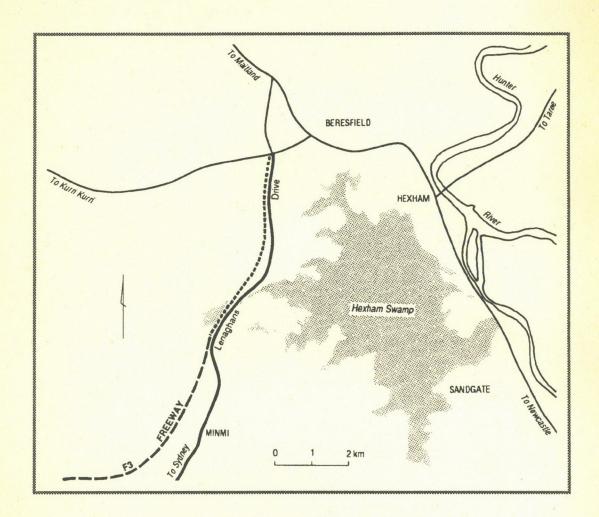
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NATIONAL HIGHWAY INTERIM CONNECTIONS F3 Freeway to the New England Highway



ENVIRONMENTAL IMPACT ASSESSMENT REPORT

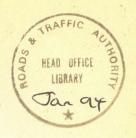
Prepared in accordance with Clause 64 of The Environmental Planning and Assessment Regulation 1980

December 1993

ON BEHALF OF THE ROADS AND TRAFFIC AUTHORITY

UNDER PART V

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
IN RELATION TO THE PROPOSAL FOR THE
NATIONAL HIGHWAY INTERIM CONNECTIONS BETWEEN
THE F3 FREEWAY AND THE NEW ENGLAND HIGHWAY



I, BERNARD GODFREY FISK, Chief Executive of the Roads and Traffic Authority of New South Wales ("RTA"), say as follows:

- 1 I have examined and considered:
 - (a) the environmental impact statement prepared under the Environmental Planning and Assessment Act 1979 ("the EIS") in respect of the proposal for the National Highway interim connections between the F3 Freeway and the New England Highway ("the Project");
 - (b) the representations made in respect of the EIS;
 - (c) the assessment report dated December 1993 in relation to the Project ("the Assessment Report"); and
 - (d) other relevant matters.
- I have taken into account to the fullest extent possible all matters affecting or likely to affect the environment as a result of the construction of the Project as described on page 2 of the Assessment Report.
- I am satisfied that the construction and operation of the Project as so described will affect the environment and that, consequently, the Project requires modification.
- I determine on behalf of the Roads and Traffic Authority that the Project may be constructed and operated as described on page 2 of the Assessment Report subject to the following conditions (by way of modification to the Project);
 - (a) the conditions set out in Section 3 of the Assessment Report; and
 - (b) (in relation to that part of the Project which passes through wetlands regulated under State Environmental Planning Policy No 14 - Coastal Wetlands, and without limiting (a)) the sixteen conditions of consent contained in the letter from Newcastle Council to the RTA dated 16 November 1993.

Bernard Fisk

Chief Executive

Roads and Traffic Authority of New South Wales

Date:

4 JAN 1994

Clause 64 Environmental Planning and Assessment Regulation 1980

Proposal for the National Highway Interim Connection between the F3 Freeway and the New England Highway

- This report is prepared under clause 64 of the Environmental Planning and Assessment Regulation 1980 in relation to the proposal for interim connections between the F3 Freeway and the New England Highway ("the Project").
- On 4 January 1994, the Chief Executive of the RTA, on behalf of the RTA, made a determination ("the Determination") that the Project may be constructed as described on page 2 of the Assessment Report relating to the Project ("the Assessment Report"), subject to:
 - (a) the conditions (by way of modification to the proposal) set out in Section 3 of the Assessment Report; and
 - (b) (in relation to that part of the Project which passes through wetlands regulated under State Environmental Planning Policy No 14 - Coastal Wetlands, and without limiting (a)) the sixteen conditions of consent contained in the letter from Newcastle City Council to the RTA dated 16 November 1993.
- 3 Attached to this report are:
 - (a) a copy of the Determination;
 - (b) a copy of the Assessment Report which includes a copy of the letter from Newcastle City Council to the RTA dated 16 November 1993 (Appendix B of the Assessment Report).
- 4 In making the Determination, the Chief Executive examined and considered the documents mentioned in the Determination.

T Mc Cong

Environmental Manager

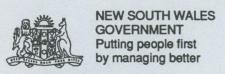
NATIONAL HIGHWAY INTERIM CONNECTIONS

F3 Freeway to the New England Highway



ENVIRONMENTAL IMPACT ASSESSMENT REPORT

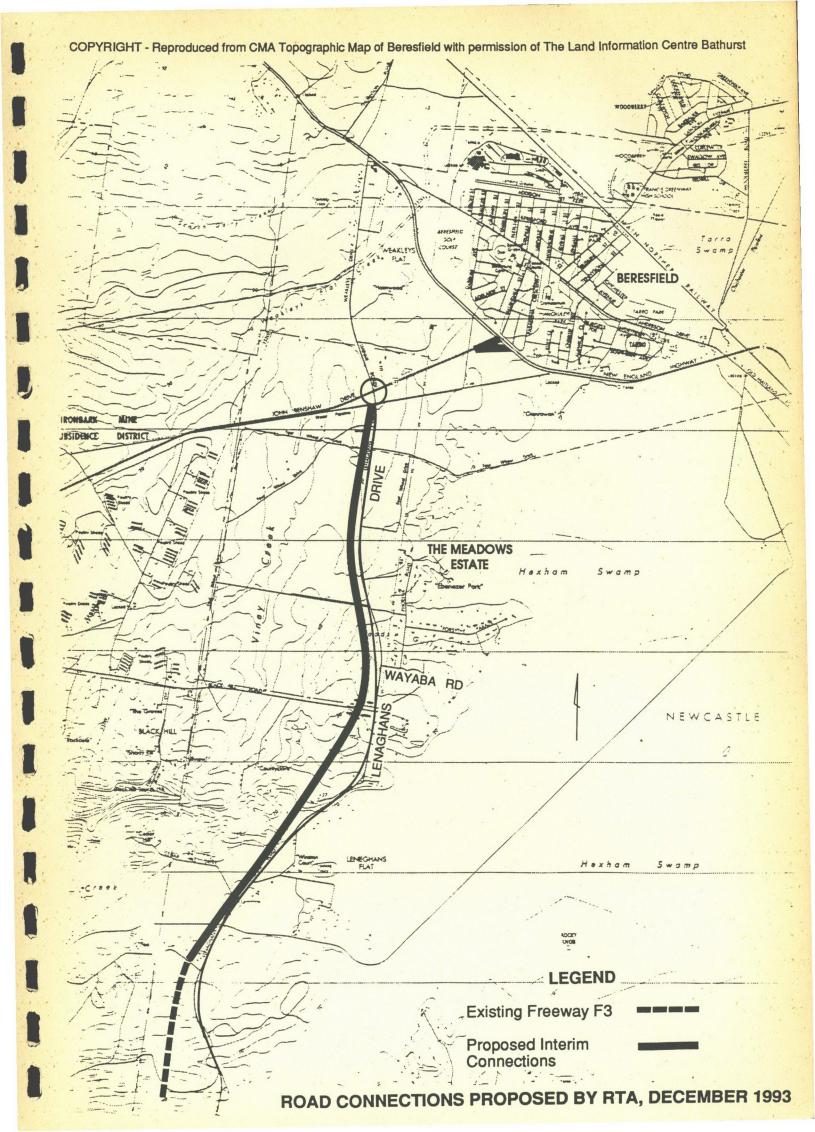
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Prepared by Graham Kinnear
Major Projects Branch
Northern Region
in consultation with Terry McCoy
Environment and Planning Branch

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1 Introduction

This Environmental Impact Assessment Report concerns the interim connections between F3 Freeway and the New England Highway. Its purpose is to examine and consider the Environmental Impact Statement (EIS) which was prepared for this project and also the representations received in response to the EIS.

It recommends that approval be given to the proposal subject to a number of conditions and modifications.

2 Summary of Works Proposed

This section summarises the elements of the proposed road works.

EIS Stage 2 Works

- Completion of road, bridge and drainage design.
- Acquisition negotiations to commence as soon as road boundaries are decided.
- Construction of a new two lane carriageway parallel to Lenaghans Drive for northbound traffic.
- Lenaghans Drive to become one way southbound with cross access points in the vicinity of the Loop Road (South), Wayaba Road and Boral Asphalt access.
- Construction of a local road link to connect Cedar Hill Drive to Stockrington Road.
- Construction of a bridge taking John Renshaw Drive traffic bound for Hexham over Maitland bound traffic on the New England Highway.

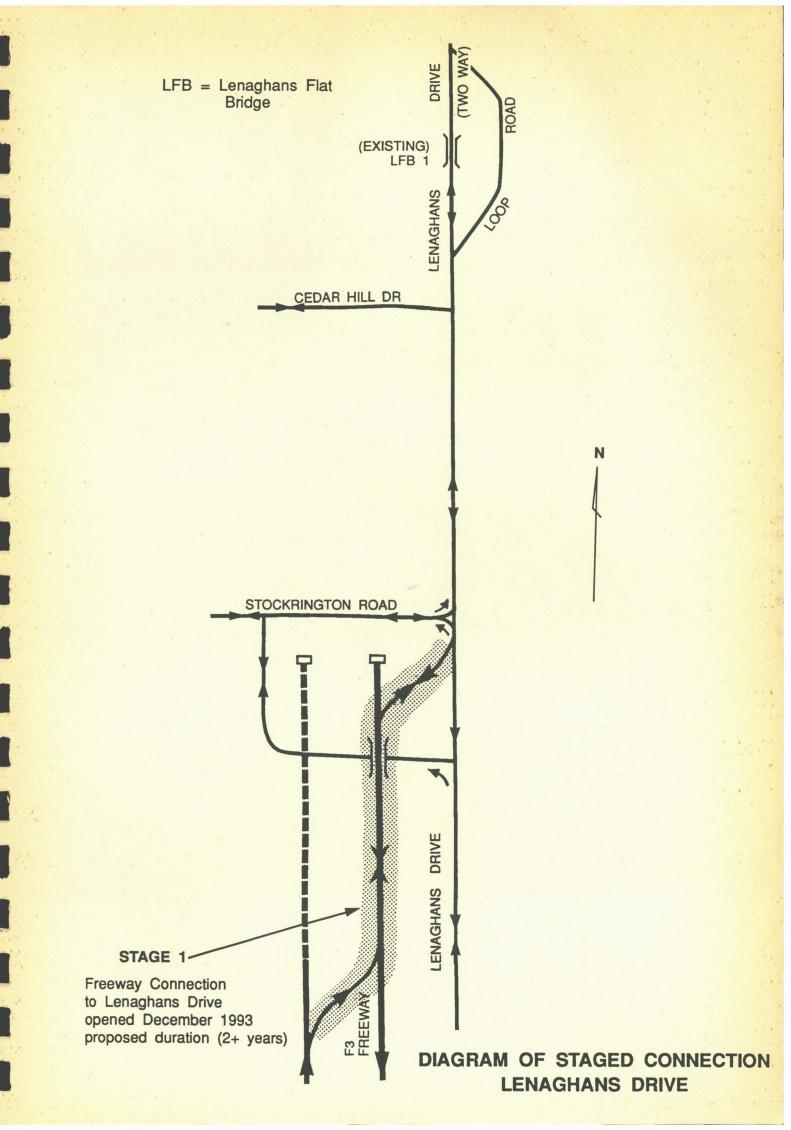
The Stage 2 works would be commenced in the immediate future.

EIS Stage 3 Works

- Construction of a second new two lane carriageway to complete the dual carriageway adjacent to Lenaghans Drive. This would become the southbound carriageway.
- Lenaghans Drive to revert to a local two way road, grade separated from the freeway.
- Construction of a new bridge to connect Black Hill Road to Lenaghans Drive.

The Stage 3 works would be constructed as funds become available.

Note: Stage 1 works have been completed. These works primarily involved minor widening, pavement strengthening and intersection improvements to Lenaghans Drive, Weakleys Drive and John Renshaw Drive.



