mostly local materials. The financially troubled governments of the day applied pressure to the Public Works Department to produce as much road and bridge work for as little cost as possible, using local materials. This condition effectively prohibited the use of iron and steel, as these, prior to the construction of the steel works at Newcastle in the early 20th century, had to be imported from England.

Allan trusses were the first truly scientifically engineered timber truss bridges, and incorporate American design

ideas for the first time. This is a reflection of the changing mindset of the NSW people, who were slowly accepting that American ideas could be as good as or better than European ones. The high quality and low cost of the Allan truss design entrenched the dominance of timber truss bridges for NSW roads for the next 30 years.

Percy Allan, the designer of Allan truss and other bridges, was a senior engineer of the Public Works Department, and a prominent figure in late 19th century NSW.

Timber truss bridges, and timber bridges generally were so common that NSW was known to travellers as the "timber bridge state".

Listings

Heritage Listing	Reference Number	Gazette Number	Gazette Page
Register of the National Estate	015950		
Regional Environmental Plan			
National Trust of Australia register			

Assessment of Significance

Historical Significance:	Through the bridge's association with the expansion of the NSW road network, its ability to demonstrate historically important concepts such as the gradual acceptance of NSW people of American design ideas, and its association with Percy Allan, it has historical significance.
Aesthetic Significance:	The bridge exhibits the technical excellence of its design, as all of the structural detail is clearly visible. In the context of its landscape it is visually attractive. As such, the bridge has substantial aesthetic significance.
Social Significance:	The bridge is highly valued by the nearby Hinton community. Timber truss bridges are prominent to road travellers, and NSW has in the past been referred to as the "timber truss bridge state". Through this, the complete set of bridges gain some social significance, as they could be said to be held in reasonable esteem by many travellers in NSW.
Technical Significance:	The bridge is highly technically significant because: -It is one of only two timber truss bridges with a lift span in the Hunter region -It is an Allan truss, and is representative of some major technical developments that were made in timber truss design by the Public Works Department.
Integrity/Intactness:	Intact
Representativeness:	Representative of Allan timber truss bridges
Rarity:	Highly rare because of its lift span and age
Endorsed Significance:	State

References

Bibliography

Type	Author	Year	Title
Written	Department of Main Roads, NSW	1987	Timber Truss Bridge Maintenance Handbook
Written	Fraser, D J	1985	Timber Bridges of New South Wales
Written	Allan, Percy	1924	Highway Bridge Construction. The practice in New South Wales

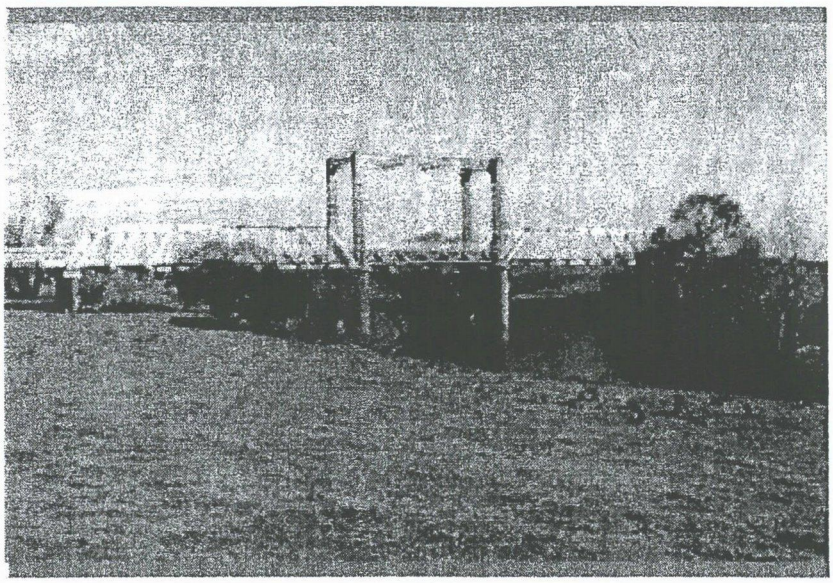
Study Details

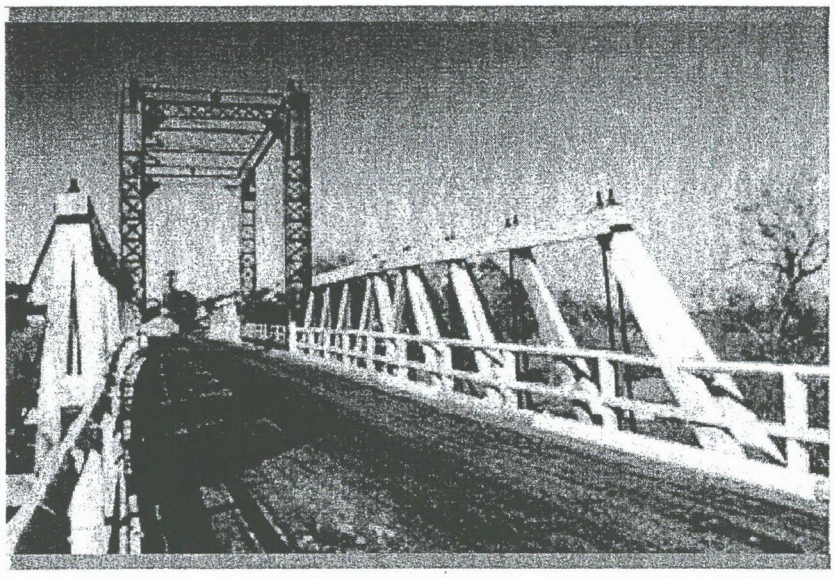
Title	Year	Number	Author	Inspected by	Guidelines Used
Relative Heritage Significance of all Timber Truss Bridges in NSW		5000092	McMillan Britton & Kell		No

Custom Fields

RTA Region:	HUNTER
Bridge Number:	1482
CARMS File Number:	****
Property Number:	****
Conservation Management Plan:	****

Images





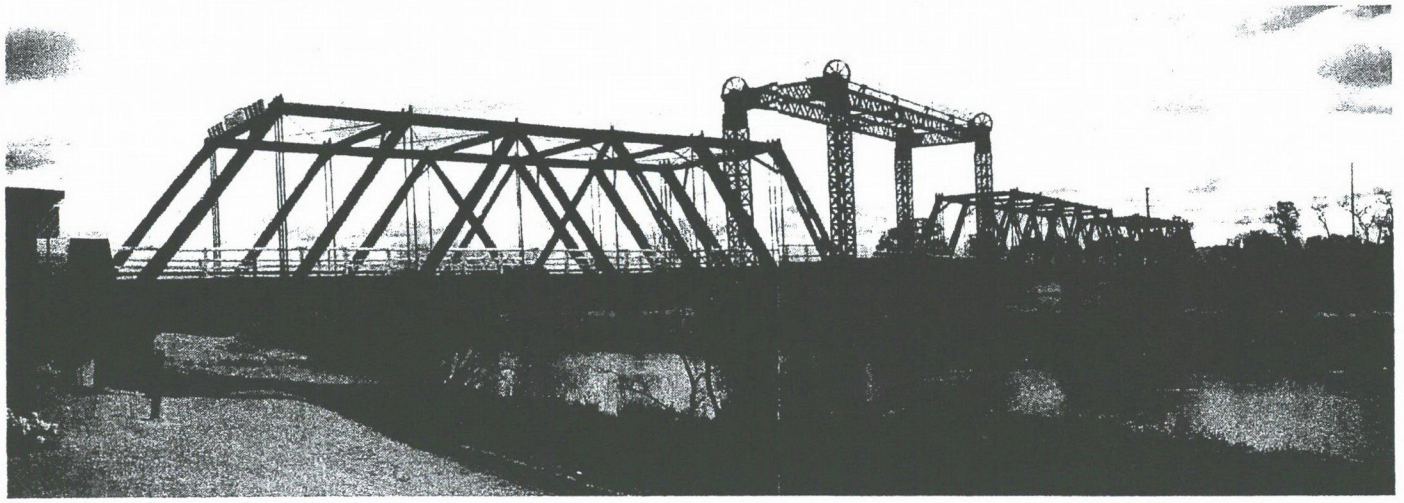
APPENDIX E

STATEMENT OF HERITAGE IMPACT

Statement of Heritage Impact

Proposed replacement of lift span on Dunmore Bridge over the Paterson River

Woodville, NSW



Prepared for RTA Hunter Region

RTA

RTA Operations

Environmental Technology Branch

Level 5, Pod D
Octagon Building
99 Phillip Street
Parramatta NSW 2150
PO Box 3035
Parramatta NSW 2124
Telephone: (02) 8837 0591
Facsimile: (02) 8837 0053
E-mail: Claire_Everett@rta.nsw.gov.au

25 July 2002

Document Controls

Business Unit	Environmental Technology Branch, RTA Operations		
Project No.	H36269		
Document description	Statement of Heritage Impact - Replacement of lift span on Dunmore Bridge over the Paterson River at Woodville NSW		
	Name	**Signed**	**Date**
Approving Manager	Belinda Randall		7 May 2002

Person managing this document	**Person(s) writing this document**
Claire Everett	Claire Everett
Location	**File**
G:\Ops\Environ\PROJECTS\Proj0102\H36269 - Hinton & Dunmore SOHIs\Dunmore\Dunmore Bridge.DOC	1M3291

Client Reference	**Status**	**Date**
	Final	7 May 2002

Prepared by Environmental Technology Branch, RTA Operations

Contents

1 Introduction and Background to the Proposal

Dunmore Bridge spans the Paterson River on an unclassified local road at Woodville, NSW. The location of the Bridge is shown on **Figure 1.** The Bridge is an Allan timber truss with a lift span, completed in 1899. As the Bridge is in excess of 50 years old, it is classified as a "relic" under the provisions of the NSW *Heritage Act* 1977. During a study of the heritage significance of all remaining timber truss road bridges in NSW, the Bridge was assessed as being of state heritage significance, and was ranked as the most significant out of all the timber truss bridges remaining in NSW (MBK 1999). The Bridge was placed on the Heritage Council of NSW's State Heritage Register (SHR) in 2000. Any proposal to conduct works other than routine maintenance and repairs on an item on the SHR requires approval from the Heritage Council in accordance with Section 60 of the NSW *Heritage Act* 1977 before works are undertaken.

The NSW Roads and Traffic Authority (RTA) proposes to replace the lift span on Dunmore Bridge. As the proposed options for replacing the lift span would involve alteration of a heritage item, a Statement of Heritage Impact (SOHI) is required to determine the potential level of impact upon the Bridge and whether the level of impact is acceptable. Project Management Services, RTA Hunter Region commissioned Environmental Technology Branch, RTA Operations to prepare a SOHI for the proposed replacement of the lift span on the Bridge. This SOHI will form accompanying documentation to the RTA's S60 application to the Heritage Council of NSW.

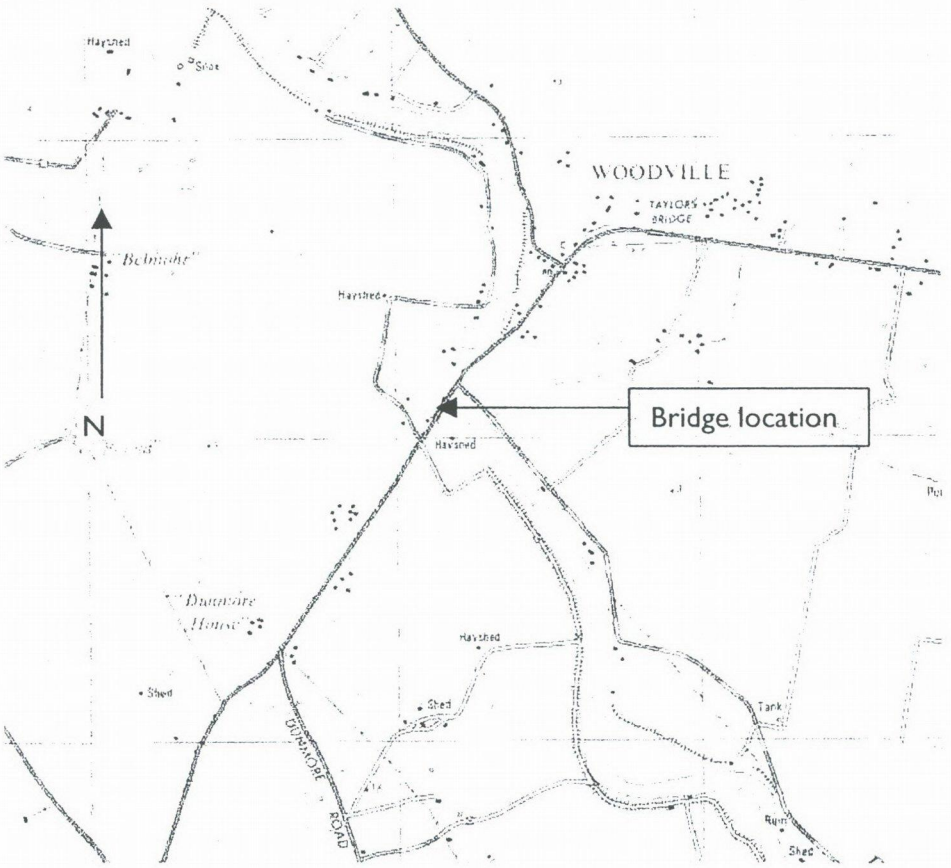


Figure 1: Location of Dunmore Bridge (source: Woodville 1:25 000. Map extract courtesy of the NSW Surveyor General's Department)

2 History and Significance of Dunmore Bridge

2.1 History of the Woodville area

The non-indigenous history of the Woodville area began soon after the settlement of the Port of Newcastle as a convict settlement. Governor King decided to have the district explored and so in June 1801 sent Lieutenant Colonel William Paterson in company with Lieutenant James Grant, Mr Harris and Mr Lewin. The extensive cedar forests upriver from Newcastle were noted during the 1801 expedition, but it was not until 1816 when Captain Wallace was appointed Commandant at Newcastle that much development in this region was made. Cedar cutting parties travelled up the Hunter, Paterson and Williams Rivers but in general colonists were reluctant to establish themselves permanently on land so close to the Newcastle penal settlement. One of the earliest settlers along the Paterson River was Captain William Dun who received a grant in 1821 of 1,300 acres with a frontage to the Paterson River located approximately 2.5 kilometres below the site of present day Paterson. After the penal settlement at Newcastle was moved to Port Macquarie in 1823, numerous land grants in the Hunter Valley were made to free settlers. by Governor Sir Thomas Brisbane (Hunter, 1997: 1-3).