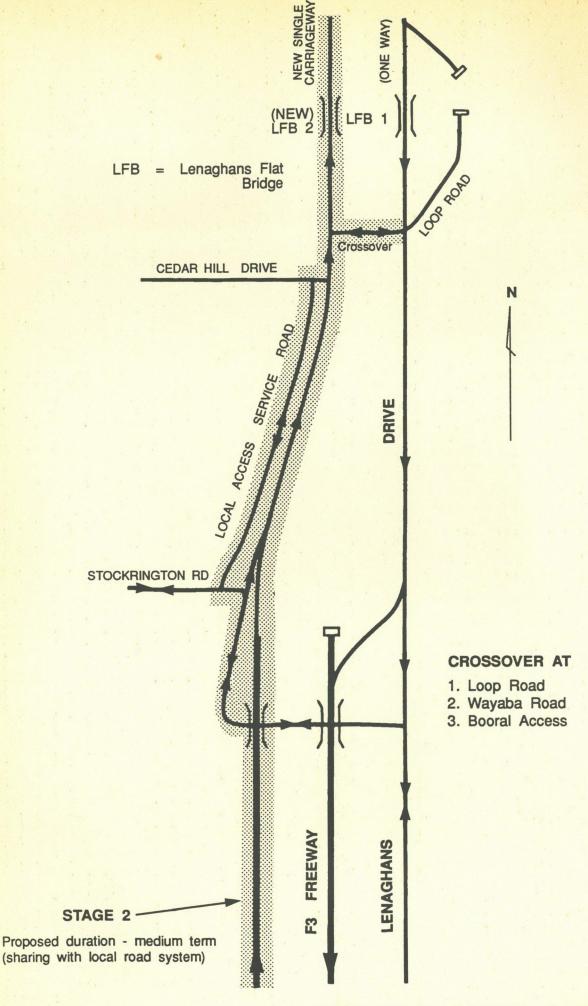
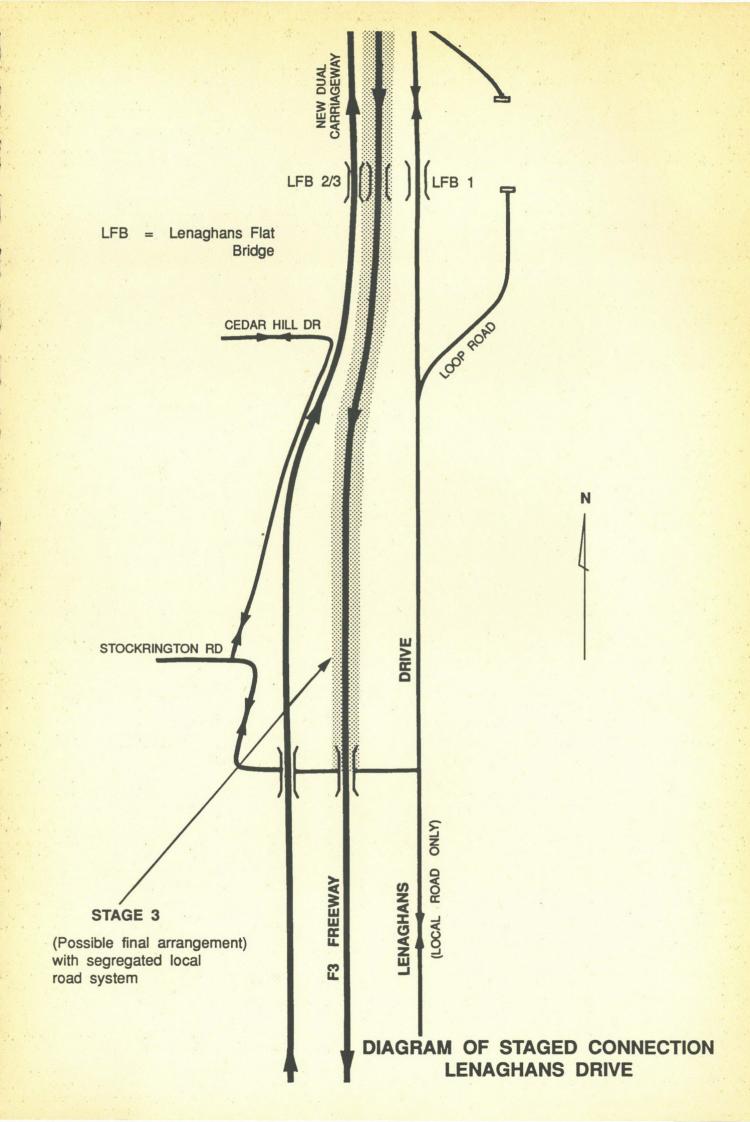


DIAGRAM OF STAGED CONNECTION
LENAGHANS DRIVE



3 Recommendations - Conditions Of Approval

The purpose of this section of the Assessment Report is to recommend that approval be given to the proposal as described in section 2 of this Assessment Report subject to the conditions and modifications contained in paragraphs 3.1 to 3.18 of this Assessment Report. This recommendation is made having examined and considered the EIS, the representations received, the alternatives to the proposal and the available mitigative measures. Section 4 of this Report contains a consideration of the EIS. Section 5 of this Report gives details of the responses to issues raised in the representations.

In addition, a special recommendation set out in paragraph 3.19 is made in relation to the widening of John Renshaw Drive to provide a fourth lane catering for traffic from Hexham towards the freeway (which is part of the EIS Stage 3 Works).

In summary, if the determination is that the proposal should proceed, it is recommended that it should be constructed as described in section 2 of this Assessment Report subject to the conditions set out in paragraphs 3.1 to 3.19 below.

3.1 Conditions to be reflected in Detailed Design and Contracts

These conditions and modifications will be reflected in the detailed designs and contract documentation.

3.2 Loop Road

The use of the Loop road as a link between Lenaghans Drive and Minmi, as proposed in the EIS, will be abandoned for reasons relating to the road flooding, land take from the wetlands and safe road design standards. Lenaghans Drive in Stage 3 will remain in its present location using the existing Lenaghans Flat Bridge.

3.3 Proposed Road Alignment at Lenaghans Flat

The alignment of the National Highway dual carriageways will be changed slightly to allow a twin bridge crossing of the Hexham Swamp adjacent to the existing Lenaghans Flat Bridge. This offers a much safer bridge approach than re-using the existing Lenaghans Flat Bridge, as originally proposed in the EIS. Less wetland will be affected than the EIS proposal utilising the Loop Road. That proposal would have required extensive fill to avoid annual flooding and to remove a low speed curve. This modified proposal also avoids the need for acquisition of one house.

3.4 Compensatory Wetland

The Loop Road is closed to through traffic because of an unsafe bridge crossing. Prior to the EIS, Newcastle City Council considered formal closure of the road. Newcastle City Council in its development consent, condition 10, (Appendix B) has directed the removal of the abandoned road embankment and conversion of approximately 0.29 ha of road reserve to wetland. Local landowners and residents along the Loop Road have shown support for this proposal and consider it may reduce the effect of annual flooding. The compensatory wetland outlined in section F1.6 of the EIS will not be provided because of risks of exposing acid sulphate soils. (See section 5.2 of this Report.)

In the Environmental Management Plan (see Appendix E) the RTA undertakes, that during the acquisition process, where total acquisition becomes necessary, it will:

i) attempt to enhance the quality of the acquired wetlands; and

ii) transfer the ownership of the acquired land to a suitable government or community conservation agency to conserve the wetlands.

3.5 Wildlife Fencing

Annual migration of the Snake-Necked Turtle across Lenaghans Drive has been highlighted in the representations to the EIS. A fence will be erected to channel turtles under the existing and proposed bridges and to prevent access onto Lenaghans Drive and the proposed new roads. Work will be carried out with advice from the Shortland Wetlands Centre.

3.6 Cattle Access

Cattle access under the new bridges will be provided. Cattle access to the pasture between the proposed road and Lenaghans Drive, north of the Lenaghans Flat Bridge, will be maintained if desired by the owner and if practicable. If it is not desired by the owner or if it is not practicable to provide, the RTA will negotiate with the owner for the acquisition of the land.

3.7 Cedar Hill Rail Crossing

The proposed arch over the Stockrington Rail line will be extended to accommodate the deviation of Cedar Hill Road. In general, this will lift the level of the Cedar Hill Road deviation and will make the new section less flood prone. The arch will avoid conflict between local traffic and the rail line. This meets the condition of the rail line owners, Coal and Allied Pty Ltd, in relation to safety considerations.

3.8 AGL Gas Main

Further survey of the AGL Trunk Gas main, close to the Stockrington Rail Line and further concept design shows the need for a protective structure over the pipeline. This will be designed in conjunction with AGL and incorporated in the embankment design. The cost of this work shall be met by the RTA.

3.9 Cutting Design

Further analysis of Geotechnical information suggests that much of the shallow material is weathered. Design of cuttings will reflect this and will be rounded where possible to provide 3:1 vegetated slopes, typical of the surrounding rolling countryside.

3.10 Requirements of Government Authorities

All necessary approvals will be obtained from the Department of Conservation and Land Management (CaLM), Mine Subsidence Board, Newcastle City Council, Environment Protection Authority and National Parks and Wildlife Service and any other relevant agencies. The conditions contained in the consent by Newcastle City Council to the development application for work in the SEPP 14 wetlands is found in Appendix B.

Any costs involved in varying the location of facilities planned or operated by Telecom, Optus, Pacific Power, Shortland Electricity or Hunter Water will be met by the RTA.

The Public Works Department, which administers the SEPP Wetlands in the tidal zone will be consulted in relation to bridge design and wetlands management.

Archaeological advice will be sought during the initial clearing operations, as required by the National Parks and Wildlife Service (NPWS). The results of any finds will be advised to NPWS.

Specialist advice will be sought from CaLM, or other approved soil erosion experts during the design and construction stages in relation to sedimentation and erosion controls over the whole length of the project.

An environmental consultant will be employed to monitor the safeguards and procedures outlined in the EIS and to provide liaison with all necessary authorities regarding birdlife, fauna and wetland management. An Environmental Management Plan has been prepared to guide construction activities in the wetlands. This is found in Appendix E. This will address the requirements of the Commonwealth Environment Protection Agency (CEPA) in relation to management of the wetlands.

3.11 Access to Boral / R W Miller & Co. Land

The existing access to the Boral Asphalt plant in Lenaghans Drive will be maintained in Stage 2, with a wide 'median' between the north and south bound carriageways.

In Stage 3 access to Boral Asphalt plant will be provided from John Renshaw Drive and will be provided in the detailed design of that Stage. The design will be prepared in conjunction with plans for the upgrading of the Chichester Water Pipeline by Hunter Water.

3.12 Bus layby

In response to representations about road safety the RTA will examine the need for a bus layby in the vicinity of the Meadows housing development.

3.13 Visual Screening - The Meadows

During detailed design, the RTA will examine the opportunity to dispose of surplus material and create visual screening, for Meadows properties, of traffic on the embankment immediately north of Black Hill Road.

3.14 Noise Barriers

The RTA will erect noise barriers up to a maximum height of four metres to reduce predicted noise levels for residents near Beth Street, Beresfield.

3.15 Landscaping Works

The landscape treatments outlined in the EIS section F2.1 will be implemented. To this end, a detailed Landscape Plan will be prepared which specifies the plant species to be used and their locations.

3.16 Management Plan for the SEPP14 Coastal Wetland

The contract for the works will require the contractor to abide by the principles contained in the Environmental Management Plan to Minimise Impacts on Wetlands (Refer to Appendix E).

3.17 Controlled Access Roads

The following roads are to be designated controlled access roads:

<u>Lenaghans Drive</u> - Between the freeway connection near Minmi and John Renshaw Drive (MR588). The gazetted accesses will include the existing public roads. The controlled access status will be removed when the road reverts to local usage, ie after Stage 3 is implemented.

John Renshaw Drive - between Lenaghans Drive and the New England Highway. Arrangements to declare this section of main road a controlled access road were commenced in mid 1992, prior to the EIS proposals. The original controlled access road proposals are still appropriate.

John Renshaw Drive - between Lenaghans Drive and the western boundary of Lot 117, DP 568625, on both sides of John Renshaw Drive. Arrangements to license a further access will be necessary in Stage 3, when the Boral access will be relocated to John Renshaw Drive.

This was not addressed in the EIS. (See section 4.13 of this Assessment Report).

3.18 Council Development Consent

In relation to that part of the proposal which passes through wetlands regulated under State Environmental Planning Policy No 14 - Coastal Wetlands, the proposal will be carried out in accordance with:

- (a) the 16 conditions of consent contained in the letter from Newcastle City Council to the RTA dated 16 November 1993 (a copy of which is contained in Appendix B to this Assessment Report); and
- (b) the relevant conditions 3.1 to 3.17 (inclusive) above.

3.19 Widening of John Renshaw Drive

The widening of John Renshaw Drive to provide a fourth lane catering for traffic from Hexham towards the freeway (which is part of the EIS Stage 3 Works) has already been completed. The environmental impacts of this element of proposal were the subject of the EIS and the representation to the EIS. However, because construction of this element of the proposal has already been completed, a review of environmental factors concerning this element of the proposal will be prepared and considered as soon as possible under Part 5 of the Environmental Planning and Assessment Act 1979. The purpose of the review of environmental factors is to make doubly sure that the environmental impacts of the widening of John Renshaw Drive to provide a fourth lane catering for traffic from Hexham towards the freeway have been adequately addressed under Part 5 of the EPA Act.

4 Consideration of the EIS

The EIS has been examined and considered and the following potential effects have been noted. These effects have also been considered in relation to the representations received. The mitigation measures described in sections 3 and 5 will be adopted to reduce or eliminate these potential effects.

4.1 Soil Erosion

The Proposal would be unlikely to have any impact in relation to the small landslides recorded in the locality, because the road would be oriented in the same direction as the slides, and the material would be removed during construction. The soils encountered are stable in the natural state but are susceptible to erosion when remoulded.

In relation to acid sulphate soils and their potential existence in the wetlands, it is not expected that material in these areas would be exposed. During pile driving for bridge construction, it is unlikely that any displaced material would be moved above the water table. Depending on the position of the new bridge structures, overburden above the water table may need to be removed. There is a low probability that acid sulphate soils could be exposed during this activity.

Sections 3 and 5 and Appendix E refer to the measures which the RTA will undertake to mitigate these potential impacts.

4.2 Wetlands

The impacts of the Proposal on the wetlands would relate primarily to the small area of filling required to provide the Stage 2 and 3 carriageways. This would have a direct impact mainly on the seasonal freshwater swamp and typha reed swamp communities.

The maximum area of gazetted wetland likely to be affected is 1.07ha but 0.29ha of compensatory wetland would be provided to produce a net loss of 0.78ha of wetland. Section 3 and 5 and Appendix E refer to the measures which the RTA will undertake to mitigate these impacts.

4.3 Hydrology and Flooding

The Proposal would have a negligible impact on hydrology and flooding. In the 1 in 100 year event described above, the hydraulic analysis estimated an increase in flood level at Lenaghans Flat from 3.59 metres to 3.60 metres. In the 1 in 20 year event, no increase was estimated.

The hydraulic analysis concluded that:

- a new bridge opening equivalent to the existing bridge opening would allow ample flood area to convey floodwaters during 1 in 100 year and 1 in 20 year flood events.
- the proposed raising of the roadway would have a minimal impact on peak flood levels.

The analysis also examined the situation of a major Hunter River flood with little runoff from Bluegum Creek. It concluded that the proposed road and bridge at Lenaghans Flat would have a negligible impact on peak Hunter River flood levels. No mitigation measures are considered necessary.

4.4 Water Quality

The proposed filling through the wetland has the potential to adversely affect surface water quality, with the greatest risk occurring near the channel linking Wetlands Nos 841a and 841b. Although the Proposal would not have a direct physical impact on Wetland No 841b, it could affect the wetland in terms of the quality of entering surface water.

Construction Phase

During the construction phase, the greatest potential impact would be an increase in the level of particulate matter, which has pollutants and nutrients adsorbed to the particles of sediment. Increased levels of oils, greases and petrochemicals from the site runoff would also be of concern.

Changes in aquatic vegetation could occur if there is an accumulation of inorganic silt as a result of construction activity.

Inorganic pollutants such as heavy metals and organic pollutants such as hydrocarbons could reduce the productivity of the wetland system.