On 30 June 1823 Governor Brisbane made a grant of 1040 acres to John Galt Smith in the Hunter Valley. Smith called the property "Woodville".

2.2 History of timber truss bridges in NSW

Timber truss road bridges have played a significant role in the expansion and improvement of the NSW road network. Prior to the bridges being built, river crossings were often dangerous in times of rain, which caused bulk freight movement to be prohibitively expensive for most agricultural and mining produce. Only the high priced wool clip of the time was able to bear the costs and inconvenience imposed by the generally inadequate river crossings that often existed prior to construction of bridges.

Timber truss bridges were preferred by the NSW Public Works Department from the mid 19th to the early 20th century because they were relatively cheap to construct, and used mostly local materials. The financially troubled governments of the day applied pressure to the Public Works Department to produce as much road and bridge work for as little cost as possible, using local materials. This condition effectively prohibited the use of iron and steel, as these, prior to the construction of the steel works at Newcastle in the early 20th century, had to be imported from England.

Five truss designs were developed in NSW, and by following the changes in truss designs it is possible to trace the evolution of early bridge design technology in NSW. Dunmore Bridge is an Allan truss bridge. The creator of the Allan truss was Percy Allan. Allan's contribution to the advancement of timber truss bridge design was a complete revision of timber truss designs to included the proper engineering science of the structural behaviour of trusses and incorporated the reliable strength data obtained from Professor Warren's testing program on the strength of Australian hardwood timbers at the University of Sydney in order to reduce the costs of construction and maintenance (MBK, 1999: 33).

In 1893 Allan introduced his new truss design based on the American Howe truss. The new truss incorporated many improvements and innovations, making it a more cost-effective structure than its predecessors. The new truss type, which could carry 50% more load but used 20% less material became known as the Allan truss. The most significant aspects of the new design were:

- All timber members were assembled from relatively smaller and shorter sizes, spliced at regular intervals for the top and bottom chords, laid parallel in pairs but held apart by timber spacer blocks. This separation allowed rainwater to fall through and created easy access for painting.
- External iron clamps at the joints meant that the vertical rods could be placed within he space between the top and bottom chord timbers or outside these members. From one to three rods could be accommodated depending upon the magnitude of the shear force at the member.
- Cast iron shoes ensured proper truss action and a good transfer of member forces at the joints.
- Simple triangulations of the truss members, mostly without crossed diagonals allowed the truss to be kept tight simply by using large spanners on the nuts at the vertical rods along the top chord.
- Any member could be renewed without temporary staging from below and without closing the bridge to traffic.
- The bridge could be built using two parallel half trusses and bolting them together to form a complete truss, one on each side of the deck. Member replacements thus in effect only required the replacement of half members, making repairs faster and simpler, yet retaining enough of the structural integrity of the truss to keep the spans in use throughout.

The Allan truss replaced its predecessor, the McDonald truss in 1893. The Allan truss remained in use until 1927, although none were built over the period 1901-1904, when the short-lived deBurgh truss design was used.

2.3 History of lift span bridges in NSW

The history of opening span bridges in NSW is closely linked to the economic rivalries of NSW, Victoria and South Australia in the final decades of the nineteenth century. Prior to 1850, the western region of NSW was thinly populated, the majority of inhabitants being settlers who managed vast sheep runs. The costs associated with transportation of the wool clip overland to Sydney were very high, but was made economically viable by the even higher prices fine Australian wool fetched on the world markets at that time. Following the goldrushes of the 1850s and the establishment of the *Crown Lands Alienation Act* 1861, more people began to settle in the west and south-west of NSW. The increased population of these areas led to demands for better river crossings of the major inland rivers, particularly the Murray and Murrumbidgee.

The majority of early bridges were preceded by punts, which although better than having to ford a river, still had problems in terms of their low capacity, slow operation, and the monopoly held by most operators which led to many disputes over excessive charges. On the majority of crossings, a simple bridge was the answer, but on the navigable stretches of rivers such as the Murray, Murrumbidgee, Darling and Clarence, provision had to be made to allow free passage of river traffic. Opening span bridges were the answer. Five types of opening span bridges were built in NSW prior to 1915, these being:

1. Pontoon or floating bridges – a series of pontoons or barges moored end to end with allowance for one or two units to be floated clear to allow passage of river traffic.

2. Sliding, traversing, draw or retractable bridges – the opening span as a counter-balance portion, projecting over the fixed part of the bridge, with the whole unit sliding horizontally on a system of rails and rollers.

3. Swing or pivoting bridges – these bridges rotate or pivot horizontally about a vertical axis. Symmetrical swing bridges provide an opening on each side of the central pivot, which balances the structure. In cases where a single-opening span is used, some form of short counterbalance is built on the other side.

4. Bascule bridges – also known as draw bridges. The moving span is hinged at one end and swinging from the horizontal into a near-vertical position.

5. Lift bridges – the moveable portion remains horizontal and is lifted vertically. The amount of headroom available is determined by the variations between water levels and the heights of the lift towers. Water traffic beneath these bridges is restricted to low-masted craft, barges and tugs (Fraser, 1985: 71-4).

During the colonial period, the costs of a high-level bridge with long approach spans was prohibitively expensive, thus low-level crossings of navigable rivers were required. Factors which determined the selection of what type of moveable span bridge should be built in a given situation were:

a) volume of water-borne traffic;

b) speed of operation, and

c) the height of vessels and the variations in water levels.

In NSW only three regions existed in which these factors combined to create justification for opening span bridges, these being Sydney Harbour, the North Coast rivers and the inland river system of the Darling, Murray and Murrumbidgee. Sydney Harbour and the North Coast had to cater for the large boats and sea-going vessels that travelled large distances upstream from the river entrances, so bridges of the first four types were required, in order to provide clearance for masted vessels. For the inland rivers, the majority of craft were paddle-steamers and loaded barges. These craft were not tall (maximum height approximately seven metres) and could pass under most bridges when water levels were low. However, during high water periods, particularly floods, additional headroom was required, and this could easily be provided by a lift span over the main channel. Hence the majority of bridges on the Murray/Darling river system are lift bridges (Fraser, 1985: 74).

The first two lift bridges in NSW were Balranald (1881) and Bourke (1883). The design of the lift spans on these bridges was unsatisfactory, as the pair of lifting towers on each bridge were built as independent structures, so that the towers deflected inwards and pinched the rising span. In addition, separate winches on each side of the bridge required the two winches to operate perfectly in unison, which rarely happened, so that the span would tilt and jam. Improvements were made to subsequent designs, such as overhead bracing to link lift spans together, and a mechanism by which only one winch was required to operate the lift span. The culmination of the improvements made to lift span design was the lifting span of Swan Hill Bridge, designed by Percy Allen, which became the pattern for all subsequent lift bridges (Fraser, 1985: 79-80). (Fraser, 1985: 79).

2.4 History of Dunmore Bridge

The first established crossing of the Paterson River in this location was a punt, located approximately 100 metres upstream of the location of the present bridge. The date of the punt's establishment is not known. The punt was replaced in 1864 with the first Dunmore Bridge, which appears to have been a timber beam bridge with a traversing span that opened to allow steam boats to pass under. The present Dunmore Bridge was built on the same alignment as the 1864 structure, which meant that during the 18 months taken to demolish the earlier bridge and build the new one, a punt was again required to transport people and vehicles across the River.

Dunmore Bridge was opened on 14 December 1899. The Annual Report of the NSW Public Works Department for 1900 stated:

> This bridge was completed and opened for traffic on 14 December 1899. The total length is 427 feet made up of three timber truss spans of 110 feet each, one steel lifting span (to admit passage of vessels) and one timber span of 30 feet on cylinder piers and concrete abutments (PWD AR, 1900: 77).

The total cost of construction of the Bridge was £12,546 9s 11d. The lift span was hand operated by a winch.

> A cottage on the Dunmore side was provided for the operator, the last of whom was Mr Franklin .... when the bridge was first built the operator was required to maintain the road half a mile each side of the bridge, but as this meant delays to steam-boats when he was absent on road-work, the latter task was eliminated and the only extra duty was sweeping the bridge, for it must be remembered that in those days horse drawn vehicles were the chief transports on our roads (Hunter, 1997: 11)

From the plans of the present bridge it appears that the operator's cottage was built for the operator of the draw section of the original Dunmore Bridge, and was retained for that purpose when the second bridge was built. As the lift span is no longer operational the need for an operator has long since ceased. However, the cottage is still present and is occupied.

2.5 Bridge description

The Bridge is six span timber beam and Allan truss bridge with a metal lift span (see **Figures 2 & 3**). The overall length of the Bridge is 130.5 metres (428 feet). It comprises an internal metal lift span (17.8 metres or 58 feet) and lift towers flanked by three overhead braced Allan timber trusses, each of 34.2 metres (113 feet), 34.4 metres (113 feet) and 33.8 metres (111 feet), plus a single timber beam approach span at each end. The Bridge has a height restriction of 4.6 metres because of the overhead bracing between the tops of the Allan trusses.

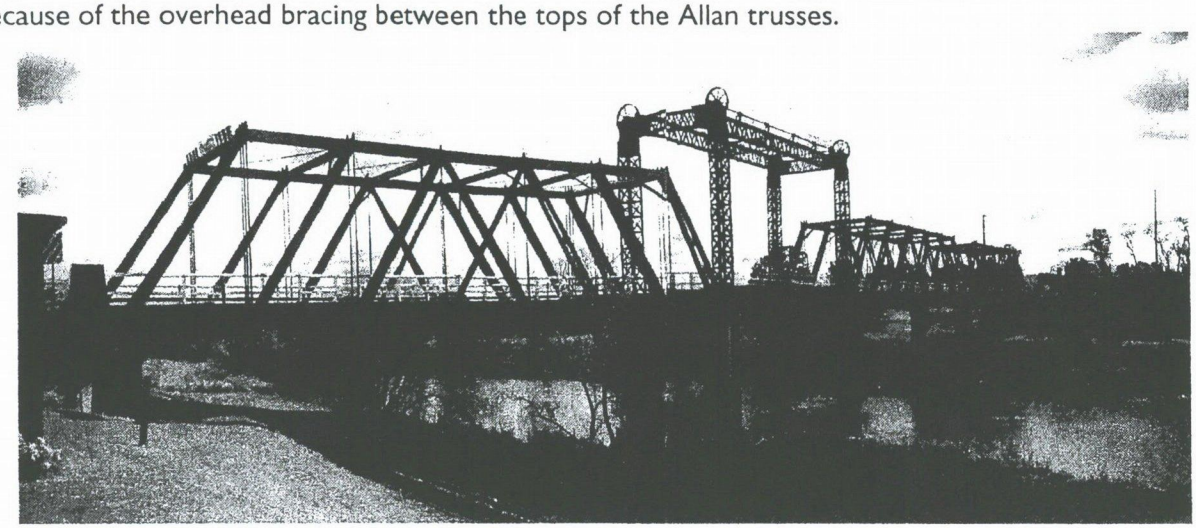


Figure 2: View of Dunmore Bridge from upstream

Figure 3: View of lift span from downstream side.

The lifting mechanism is different to that used on Hinton Bridge also over the Paterson River at Hinton, which is the junior of Dunmore Bridge by two years, and was designed by Allan's successor, EM deBurgh. The sheaves (or pulleys) at the top of the lift towers are arranged so that their axles run at right angles to the stream flow, whereas at Hinton Bridge, the arrangement of the sheaves is such that the axles parallel to the stream flow.

The lifting span on Dunmore Bridge was fixed in position in 1940 as the need for it to be raised to allow the passage of river traffic ceased. The bearing ropes and counterweights were removed in 1949. The lift span is supported by twin cast iron cylinder piers. The timber truss spans are supported by timber trestle piers.

2.6 Heritage Listings

Australian Heritage Commission Register of the National Estate	Registered
NSW Heritage Office State Heritage Register	Registered
Port Stephens Council Local Environmental Plan – Heritage Schedule	Listed
NSW National Trust Register	Listed
RTA s.170 Heritage and Conservation Register	Listed - assessed as being of state significance.

The statutory listings that are relevant to the proposed works are the SHR and the Port Stephens Local Environment Plan (LEP) Heritage Schedule.