Increased nutrient levels might also occur as a result of construction. At elevated levels, this could lead to eutrophication, and possibly to blue-green algae blooms. An increase in nutrient levels could also aid the spread of water hyacinth (Eichhornia crassipes) through Hexham Swamp.

Operational Phase

During the operational phase, the main concerns are changes to the erosion and deposition pattern and the introduction of a large number of slowly degradable substances having the potential to create a chronic hazard to the receiving water body.

During high rainfall events, the concentrations of pollutants in the immediate vicinity of stormwater discharges could approach values which are acute for aquatic life. Strong runoff discharges could stir up settled sediments, further increasing the concentration of pollutants.

The other major potential impact would be the discharge of hazardous substances from accidents.

Groundwater

Because of the close connection between subsurface and surface systems, any impact on groundwater quality would be unlikely except where there is an impact on surface water.

Sections 3 and 5 and Appendix E refer to the measures which the RTA will undertake to minimise these potential impacts to the greatest practical extent.

4.5 Flora and Fauna

Construction Phase

Based on a general clearance width of 20 metres between the F3 Freeway and John Renshaw Drive, and the proposal to deviate Cedar Hill Drive, it is estimated that Stage 3 works would result in the loss of the following areas of native habitat:

Seasonal fresh swamp: 0.9ha
Grassy eucalypt forest: 1ha
Scrub eucalypt forest: 3ha

There would be a minor loss of less than 1ha of shrubby eucalypt forest associated with Stage 2 and 3 works on John Renshaw Drive.

Operation Phase

The provision of the road could result in long-term hydrological changes and redirection of stormwater flows and result in weed invasion of natural areas. While runoff from the existing roads is uncontrolled, the additional traffic associated with the Proposal would result in the possibility of increased sediment and nutrient flows.

A long-term concern would be a gradual increase in alkalinity as a result of run-off from materials such as bitumen or slag road base used in construction. As most natural communities in coastal NSW occur in slightly acid soils, this could result in the gradual replacement of native plant species with weeds.

The existing roads present a barrier to fauna movement. The new road west of Lenaghans Drive would also present such a barrier. In the wetlands, any potential impact would be greatest on the Eastern Snake-necked Turtle, which moves between wetlands during its breeding season. In the forested areas, the impact would be greatest on possums, wallabies and reptiles.

Habitat of Endangered Species

The Shortland Wetlands Centre conducted a Flora and Fauna Study of the Proposal which is contained in the Working Papers volume. It concluded that the Proposal would not be likely to have a significant effect on the environment of any endangered fauna within the meaning of section 77(3)(d1) of the National Parks and Wildlife Act 1974 and Section 112 (1B) of the Environmental Planning and Assessment Act 1979.

This conclusion is based on a consideration of the factors set out in section 4A of the Environmental Planning and Assessment Act 1979. Section 4A of the Environmental Planning and Assessment Act 1979 sets out six factors which must be taken into account in deciding whether or not there is likely to be a significant effect on the environment of endangered fauna. Page 73 of the EIS sets out those factors and the consideration given to them. Sections 3 and 5 and Appendix E refer to measures which the RTA will undertake to minimise to the greatest practical extent, any impacts to flora and fauna.

4.6 Visual Quality and Landscape Character

Residences located on the elevated hillslopes west of the new road alignment would have their existing rural outlook over the swamp plain altered in the mid-foreground with the inclusion of the new road.

The Meadows area currently experiences low visual exposure to Lenaghans Drive because of a wide setback from the roadway and intervening scattered Eucalypt vegetation. Generally these residences will benefit when Lenaghans Drive reverts to local road status due to reduced traffic flows.

The eastern side of Lenaghans Drive, north of the Meadows is zoned residential. The new road would be set back sufficiently to allow landscape treatments and surrounding indigenous vegetation to provide an effective visual screen.

The elevated overpass (7.5m in height) would be visible to a number of residents located on the southern boundary of Beresfield. Sections 3 and 5 and Appendix E refer to measures which the RTA will undertake to mitigate these impacts.

4.7 Air Quality

There would be a low level of air pollution during construction. This would be the result mainly of exhaust emissions from construction vehicles and equipment (graders, excavators, concrete pumps, air compressors); and dust resulting from construction activities and movement of trucks to the site.

The potential for concentration of emissions is considered to be low, because of the relatively free traffic flow which results in the blending and dispersion of emissions with the atmosphere, and the effects of wind dispersion. There are no areas along the Proposal that are sufficiently constrained by topography to offset these effects. Regular watering or emulsion spraying of cleared areas will be implemented to mitigate dust emissions from the construction site.

4.8 Noise And Vibration

On Lenaghans Drive, anticipated changes in noise levels would remain within RTA noise level criteria.

Whilst outside the immediate effect of this proposal, it is predicted that rehabilitation of the pavement surface on Weakleys Drive will limit noise increases to below RTA noise level objectives.

The main impact would be felt in the vicinity of the proposed overpass at the intersection of John Renshaw Drive and the New England Highway. Noise levels would be expected to increase as a result of Stage 2 and Stage 3 works. Sections 3 and 5 and Appendix E refer to measures which the RTA will undertake to mitigate these impacts.

Construction Noise

In relation to current background noise levels, it is likely that there would be times when construction activities would be barely audible at residences. Conversely, there are likely to be times when noise levels would exceed the guideline levels.

Construction near the residential area would be restricted generally to 7am to 6pm Mondays to Saturdays. Some additional work might be required outside normal hours for particular activities.

Vibration

It is anticipated that no blasting would be required during construction.

It is extremely unlikely that any damage to property would occur as a result of construction vibration. Similarly, vibration from rollers would be kept below levels at which any possibility of damage exists.

4.9 Existing Land Use

Overall acquisition in whole or in part would be likely to be required of twelve landholdings.

The public consultation program indicated that the enjoyment of residential uses in the area, whether in the Meadows estate, along Weakleys Drive or in the rural areas, is being affected even now by increased traffic volumes and associated problems of access, safety, noise and general intrusion. A number of the health and proximity effects are already being experienced. These are expected to be exacerbated as a result of the opening of the extension of the F3 Freeway in December 1993.

The Proposal would provide a beneficial impact by reducing these effects, particularly in areas along Lenaghans Drive. Along Weakleys Drive, a minor improvement will result from the Stage 1 works, but until the National Highway extension removes long distance traffic from this road, the adverse effect on residential enjoyment is likely to remain. There are no residential properties along John Renshaw Drive.

Along Lenaghans Drive, the improvement in the enjoyment of residential uses would be greater when the Stage 3 works were completed, as all through traffic would be removed from Lenaghans Drive at that time. The Stage 2 works would result in some improvement in relation to the situation after the opening of the freeway extension. This would be tempered however, by the southbound through traffic remaining on Lenaghans Drive and any inconvenience associated with the one-way traffic arrangements on Lenaghans Drive and the new northbound carriageway. Compensation provisions apply to all properties which are physically affected by the road proposal.

4.10 Local Access and Safety

Some problems of community severance could be experienced during Stage 2 if access becomes more difficult between residential areas such as the Meadows and the school and church at Black Hill or onto and along Lenaghans Drive to other community facilities in the area. These problems would be increased if other urban development takes place which also experiences difficulty in gaining access to community facilities.

As well, the additional traffic volumes are likely to result in an increase in accidents affecting road users. Stage 3 of the proposal would reduce these access problems and also the accident rate.

4.11 Hazard and Risk Analysis

Although the risk of accidents involving hazardous goods appears to be low and the chance of contamination of the environment would be lower still, the potential for contamination still exists. In regard to liquid spills and/or contaminated runoff, the proposed controls would, under normal conditions, catch much of the runoff and ameliorate the impacts on the local aquatic environment.

Implementation of the Environmental Management Plan for the Wetlands (Appendix E) will greatly reduce the risk of chemical spills, from truck crashes, entering the wetlands.

4.12 Cumulative Impacts

The Proposal could contribute to the continuing competitive advantage of road freight over rail freight in the Sydney-Newcastle and Sydney-Brisbane corridors. The extent of that contribution is not known, as it is affected by other improvements in the National (New England) and Pacific Highways and various other factors which are unrelated to infrastructure provision.

In contributing to the improvement in road accessibility between Sydney and the lower Hunter Valley, the Proposal could also have an undefined impact in terms of reinforcing Sydney's dominance over Newcastle and the Hunter region.

Further development of the road system along the north coast of NSW, to cater for high population growth, will lead to future increases in traffic volume on the Proposal in the longer term.

4.13 EIS Errors and Omissions

Erratum

EIS Page 46, E2.6 Cost.

The estimated construction costs are listed as

"Current committed Stage 1 Works	\$6.0m
The Proposal - Stage 2 Works	\$30.2m
The Proposal - Stage 3 Works	\$23.3m
Total Proposal cost (Stages 2 & 3)	\$54.5m"

The last line incorrectly shows the total cost as \$54.5m and should show it as \$53.5m.

Erratum

EIS Table 3. - Five year Accident Total, page 22. Computer retrieval of accident data omitted a number of accidents due to different locality descriptions used in recording crashes on John Renshaw Drive.

The revised, updated accident data shows a five year accident total for this section of road to be 43 accidents during the period last quarter 1987 until end of 3rd quarter 1992.

This data emphasises the need for the Stage 1 works (additional traffic lanes and traffic signals) now completed and for the removal of queues in John Renshaw Drive through the construction of a grade separated link to the New England Highway, leading to Pacific Highway at Hexham, as proposed in the EIS Stage 2 works.

Omission

The EIS omitted mention of the AGL Trunk Gas Main that crosses the route and will require bridging. The gas main will be protected under the modified Proposal as addressed in section 3.8.

Erratum

EIS Table 12, page 82 identifies the Meadows as "+300m to the proposal".

While this may be correct for the majority of Meadows homes, the closest home, No.2, Phoenix Drive, is approximately 160 metres from the edge of the southbound carriageway.

Erratum

EIS Table 15 incorrectly shows noise levels in classrooms, column 4, as 5dBA. The Table should read 45dBA.

Erratum

EIS Appendix 7 omitted a page listing further typical concrete batch plant safeguards. The complete Appendix 7 is reprinted at the end of this section of the Assessment Report.

Omission

Controlled Access Roads.

Section C3 of the EIS made no specific mention of controlled access road status, existing or to be applied in the vicinity of the Interim National Highway Connections.

A controlled access road is a section of road on which access is restricted to minimise the number of locations where traffic enters or crosses the road, and, by so doing, to increase safety and to promote the free flow of traffic.

It is intended that the following roads should have Controlled Access Status:

<u>Lenaghans Drive</u> - between the freeway connection near Minmi and John Renshaw Drive (MR588). The gazetted accesses will include the existing public roads. The controlled access status will be removed when the road reverts to local usage, ie after Stage 3 is implemented.

John Renshaw Drive - between Lenaghans Drive and the New England Highway. Arrangements to declare this section of main road a controlled access road were commenced in mid 1992, prior to the EIS proposals. The original controlled access road proposals are still appropriate.

John Renshaw Drive - between Lenaghans Drive and the western boundary of Lot 117, DP 568625, on both sides of John Renshaw Drive. Arrangements to license a further access will be necessary in Stage 3, when the Boral access will be relocated to John Renshaw Drive.

The procedures for declaration and notification will be carried out.

APPENDIX 7 (Incomplete in EIS)

CONCRETE BATCH PLANTS: TYPICAL SAFEGUARDS (Not all of these measures might be applicable at any one site.)

Air Quality

- All raw materials will be covered during transport. Materials will be dampened prior to delivery.
- The area immediately in front of the truck unloading hopper will be sealed. Any aggregates spilled during unloading will be shovelled immediately into hopper.
- Sand and aggregate will not be allowed to bank up against the unloading hopper windshields.
- Water spray nozzles will be operated to suppress any dust emissions that occur during truck unloading operations. All material will therefore be wet as it starts to move through the plant.
- Effective enclosures will be provided for all transfer points and conveyors will be enclosed on at least the top and one side (one side needs to be open for maintenance purposes). Conveyors will be fitted with a bottom covering to restrict dust further. The covering will be able to be removed for cleaning.
- Automatic water sprays will be installed at the point of discharge from sand and aggregate holding hoppers to conveyor belts. The sprays will be initiated on start up of the conveyor when material being discharged is not sufficiently wet to prevent dust generation.
- Effective cleaning devices will be fitted to the return side of all conveyor belts.
- Materials removed during belt cleaning operations will be contained for dust free disposal.
- All vessels or hoppers containing or likely to contain dry cement and/or fly ash will be enclosed, and all air discharging to atmosphere will pass through bagfilters. These bagfilters will be ducted to near ground level, to safeguard against dust emissions at elevated height in the event of filter failure.
- All inspection ports and hatches on cement and fly ash silos will be sealed at all times when not in direct use.
- Level indicators will be fitted to all cement and fly ash storage hoppers, and these will be interlocked with the filling line such that, in the event of the hopper approaching an overfull condition, an audible alarm will operate and after 1 minute the pneumatic line to the filling tanker will close.
- All hopper high level indicators will incorporate a test circuit, which will enable the operator to simulate a high level condition prior to each delivery. Should the level indicator test circuit show a malfunction of the level indicator, then an inspection of the cement or fly ash levels within the hopper will be made to ensure that it is capable of holding the volume of material which is to be discharged from a tanker.

- All pneumatic lines to cement and fly silos will be blown through into the silos and the ends capped after each delivery.
- A dust control system will be installed to suppress emissions from the hoppers at the charging point for the truck mixers. The control system will be automatically interlocked to the batch charging mechanism.
- Concrete agitator truck washout pits will be provided.
- Slurry runoff will be collected, with the slurry to be kept wet at all times.

Drainage, Erosion and Water Quality

- Erosion control measures instituted for road construction will apply also to the batching plant.
- A drainage system will be installed to ensure that all runoff from the batching area is directed to sedimentation ponds.
- The effluent from the agitator truck washout pits will be directed to sedimentation ponds. Provision will be made to handle solid residues from the washout pits.
- A daily test will be taken to determine the acidity/alkalinity of the effluent. The effluent will be dosed steadily so that the pH of the effluent is maintained between 6.5 and 8.5.

Noise

- The plant will be designed and operated so that is conforms to the requirements of the licence.
- The external surfaces of the truck unloading hopper and of the aggregate storage bins will be externally lagged with noise suppression lagging in the areas that are likely to transmit noise from aggregate contact. A roof will be provided to the wind shield to be fitted to the truck unloading hopper.
- Windshields around the aggregate receival bin will be constructed as dual purpose windshields/acoustic shields.

5 Consideration of Representations: Issues Raised and Responses

Each representation to the EIS has been summarised in Appendix A. The issues raised in representations to the EIS have been categorised under the following headings and responses have been provided.

- A. Noise
- B. Loop Road
- C. Access
- D. Public Utilities/Government Authorities
- E. Stockrington Rail Line
- F. Environmental (Wetlands/Erosion/Sedimentation)
- G. Stages 2, 3 Timing
- H. Speed Limits
- I. Relocate Proposal
- J. Route Planning
- K. Traffic Volumes
- L. Visual Intrusion
- M. Compensation
- N. Other Proposals

5.1 Noise [Submissions 1, 12, 16, 24, 63, 73, 74, 79, 89]

Issue:

"Noise and pollution have increased significantly on Lenaghans Drive and at the John Renshaw Drive/New England Highway Intersection in recent years. Trees and noise barriers are requested, together with general advice on noise abatement measures.

Response:

While traffic and traffic generated noise and pollution may well have increased over recent years, this is a reflection of a developing road network and a general growth in traffic. This growth will not be included in the assessment for noise or the need for noise barriers. The existing ambient noise levels measured in the EIS will be the base against which further noise increases will be measured when the National Highway is extended.

Notwithstanding this approach, irrespective of any increase in noise levels, the design of road cuttings and embankments will be carried out sympathetically and will include tree planting and visual screening where practicable. In themselves, these features may reduce noise levels.

Where noise levels increase above the RTA Noise Level Objectives in the EIS Table 15 (reproduced below), then some form of noise barrier will be considered. The RTA will erect noise barriers to reduce predicted noise levels near Beth Street, Beresfield. General advice on noise abatement measures will be provided to all residents who request it.

RTA NOISE LEVEL OBJECTIVES (1) FOR NEW ROAD AND BRIDGE PROJECTS.

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	
Assessment site category (2)	Descriptor	Base Objective	Lower noise areas	Higher noise areas	
Buildings of a residential nature including	"Day-time (24 hour) Leq(24 hour)	60dBA	Ambient (3) +12dBA	Ambient +3dBA	
residences, hospitals, motels, and caravan parks	Night-time (10pm-6am) Leq(8 hour)	55dBA	Ambient +12dBA	Ambient +3dBA	
Classrooms in educational institutions	8.30am-3.30pm Leq(1 hour) internal	45dBA (4)	45dBA	Ambient +3dBA	
Community facilities, eg places of worship, passive urban parks and noise sensitive facilities (eg,	Consideration will be given to ambient noise conditions, extent and type of use to determine whether noise reduction strategies are needed.				
libraries)		-			

Notes

- (1) The Noise Level Objective is the noise level which the RTA aims to achieve. It generally reflects the noise from the ultimate predicted traffic flow.
- (2) An assessment site is a location being investigated to determine possible noise impacts. The noise level at the site is determined at the 'Assessment Point'. For all assessment sites other than classrooms in educational institutions, the assessment point is outside a building at 1.2 metres above ground or floor level (whichever is appropriate), and one metre from the ground floor window or door which is most exposed to traffic noise.
- (3) The ambient noise level is the total noise at the assessment site excluding extraneous noises, such as cicadas, before the road project commences.
- (4) This is the Noise Level Objective used by the Public Works Department for inside classrooms. The RTA will endeavour to meet this objective in those cases where a classroom has been located, designed and constructed to meet 45dBA.

Measurement of noise levels will be carried out at all sites, repeating the exercise in the EIS, to determine whether there has been any change to noise levels since the freeway has been extended. This will follow community agreement that stable traffic conditions prevail. Monitoring of noise levels will also be carried out after the completion of Stage 3.

Noise abatement measures for single storey residential buildings, where appropriate, will generally take the form of either modification of the road structure to include mounds, mounds between the road structure and the residences or fabricated noise barriers. In developing noise reduction treatments, the RTA will take into consideration the conflicting interests and desires of the affected people.

Only 30 minutes of traffic noise was measured at No 8 Phoenix Road, Issue: The Meadows. The monitoring should be carried out again.

> A number of site sensitivity measurements of approximately one half hour duration were taken before the test site was selected. Noise measurements were collected on a 24 hour basis for a full week at a number of sites including site No.8 at 8 Phoenix Road, the Meadows. The measurements obtained are considered adequate for a before and after noise study, representative of the area.

> The EPA seeks likely times when noise levels would exceed EPA guideline levels during construction stages, and abatement measures devised to bring levels within the guidelines.

> The EIS indicates that there are times when noise levels would exceed EPA guideline levels. These would be due to the noisiest construction operations during the working times of 7am to 6pm Monday to Saturdays as given in the EIS. Mitigation and safeguard measures are also given in the EIS, section F2.3.

> The EPA advises that the age of vehicles should not be used in assessing noise mitigation techniques.

> The RTA did not use the age of vehicles to determine appropriate mitigation measures. The statement on page 92 of the EIS, paragraph 7, was included to reflect a changing (more modern) fleet and hence likely change to the acoustic emissions of vehicles and particularly trucks. Heavy vehicles and traffic volumes, vehicle speeds, site layout geometry, road surface and noise barriers were taken into account in the predictions of future noise levels using the CORTN modelling technique, calibrated to local conditions.

> The EPA advises that the 4 metre barrier predictions do not comply with the RTA Traffic Noise Level Objectives.

> Tables 16 and 17 of the EIS section F2.3 show the existing noise levels at location 7 (Beth St, Beresfield), which are Leq(24hrs) = 64.8, and Leq(night)=60.8. Hence location 7 is in a "higher noise area" (in terms of the definition of the RTA Interim Traffic Noise Policy). The Noise Level Objectives for location 7 are 3dBA above existing levels, not the Base Objectives. (ie the Noise Level Objectives applying to location 7 would be Leq(24hrs) = 67.8dBA, Leq(night)=63.8dBA).

Response:

Issue:

Response:

Issue:

Response:

Issue:

Response:

Therefore it is predicted that with no barriers at location 7, the Noise Level Objectives would be exceeded by 0.4dBA. Since barriers are being erected at location 7 the predicted noise level will be significantly below the Noise Level Objectives.

The levels in Table 18 of the EIS are given for sensitivity purposes to enable cost-benefit analyses to be undertaken of various barrier heights, when detailed design is being undertaken. Note: The Base Objectives are used for locations in "lower noise areas". (Refer Interim Traffic Noise Policy Table 1, reproduced on page 15.)

Issue:

The EPA advised that its TNL environmental goal would not be met.

Response:

A letter from the Director General of the EPA to the RTA Chief Executive, dated 7 April, 1993, states with reference to the North West Transport Links (East and West) EISs that:

"we are prepared to accept the RTA Interim Traffic Noise Policy as an appropriate response to the F2 EIS with the following provisos:

- 1) That the RTA Interim Traffic Noise Criteria be considered the absolute minimum design objective (i.e. expected noise levels not to exceed these criteria and in most places to be below these levels).
- That during the design phase, areas identified as not meeting our interim environmental goal (TNL of 55) be assessed to have all practical measures applied to approach this environmental goal."

The RTA applied these principles to the assessment of noise reduction measures on this project. At Beth Street, Beresfield the RTA noise level objective is a maximum 3dBA increase above existing noise levels, which are high due to traffic on the New England Highway. The RTA has examined the practical measures which are available to ensure that future noise levels will be less than existing noise levels. It is proposing to erect noise barriers up to 4m high at this location in order to achieve this result.

5.2 Loop Road [Submissions 3, 4, 20, 21, 22, 25-56, 67, 71]

Issue:

The low level road is subject to annual flooding and the close proximity to the home "Winston Court" makes the home susceptible to vibration. A Heritage adviser to Newcastle City Council advises that Winston Court, a former mid-Victorian country inn, is an important heritage item. Upgrading of the road will cause detrimental effect on the building, both visually and from the vibration effect on the fabric of the building.

Newcastle City Council consider the road unsuitable for use in its present form for flooding and alignment reasons.

The owner of Winston Court and others have suggested excavation and removal of the Loop Road between Winston Court and the property at the northern end of the Loop Road - returning the area to Wetland.

Response:

The EIS proposal to use the Loop Road was an attempt to minimise the effect of road works on the Wetlands, with the Loop Road and Lenaghans Drive being designated corridors across an arm of Hexham Swamp.

Notwithstanding this, further concept design has been carried out to determine the level and alignment of a flood free road (>1 in 50 years flood) with 80 kph curves. An embankment design has been produced that will avoid conflict with "Winston Court" and that will allow vehicular access to it. This has been assessed as having a consequent effect on the wetland, encroaching some 0.42 ha onto Wetlands. This is shown in Attachment 5.1.

An alternative design, retaining Lenaghans Drive in its present position, and using the existing Lenaghans Flat Bridge in Stage 3 has also been assessed. This avoids the need to use the Loop Road. The new proposal is shown in section 7, Plans of The Preferred Route.

Such a design only encroaches 0.38 ha onto Wetlands beyond the original RTA Preferred Option.

In considering the balance between these two options, the following factors were taken into consideration.

- Irrespective of which option is chosen, the proposed dual carriageways need to be moved towards the Wetlands in order to avoid undercutting Lenaghans Drive. This in itself means an encroachment of up to 2m on the Wetlands.
- In the EIS proposal, the re-use of the Lenaghans Flat Bridge on Lenaghans Drive as part of the new dual carriageway, although cost efficient, creates less than ideal circumstances with super-elevation of the existing bridge being the "wrong way" and changes in super-elevation and approach angle to a bridge with narrow shoulders in a fog prone area.
- Retaining Lenaghans Drive as a straight approach over the existing bridge is safer.

• The realignment also allows major land acquisition of a substantial home immediately north of Lenaghans Flat Bridge to be avoided without compromising design standards.

In conclusion, the decision to move the dual carriageways slightly westward and use Lenaghans Drive as a local road in its present position, in Stage 3, was seen as having considerable net advantages. A particular further advantage is that 0.29 ha of road reserve on the Loop Road could revert back to Wetland, offsetting Wetland encroachment elsewhere. Local opinion suggests that this would also reduce the severity and frequency of flooding on the Loop Road.

Newcastle City Council has directed that the Loop Road embankment be excavated and the area converted to wetlands. The issue of excavating the Loop Road and allowing it to revert to wetland will be discussed with the Public Works Department, which administers the tidal zone of the SEPP wetlands.

In excavating the perimeter of the wetlands to below the existing water level to create compensatory wetlands, it is acknowledged that there is a risk of exposing acid sulphate soils and contaminating the wetlands. The effect of acid sulphates on the isolated pocket of SEPP14 coastal wetland shown in Figure 16 of the EIS could be considerable.

In discussion with the Department of Planning, it is considered that the greatest safeguard to the Wetlands would be to leave the natural boundaries undisturbed. The only compensatory wetland that would be created would be 0.29 ha currently occupied by the Loop Road embankment. As this is imported fill material and as there would be no disturbance of the natural wetland mudbase, there is no risk of acid sulphate contamination.

Without the compensatory wetlands originally proposed, the net effect on the SEPP14 coastal wetlands is 0.78 ha This is shown in Attachment 5.2.

5.3 Access [Submissions 5, 8, 11, 12, 14, 16, 59, 60, 63, 67, 68, 69, 84]

<u>Issue</u>: General requests for information about specific accesses.

Response: RW Miller Land, John Renshaw Drive.

The present access into the Boral Asphalt Plant at this site will be maintained during Stage 2 with a cross-over point allowing north and south access across a wide median.

The existing Boral access will be closed in Stage 3. As an alternative, access to John Renshaw Drive in Stage 3 will be provided for in the detailed design of that stage. The design will be prepared in conjunction with plans for the upgrading of the Chichester water pipeline which crosses the route of a possible access.

The EIS has no proposals for Weakleys Drive, or land adjacent to it.

Black Hill Road/Wayaba Road.

In Stage 2, with a new northbound carriageway and Lenaghans Drive carrying southbound traffic, the side roads of Black Hill Road and Wayaba Road will be located directly opposite each other with a very wide "median" in between. The median width in excess of 50 metres, will allow side road traffic to cross each carriageway, negotiating one direction of traffic at a time. The wide median of almost 10 car lengths, will provide ample storage room for traffic waiting to manoeuvre.

In Stage 3 this intersection will disappear to be replaced by a bridge over the dual carriageways, segregating the local road system from the National Highway.

Carrington Holdings - Weakleys Drive.

The EIS has no proposals for Weakleys Drive or land adjacent to it.

JA & DR Crockett/SR & BA Hardes - Pastureland Access.

Cattle access under the new bridges will be provided. During the design stage, further consideration will be given to maintaining cattle access to the pasture between the proposed road and Lenaghans Drive, north of Lenaghans Flat Bridge.

Access to land west of Lenaghans Drive will be arranged during land acquisition negotiations.

Issue:

Access restricted by congestion with specific reference to Wayaba Road, Anderson Drive (East and West), Thornton Road and Weakleys Drive.

Response:

Wayaba Road/Lenaghans Drive.

The speed of through traffic on Lenaghans Drive should not be greater than the speed before the opening of the freeway extension on 1 December 1993. The increase in traffic volumes will be offset in Stage 2 with the separation of the two carriageways by a median in excess of 50m wide at Wayaba Road. Traffic from the Blackhill and Wayaba side roads will therefore be able to negotiate the northbound and southbound through traffic in two separate stages, with ample queuing storage room between carriageways.

Anderson Drive East and West, Thornton Road.

Section B1 of the EIS clearly states that the study does not include any works other than those essential to provide adequate connections between the freeway and the New England Highway. Moreover, the study acknowledges that a considerable portion of the traffic travelling on the interim connections will re-route to the final National Highway link between the freeway and Branxton.

While separate and routine planning consideration of local road intersections with the State/National Highway road system will take place as capacity and safety demand, local roads close to the study area with pre-existing local problems were not considered in the scope of this study.

A grade separated proposal for Anderson Drive (East) at Tarro to allow east and west access from Beresfield is under consideration as a separate project and Federal concurrence has been sought.

Weakleys Drive.