2.6.1 State Heritage Register

The SHR is maintained by the NSW Heritage Office on behalf of the Heritage Council of NSW. The Register is a list of heritage items identified as being of State heritage significance. A listing on the SHR confers the highest level of legislative protection available for heritage items in NSW. As a listing on the SHR confers protection upon a heritage item, there are restrictions on what activities can be carried out on or adjacent to a listed item. These are covered under Section 57 of the NSW *Heritage Act* 1977. Section 57(1) of the Act states that:

> When an interim heritage order or listing on the State Heritage Register applies to a place, building, work, relic, movable object, precinct or land, a person, must not do any of the following things except in pursuance of an approval granted by the approval body under Subdivision 1 of Division 3:
>
> (a) demolish the building or work,
>
> (b) damage or despoil the place, precinct or land, or any part of the place, precinct or land,
>
> (c) move, damage or destroy the relic or movable object,
>
> (d) excavate any land for the purpose of exposing or moving the relic
>
> (e) carry out any development in relation to the land on which the building, work or relic is situated, the land that comprises the place, or land within the precinct,
>
> (f) alter the building, work, relic or movable object,
>
> (g) display any notice or advertisement on the place, building, work, relic, moveable object or land, or in the precinct,
>
> (h) damage or destroy any tree or other vegetation on or remove any tree or other vegetation form the place, precinct or land.

Approval to conduct works upon an item listed on the SHR (other than routine maintenance) must be sought from the approval body, the Heritage Council of NSW. An application to conduct works upon or modify a SHR listed item can be made under Section 60 of the Act. The only exceptions to this are works covered in a CMP endorsed by the Heritage Council of NSW, or works for which a standard exemption has been granted by the Minister under Section 57(2) of the Act. The RTA is required to obtain a S60 permit from the Heritage Council in order to conduct the works outlined in this SOHI.

2.6.2 Port Stephens LEP

Dunmore Bridge is listed on the heritage schedule of the Port Stephens Council LEP. Under the heritage provisions of the LEP, the following conditions apply to listed heritage items:

The following development may be carried out only with development consent:

a) Demolishing, defacing, damaging or moving a heritage item or a building, work, relic, tree or place within a heritage conservation area,

b) Altering a heritage item or a building, work or relic within a heritage conservation area by making structural changes to its exterior,

c) Altering a heritage item or a building, work or relic within a heritage conservation area by making non-structural changes to the detail, fabric, finish or appearance of its exterior, except changes resulting from any maintenance necessary for its ongoing protective care which does not adversely affect its heritage significance,

d) Moving a relic, or excavating land for the purpose of discovering, exposing of moving a relic,

e) Erecting a building on, or subdividing, land on which a heritage item is located or which is within a heritage conservation area.

The RTA is required under the terms of these provisions to submit a Development Application (DA) to Port Stephens Council for the proposed works on the Bridge.

2.7 Heritage significance

The Dunmore Bridge has been assessed as being of State Heritage significance. In the comparative heritage significance assessment of all remaining timber truss bridges in NSW commissioned by the RTA, Dunmore Bridge was assessed as being the most significant timber truss bridge in NSW, out of the 82 examples still surviving in 1998 (MBK, 1999). The Bridge is the fifth-oldest surviving lift bridge in Australia after Bourke (1883), Brewarrina (1888), Tocumwal (1895) and Swan Hill (1896) and is one of only three surviving overhead braced timber truss road bridges in NSW.

3 The Proposal

The RTA proposes to replace the lift span of Dunmore Bridge. The existing span is of wrought iron construction with riveted connections. The span requires replacement because the fabric of the lift span has deteriorated to such an extent that its structural capacity has become severely impaired. The RTA has designed a replacement span, which would see the basic design of the existing lift span replicated, but in steel with welded connections. The connections on the original span are held together by rivets. However, hot-riveting is a practice that is no longer used, having been made obsolete by the advent of welding. Metal members that have been riveted together are liable to suffer from crevice corrosion, which occurs when moisture penetrates the area between two plates riveted together.

Due to the nature of the bolt connections on the lift span of this Bridge, the corrosion at the joints was not evident to regular bridge inspections. The corrosion was detected during an intensive condition inspection, by which time the extent of corrosion was such that the corroded elements were deemed to be beyond repair. The problem of crevice corrosion is eliminated when members are welded together, as there are no crevices present for water to enter. As the visual appearance of the welded connections would be quite different to the original riveted connections, the RTA proposes to simulate the appearance of rivets by inserting cup-head bolts, which are similar in appearance to rivets, at intervals along the new elements that correspond with the locations of the rivets on the original span.

The two design options under consideration differ in the nature of the proposed decking material. Option 1 would utilise traditional timber transverse decking with longitudinal timber decking laid on top to improve the travelling surface and reduce wear on the transverse deck planks. Beneath the transverse decking would be a steel universal beam girder atop steel cross girders of the same depth as in the original lift span. Option 2 would see the traditional transverse and longitudinal decking replaced with stress laminated timber (SLT) decking. SLT decking consists of small pieces of timber assembled to form a slab held in position with high tension stressing tendons (these tendons can be either rods or cables). The timber in SLT decking is aligned longitudinally parallel with the roadway, with the stressing tendons running at right angles to this. As there would be no transverse decking to support, this would eliminate the need for longitudinal timber stringers beneath the decking, and would instead require the installation of deeper section steel cross girders. See **Appendix A** for drawings of the two options.

In this instance it is proposed that Option 2 be used on the replacement span, as SLT decking is a longer lasting and more durable decking material than the traditional timber transverse decking with longitudinal sheeting. In addition, SLT decking has the advantage of being waterproof, so that rainwater would run off the edges of the deck instead of seeping through the deck resulting in faster deterioration of not only the deck but also the metal elements of the span below. This is an inherent flaw of the more traditional decking system, as there is no way to effectively waterproof it so that water does not run through and pool in the channels and crevices of the steelwork below. The deck surface would be sealed with a rubberised seal that matches the existing deck seal. SLT has been used successfully in the past by the RTA to re-deck entire timber truss bridges. Traditionally, a timber kerb rests on the deck surface close to the edge of the deck in order to prevent the wheel of vehicles crossing the Bridge touching the trusses. As SLT decking is designed so that water runs off the edges of the deck, it is not possible to have the kerb sitting flush with the deck as it would prevent water runoff. In order to overcome this, it is proposed to install a steel rectangular hollow section (RHS) kerb that is raised approximately 50 millimetres above the surface of the deck.

The existing metal pipe hand railing on the lift span, an original feature, would be removed and attached to the new lift span (see **Figure 3**). As this railing does not constitute an effective traffic barrier, an additional crash barrier would have to be installed. The two existing railing systems on the entire Bridge do not provide adequate protection to either the Bridge or the travelling public, as they do nothing to prevent vehicle impacts from damaging structural elements of the Bridge, nor do they provide sufficient restraint to prevent a vehicle crashing through and subsequently falling off the Bridge. In designing the new lift span for the Bridge, the RTA is obliged to be in compliance with the current design code, AUSTROADS Level 2. The code requires that safety barriers of a certain standard be installed on new Bridge elements. In order to comply with the code, the RTA ultimately proposes to install a continuous steel safety barrier for the entire length of the Bridge. The proposed barrier would be similar in appearance to the one shown in **Figure 4** which is a barrier system fitted to Coonamit Bridge, a timber truss bridge located in south-western NSW. Coonamit Bridge has also been re-decked throughout with SLT decking, and the new decking system can be seen in the photograph. Also visible is the steel RHS kerb that can be seen to be raised slightly above the surface of the deck. However, any new barrier installed on Dunmore Bridge would be painted to match the existing colour scheme of the Bridge, rather than having a galvanised appearance, as shown in the photograph.

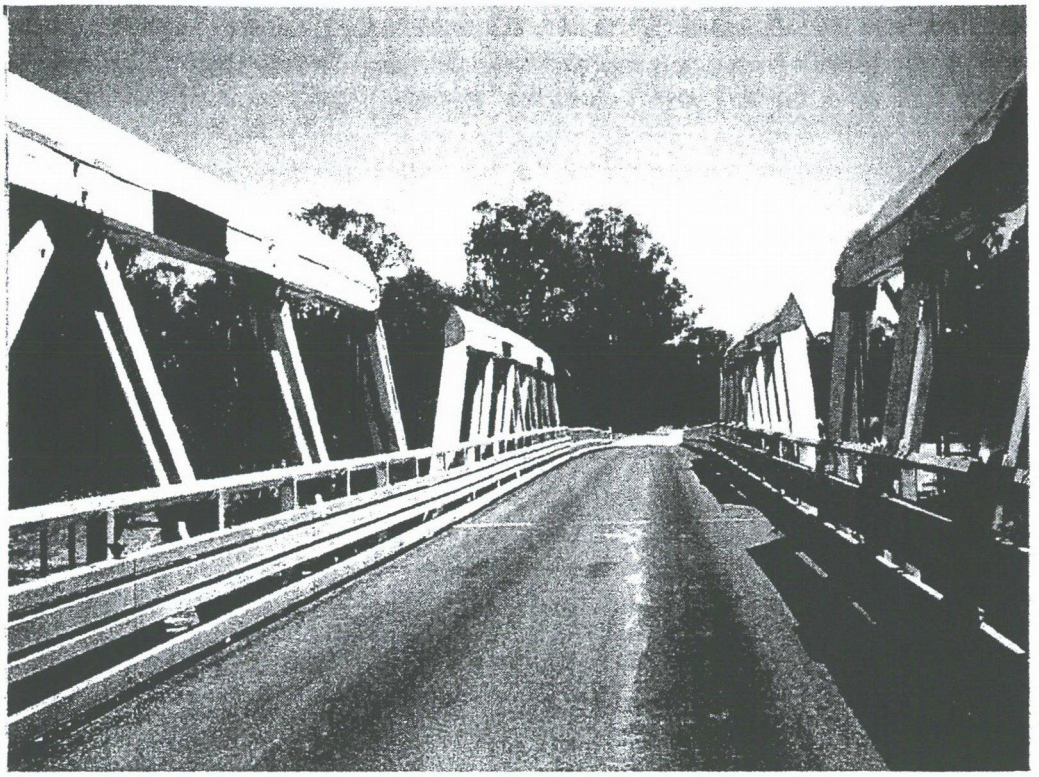


Figure 4: Coonamit Bridge, showing safety barrier and modified hand railing and kerb system installed. Note also appearance of SLT decking from deck level.

The other elements associated with the lifting capabilities of the Bridge, such as the lift span towers would remain unchanged. The proposed new span would be designed so that it could be lifted should the lifting capacity of the Bridge ever be reinstated, although it is highly unlikely that this would ever occur. The lift span ceased operation in the early decades of the 20th Century and was locked in place in 1940. The ropes and counterweights required to lift the span were removed in 1949, and it would not be possible to raise the lift span unless these were reinstated. In more recent decades, telecommunications cables and water pipes have been run across the Bridge, and relocation or re-routing of these services would be required should the lift span be made operational again.

4 Statement of Heritage Impact

The following questions are presented in the *NSW Heritage Manual* document "Statements of Heritage Impact" as the minimum response required to properly address proposals on heritage items which would result in the removal of original fabric (HO/DUAP 1996b).

4.1 What aspects of the Proposal respect or enhance the heritage significance of the Bridge?

The Proposal seeks to keep Dunmore Bridge operating as a road bridge with no load restrictions placed upon it, thus ensuring the historical and social significance of the Bridge as a functioning road bridge remains intact. The Proposal seeks to respect the aesthetic significance of the Bridge by keeping the visual appearance of the new lift span as close as possible to the original span.

4.2 What aspects of the Proposal could have a detrimental effect on the heritage significance of the Bridge?

The Proposal would result in the removal and replacement of significant original fabric from Dunmore Bridge. Whilst removing and replacing deteriorated elements is standard practice in maintaining the timber elements of timber truss bridges, it is not considered routine maintenance to replace components that are considered to be permanent elements of the structure. However, the replacement of the fabric of the lift span is required because the fabric has deteriorated to such an extent that it is no longer structurally sound. From a conservation perspective it is preferable to keep the Bridge operating, even if it requires replacing original fabric, than to have the Bridge taken out of use. The heritage impact of the bridge being removed from service as a road bridge would be greater than the heritage impact of replacing the lift span. The heritage impact of the proposal would be minimised by designing the new lift span to be similar in visual appearance to the form and fabric of the original span. While it would not be an exact replica of the original span, it would be designed so as to be sympathetic to the appearance of the Bridge. The proposed use of SLT decking on the new lift span would alter the appearance of the side profile of the lift span. However the visual impact would be reduced by covering up the stressing bolts that would project from the sides of the deck.

As discussed in **Section 3**, the installation of a new structural element such as the new lift span creates a legislative requirement for the RTA to upgrade other elements of the Bridge to be in accordance with current bridge design standards. This means that the existing railings on the Bridge would eventually have to be replaced with steel safety barriers of a type discussed above and seen in **Figure 4**. However, to minimise the visual impact of this change, it is recommended that should the lift span be replaced and a new barrier system be installed, that the new barrier have a painted, rather than galvanised surface coating.

The proposal if implemented would not result in the reduction of heritage significance for this Bridge.

4.3 Have more sympathetic solutions been considered and discounted? Why?

The most sympathetic solution from a heritage perspective would be to retain the existing lift span. However, the fabric of the lift span has deteriorated to such an extent that it is no longer considered to be structurally sound and cannot be repaired or strengthened. Thus if the lift span were not to be replaced the RTA would either have to close the Bridge to traffic, place a load limit upon the Bridge or leave a Bailey truss permanently in place in order for the Bridge to continue to carry road traffic. None of these options are acceptable from an operational perspective, and would result in greater heritage impact upon the Bridge. If the Bridge were to be closed to traffic, a considerable loss of heritage significance would ensue, as it would no longer perform the function for which it was built. If a Bailey truss were to be placed on the Bridge, it would have a negative impact on the Bridge's aesthetic significance. The use of a Bailey truss is intended as a short-term solution, and would not address the long-term issue of deterioration of the lift span due to corrosion. Placing a load limit upon the Bridge would also be a short term solution, and is undesirable due to the detour required for heavy traffic, and the possibility of the lift span suffering further damage or failing if vehicles exceeding the load limit attempt to cross it.

Furthermore, neither of these options address the cause of the problem, which is that the fabric of the lift span has deteriorated to such an extent that it cannot be repaired. If the lift span is not replaced this fabric will continue to deteriorate. If the lift span is replaced, Australian bridge design requirements require that the safety barriers on the Bridge also be upgraded to meet current standards. The RTA is obliged to meet these standards in order to ensure that the safety of the travelling public, and of the Bridge itself, is not compromised in the event of a vehicle collision on the Bridge.

4.4 Is the alteration sympathetic to the Bridge? In what way?

The proposed new lift span is sympathetic to the Bridge in that it echoes the form and fabric of the original lift span without attempting to be an exact replica. The original span is of wrought iron with riveted connections. Wrought iron is no longer used today in bridge construction because steel is structurally. In addition, the technique of hot-riveting steel members together has been totally superseded by other forms of attachment. Welding is a superior manner in which to join pieces of steel together, and the expertise required for hot riveting is virtually unobtainable today. When viewed from a distance, the use of welding rather than riveting to join the metal elements would not be noticeable. However, when viewed close-up, the rivets on the original span give a certain textured appearance to the metal elements of the lift span. The RTA proposes to simulate the appearance of riveted connections by placing cup-head bolts (which are similar in appearance to rivets) on the sections of the truss that would have held rivets on the original.

The proposal to install SLT decking on the replacement lift span is sympathetic in that the decking system used would still be timber, rather than a concrete overlay or some other method of construction. Some alteration to the appearance of the span would eventuate, as discussed above, but would not be noticeable to the casual observer.

The proposed safety barrier system is sympathetic in that it echoes the form of the existing ordinance fencing and timber kerbing, but is much stronger. Painting the barrier in accordance with the Bridge's existing colour scheme would serve to reduce the visual impact of the proposed alterations.

5 Conclusions

The replacement of the lift span of Dunmore Bridge and associated works would constitute removal of original and highly significant bridge fabric, which would have a moderate heritage impact upon the Bridge. However, the heritage impact would not be such that the heritage significance of the Bridge would be reduced. While it is generally desirable to avoid removal of original fabric, in this instance the heritage impact would be lesser than other potential options which could allow for retention of original fabric but which could alter the function of the Bridge. Thus the proposed works would have a lesser heritage impact upon the heritage significance of Dunmore Bridge than retaining the Bailey truss or removing the Bridge from service.

6 Recommendations

- It is recommended that the RTA submit an application under Section 60 of the NSW *Heritage Act* 1977 to the Heritage Council of NSW to replace the lift span of Dunmore Bridge.
- It is recommended that the RTA submit a development application to Port Stephens Council to replace the lift span of Dunmore Bridge.
- It is recommended that this SOHI and the Review of Environmental Factors (REF) for the project be attached in support of the application.
- It is recommended that of the two options for installing a decking system on the replacement lift span, that SLT decking be utilised in order to provide a superior travelling surface, and to assist in the preservation of the steel elements beneath the deck of the new lift span.
- It is further recommended that an upgraded safety barrier be installed for the entire length of the Bridge in order that the RTA may comply with current bridge design standards. It is recommended that this barrier be of a design that is sympathetic to the form and profile of the Bridge, and that it be painted to match the Bridge's existing colour scheme.
- If the works proceed, it is recommended that a detailed, archival quality photographic recording of the Bridge be taken as the works progress, to provide a record of the alterations to the Bridge. Any images should taken be placed on the RTA general file for the Bridge.

7 References

Primary Sources

NSW Department of Public Works Annual Report 1903

Secondary Sources

Dare, H 1903 "Recent road-bridge practice in New South Wales" *Proceedings of the Institution of Civil Engineers* 155.4:382-4

Fraser, D 1985 "Movable span bridges in New South Wales prior to 1915" *Multi-Disciplinary Engineering Transactions* Industrial Engineers Australia GE9.2:71-81

Heritage Office and Department of Urban Affairs and Planning 1996a *Regional Histories*, Heritage Office and Department of Urban Affairs and Planning

Heritage Office and Department of Urban Affairs and Planning 1996b *Statements of Heritage Impact*, Heritage Office and Department of Urban Affairs and Planning

McMillan Britton & Kell 1998 *Study of Relative Heritage Significance of all Timber Truss Road Bridges in NSW*, Report to the NSW Roads & Traffic Authority

Main Roads 1953 "Movable bridges on Main Roads in New South Wales" *Main Roads* 19.2: 36-40

New South Wales Roads and Traffic Authority, 1999 "Dunmore Bridge, Paterson River" *RTA Section 170 Heritage Register*, database entry for Dunmore Bridge

O'Connor, C. 1985 *Spanning Two Centuries: Historic Bridges of Australia*, University of Queensland Press, Brisbane

APPENDIX F

RTA QA SPECIFICATION G35, ENVIRONMENTAL PROTECTION (MANAGEMENT PLAN)

RTA QA SPECIFICATION G35

ENVIRONMENTAL PROTECTION (MANAGEMENT PLAN)

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RTA QA SPECIFICATION G35

ENVIRONMENTAL PROTECTION (MANAGEMENT PLAN)

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REVISION REGISTER

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed1 / Rev0		First issued to replace RTA G5.	GM, RNIC	26.04.99
Ed1 / Rev1	1.2	Additional references added to list.	GM, RNIC	06.12.99
	1.3	Definition (c) - definition of "Environmental Incident" removed and replaced by definition of "Pollution Incident".		
	4.1 (d)	"(b) and" added.		
	4.1 (n)	Item (n) added.		
	4.1 (o)	New item		
	4.2 1st para	More specific provisions regarding deficiencies; "and keeping the Contractor's environmental records" added.		
	4.2 2nd para	"status of" deleted; "environmental incidents" replaced with "pollution incidents"; "control of environmental nonconformances" added.		

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed1 / Rev1 (cont'd)	4.4 (e)	Reference to "the register" and "Waste Minimisation and Management Act" added.		
	4.7	Reworded to clarify the requirement for Contractor to advise EPA and Superintendent.		
	4.8 1st para	Reworded. Contractor's notification requirements to local residents made more specific.		
	4.9 2nd para	Reworded. Contractor's obligation under the POEO Act to notify EPA of pollution incidents.		
	4.10 3rd line	The word "taken" added after the word "action".		
	4.13	New sentence concerning records and summary reports of performance evaluations.		
	4.14	Clause renamed.		
	4.14.1	New clause number with revised wording.		
	4.14.2	New clause number.		
	6.2.1 1st para	Reworded. CEMP to identify "Contractor's obligations" under legislation relevant to the work; list of relevant legislation revised.		
	6.2.2	List of legislation repealed and replaced by POEO Act added; paragraph on Waste Minimisation and Management Act added.		
	6.5.1 1st para	Second sentence revised.		
	6.5.2	New clause - "Soil Stockpile Management".		
	6.5.3	Clause renumbered from 6.5.2; 1st paragraph, reference to "Clean Waters Act, Clean Waters Regulations" replaced by "POEO Act".		
	6.5.4	New clause – Water Extraction.		

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed1 / Rev1 (cont'd)	6.6	First paragraph, reference to "Clean Air Act" replaced by "POEO Act"; 3rd paragraph, "such as" replaced by "including"; "as required" inserted after "listed below".		
	6.6 (g)	Wording revised.		
	6.6 (h)	Wording revised.		
	6.7	First paragraph, reference to "Noise Control Act 1975" replaced by "POEO Act"; point (iii) revised; new point (iv); previous point (iv) renumbered to point (v).		
	6.9 1st para	Third line, "CEMP and implement" replaced by "CEMP, and then implement".		
	6.11.2 (c)	The word "shall" replaced by "does".		
	6.13	First paragraph, "any" waterways replaced by "land or" waterways; 2nd paragraph, "on any road with drainage" replaced by "on any location with direct drainage"; two new sentences on refuelling added; 3rd paragraph, new sentence on location of storage areas added.		
	6.15	"immediately who will arrange" replaced by "immediately, who will then arrange".		
	6.17	First paragraph revised; example box added.		
	6.18	The words "to the satisfaction of the Superintendent" deleted.		
	Annexure G35/3	Clause numbers revised.		
	Annexure G35/4	Clause numbers revised.		
Ed1 / Rev2	4.1	Title changed.	GM, RNIC	21.01.00
	4.1.1	New clause number and title; "meet" replaced by "comply with".		
	4.1.2	New clause number and title; second paragraph revised; new second last and last paragraphs added.		

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed1 / Rev2 (cont'd)	5, 6.5.3, 6.6	Examples revised.		
	6.7	First paragraph revised; example revised; new paragraph added after item (v); example deleted		
	6.8	Example revised; fourth paragraph "monitored" replaced by "managed".		
	6.16	Example revised.		
	Annexure G36/1	Clause 4.1 of the table revised.		
	Annexure G36/4	Example contents of the table deleted.		
Ed1 / Rev3	1.1, 1.3, 4.7	Reference to "Special Conditions of Contract" changed to "Conditions of Contract".	GM, RNIC	17.07.01
Ed 1/Rev 4	4.1.1.(g), 4.1.2, 6.3,	Minor editorial changes. 6.7, Annex G36/1 (4.1)	GM, RNIC	07.09.01
	1.2	New references added		
	1.2, 1.3	ISO 9000 replaces ISO 8402		
	2(5),4.1.1e	Monitoring of high risks required		
	3.8	Quality system requirements added		
	4.1.1	CEMP to comply with legislation and approval conditions Additional details required.		
	4.1.2	CEMP submission to others changed		
	4.5	Minimum training levels to be shown		
	4.9, Annex G36/1	Notification to EPA of contact persons changed.		
	5	Include construction related problems/risks		
	6.2.1	List of legislation updated		
	6.5.3, 6.6	Use EPA methods in monitoring		
	6.6	Visually check exhaust systems		
	6.7	Comply with EPA requirements		
	6.9	Observe limits of clearing		
	6.11.2	EPA regulation and guideline added		
	6.13	Store away from vegetated areas EPA guideline added		

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 1/Rev 4 (cont'd)	6.16	Requirements defined as a Hold Point		
	6.17(c)	New guideline added Consider waste management in design, planning and purchasing		

NOTICE

Using RTA G35

Specification RTA G35 contains the RTA's requirements for a contractor's project specific environmental management plan. When a corporate environmental management system is to be implemented by the Contractor, Specification RTA G36 should be used in lieu of RTA G35.

Specification RTA G35 is a "proforma" model specification and must be customised by the TENDER DOCUMENTER for each specific project. Customisation requires insertion of the various environmental conditions and constraints from the REF, EIS, Decision Report and associated information into the body of G35. It is recommended that G35 is project customised parallel with the RTA's project environmental management plan.

Some typical examples of customisation are shown in boxes within the text, as illustrated below:

Example: List or cross-refer to specific topsoil management requirements

The reuse of weed contaminated topsoil by surface spreading is not permitted. Where necessary, horticultural advice must be sought to determine whether the type and/or proportion of weed cover is significant for the topsoil to be deemed weed contaminated.

If any issue is not relevant for your project, delete the boxed text.

If an issue is relevant, delete the borders around the text, modify the text to suit your circumstances, adjust the margins so the customised paragraphs line up with the general text, match the font size and set the customised paragraphs in bold italic.

After completing the customisation, check the pagination of the whole document and insert page breaks if necessary to achieve continuity within Clauses. Then return to CONTENTS page to highlight and automatically revise listing and page numbers.

This customisation must be done carefully because tenderers will rely on G35 to price in their environmental obligations for the project.

RTA

QA SPECIFICATION G35

ENVIRONMENTAL PROTECTION
(MANAGEMENT PLAN)

RNIC-QA-G35

VERSION FOR:
DATE:

Edition 1 / Revision 4
September 2001

ROADS and TRAFFIC AUTHORITY NSW

CONTENTS

CLAUSE PAGE

RTA QA SPECIFICATION G35

ENVIRONMENTAL PROTECTION (MANAGEMENT PLAN)

REVISIONS TO EDITION 1

This document is based on RTA Specification G35 Edition 1 Revision 0 — April 1999.

All revisions to RTA G35 Ed 1 / Rev 2 (other than minor editorial and project specific changes) have been indicated by a vertical line in the margin as shown here.

PROJECT SPECIFIC CHANGES

Any project specific changes have been indicated in the following manner:

(a) Text which is additional to the base document and which is included in the Specification is shown in bold italics e.g. ***Additional Text***.

(b) Text which has been deleted from the base document and which is not included in the Specification is shown struck out e.g. ~~Deleted Text~~.

1 GENERAL

1.1 SCOPE

The Principal recognises that construction of the Works in accordance with the Contract will result in some unavoidable damage to the environment. The Contractor shall undertake all activities in such a manner as to limit damage to the environment to that which is unavoidable.