Traffic Signals at the John Renshaw Drive/New England Highway cause significant gaps in the westbound traffic at the Weakleys Drive/New England Highway intersection. In Stage 2, after the bridge at John Renshaw Drive is constructed, the need to retain the right turn into John Renshaw Drive, under the new bridge, will be assessed in the light of traffic demand at that time. This is referred to on page 46 of the EIS.

A major consideration in providing a signal controlled right turn into John Renshaw Drive, will be the performance of the right turn into Weakleys Drive. A signal controlled turn at John Renshaw Drive would provide an alternative to the Weakleys Drive Access to the freeway.

Issue:

Access and Safety - General concern for various locations.

Response:

The Stage 1 Works are not works covered by the EIS. They are, however, intended to make access and road conditions as safe as possible on Lenaghans Drive when the freeway connects to it. Safety at each of the accesses is being addressed on an individual basis.

Stage 2 Works will bring a considerable improvement both in terms of capacity and safety. Cross-over points, allowing access to the north and the south will be located at Wayaba Road, Boral Asphalt and at the southern end of the Loop Road. The median will be sufficiently wide at these locations to store turning traffic. Local traffic will be able to cross each carriageway in separate movements, concentrating on only one direction of traffic at a time.

The speed of traffic should be no higher than on the existing road, prefreeway opening. However, speed limits will be reviewed jointly by the Authority and the police after the freeway opens and regular monitoring of the situation will be carried out.

Final design of Stage 2 will include discussions with the bus companies operating in the area, and the need for bus laybys will be considered.

5.4 Public Utilities/Government Authorities [Submissions 6, 7, 9, 10, 13, 23, 57, 64, 66, 65, 82, 70, 76, 78, 80, 82, 87, 89]

Issue:

Location and treatment of public utilities, and government agency requirements.

Response:

All necessary approvals will be obtained from the Department of Conservation and Land Management (CaLM), Mine Subsidence Board, Newcastle City Council, Environment Protection Authority and National Parks and Wildlife Service.

Any costs involved in varying the location of facilities operated by Telecom, Optus, Pacific Power, Shortland Electricity or Hunter Water will be met by the RTA.

The Public Works Department, which administers the SEPP 14 Wetlands in the tidal zone will be consulted in relation to bridge design and wetlands management.

Archaeological advice will be sought during the initial clearing operations, as required by the National Parks and Wildlife Service (NPWS). The results of any archaeology finds will be advised to NPWS.

Specialist advice will be sought from CaLM, or other recognised soil erosion experts during the design and construction stages, in relation to sedimentation and erosion control.

Further survey of the AGL trunk gas main, close to the Stockrington rail line and further concept design shows the need for a protective structure over the pipeline. This will be designed in conjunction with AGL and incorporated in the embankment design. The cost of this work will be met by the RTA.

The Chichester water pipeline is crossed by the proposed new carriageways and a future connection between Boral Asphalt and John Renshaw Drive. The pipeline is due for replacement by the year 2000. Provision will be made for the new pipeline under any new roads associated with this project, by providing culverts. Discussions will be held with Hunter Water during the design phases of the road construction project.

5.5 Stockrington Rail Line [Submissions 8, 15, 88]

Issue:

- (i) Rail line not abandoned and studies under consideration to use the rail line to haul waste for disposal on Coal and Allied Stockrington lands.
- (ii) The Richmond Vale Preservation Co-operative Society has an interest in preserving the corridor.
- (iii) The RTA is expected to provide adequate precautions where the road crosses the rail line.

Response:

The EIS proposed an "at grade" crossing of the rail line by a new deviation of Cedar Hill Road. It is now proposed that the arch under the northbound carriageway should be extended and the deviation of Cedar Hill Road modified to be grade separated from the rail line. This design modification will have the added advantage of raising the general level of the proposed local road deviation, making the new section less flood prone.

Cedar Hill Road deviation will be constructed as an integral part of the embankment of the new northbound carriageway. Because the deviation is sandwiched between the proposed new carriageway and the Wetlands, the local road deviation would have had to cross the rail line without any sight line along the rail line. This revision of the EIS proposal avoids constructing the crossing at-grade and later having to modify the arrangement.

5.6 Heritage/Wetlands/Erosion/Sedimentation [Submissions 10, 18, 63, 64, 67, 69, 83, 87, 89]

Issue:

- (i) Register of the National Estate.
- (ii) Need for sedimentation and erosion control and emergency spillage measures.
- (iii) Compensatory Wetland.
- (iv) Turtle fences.

Response:

(i) The Australian Heritage Commission advises that Hexham Swamp is on the Interim List of the Register of the National Estate as part of the Hunter Estuary.

Research and professional advice from the Shortland Wetlands Centre is that the proposed road development lies outside the declared area. The report on this issue is provided in Appendix D

(ii) Sedimentation and erosion control measures will be employed, as stated in the EIS sections E 2.10 and E 2.11. Professional advice will be obtained from the Department of Conservation and Land Management (CaLM) or other experts during the design and construction phases.

Throughout the design and construction process, the works will be subject to an Environment Management Plan for the "SEPP14" Coastal Wetlands (see Appendix E). This gives emphasis to protecting water quality and fauna in the vicinity of the wetland.

The management plan addresses:

Temporary erosion control measures before major works commence

Long term erosion control measures

. Fauna protection

Accidental spillage provisions

Environmental monitoring

The management plan was produced in conjunction with environmental scientists at the Shortland Wetlands Centre and soil conservation advisors from CaLM.

All new works will have sedimentation traps with sufficient capacity to trap the entire load of a bulk liquid tanker between the low flow outlet and the sediment trap spillway. A valve will be provided on the low flow outlet to allow it to be closed by emergency services.

- (iii) Compensatory Wetlands are dealt with in issue 5.2. Loop Road.
- (iv) Attention has been drawn to the annual migration of the Snake Necked Turtle and to the high death rate of these reptiles on Lenaghans Drive. In order to channel turtles to and from the bridges under Lenaghans Drive and the new road, low level fences will be constructed, with advice from the Shortland Wetlands Centre.

5.7 Timing of Stages 2 & 3 [Submissions 11, 12, 14, 16, 17, 19, 24, 58, 59, 60, 68, 75, 77, 85]

Issue:

Construction of the second new carriageway (Stage 3) will halve the accident rate. Carry out the construction of Stages 2 and 3 now, as one project.

Response:

While any accident rate at all gives cause for concern, it is unrealistic to expect there to be no accidents. The forecast accident level that will be achieved by the new carriageway and Lenaghans Drive operating as a one-way pair is regarded as similar to other roads carrying a similar traffic load. Attachment 5.3 shows Rural Crash Rates for road stereotypes for the years 1988 - 1990.

In order to reduce that accident level further, the EIS showed that an expenditure in excess of \$23m would be required. In economic terms, such an expenditure would not result in a substantial change to the benefit cost ratio (BCR) at this time.

The EIS position stating that the objective was to provide "adequate" road connections in terms of safety and capacity is maintained. However, the one-way pair of roads proposed in Stage 2 is regarded as adequate at this time.

While there can be no guarantee regarding the implementation or timing of the Stage 3 works, it is intended that Stage 3 should be introduced as safety, and traffic capacity demand.

5.8 Speed Limit/Safety [Submissions 12, 14, 19, 24, 62, 63, 68, 69]

Issue: A number of respondents suggest that Lenaghans Drive should be

speed zoned for 80 kph and make general reference to safety.

Response: The comments on speed and safety addressed in issues 5.3 Access and

5.7 Timing, apply. In brief these are:

<u>Speed</u> - Speed limits will be reviewed jointly with the police once the freeway opens and connects to Lenaghans Drive. Regular monitoring of the situation will be carried out. Initially, the speed limit on Lenaghans Drive will be reduced to 90km/hr.

<u>Safety</u> - The forecast accident level for Stage 2 (one way Lenaghans Drive) is regarded as similar to other roads carrying similar traffic. Attachment 5.3 provides accident rates for similar types of road for comparison.

Stage 3 - It is intended that Stage 3 will be introduced when safety and traffic demand require it.

5.9 Relocate Proposal [Submissions 3, 4, 24, 61, 74]

Issue: A number of EIS respondents suggest relocating the position of the

RTA Preferred Option in the area of the Loop Road, near the Crockett Home, opposite the southern end of the Loop Road and near the

Meadows.

Response: The Loop Road.

The proposal to abandon use of the Loop Road is covered in Issue 5.2 - Loop Road. The modified proposal in section 5.2 of this document

reflects the suggestions of the EIS respondents.

Crockett Home.

The EIS outlined proposals that would require acquisition of up to approximately 30% of a 5 acre property with a substantial home. The proposals affected outhouses, a tennis court and swimming pool. The owner requested that the alignment be modified to minimise affect of the property. Further investigation and geotechnical advice showed that the road cutting adjacent to the home was made of poor material and that the cutting would have to be widened, effectively engulfing the whole residence. The realignment of the dual carriageways at Lenaghans Flat to allow for Lenaghans Drive to be retained in the same position, however, causes the road alignment to move away, from the Crockett home and gives a degree of design freedom not possible under the original EIS proposal.

While there may be some minor affect on the property for erosion and sedimentation control, it has been possible to avoid the Crockett property generally. Detail of the effect on the property, if any, will only be available on completion of final design.

Home opposite Loop Road (Southern End).

The EIS proposal requires acquisition and demolition of homes opposite the southern end of the Loop Road. A request to avoid the home(s) was considered in detail. Because the property concerned is flanked on the west by Wetlands, the only viable alternative was to locate the proposed new road further east; that is, on top of the present location of Lenaghans Drive. The diagram in Attachment 5.4 shows the alternate alignments considered and the effect on adjacent land.

In summary this alternate proposal is not economically viable as there was a net community cost estimated to be between \$0.5M to \$1.0M. Apart from the fact that the road would in turn affect a residence and quarry operation on the other side of Lenaghans Drive, the following issues were relevant:

- There would be a need to construct about 1.2km of Lenaghans Drive as a new deviation.
- The existing Lenaghans Drive, which has just been reconstructed and widened for the freeway, would have to be abandoned.
- The freeway radius would be reduced to 1200m.
- Extensive acquisition of the quarry property opposite would be required.
- Noise barriers would have to be provided for the four homes remaining close to the freeway. They would be located close to the new road.
- An undesirable S-bend would have to be introduced into the local road adjacent to the existing bridge which could reduce safety conditions for traffic.

The arch over Stockrington Rail Line would require extending to accommodate the necessary curve in the freeway.

The Meadows.

For perceived visual and noise reasons, respondents suggested that the proposed road should be relocated approximately 300m further away from the Meadows development.

This suggestion is not favoured for the following reasons:

- The proposed road already lies on the opposite side of Lenaghans Drive from the homes. Lenaghans Drive currently carries about 9,000 vehicles per day.
- The forecast noise levels at this stage are estimated to be insufficient to warrant noise attenuation measures at the Meadows' homes.
- It is intended to use surplus material from the project, where available, to create visual screening of traffic on the embankment opposite the Meadows. Indirectly this may also have the added benefit of reducing noise levels from the new road.
- The proposal has the old and the new road in one 'corridor' minimising impact on the area, whether rural or urban in nature. Were the road to be relocated as suggested, the intervening 300m wide strip between the old and new roads would be undesirable for either rural or urban development.
- Moving the new road to the west, would mean further reconstruction of Black Hill Road.

5.10 Route Planning [Submissions 19, 63, 68, 69, 71, 81, 84]

Issue:

There has been poor Federal State co-ordination in developing the freeway route and there is a lack of forward planning.

Response:

As indicated in the EIS (page 17) there has been a clear intention by both Federal and State Governments since 1984 to continue the National Highway in its present position, with temporary connections to the New England Highway using Lenaghans Drive (Minmi Road) as a temporary National Highway. Such intentions were published in National Highway Strategy documentation shown in public display.

As foreshadowed in 1984, Lenaghans Drive has been upgraded and now has the capacity to carry the freeway traffic for several years.

The staged introduction of the new dual carriageway adjacent to Lenaghans Drive has been designed very much with forward planning in mind, and provides for:

- An improvement to the local road in the short term, as traffic demand increases.
- An alignment and design standard suitable for incorporation into the final route of the National Highway if the Outer Maitland By-Pass is chosen as the final route.
- A staging that will avoid committing either the final route of the National Highway or the development of Motorway Pacific to the Lenaghans Drive corridor.

5.11 Traffic Volumes [Submissions 63, 84, 85]

Issue:

Lenaghans Drive will have had a 250% increase in traffic since 1984, once the freeway opens. Landowners adjacent to Lenaghans Drive are affected by a multitude of problems associated with traffic.

Response:

Lenaghans Drive to date has experienced traffic growth similar to or less than adjacent roads such as Main Road 220 and Main Road 588. It is acknowledged that the opening of the freeway will cause a further substantial increase in traffic on this road. However, the use of Lenaghans Drive as a two way connection to the New England Highway is a temporary phenomenon. The projected increase in traffic attributable to the opening of the freeway is 50%.

While Stage 2 will take one direction of traffic flow further away from the Meadows in the short term and Stage 3 will allow Lenaghans Drive to revert to a local road in the long term, there can be no guarantee given about residual level of local traffic attracted to Lenaghans Drive.

The attendant problems accompanying an increase in traffic are acknowledged in the EIS. Further comment, where possible, is included in the issues under discussion.

Issue:

It is suggested that many heavy trucks on Main Road 220 at Kearsley near Cessnock will re-route and use Weakleys Drive. Can Weakleys Drive accommodate this traffic, with particular reference to the right turn into Weakleys Drive.

Response:

The road pavement will be physically capable of carrying heavy traffic after the current reconstruction works. In terms of traffic volumes it is considered that the road will have adequate capacity for the traffic volumes forecast in the EIS section C3.9. The EIS traffic modelling assumed a level of re-routing, as suggested by the respondent.

The traffic movement from the New England Highway has been made easier by the gaps in the westbound traffic flow caused by the new traffic signals at the intersection immediately east of the Weakleys Drive intersection.

The medium to long term future of the Weakleys Drive/New England Highway intersection and its relationship to the adjacent intersections at Thornton Road and Anderson Drive (West) are currently being examined as part of the New England Highway Overview Study. The long term traffic control management at these locations will be determined as part of the normal planning process, distinct from the temporary freeway connections determined in this study.