RTA G35 describes an environmental protection management process which the Contractor must implement to provide environmental protection during execution of the Works.

RTA G35 also identifies environmental conditions of approval for the project which the Contractor must satisfy.

The environmental protection requirements in RTA G35, together with the Conditions of Contract, are complementary to, and not in substitution for, any statutory requirements nor any of the technical requirements of the Specifications and Drawings.

Compliance with this Specification must continue while carrying out the work under the Contract, including application of a project specific Contractor's Environmental Management Plan (CEMP) - (refer to RTA G35 Clause 4).

1.2 REFERENCES

Unless otherwise specified the applicable issue of a reference document, except RTA specifications, shall be the issue current at the date one week before the closing date for tenders.

Standards, specifications and test methods are referred to in abbreviated form (eg AS 2865). For convenience, the full titles are given below:

Australian Standards

AS 1055	Acoustics – Description and measurement of environment noise
AS 3580	Methods of sampling and analysis of ambient air
ISO 9000	AS/NZS ISO 9000, Quality management systems – Fundamentals and vocabulary

British Standards

BS 7385	Evaluation and measurement for vibration in buildings

RTA Specifications

RTA G2	General Requirements
RTA G10	Control of Traffic
RTA G21	Occupational Health and Safety (Minor Works)
RTA G22	Occupational Health and Safety (Major Works)
RTA Q	Quality System
RTA R1 or R2	Erosion and Sedimentation Control
RTA R41	Clearing and Grubbing
RTA R162	Vegetation
RTA B30	Clearing, Excavation and Backfill for Bridgeworks

RTA Guidelines

Compliance Guidelines for Waste Minimisation and Management Act 1995 and the WMM Regulation 1996.

EPA Publications

Noise Control Manual
Green Waste Action Plan
Construction and Demolition Waste Action Plan
Industrial Noise Policy
Assessment, Classification and Management of Liquid and Non Liquid Wastes
Bunding and Spill Management
Approved Methods for Sampling and Analysis of Air Pollutants in NSW
Approved Methods for Sampling and Analysis of Water Pollutants in NSW
Regulation of Open Burning in NSW

Department of Housing Publication

Managing Urban Stormwater

ANZECC Publications

Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Over pressure and Ground Vibration - September 1990

1.3 DEFINITIONS

The following definitions are applicable:

(a) Environment": refer to the definition in the Conditions of Contract;

(b) The definitions used in ISO 9000 for nonconformance (see "nonconformity"), corrective action and preventive action, where they can be extended to apply to environmental management;

(c) "Pollution Incident": An incident during which there is, has been or is likely to be a leak, spill or other escape of a substance, as a result of which, water, air, noise or land pollution has occurred or is occurring, or is likely to occur.

2 ENVIRONMENTAL PROTECTION MANAGEMENT PROCESS

The Contractor shall undertake the following tasks:

1. Identify statutory requirements, compliance limits and adverse environmental effects which could occur during execution of the Works (refer to Clause 6).
2. Plan work activities and environmental protection measures to minimise environmental risks and comply with specified environmental protection requirements (refer to Clause 4.1). The CEMP is the outcome of this planning process.
3. Set up the planned environmental protection measures (refer to Clause 6) and train site personnel to be environmentally aware (refer to Clause 4.5).
4. Monitor the effectiveness of the environmental protection measures (refer to Clause 4.1.1e).
5. Set up response procedures which will initially contain then remedy any environmental damage which does arise (refer to Clause 4.4).
6. Improve environmental protection measures and revise the CEMP promptly when deficiencies are identified (refer to Clauses 3 and 4.1).

3 NONCONFORMANCE CONTROL, CORRECTIVE AND PREVENTIVE ACTION

The Contractor shall apply nonconformance control and corrective and preventive action procedures in accordance with RTA Q to address any environmental management deficiencies.

Nonconformance control shall apply to containment measures, clean-up and restoration of the environment as well as rectification of deficient environmental protection measures.

If surveillance or an audit by the Superintendent indicates a nonconforming product or event which has not been addressed by a Nonconformance Report, the Superintendent shall issue a 'Nonconforming Product Notification'. The Contractor shall deal with this nonconforming product or event in the same manner as if it had been identified by the Contractor.

The Contractor shall review, analyse and record the cause of all detected nonconformities and develop corrective action to eliminate the cause of nonconformities. This shall include both the determination of immediate action to prevent recurrence, as well as long term corrective action.

If surveillance or an audit by the Superintendent indicates that the CEMP does not comply with the provisions of the Contract or that an environmental risk is identified, the Superintendent shall issue a 'Corrective Action Request'.

The Contractor shall rectify any nonconformity or environmental risk notified by the Superintendent, shall initiate and implement corrective/preventive action to prevent recurrence of the nonconformity or remove the identified environmental risk and shall return the completed Corrective Action Request, all within seven days after the Corrective Action Request is given to the Contractor.

The Corrective Action Request shall be dealt with in accordance with the Contractor's procedure for handling customer complaints as required by Clause 4.10.

4 CONTRACTOR'S ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

4.1 PREPARATION OF CEMP

4.1.1 Scope

The Contractor is to prepare the Contractor's Environmental Management Plan (CEMP) for the works under the Contract. The CEMP shall cover the environmental protection practices, resources and sequence of activities required to comply with all the requirements of relevant environmental legislation, conditions of any applicable licence, approval and permit and this Specification.

The CEMP shall include the following, as applicable:

(a) assignment of responsibility for planning, approving, implementing, maintaining, assessing and monitoring of environmental controls (refer to Clause 4.2);

(b) copies of approvals, licences and permits to meet statutory requirements (refer to Clauses 6.2, 6.3);

(c) details of the potential environmental effects and the operational control measures which are to be implemented to comply with statutory requirements and provide environmental protection in accordance with the requirements of the Contract (refer to Clause 6);

(d) details of how environmental protection will be maintained for each subcontractor's activities (refer to Clause 4.6), including full details in accordance with (b) and (c) above;

(e) environmental monitoring programme and report forms for recording all monitoring activities, including periodic inspections and inspections essential for monitoring high risk events, of the adequacy of operational controls together with measurements for aspects where compliance limits have been specified;

(f) locations of environmental controls and environmentally sensitive areas, with particular reference to how the effectiveness of such controls will be ensured in any environmentally sensitive areas (refer to Clause 5);

(g) supplementary plans for environmental protection and operational control (including Erosion and Sedimentation Control Plan, Soil and Water Management Plan, Noise Management Plan, Waste Management Plan, Vegetation Management Plan and a Vibration and Air Blast Management Plan, if specified);

(h) how nonconformance control, corrective and preventive actions will be implemented and closed out (refer to Clause 3)

(i) communication procedures (refer to Clause 4.3);

(j) emergency response procedures for containing environmental damage and procedures for planning restoration activities (refer to Clause 4.4);

(k) environmental training programme (refer to Clause 4.5);

(l) authorised personnel and procedure for changing and issuing the CEMP (refer to Clause 4.2);

(m) details of how the changes to the environmental management documentation and data are to be identified and communicated to relevant project personnel;

(n) mechanism for regular evaluation of environmental performance (refer to Clause 4.13); and

(o) environmental auditing programme (refer to Clause 4.14).

The CEMP shall identify potential adverse environmental effects, applicable regulatory requirements and/or compliance limits for the physical, human and biological environment. Appropriate environmental protection measures shall be documented to keep environmental effects within compliance limits and shall show the person responsible for implementation in each case.

Three distinct phases of activity shall be addressed, as appropriate:

(i) before construction and site establishment;

(ii) during construction; and

(iii) after construction (including rehabilitation activities and maintenance of erosion and sedimentation controls).

4.1.2 Submission of Documents to the Superintendent

The CEMP shall be a "controlled" document and may be submitted progressively to suit construction stages in accordance with the specified requirement in RTA Q for the submission of the PROJECT QUALITY PLAN.

HOLD POINT

Process Held.	Commencement of Work not previously addressed by CEMP documents and authorised by earlier Hold Point release.
Submission Details.	At least 10 working days prior to the proposed commencement of work nominated in the submission by the Contractor, the Contractor shall submit its CEMP, addressing the issues listed in Clause 4.1 for the nominated work.
Release of Hold Point.	The Superintendent will consider the documents prior to authorising the release of the Hold Point for the nominated work. The Superintendent may release work covered by the CEMP progressively, consistent with the Contractor's programme for the Works.

The CEMP shall be either incorporated as part of the PROJECT QUALITY PLAN (refer to RTA Q) or be consistent with the PROJECT QUALITY PLAN. Appropriate cross-referencing to the Contractor's quality system and PROJECT QUALITY PLAN shall be included.

The Contractor shall revise the CEMP and implement better environmental protection measures if the original protection measures prove to be not fully effective (refer to Clause 3).

The submission of copies of the CEMP and environmental management documents shall be as specified in RTA Q for quality system documentation.

Where submission to a statutory authority is nominated in Annexure G35/1 or directed by the Superintendent, an additional copy of the CEMP at each stage, including any proposal for staged submission, for each of the nominated authorities shall be submitted to the Superintendent. The staging of CEMP submissions shall comply with the requirements of the nominated authorities. The submissions of the CEMP at each stage shall contain sufficient information and detail explainthe proposed environmental protection measures for the understanding of the nominated authority.

The CEMP shall include a matrix or index which clearly shows where the environmental protection requirements of this Specification have been addressed in the submitted documents.

4.2 RESOURCES

The CEMP shall indicate the names, responsibilities and authority of the Contractor's site management personnel who have primary responsibility for implementing the CEMP for the works under the Contract, monitoring its effectiveness, rectifying any environmental deficiencies, controlling further construction activities until deficiencies are rectified and keeping the Contractor's environmental records. The Contractor shall provide a sufficient level of resources at the site to ensure effective environmental management throughout the duration of the Contract.

When the conditions of approval require a full time environmental officer, provide details of the requirements, addressing relevant specific requirements of the conditions, skills and training of the person to:
appreciate the environmental issues and proposed environmental measures of the project and monitor and audit environmental performance;
provide advice on environmental issues and improvements to environmental performance; and
liaise with EPA and the Superintendent on environmental issues.

The Contractor shall nominate a full time member of the Contractor's site management team to be the authorised contact person for communications with the Superintendent and the Environment Protection Authority (EPA) on environmental matters. This person shall be fully conversant with the CEMP, operational controls, monitoring programme, complaints, pollution incidents, control of environmental nonconformances and environmental records and shall promptly provide access to or copies of environmental records to the Superintendent as required.

Where the Contractor has established corporate responsibilities for environmental management, the relationship between the Contractor's site management personnel with environmental responsibility and the corporate environmental functions shall be detailed in the CEMP.

4.3 COMMUNICATION

Establish site communication, external communication and communication with subcontractors in relation to notification of environmental problems and emergencies. Maintain a current list of relevant contact names, telephone numbers and facsimile numbers for the project.

4.4 EMERGENCY PLANNING AND RESPONSE

The CEMP shall include details of:

(a) a list of the Contractor's key emergency response personnel showing responsibilities and contact details including all-hours telephone numbers;

(b) details of emergency services (eg. ambulance, fire brigade, spill clean-up services);

(c) communications strategy (internal and external) - (refer to Clause 4.3);

(d) details of containment measures to be taken in the event of emergency situations that may arise during the work under the Contract; and

(e) location on site of the register and information on hazardous materials (as defined in the Waste Minimisation and Management Act) including MSDS sheets.

4.5 TRAINING, AWARENESS AND COMPETENCE

The Contractor shall ensure that all staff and subcontractors working on the site are provided with environmental training to achieve a level of awareness and competence appropriate to their assigned activities. Persons, including subcontractors' personnel, without appropriate environmental training are not permitted to work on the site.

The Contractor shall document a site specific induction and training plan and induction and training procedures to describe the minimum level of training and/or qualifications staff and subcontractors working on site shall require, who is to be trained, when and how. This procedure shall form part of the CEMP.

The Contractor shall train relevant employees to use the plant and materials on site efficiently and minimise all potential environmental impacts including noise, air and water quality, waste generation, minimisation and disposal, effluent control and management and contamination of land and groundwater.

The Contractor shall establish and maintain a register of environmental training carried out including dates, names of persons trained and trainer details.

4.6 SUBCONTRACTORS

The Contractor, when complying with the purchasing requirements of RTA Q, shall include environmental management requirements in the planning, selection and management of subcontractors.

When the Contract specifies RTA Prequalification for a subcontractor and the Prequalification level nominated includes environmental management requirements, the subcontractor shall apply its RTA Accredited environmental management system for its construction activities.

The Contractor shall undertake appropriate monitoring of each subcontractor's work to ensure that the specified environmental protection requirements are effectively implemented.

For subcontracted work, the Contractor shall include in the CEMP the processes the Contractor will implement to ensure subcontractor compliance, including details of:

(a) the duties of each subcontractor for planning, implementing and monitoring environmental protection measures and for keeping environmental records;

(b) the duties the Contractor will retain for environmental protection of subcontracted work;

(c) how environmental protection measures on subcontracted work interface with adjacent work areas, as applicable; and

(d) the Contractor's surveillance programme to monitor effectiveness of each subcontractor's environmental protection measures.