However, if after the introduction of a flyover at John Renshaw Drive, traffic experiences difficulty turning into Weakleys Drive, consideration will be given to providing a signal controlled right turn under the bridge, allowing access to Lenaghans Drive via John Renshaw Drive. This would relieve any unacceptable traffic pressure on the Weakleys Drive intersection. This proposal is outlined in the EIS, page 46.

5.12 Visual/Intrusion [Submissions 12, 63]

Issue:

Noise and fumes have increased considerably since the upgrading of Lenaghans Drive. Tree screening on the property/road boundary is requested.

Response:

Tree and shrub planting will be incorporated into the final design at sensitive locations, wherever possible. A detailed Landscape Plan will be prepared which will specify the plant species to be used and their location.

Issue:

The view to the west, from the Meadows' property would be substantially altered.

Response:

During detailed design, the RTA shall examine the opportunity to dispose of surplus material and create visual screening for Meadows' properties of traffic on the embankment immediately north of Black Hill Road.

Issue:

Intrusion by strangers and personal security is already a concern with a noticeable increase in requests for petrol or use of the telephone. This will increase with traffic and will be unacceptable.

Response:

It is acknowledged that calls for assistance on residents of the Meadows may increase with the urbanisation of the area and with an increase in traffic. However, there is little the Authority can do in this matter. Discussions have been held with Telecom requesting that consideration be given to the installation of a public call box in Wayaba Road. Telecom Payphone Services has advised that it is not prepared to install a public telephone in the area. The full context of the Telecom reply is given in Attachment 5.5.

5.13 Compensation [Submission 63]

<u>Issue:</u> The many changes to the area caused by the new road affect the

overall value of an adjacent property, although not physically

affected. The owner wishes compensation.

Response: The Authority has a policy of paying compensation only in cases

where the property is directly physically affected.

As the property concerned is not physically affected, a claim

cannot be considered in this case.

5.14 Other Proposals [Submissions 2, 69, 72]

Issue: A roundabout or signals should be installed at Weakleys

Drive/New England Highway intersection.

Response: Refer issue 5.11 - traffic volumes. Provision exists to relieve

right turn traffic into Weakleys Drive by allowing the right turn at John Renshaw Drive, under the proposed flyover, if

necessary.

Issue: A very large roundabout of some 3.2 km circumference and

incorporating the New England Highway, John Renshaw Drive, Weakleys Drive and a new section of road, together with a

grade separation is proposed as an alternative.

Response:

This submission has been considered and discounted in the initial EIS process. Of specific concern is the northbound traffic on the New England Highway, traffic from the freeway and traffic from Beresfield which would all have to travel a considerable extra distance. The New England Highway traffic of approximate 30,000 vehicles/day would have to travel up to 2.1 km further to cover the same stretch of road. This suggestion would also sterilise an area previously considered for an industrial subdivision.

Issue:

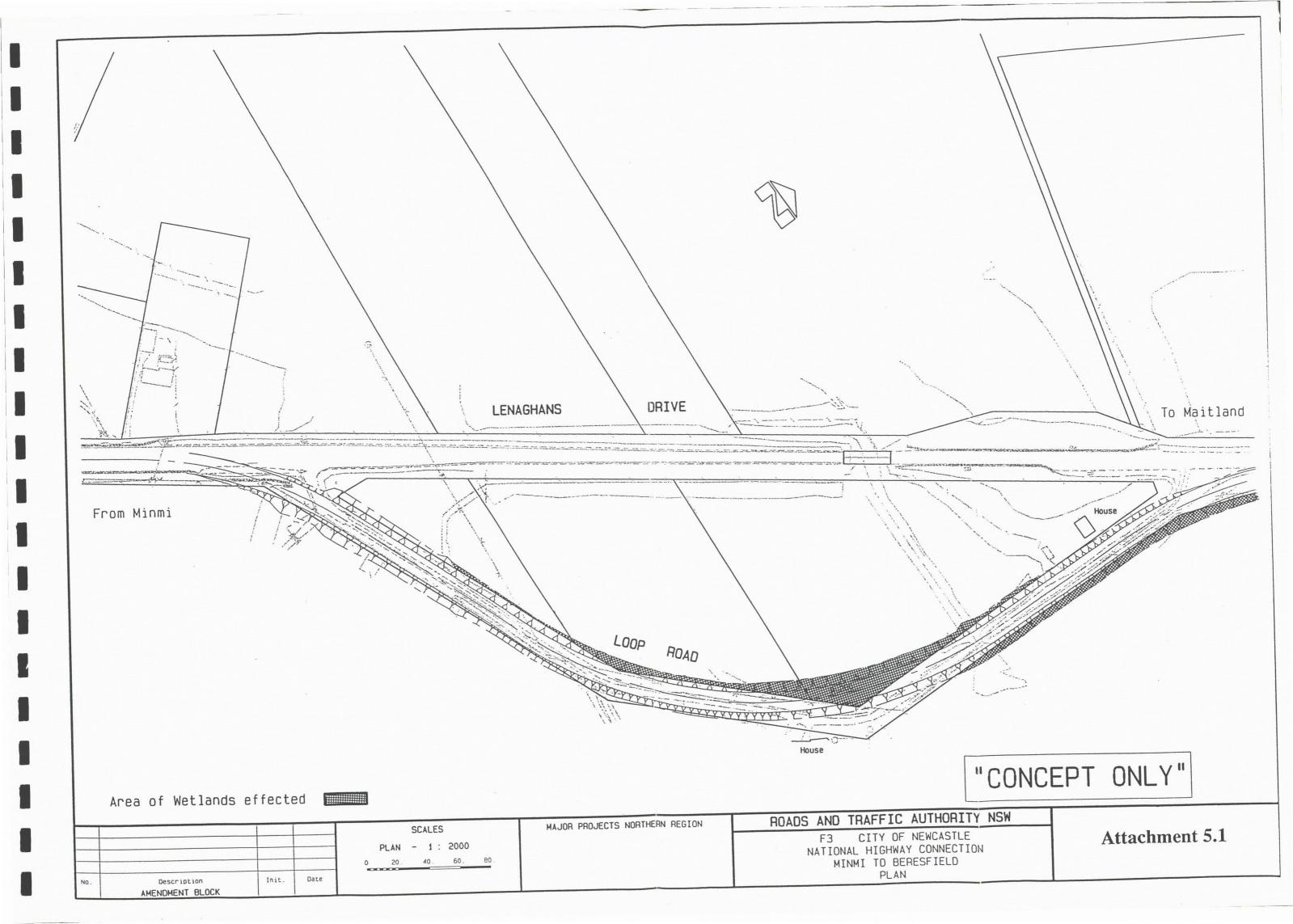
Residential Development Consent - Lenaghans Drive.

During the course of assessing submissions to the EIS, the Authority was advised of a successful challenge in the Land and Environment Court of planning consent refusal by Newcastle City Council. The development now approved, with an access directly onto Lenaghans Drive is on the east side of Lenaghans Drive, immediately north of the Meadows development.

Response:

In correspondence with Newcastle City Council, reference Attachment 5.6, it has been suggested that for reasons of safety and access, the proposed development should not connect onto Lenaghans Drive at the proposed location until Lenaghans Drive reverts to local usage only. Instead, it is proposed, a connection should be made to Phoenix Drive which will have full turning facilities provided at the Lenaghans Drive/Wayaba road/Blackhill Road intersection. As the proposed development comprises 27 x 1 hectare lots, the level of traffic generated should be able to be accommodated within the adjacent Meadows development road system.

This shows the effect of an embankment and curve improvement on the Loop Road and the consequent encroachment on to the Wetlands.



This shows the total effect of the proposal on the Wetlands, including the compensatory Wetlands.

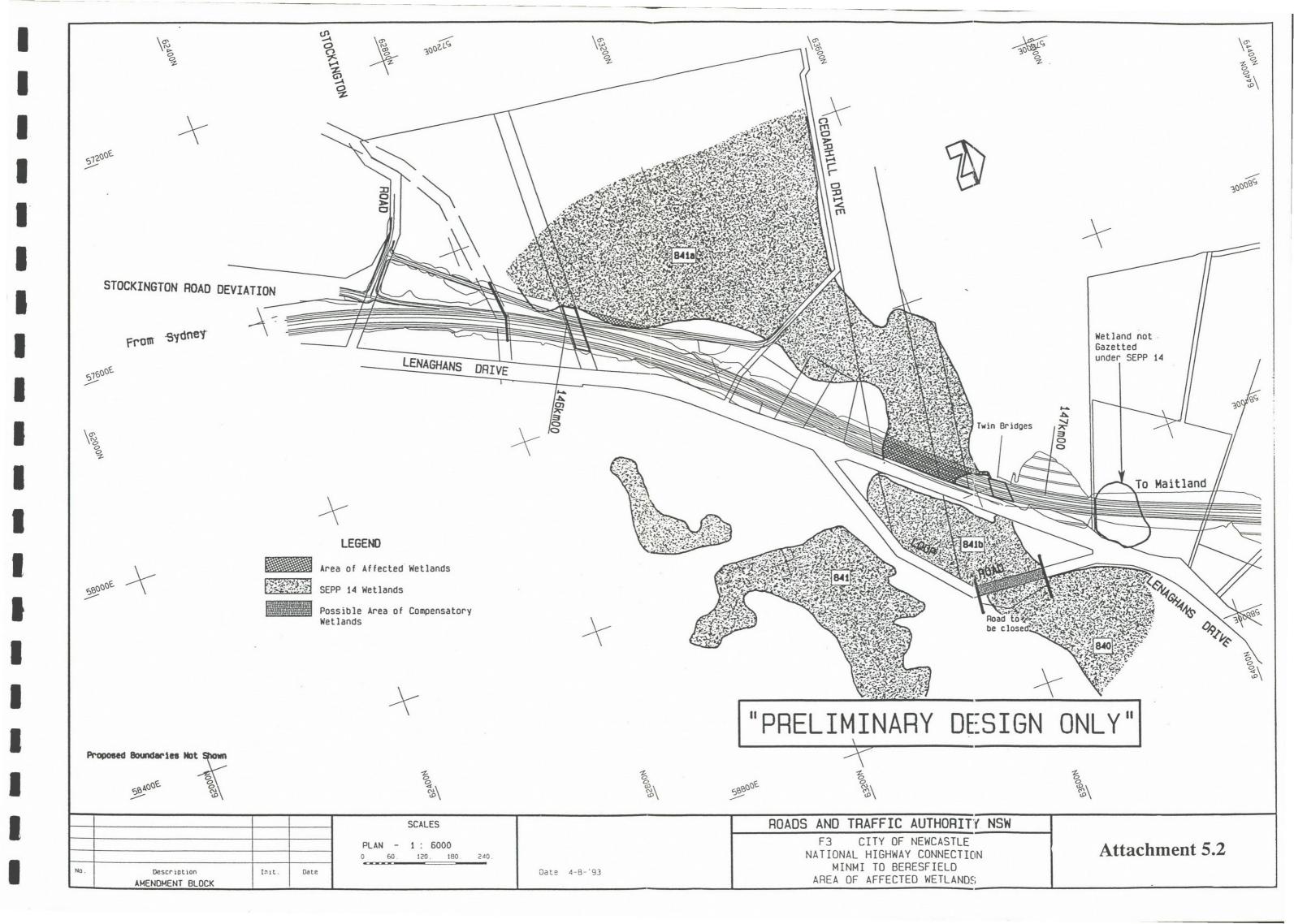


Table of Accident Rates for Rural Road Stereotypes.

RURAL CRASH RATES - ROAD STEREOTYPES

Accident Rates by Major Road Types All road design elements combined

ALL ROAD DESIGN ELEMENTS COMBINED	2 lane Non-Divided	2 Lane Non-Divided + Overtaking	2 Lane Non-Divided Unsealed	4 Lane Non Divided	4 Lane Divided	2 Lane Divided + Overtaking	4 Lane Freeway	All road types combined
All Accidents	46.6	37.6	64.6	33.6	33.5	34.9	11.3	38.8
Fatal Accidents	2.6	1.5	0.0	0.9	0.7	0.0	0.3	1.9
Admitted Injury Accidents	9.3	7.4	25.8	3.5	4.1	0.0	1.4	7.2
Treated Injury Accidents	10.6	9.5	12.9	10.4	11.5	21.0	3.9	9.6
Non-Treated Injury Accid.	1.5	1.2	0.0	2.6	1.1	7.0	0.2	1.3
Non-Casualty Accidents	22.7	18.1	25.8	16.4	16.1	7.0	5.4	18.8
Serious Casualty Accidents	11.9	8.8	25.8	4.3	4.8	0.0	1.8	9.1
Non Intersection Accidents	41.0	34.2	64.6	25.0	20.8	21.0	10.5	33.3
Intersection Accidents	5.6	3.4	0.0	8.6	12.6	14.0	0.7	5.5
Length of road (km)	1697.6	287.4	101.9	10.8	85.2	2.2	61.8	2246.9
Total number of accidents	3040	787	5	39	472	5	166	4514

Accident Rate (100 Million Vehicle Kilometres)

NOTE: The above table was derived from the RTA Road Safety Bureau's RCR database for the years 1988 - 1990.