4.7 HOURS OF WORK

Any approval by the Superintendent (refer to Clause 32 of the Conditions of Contract) to extend working hours or working days (except for Saturday work between 8.00am - 1.00pm), shall be conditional on the Contractor advising the EPA in writing then submitting a copy of the advice to the Superintendent (together with EPA's concurrence, where this is a condition of any consent by the Department of Urban Affairs and Planning (DUAP)) at least 2 working days before the commencement of the extended period.

List any additional restrictions on working hours such as noise generating activities

4.8 COMMUNITY LIAISON

The Contractor shall notify local residents about new or changed construction activities which will affect access to their properties or otherwise significantly disrupt residents' use of their premises. Such notification shall be made at least 5 working days before commencing work affecting residents and shall advise the nature of the work, why it is necessary, indicate the expected duration plus any changes to arrangements for traffic or property access. The name and contact telephone number of the Contractor's representative who can respond to resident concerns shall also be provided.

On each instance when approval to extend working hours is being sought, the Contractor shall inform residents by letter of the extent, times and duration of the proposed work outside normal working hours prior to requesting approval from the EPA (where required) and the Superintendent. A contact name and telephone number shall be included so residents can notify any concerns about altered working hours.

Any concerns raised by residents shall be addressed in accordance with Clause 4.10.

4.9 LIAISON WITH EPA

The Contractor shall nominate in the CEMP at least two (2) persons (and their contact telephone numbers) who will be available to the EPA on a 24-hour basis and who have authority to take immediate action to shut down any activity, or to effect any pollution control measure, as directed by an authorised officer of the EPA. The Contractor (if nominated in Annexure G35/1) or the licensee (if an Environmental Protection Licence is issued) shall notify the EPA Regional Manager of these contacts.

The Contractor must notify the EPA Regional Manager (or the EPA Pollution Line on telephone 131555 should the incident occur outside normal EPA business hours) of pollution incidents on or around the site which have occurred in the course of the Contractor's activities (to comply with the POEO Act - refer to Clause 6.2), in the following circumstances:

a) if the actual or potential harm to the health or safety of human beings or ecosystems is not trivial,

b) if actual or potential loss or property damage (including clean-up costs) associated with a pollution incident exceeds $10,000.

The Contractor shall notify the Superintendent verbally within 2 hours and in writing within 24 hours of any pollution incidents which involve the EPA.

The Contractor shall prepare a report on each occasion when the site is visited by the EPA, notifying the Superintendent of the purpose and outcome of the EPA visit and of all actions being taken by the Contractor in response to the EPA visit. This report shall be submitted to the Superintendent within 5 working days of the EPA site visit.

4.10 COMPLAINTS

The Contractor shall, within one (1) working day of receiving a complaint about any environmental issue, including pollution, arising from the work under the Contract, supply a written report to the Superintendent detailing the complaint and immediate action taken to alleviate the problem. A final report with proposed measures to prevent the occurrence of a similar incident shall be submitted to the Superintendent within 5 working days.

The Contractor shall keep a register of all such complaints, together with the following records:

(a) date, time and nature of complaint;

(b) type of communication (telephone, letter, meeting, etc);

(c) name, address, contact number of complainant;

(d) nature of complaint;

(e) action taken in response; and

(f) any monitoring to confirm that the complaint has been satisfactorily resolved.

4.11 RECORDS OF ENVIRONMENTAL ACTIVITIES

The Contractor shall maintain (as part of the quality records in accordance with RTA Q Clause 4.16) legible records of all environmental control issues and activities required under this Specification.

These records shall be held for at least 5 years after the date of issue of the Final Certificate and be accessible to staff of the Superintendent and Principal and to authorised EPA officers.

4.12 CONSEQUENCES OF NONCOMPLIANCE

If the Contractor fails to comply with its environmental obligations under the Contract, including failure to:

(a) comply with, and to ensure compliance by subcontractors with, any requirements of the Specification involving environmental control or rehabilitation; or

(b) act promptly when environmental controls are observed not to be effective by the Contractor, the Superintendent, or by any Statutory Authority having jurisdiction over the Works,

a Hold Point may apply.

HOLD POINT	(Where required by the Superintendent)
Process Held.	The Process/es relevant to the Noncompliance.
Submission Details.	Verification that the failure has been corrected and measures have been implemented to prevent recurrence.
Release of Hold Point.	The Superintendent will consider the submitted documents and may inspect the work subject to the failure prior to authorising the release of the Hold Point.

4.13 PROJECT ENVIRONMENTAL PERFORMANCE

The effectiveness of the Contractor's environmental protection measures shall be evaluated for compliance by the Contractor during the Contract, at least once per month. The minimum frequency for performance evaluation may be reduced by the Superintendent when the Contractor submits a risk based review and evidence of consistent compliance. The Contractor shall keep detailed records of the environmental performance evaluations and provide a summary report of the evaluations at intervals of six months or when requested by the Superintendent.

4.14 ENVIRONMENTAL AUDITING

4.14.1 Audits During Construction

The Contractor shall undertake compliance auditing of the CEMP against the requirements of this Specification while construction is in progress and to verify that the work under the Contract is in compliance with the CEMP. The first audit shall be scheduled within the first three months from the commencement of work on site and then at least every six months. The Superintendent may require more frequent auditing if environmental performance evaluations (refer to Clause 4.13) indicate significant deficiencies with the environmental management of the site. The Contractor shall keep detailed records of these audits and the audit reports.

4.14.2 Post Completion Audit

Within 28 days after the issue of the Certificate of Practical Completion, the Contractor shall carry out an environmental compliance audit, including site inspection and full review of environmental records, to identify any environmental protection measures (refer to Clause 4.1) which have not yet been finalised. The condition of existing environmental protection controls shall be recorded and environmental protection controls which need ongoing management shall be itemised.

An audit report shall be submitted promptly to the Superintendent, together with the Contractor's written response on how all actions and issues raised in the audit will be addressed.

5 ENVIRONMENTALLY SENSITIVE AREAS

The Contractor shall pay particular attention to ensuring that environmental protection measures are effective in any environmentally sensitive areas identified by the Principal or detected during the progress of the Contract.

The Principal has identified the following environmentally sensitive areas:
List significant items identified in REF or EIS and include construction related problems/risks.
Delete this paragraph if there are no significant items.

6 ENVIRONMENTAL PROTECTION REQUIREMENTS

6.1 GENERAL

The Contractor shall comply with all the environmental protection requirements specified in Clause 6. These are minimum requirements based on the environmental conditions of approval for the project. The documents listed in Annexure G35/1 are available on request and for the Contractor's information only; they do not form part of the Contract.

The Contractor shall ascertain any additional environmental protection requirements resulting from the Contractor's operations and incorporate these additional requirements in the CEMP.

Particular measures to protect the environment which are specified may, with the Superintendent's approval, be substituted by measures which achieve the same environmental result but which are superior in terms of cost or operational efficiency.

6.2 LEGISLATION

6.2.1 Relevant Legislation

The CEMP shall identify the Contractor's obligations under environmental legislation which is relevant to the work under the Contract including but not limited to the following (as amended):

Environmental Planning Legislation

Environmental Planning and Assessment Act, 1979 (NSW)

Local Government Act, 1993 (NSW)

Roads Act, 1993 (NSW)

Soil Conservation Act, 1938 (NSW)

National Parks and Wildlife Conservation Act, 1975 (Cth)

Conservation and Heritage Legislation

Native Vegetation Conservation Act, 1997 (NSW)

Coastal Protection Act, 1979 (NSW)

National Parks and Wildlife Act, 1974 (NSW)

Threatened Species Conservation Act, 1995 (NSW)

Environment Protection and Biodiversity Conservation Act, 1999 (Cth)

Fisheries Management Act, 1994 (NSW)

Marine Pollution Act, 1987 (NSW)

Noxious Weeds Act, 1993 (NSW)

Rivers and Foreshores Improvement Act, 1948 (NSW)

Water Act, 1912 (NSW)

Heritage Act, 1977 (NSW)

Australian Heritage Commission Act, 1975 (Cth)

Aboriginal and Torres Strait Islander Heritage Protection Act, 1984 (Cth)

Pollution and Waste Management Legislation

Protection of the Environment Operations Act, 1997 (NSW)

Waste Minimisation and Management Act, 1995 (NSW)

Contaminated Land Legislation

Contaminated Land Management Act, 1997 (NSW)

Unhealthy Building Land Act, 1990 (NSW)

Fire Control

Rural Fires Act, 1997 (NSW)

Hazardous Substances

Environmentally Hazardous Chemicals Act, 1985 (NSW)

Dangerous Goods Act, 1975 (NSW)

Road and Rail Transport (Dangerous Goods) Act, 1997 (NSW)

6.2.2 Protection of the Environment Operations Act (POEO Act)

The POEO Act came into force in July 1999. It has repealed and replaced the following NSW legislation:

- Clean Air Act, 1961
- Clean Waters Act, 1970
- Pollution Control Act, 1970
- Noise Control Act, 1975
- Environmental Offences and Penalties Act, 1989

The Waste Minimisation and Management Act, 1995 has also been substantially amended to remove the licensing provisions that are now found under the POEO Act.

6.3 Approvals, Licences and Permits

The following approvals, licences and permits will be obtained by the Principal:

List any or insert NIL

The Contractor shall ascertain from the appropriate authorities what approvals, licences and permits are required.

Each necessary approval, licence and permit not obtained by the Principal shall be obtained by the Contractor prior to the commencement of any work which relates to that approval, licence or permit. This constitutes a HOLD POINT in accordance with Clause 4.1.

The Contractor must comply with the terms and conditions of all approvals, licences and permits.

6.4 Access and Traffic Management

The Contractor shall identify construction activities and site access requirements which are likely to:

(a) interfere with traffic flow and pedestrian thoroughfare through and adjacent to the site; and/or

(b) interfere with access to nearby properties.

The Contractor shall plan and implement traffic control measures in accordance with RTA G10 to minimise disruption to traffic and pedestrians.

6.5 Soil and Water Management

6.5.1 Erosion and Sedimentation Control

The Contractor shall plan and carry out the whole of the Works to avoid erosion and sedimentation of the site, surrounding country, watercourses, waterbodies, wetlands and stormwater drainage systems (refer to RTA R1 or RTA R2). This shall include careful location of site compounds (refer to RTA G2), access tracks, stockpile sites and temporary work areas plus staging of work to minimise the extent and duration of disturbance to vegetation.

The Contractor shall programme construction activities to minimise the area of disturbed ground which is exposed to erosion at any one time.

Procedures for controlling the following activities on or around the site shall also be included in the CEMP, if applicable to work under the Contract:

(a) waste water discharge from dewatering, surface washing, grit blasting, washing vehicles and plant and washing out of concrete mixers and concrete trucks;

(b) containment of sediment from excavation in waterways;

(c) prevention of mud and litter being deposited on trafficked roadways; and

(d) maintenance and cleaning of sedimentation works.

6.5.2 Soil Stockpile Management

The CEMP shall detail the measures that will be implemented to protect soil stockpiles from erosion by wind and rain. In addition, temporary sediment control fences shall be installed on the downhill side of stockpile sites and diversion drains on the uphill side of stockpile sites prior to stockpiling material. If necessary, the Contractor shall construct temporary sediment ponds to capture any turbid runoff from these sites.

Stockpiled materials shall not be placed inside vegetation protection areas or within 5 metres of retained trees.

Insert any project specific soil management requirements

6.5.3 Water Quality

The Contractor shall comply with the requirements of the POEO Act, requirements of local water authorities and all other relevant laws and by-laws in force from time to time in the State of New South Wales.

The Contractor shall be guided by the Department of Housing's "Managing Urban Stormwater, Soils and Construction".

The Contractor shall provide adequate controls to ensure that any water entering the natural watercourse system or stormwater drainage system from areas disturbed by the Contractor complies with any water quality criteria nominated by the EPA for the project.

Insert all water quality compliance limits as detailed in the REF, Decision Report or EPA approval

Where monitoring is required, the monitoring shall comply with the EPA Approved Methods for Sampling and Analysis of Water Pollutants in NSW.

Potentially hazardous activities, including washing out of concrete delivery vehicles, washing down of construction plant, refuelling plant and handling hazardous chemicals are only permitted on site at appropriate locations that have adequate environmental protection measures and are located more than 20 metres away from stormwater drainage systems or natural watercourses. Washing out of concrete delivery vehicles off-site is only permitted at locations approved for that purpose by the appropriate authority.

6.5.4 Water Extraction

The proposed water source(s) which the Contractor intends to use for construction activities (such as dust control, earthworks/pavement compaction, on-site concrete batching and the like) shall be identified in the CEMP.

6.6 Air Quality

The Contractor shall comply with the requirements of the POEO Act and all other relevant laws and by-laws in force from time to time in the State of New South Wales.

The Contractor shall ensure that all its construction facilities erected on the site of the Works are designed and operated to minimise the emission of smoke, dust, cement dust and other substances into the atmosphere. The Contractor shall comply with any conditions of licences or approvals in relation to maximum air pollutant levels (refer to Clause 6.3).

Insert all air quality compliance limits as detailed in the REF, Decision Report or EPA approval

Where monitoring is required, the monitoring shall comply with the EPA Approved Methods for Sampling and Analysis of Air Pollutants in NSW.