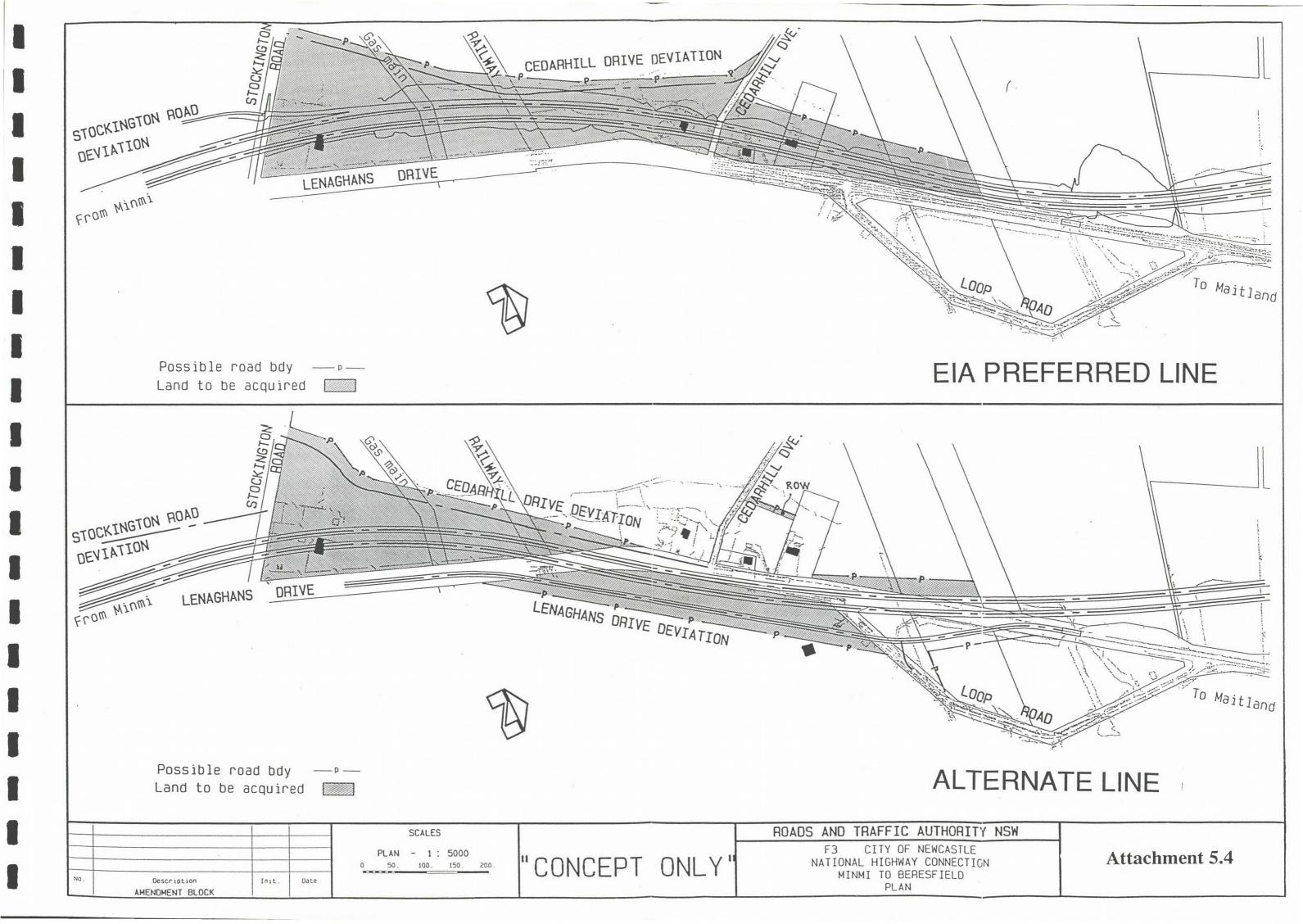
The database excludes all 60 km/hr sections and may have use a small sample size to derive some of the results.

Non intersection accidents were all those accidents which were not within 10 metres of an intersection.

Intersection Accidents were accidents within 10 metres of an intersection.

The length of the road relates to the total sample size in the study for the particular variables included.

Shows alternate locations of dual carriageway opposite east end of Loop Road.



Correspondence from Telecom



TELECOM REPLY OF 6 AUGUST 1993 TO REQUEST FOR PUBLIC TELEPHONE KIOSK AT WAYABA ROAD.

Telecom Payphone Services (Hunter Region) advised:

The decision to provide a public telephone in a particular place or location takes into account:

- * the technical feasibility of providing and maintaining a payphone.
- * the suitability of the location having regard to the safety of users, public safety, environmental impact and the risk of vandalism.
- * the commercial viability of the site.

An inspection of Lenaghans Road from the roundabout to the present end of the construction and Wayaba Road has been carried out.

Telecom Payphone Services does not consider a location in Wayaba Road offers sufficient scope to provide a professional well presented public telephone. Motorists would be reluctant to leave the main stream of traffic and would require a turning or exit lane as well as sufficient parking for larger vehicles. The motorists must be able to enter or exit safely and easily without undue delays.

Telecom suggested that if a public telephone installation was to be considered then Telecom would require:

- 1 RTA to provide a parking bay for two semi-trailers at the site of the public telephone.
- 2 RTA to provide a large payphone sign at end of freeway and 500 metres from site or turn off, if payphone is installed in Wayaba Road.
- 3 RTA to provide increased lighting at site of public telephone.
- 4 RTA to provide assistance with installation eg electricity, conduits, street crossing.
- 5 Option of removal of cabinet when freeway is extended past this area.

In conclusion, Telecom stated that after making all reasonable efforts to assess the potential demand for payphone services from local residents and in particular passing vehicles, Telecom considers that even if the above conditions could be achieved, the usage level would still be unacceptable.

Telecom Payphones Services advised that at this time it is not prepared to commit to the installation of a public telephone in this area.

Correspondence with Newcastle City
Council about Proposed Residential
Development.

The Authority advised that while it can see merit in servicing of the proposed residential area, covering both Council and Shelldale land with one access only, there is grave concern over any development that will require a new access onto Lenaghans Drive while it is being used as a temporary National Highway. All Federally funded works undertaken by Council to date have been specifically directed at minimising and making safe all access conflict points.

Subject to the final determination of the Environmental Impact Statement currently under study, Lenaghans Drive will carry all the National Highway traffic for the next two years and then become one carriageway of a two-way pair for a number of years.

The Authority advised that the concerns it has over the proposed development relate specifically to safety, noise and access. These are detailed overleaf.

The Authority suggested that the proposed development should gain access to Lenaghans Drive via Phoenix Drive (Wayaba Road) for the duration that Lenaghans Drive will be used as a temporary National Highway. On reversion to local road usage, the final subdivision access, as proposed, could be constructed.

National Highway Interim Connections - Sydney/Newcastle Freeway to New England Highway. Development Consent (CT112/240782).

RTA concerns over Subdivision Proposal.

Location of Access

200m south of Boral Access to Asphalt Plant 530m south of John Renshaw Drive 2.6km north of Wayaba Road.

Safety

The proposed access is located at a point where two southbound lanes will start a 200m merge. These lanes are currently under construction as part of a sliplane scheme at the roundabout. Further traffic movements in this area are most undesirable as drivers on Lenaghans Drive will be manoeuvring for position in the merge and will be unprepared for side road traffic or right turn traffic crossing across the path of southbound traffic.

In both Stages 1 and 2 of the EIS proposal, a right turn into the proposed development or out of the site at the site of the new access is not provided for. A type C intersection, as proposed in the development consent is inappropriate in safety terms by virtue of its location and has not been incorporated in any design considerations to date.

Noise

The proposed National Highway is approximately 60 metres from the boundary of the proposed development. As such, there is potential for the site to be affected by noise from the proposed new road.

Access

As indicated above, notwithstanding the safety issues, any new access would have to operate on a left in, left out basis, with the nearest turning facility, under Stage 2, at Wayaba Road.

Alternatively, a temporary connection of the proposed development to Phoenix Drive would overcome all of the concerns.

It is also noted that the proposed development shows a new road being constructed through the site of one of the 330 KV Pacific Power Steel transmission towers.

6 Consideration Of Clause 56 Factors

Clause 56 of the Environmental Planning and Assessment Regulation sets out a number of factors which need to be taken into account when consideration is being given to the likely impact of an activity on the environment. Set out below is a discussion of the impact of the proposed activity on the environment in the context of these factors.

The table at the end of this section lists the parts of the EIS which consider each of the factors in Clause 56 of the Regulation.

Will the proposal cause:

(a) any environmental impact on a community?

Yes. These matters have been the subject of the EIS.

(b) a transformation of a locality?

Yes. These matters have been the subject of the EIS.

(c) any environmental impact on the ecosystems of the locality?

Yes. These matters have been the subject of the EIS.

(d) a diminution of the aesthetic, recreational, scientific or other environmental quality or value of a locality?

Yes. These matters have been the subject of the EIS.

(e) any effect upon a locality, place or building having aesthetic, anthropological, archaeological, cultural, historical, scientific or social significance or other special value for present or future generations?

No. The modified proposal will not affect any known place with these qualities.

(e1) any impact on the habitat of any protected fauna within the meaning of section 98 of the National Parks and Wildlife Act 1974 or endangered fauna within the meaning of that Act?

Yes. These matters have been the subject of the EIS.

(f) any endangering of any species of fauna or flora?

No. The modified proposal will not endanger any species of known fauna or flora.

(g) any long-term effects on the environment?

Yes. These matters have been the subject of the EIS.

(h) any degradation of the quality of the environment?

Yes. These matters have been the subject of the EIS.

(i) any risk to the safety of the environment?

Yes. These matters have been the subject of the EIS.

(j) any curtailing of the range of beneficial uses of the environment?

No. The modified proposal will not cause a significant curtailment of beneficial uses of the environment.

(k) any pollution of the environment

Yes. These matters have been the subject of the EIS.

(l) any environmental problems associated with the disposal of waste?

No. Waste generated during construction of the project will be disposed off site in approved waste disposal depots.

(m) any increased demands on resources, natural or otherwise, which are, or are likely to become, in short supply?

No. Savings in petroleum resources are forecast from the use of the proposed road.

(n) any cumulative environmental effect with other existing or likely future activities?

Yes. These matters have been the subject of the EIS.

TABLE

CLAUSE 56 FACTORS	ENVIRONMENTAL IMPACT STATEMENT
Will the proposed activity cause:	
(a) any environmental impact on a community	PART F: 2, 3
(b) a transformation of a locality	PART F: 1.3, 2.3, 3.2, 3.3, 4.4
(c) any environmental impact on the ecosystems of the locality	PART F: 1.3, 1.6,
(d) a diminution of the aesthetic, recreational, scientific or other environmental quality or value of a locality	PART F: 1.3, 1.5, 1.6, 2.1,
(e) any effect upon a locality, place or building having aesthetic, anthropological, archaeological, cultural, historical, scientific or social significance or other special value for present or future generations	PART F: 3.5, 3.6
(e1) any impact on the habitat of any protected fauna within the meaning of section 98 of the National Parks and Wildlife Act 1974 or endangered fauna within the meaning of that Act	PART F: 1.6
(f) any endangering of any species of fauna or flora	PART F: 1.6
(g) any long-term effects on the environment	PART F: 2.1, 2.2, 2.3, 3.2, 3.3, 3.4, 4.4
(h) any degradation of the quality of the environment	PART F: 1.1, 1.3, 1.5, 1.7, 2.1, 2.2, 2.3, 3.2, 3.3, 3.4, 4.4
(i) any risk to the safety of the environment	PART F: 4.2
(j) any curtailing of the range of beneficial uses of the environment	PART F: 1.4, 1.7, 3.3
(k) any pollution of the environment	PART F: 1.5, 2.2, 2.3, 4.2
(l) any environmental problems associated with the disposal of waste	PART F: 1.5, 4.2
(m) any increased demands on resources, natural or otherwise, which are, or are likely to become, in short supply	PART F: 1.7, 4.1
(n) any cumulative environmental effect with other existing or likely future activities	PART F: 4.4

7 Plans of the Preferred Route.

(Concept Design Only)

- 7.1 Plan of Proposed Bridge Intersection of John Renshaw Drive and the New England Highway.
- 7.2 Typical Cross Sections of the Staged Road Proposal.
- 7.3 Plans of the Road Proposal (3 Sheets).
- 7.4 Longitudinal Section of the Road Proposal (2 Sheets)

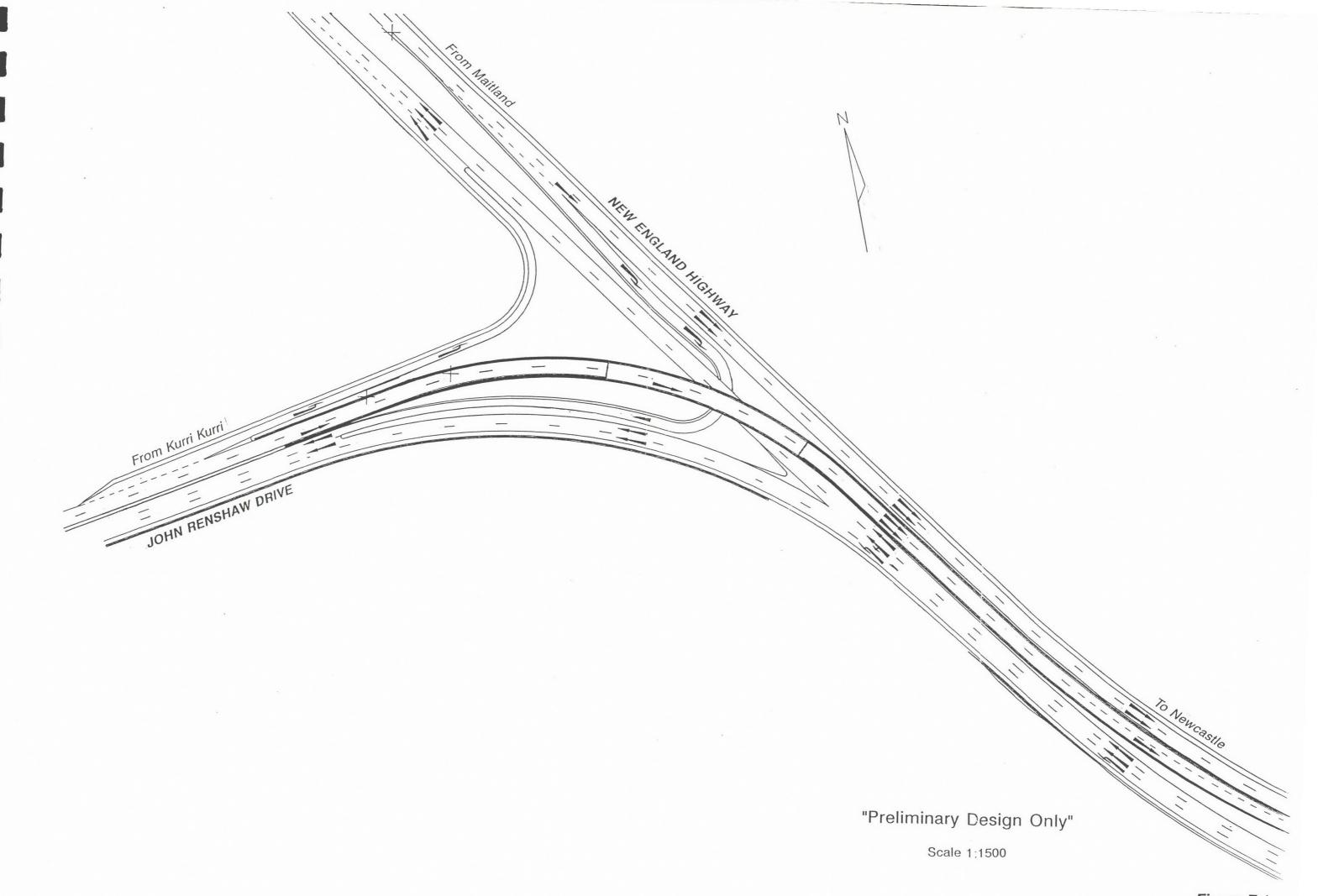
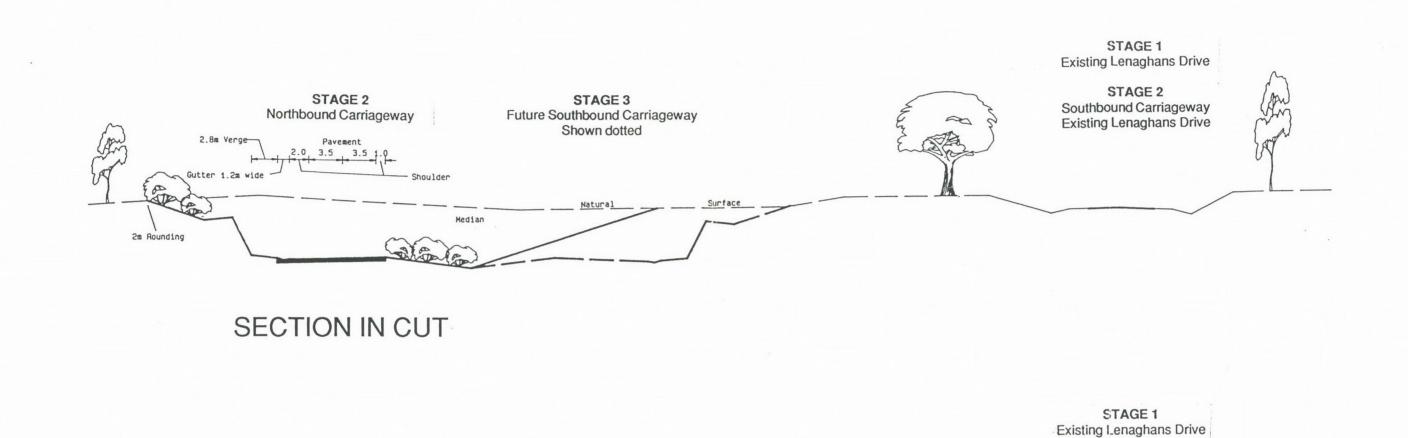