The Contractor shall employ construction methods that will keep the air pollution to a minimum and apply measures including those listed below, as required, to ensure that airborne pollutants from the Contractor's activities do not cause undue disruption or inconvenience in the vicinity of the Works:

(a) the spraying of earthwork formations and roads with water or other suitable liquids approved by the Superintendent;

(b) the removal of mud from the wheels and bodies of haulage equipment before it enters public roads or other sealed pavements by means of facilities such as truck washdowns and wheel washes;

(c) the removal of mud spilt by construction equipment on to public roads or other sealed pavements;

(d) the establishment of suitable cover crop or provision of other covering over topsoil stockpiles;

(e) the erection of dust screens around and/or spraying of stockpiles with suitable stabilising agents;

(f) fitting rock drilling equipment with dust collection devices;

(g) cease dust generating activities which cannot be adequately controlled by water or other means;

(h) maintaining dust control equipment so that this equipment is available when required including periods of dust generating activities or high wind speed. , and

(j) undertaking periodic visual checks of exhaust systems emissions.

The materials and methods used for effective dust control, including the monitoring arrangements, shall be detailed in the CEMP. If dust control measures are not adequately restricting the generation of dust under the prevailing conditions at any time, the Contractor shall re-programme the work activities which are causing the dust.

6.7 NOISE CONTROL

When developing and implementing management strategies, the Contractor shall make all practical efforts to comply with the requirements of the POEO Act, and, the EPA Noise Control Manual Chapter 171 "Noise Control Guidelines for Construction Site Noise". Individual items of plant and equipment shall comply with the requirements of Chapters 119 and 157 of the EPA Noise Control Manual The Contractor shall be guided by the EPA Guideline, Industrial Noise Policy. Where the guidelines are, or are likely to be exceeded, the Contractor shall apply a practical and economical combination of noise control measures to manage the impacts of construction noise in consultation with, and in accordance with, the requirements stipulated by the EPA.

Insert all noise compliance limits as detailed in the REF, Decision Report or EPA approval

When construction will involve the use of heavy equipment and significant noise generating activities, the Contractor shall, as much as practicable, prevent noise from being a nuisance to neighbouring residents. The Contractor shall prepare a Noise Management Plan as part of the CEMP to show how construction will be carried out to minimise the impact of noise from the Contractor's operations on adjacent properties. This could include operational controls such as:

(i) substitution by an alternative process

(ii) restricting times when noisy work is carried out

(iii) placement of work compounds, parking areas, equipment and material stockpile sites away from noise-sensitive locations

(iv) where noise barriers/walls are to be constructed, program this as early as possible to reduce noise impacts from other construction work on neighbouring residents

(v) screening or enclosures

(vi) consultation with affected residents

The Noise Management Plan shall cover all significant noise generating activities.

HOLD POINT

Process Held.	Offending process producing noise at adjacent property above specified noise levels.
Submission Details.	Nonconformance Report and Revised Noise Management Plan.
Release of Hold Point.	The Superintendent will consider the submitted documents prior to authorising the release of the Hold Point.

All construction plant and equipment used on the Works must, in addition to other requirements, be:

(a) fitted with properly maintained noise suppression devices in accordance with the manufacturer's recommendations;

(b) maintained in an efficient condition; and

(c) operated in a proper and efficient manner.

6.8 GROUND VIBRATION AND AIR BLAST

The Contractor shall take due care in all construction activities to prevent damage to adjacent public utilities, structures and buildings resulting from construction vibration and air blast. To protect the amenity of the occupiers of buildings the blasting activities shall be carried out to meet the ANZECC Guidelines *"Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Over pressure and Ground Vibration - September 1990"*. Where the amenity guidelines are likely to be exceeded, the Contractor shall apply a practical and economical combination of vibration control measures to manage the impacts in consultation with, and in accordance with, the requirements stipulated by the EPA.

The contractor shall make all practical efforts to meet the requirements of Chapter 174 "Vibration in Buildings" of the EPA Noise Control Manual.

To avoid structural damage, the activities shall be carried out to meet the requirements of BS 7385.

Include any specific requirements from REF or consent conditions

Where construction activities including blasting, pile driving, excavation by hammering or ripping, dynamic compaction or demolition of structures may cause damage through vibration or air blast to nearby public utilities, structures, buildings and their contents or if the items are located within the distance from the construction activity as specified in Annexure G36/2, a Building Condition Inspection of these items must be undertaken.

The Inspection must be conducted in the presence of the Superintendent, by inspectors acceptable to the Contractor's insurance company, to determine and record the existing condition of all structures required to be surveyed. A written report of the Building Condition Inspection supported by photographs, together with a list of any existing defects in the items, shall be submitted to the owner of each item and to the Superintendent before the construction activity commences.

The Contractor shall prepare a Vibration and Air Blast Management Plan as part of the CEMP to show how construction will be carried out to minimise the impacts from the Contractor's operations on adjacent properties. This could include operational controls such as:

(a) substitution by an alternative process

(b) restricting times when work is carried out

(c) screening or enclosures

(d) consultations with affected residents

The Vibration and Air Blast Management Plan shall detail how construction vibration and air blast will be managed for various plant items working adjacent to buildings. Records shall be kept as evidence of compliance with these construction vibration and air blast restrictions.

HOLD POINT	
Process Held.	Commencement of blasting, pile driving, excavation by hammering or ripping, dynamic compaction or demolition operations or other activities which may cause damage through vibration or air blast.
Submission Details.	Copy of Building Condition Inspection.
Release of Hold Point.	The Superintendent will consider the submitted documents prior to authorising the release of the Hold Point.

Notwithstanding the above, the Contractor shall be liable for any accident or damage to any property, person, or thing resulting from vibration and air blast from construction activity.

6.9 VEGETATION

The Contractor shall preserve existing trees, plants, and other vegetation that are to remain within or adjacent to the Works and shall use every precaution necessary to prevent damage or injury thereto (refer to RTA R41 or B30). The Contractor shall include in the CEMP, and then implement, procedures for monitoring clearing and grubbing operations to ensure that trees and other vegetation are not unnecessarily cleared or otherwise disturbed.

Include any specific requirements from REF or consent conditions

Construction methods that will minimise the spreading or introduction of weeds caused by construction activity on or around the site must be employed. Procedures for controlling the spreading or introduction of weeds caused by works under the Contract, including the monitoring arrangements, shall be included in the CEMP.

Example: List or cross-refer to specific topsoil management requirements

The reuse of weed contaminated topsoil by surface spreading is not permitted. Where necessary, horticultural advice must be sought to determine whether the type and/or proportion of weed cover is significant for the topsoil to be deemed weed contaminated.

The Contractor shall ensure that all site personnel observe the limits of clearing and are made aware of the importance of any trees of significant value.

If RTA R162 is included in the Contract, all areas disturbed by the Contractor's construction activities (such as areas for compounds, material storage, access and haul roads and the provision of the Superintendent's accommodation) shall be restored in accordance with that Specification.

If RTA R162 is not included in the Contract, on completion of the Works, all areas disturbed by the Contractor's construction activities (such as areas for compounds, material storage, access and haul roads and the provision of the Superintendent's accommodation) shall be restored to conditions similar to their original condition. Restoration shall include ripping, topsoiling of the area, weed control and seeding, planting, watering and maintenance.

6.10 FAUNA

The Contractor shall include habitat conservation measures in the CEMP.

All native wildlife shall be protected. No firearms will be allowed on site except for security purposes permitted by law.

Where the Contractor proposes to remove vegetation during the nesting and breeding season, all trees to be removed shall first be inspected to establish whether nesting of native fauna is evident. If so, advice shall be sought from an ecologist on whether disturbance of fauna is feasible. Disturbance of fauna shall only proceed under the guidance of an ecologist and with the concurrence of NPWS where threatened species occur.

Example: (modify to suit any conditions of consent or delete if not applicable)

The following protected wildlife has been identified on, and in the vicinity of, the site: (list any from REF)

Tree hollows affected by clearing (refer to RTA R41) shall be relocated to suitable undisturbed bushland sites within the Bypass corridor.

Winding Creek is designated as a wildlife corridor. The Contractor shall conduct its operations to minimise any disturbance to fauna in the vicinity of Winding Creek and shall erect suitable fencing to assist with "funnelling" fauna towards Winding Creek.

Injury to protected wildlife caused through or because of any construction activity shall be reported by the Contractor to ???

6.11 FIRE PRECAUTIONS

6.11.1 General

The Contractor shall at all times comply with the requirements of the Rural Fires Act, 1997 and the Local Government Act, 1993.

The Contractor shall be responsible for any damage to fences, trees, grass, cultivation, buildings or other property caused by fires lit for any purpose in connection with the Contract.

All items of plant used during proclaimed high fire danger periods that could discharge sparks shall be fitted with spark arresters. No cutting, welding, grinding or other activities likely to generate fires shall be undertaken in the open on "total fire ban" days.

6.11.2 Burning Off

Annexure G35/1 indicates whether the Principal will allow disposal of cleared and grubbed vegetation by burning off, subject to the Environment Operations (Control of Burning) Regulation 2000. If so, the Contractor is still required to obtain approval from other relevant Authorities.

Even if burning off is permitted, the Contractor shall utilise recycling or alternative uses of cleared vegetation where practical. Where no alternative method of disposal is available to the Contractor, the Contractor must obtain a fire permit from the relevant Statutory Authorities and comply with the requirements of the Statutory Regulations. The Contractor shall be guided by the EPA guideline Regulation of Open Burning in NSW.

On receipt of a fire permit, the Contractor must notify the Superintendent and occupiers of adjoining properties of the proposed burning off operation at least twenty four (24) hours before burning off is commenced. The burning off operation must be controlled so that:

(a) vegetation outside the limits of clearing is not damaged;

(b) fences, buildings or other property is not damaged; and

(c) smoke does not cause a traffic hazard, nuisance nor contravene air quality requirements.

Consent to any burning operations shall be conditional upon the provision of fire fighting equipment as required to ensure the safety of public and property. The Contractor shall submit its proposals in this regard and the fire permit to the Superintendent and shall obtain the Superintendent's consent prior to commencing any burning off.

6.12 Herbicides and Other Contaminants

The Contractor shall plan and execute the work so as to minimise the possibility of pollution of areas adjoining the construction area from contaminants such as petroleum products, trade waste, garbage and other noxious substances.

The use and storage of any herbicide or other chemical classified as a Dangerous Goods Class 6 Poison shall be strictly in accordance with the manufacturer's instructions and the relevant Materials Safety Data Sheets (MSDS).

6.13 Spillage Prevention and Containment

Transporting, handling and storage methods that will prevent chemical, fuel and lubricant spillage on or around the site caused by construction activity must be employed. Polluting or permitting pollution of land or waterways by a chemical, fuel or lubricant, or any waste material is not permitted.

Refuelling or maintenance of plant and equipment, mixing of cutting oil with bitumen, or any other activity which may result in the spillage of a chemical, fuel or lubricant on any location with direct drainage to a waterway, is not permitted without appropriate temporary bunding being provided. Refuelling shall not occur in the vicinity of waterways or environmentally

sensitive areas. Refuelling operations shall not be left unattended while in progress. Adequate quantities of suitable material to counteract spillage must be kept readily available.

Chemical, fuel and lubricant storage areas must be suitably located and protected to minimise the impact of any spillage or contamination on or around the site. Storage areas shall not be located within 20 metres of natural or built drainage lines, flood prone areas, or on slopes steeper than 1:10 or near vegetated areas. Impervious bunds of sufficient capacity to contain at least 120% of the stored chemical, fuel and lubricant volume, must be constructed around all chemical, fuel and lubricant storage areas. Drainage of the bunded areas must be provided with lockable gate valves. The gate valves must remain closed and locked at all times except during the controlled removal of stormwater from the bunded area. The valves must be attended to at all times while they are unlocked and/or open. An effective alternative method of draining the bunded area is permitted where the bunded area cannot be drained by gravity.The Contractor shall be guided by the EPA guideline Bunding and Spill Management.

Before discharging any stormwater from bunded areas, the Contractor shall verify that the water complies with any water quality criteria nominated by the EPA (refer to Clause 6.5). The Contractor shall arrange appropriate treatment if the water quality is not suitable for discharge.

The Contractor shall keep records of all water quality checks, discharges and any remedial actions.

Procedures for controlling and removing chemical and fuel and lubricant spillage on or around the site caused by works under the Contract must be included in the CEMP. Procedures for containing spillage which may be caused by the following activities on or around the site must also be included if applicable to work under the Contract:

(a) refuelling or maintenance/cleaning of plant and equipment including concrete agitators, bitumen spraybars and asphalt pavers;

(b) on-site batching of concrete or asphalt;

(c) mixing of cutting oil and additives with bitumen; and

(d) application of liquid membranes, including paint and thermoplastic, resin, emulsion, precoat agent and curing compound.

6.14 Indigenous Heritage

Should any relic, artefact or material (including skeletal remains) suspected of being of Aboriginal origin be encountered, the Contractor shall cease all construction work that might affect the relic, artefact or material and protect the relic, artefact or material from damage or disturbance. The Contractor shall notify the Superintendent immediately, who will then arrange for an officer of the National Parks and Wildlife Service to be consulted.

Example: Protect the aboriginal cave site and surroundings located on the banks of Shark River approximately 50 m upstream of the bridge site from construction related activities.

This is to include the provision of a man-proof fence located as shown on the Drawings and constructed in accordance with the provisions of RTA R161.

The fencing shall be paid for in accordance with RTA R161.

6.15 NON-INDIGENOUS HERITAGE

Should any item be encountered which is suspected to be a relic of heritage value, the Contractor shall cease all construction work that might affect the item and protect the item from damage or disturbance. The Contractor shall notify the Superintendent immediately, who will then arrange for an officer from the Heritage Office to be consulted.

Under the Heritage Act, 'relic' means any deposit, object or material evidence:

(a) which relates to the settlement of the area that comprises NSW, not being aboriginal settlement; and

(b) which is 50 or more years old.

Detail specific requirements for any sites identified in REF

6.16 CONTAMINATED GROUND

The Contractor shall promptly notify the Superintendent and the EPA of any suspected or potentially contaminated ground exposed during construction activities.

HOLD POINT

Process Held.	Activities within the vicinity of suspected or potentially contaminated ground.
Submission Details.	Notification to Superintendent and EPA of suspected or potentially contaminated ground exposed during construction activities.
Release of Hold Point.	The Superintendent will assess the suspected or .potentially contaminated ground and direct protection measures, as appropriate, prior to authorising the release of the Hold Point.

The Contractor shall comply with the Contaminated Land Management Act in relation to disturbance or treatment of potentially contaminated ground.

Detail specific requirements for any sites identified in REF

The Contractor shall install any control measures needed to divert surface runoff away from contaminated ground and to treat any surface runoff contaminated by exposure to contaminated ground.

6.17 WASTE MANAGEMENT

The CEMP shall include a Waste Management Plan detailing how the Contractor will manage and dispose of any waste generated during execution of the Contract including, but not limited to, green waste, office waste and construction and demolition waste. This shall include compliance with the POEO Act for any non-licensed as well as licensed waste activities which involve the generation, storage and/or disposal of waste, as applicable. In preparing the Waste Management Plan, the Contractor shall be guided by the following publications:

(a) Compliance Guidelines for Waste Minimisation and Management Act 1995 and the WMM Regulation 1996;

(b) Green Waste Action Plan and Construction and Demolition Waste Action Plan; and

(c) Assessment, Classification and Management of Liquid and Non Liquid Wastes.

Effluent from the amenities for which the Contractor is responsible shall be discharged into the local sewerage system, where available. Otherwise, septic tanks and portable self-contained toilets of suitable capacity may be used subject to acceptable arrangements for disposal of the effluent. Pit toilets are not permitted.

Littering or dumping of unwanted waste or disposal of surplus construction materials including bitumen, asphalt or concrete, or permitting such activities on any land on or around the site, is not permitted unless specifically permitted in the Specifications.

Appropriate receptacles must be provided for depositing of litter and other waste materials, and their contents disposed off site at a suitable waste disposal station on a regular basis. The disposal of chemical, fuel and lubricant containers, solid and liquid wastes shall be in accordance with the requirements of the local Council or the EPA.

The Waste Management Plan shall address measures to consider use of recycled materials and to avoid or minimise waste, where permitted, when designing and planning the work or purchasing materials.

The Waste Management Plan shall cover transport and disposal arrangements including suitable facilities for storing waste materials and for monitoring the waste control measures.

A Waste Management Register shall be kept detailing type of waste picked up, amounts, date/time, by whom, and where it was disposed.

Example: Detailed requirements for the preparation of the Waste Management Plan

The Contractor shall include in the Waste Management Plan the percentage of reused, recycled or substituted materials as detailed in the following specifications:

3256	*Comminuted Scrap Rubber*
3151	*Cover Aggregate for Sprayed Bituminous Surfacing*
R116	*Asphalt (Dense Graded and Open Graded)*
R84	*Continuously Reinforced Concrete Base*

This list may be added to as appropriate to incorporate any specifications that allow the reuse, recycling or substitution of materials.

6.18 RESTORATION OF SITE

The Contractor shall reinstate all areas disturbed by the Contractor's construction operations. Restoration shall include remedying of any ground contaminated by incidents such as oil or fuel spills (particularly in fuel storage areas), appropriate revegetation (refer to Clause 6.9) and any other measures to restore the land to a condition at least similar to the existing condition before disturbance.

7 SUPERINTENDENT'S SURVEILLANCE AND AUDITS

Environmental management audits by the Superintendent may be conducted on a scheduled basis on all aspects of the CEMP and will be performed in accordance with recognised audit procedures.

The Superintendent shall give the Contractor at least five days notice that an environmental management audit is to be conducted and shall advise the scope of this audit.

Surveillance and process audits by the Superintendent may be conducted at any time.

The Superintendent may authorise environmental specialists as agents of the Principal to enter the site for the purposes of inspection and liaison with the Superintendent and to attend appropriately convened site meetings to discuss aspects of the work.

If surveillance or an audit indicates a significant nonconformance of environmental requirements, the Superintendent shall be entitled to conduct an environmental management audit at twenty four hours notice to the Contractor.

The Contractor shall make available at the site suitable facilities to accommodate an audit team of three persons. The cost of providing such facilities shall be borne by the Contractor.

8 PAYMENT

Except where specific pay items are provided, all costs associated with environmental protection shall be deemed to be included in the rates and prices generally for the work under the Contract.

Measurement for payment defined in other specifications shall, unless otherwise stated in RTA G35, exclude works which are only carried out to comply with RTA G35.

NOTES TO TENDER DOCUMENTER: (Delete this boxed text after drafting G35)

Clause 8 Payment:
The documenter may include Pay Items for specific items such as monitoring of dust, monitoring of water quality, building condition inspections, etc

Example:

Pay Item G35 P1 - Building Condition Inspections

This is a provisional item.

Payment will be made for all activities associated with performing and reporting building condition inspections in accordance with G35 Clause 6.8. The unit of measurement is "each" building inspected.

Pay Item G35 P2 - Site Monitoring

Payment will be made for all activities associated with the measurement and provision of records associated with the site monitoring required under G35 Clauses 6.5 to 6.8 under the following items:

a) Water Quality

b) Air Pollution

c) Noise

d) Ground Vibration

Progress payments shall be made on a pro rata basis, having due regard to the duration of the Contract.

ANNEXURE G35/1 - SUPPLEMENTARY PROJECT INFORMATION

CLAUSE	DETAILS	
4.1	Submission of the CEMP to the Superintendent is required for forwarding to: *[insert (as applicable)]:* *(a) Department of Urban Affairs and Planning* *(b) Environmental Protection Authority* *(c) [ ]*	 *Yes* *Yes* *[Yes]*
4.9	Notification to EPA Regional Manager is required of at least two (2) persons (and their contact telephone numbers) who will be available to the EPA on a 24-hour basis.	*Yes/No*
6.1	Documents relevant to Environmental Protection: (NOTE: These documents are available on request and are for information only, they do not form part of the Contract.) *[insert (as applicable) REF, EIS, Environmental Impact Assessment Report, Determination of the Chief Executive, Decision Report, Conditions of Approval, Project EMP, any other relevant documents]*	
6.11.2	Disposal of cleared and grubbed vegetation by burning off is conditionally allowed by the Principal	Yes/No

ANNEXURE G35/2 - DISTANCE FROM CONSTRUCTION ACTIVITY FOR BUILDING CONDITION INSPECTION

Refer to Clause 6.8.

The Contractor shall carry out a Building Condition Inspection for each public utility, structure and building within the distance from the appropriate activity listed below, however, where the risk of damage to an item is assessed to be very low, the requirement for a Building Condition Inspection may be waived with the Superintendent's agreement.

ACTIVITY	DISTANCE
Blasting Operations	*(Eg. 500 metres)*
Pile Driving	*(Eg. 200 metres)*
Excavation by hammering or ripping	*(Eg. 100 metres)*
Vibrating Compaction > 7 tonne plant	*(Eg. 50 metres)*
Vibrating Compaction < 7 tonne plant	*(Eg. 25 metres)*
Demolition of Structures	*(Eg. 50 metres)*

NOTES TO TENDER DOCUMENTER: *(Delete this boxed text after drafting G35)*

The documenter shall ascertain from the REF if any structures are potentially susceptible to damage from construction vibration or air blast and amend the distances in the table for actual site circumstances.

ANNEXURE G35/3 - SCHEDULE OF HOLD POINTS

CLAUSE	DESCRIPTION
4.1	Submission of CEMP
4.12	Failure to comply with environmental requirements
6.3	Environmental Protection Licences
6.7	Noise levels above specified limits
6.8	Building Condition Inspections
6.16	Suspected or potentially contaminated ground

ANNEXURE G35/4 - MINIMUM FREQUENCY OF TESTING

CLAUSE	CHARACTERISTIC ANALYSED	TEST METHOD	MINIMUM FREQUENCY OF TESTING

APPENDIX G

RTA ENVIRONMENTAL NOISE MANAGEMENT MANUAL, PRACTICE NOTE VII

Practice Note vii

Roadworks outside normal working hours

An outline of procedures for construction and maintenance works outside normal working hours. This Practice Note should be read in conjunction with Sections 9 and 10.

Background

From time to time local communities raise issues regarding noise and vibrations generated by roadworks outside normal working hours, and particularly works at night. These works are often unavoidable, because of the need to maintain full traffic capacity on the network during peak demand periods.

"Normal working hours" are defined in the EPA's *Environmental Noise Control Manual* as 7 am to 6 pm Monday to Friday and 8 am to 1 pm on Saturdays (or 7 am to 1 pm on Saturdays if the noise is not audible on residential premises).

To minimise community concerns, effective community consultation is essential.

The involvement of affected communities should be sought in the selection and design of noise and vibration treatment measures, where possible.

Where practical, noise and vibration impacts should be minimised by applying stringent roadworks programming restrictions for work conducted outside normal working hours.

Minimum roadworks programming requirements

If roadworks are proposed and it is likely that sensitive receptors will be affected by noise and vibration above guideline levels, and/or receivers are within minimum distance setbacks set out in the *CEMP*,

- Program the work so that noise and vibration at night will not affect any single dwelling or group of dwellings, flats, units and other places of residence on more than two consecutive nights, or on more than a total of six nights over a period of one calendar month.
    - When night work is programmed in stages to comply with this requirement, the periods of work should be separated by not less than one week.

- If programmed night work is postponed for any reason, the work should be re-programmed and the programming requirements described above apply again.
- Very noisy activities should be programmed for normal working hours. If the work cannot be undertaken during the day, it should be completed before 11:00 pm.
- Where practicable, work should be scheduled to avoid major student examination periods and times when students are studying for examinations, such as before and during the Higher School Certificate and at the end of higher education semesters.

If it is not practical to apply these minimum programming requirements, extra care will need to be taken in selecting and applying alternative and effective noise and vibration management measures.

The *CEMP* must be regularly revised to account for changes in noise and vibration management strategies.

Consultation and procedural requirements

- Evaluate all available, feasible and reasonable noise and vibration management measures and include the preferred management measures in the *CEMP*.
    - RTA environmental protection quality assurance specifications outline a range of measures, including minimum noise and vibration management requirements, that should be included in a *CEMP*. *Section 5* also outlines a range of construction and maintenance noise and vibration management measures which could be adopted. Source control is generally the most effective strategy.
- Apply for a *Road Occupancy or Road Development Licence* from the RTA's Transport Management Centre (Sydney region) or the Regional Traffic Commander (remainder of NSW).
    - Road construction or maintenance works must not commence until a *Road Occupancy or Road Development Licence* has been granted.
- On the *Road Occupancy or Road Development Licence* application form, include an "after hours" contact name and telephone number for the work. This person should have the power to issue directions concerning the commencement, performance or termination of the work. The "after hours" contact person must be accessible during the course of work.
- If the work is the subject of an Environment Protection Licence, contact the EPA and advise the work proposed to be undertaken, its location, the days and dates of the work, the hours involved and the "after hours" contact name and telephone number.
- Update the *CEMP* to include any additional noise and vibration management strategies and any additional EPA requirements.

- Contact the local community potentially affected by the proposed out-of-hours noise/vibration (residents, businesses, etc) and inform them by letter of the proposed work, the location and type of work, the day(s) and date(s) of work and the hours involved.
    - This contact should be made five days before the proposed commencement of the work.
    - It is preferable to over-estimate the hours of work, rather than aggravate people by extending the work hours for longer than anticipated.
    - A standard *Letter of Advice* can be found at the end of this *Practice Note* (below).
- If the night work will also involve significant disruption to traffic, a suitable advertisement should be placed in local papers. This advertisement should include a reference to night noise/vibration.
- Notify the TMC or Regional Traffic Commander, as applicable, prior to the commencement of work and again upon completion, in accordance with traffic management procedures.
    - It may also be beneficial to notify the affected community and other organisations (e.g. Police and Council), to assist effective complaint management.
- Notify the RTA Environmental Adviser for the region before the commencement of work.
- Manage any noise and vibration complaints in accordance with *Practice Note IX*.

Sample letter of advice

Dear resident,

[***Road name, suburb/town***]
Roadworks

The Roads and Traffic Authority (RTA) will soon be carrying out urgent road works on [***road name***] between [***point A***] and [***point B***], [***suburb/town***].

These works are programmed to commence on [***date***], weather permitting. It is expected that the work will take [***number***] nights to complete.

Unfortunately, because of the high traffic volumes in the area, the work must be carried out outside normal working hours, in order to limit traffic disruptions. It is therefore planned to work between the hours of [***state hours and relevant dates***].

The work will involve activities such as [***state nature of works e.g. the removal of failed pavement and its replacement***]. The effect on you is likely to be limited to noise [***and vibration, if relevant***] associated with this activity. Every attempt will be made to minimise the effect of this work on residents.

If you have any questions, please contact [***name***] on phone [***number***], or after hours the RTA Transport Management Centre on 131 700.

Yours faithfully,

[***Name***]
[***Position***]
[***Region/organisation***]
[***Date***]