Figure 7.1



STAGE 3

Future Southbound Carriageway Shown dotted

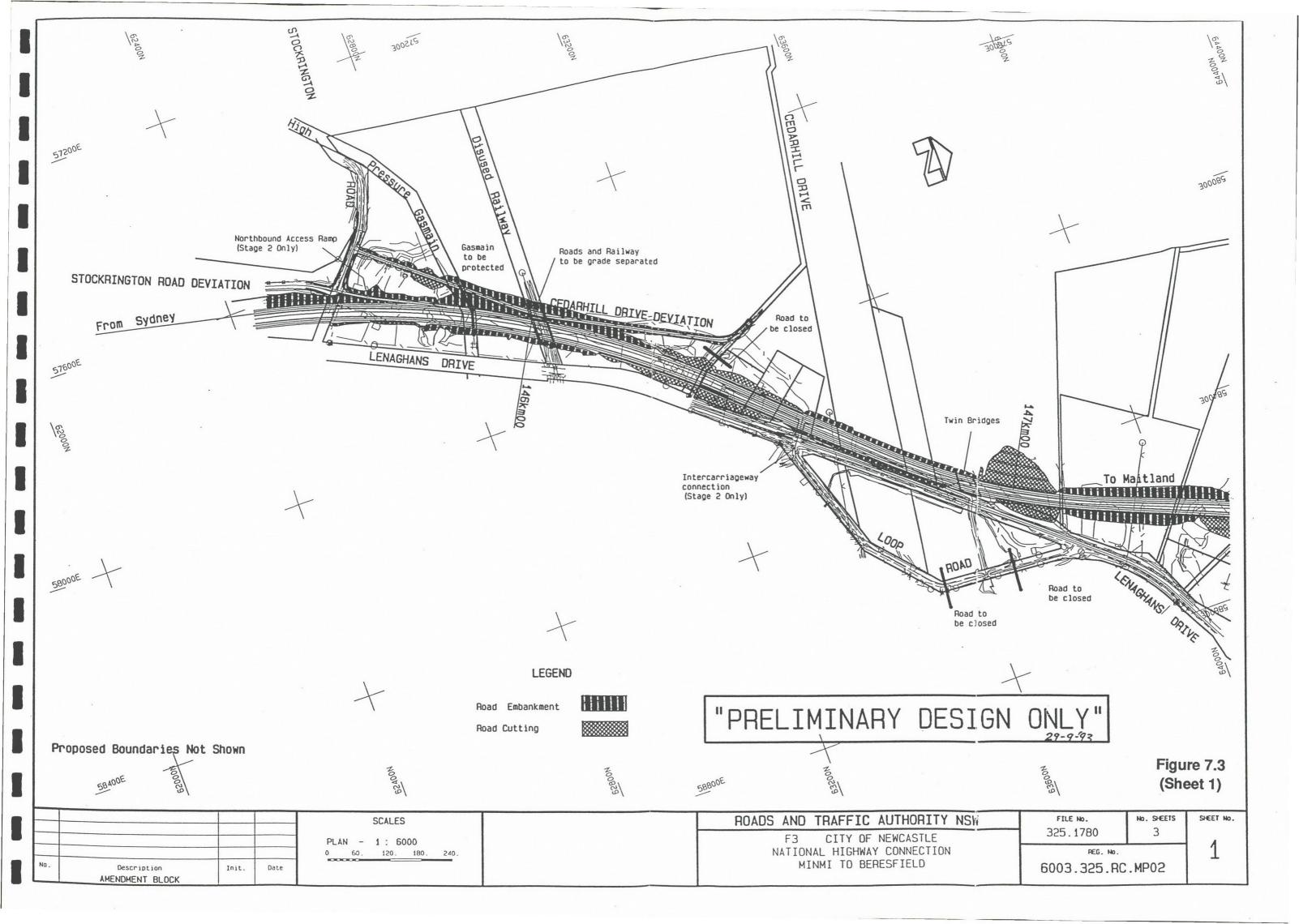
SECTION IN EMBANKMENT

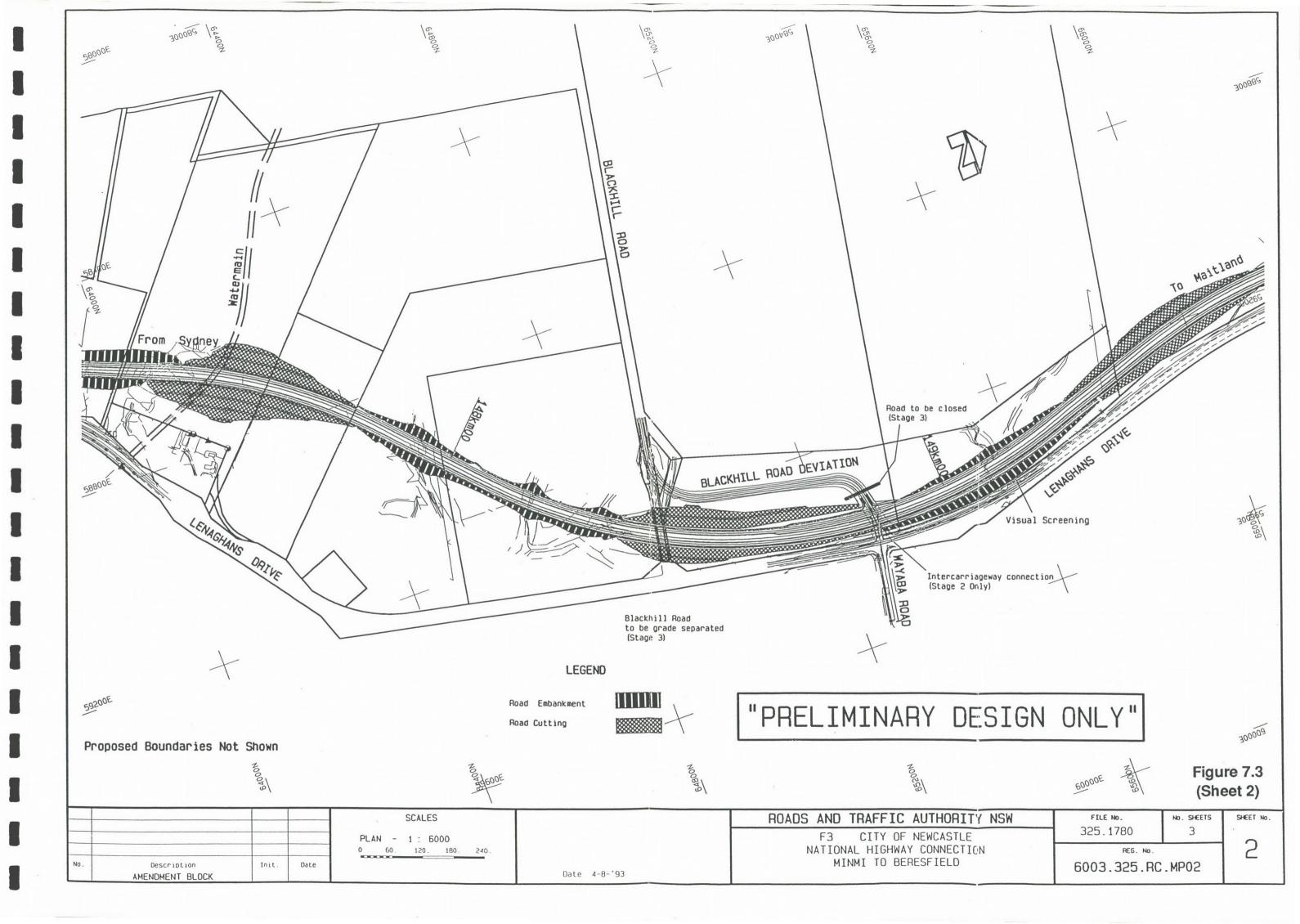
STAGE 2

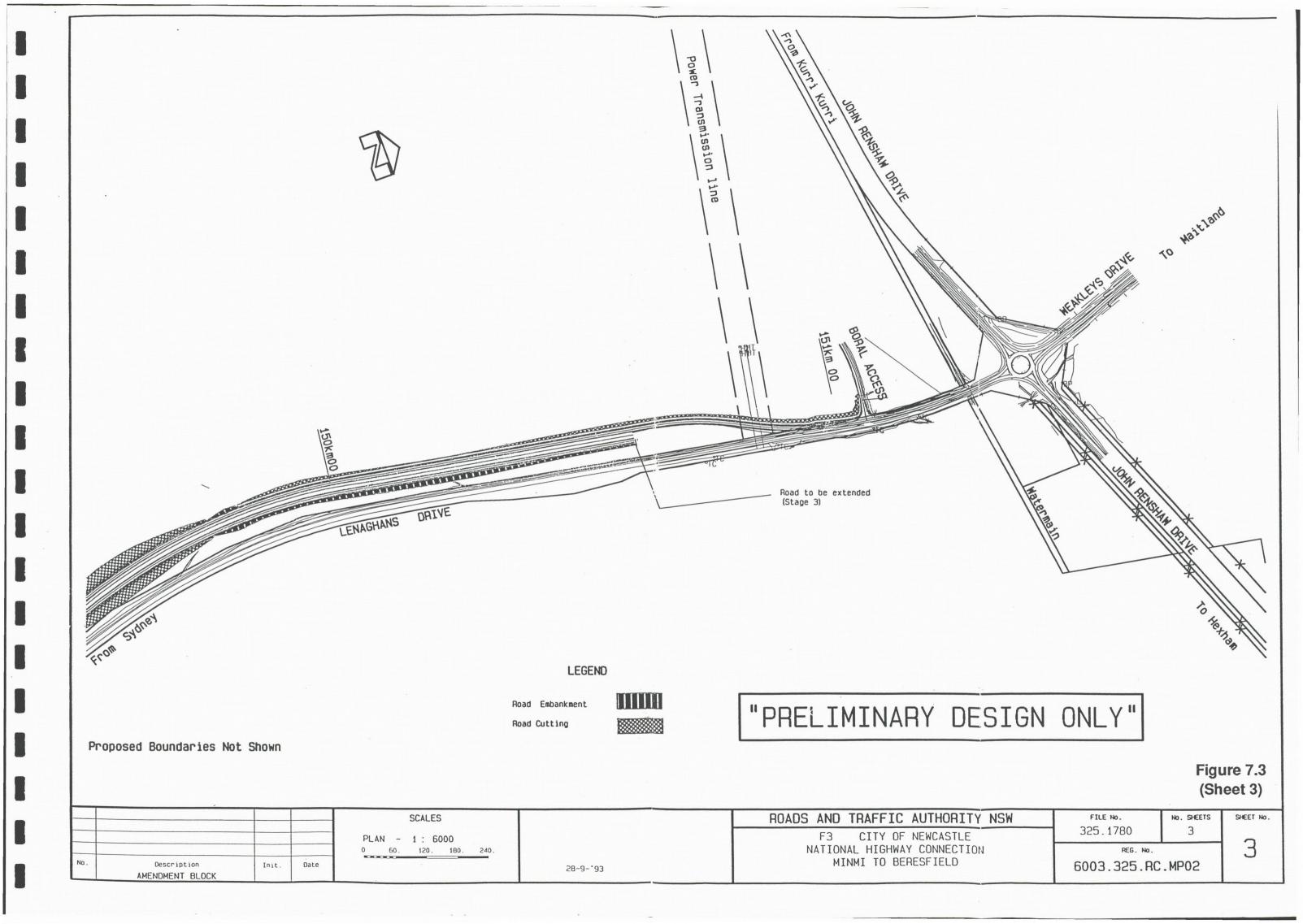
Northbound Carriageway

Note: Batter slopes are subject to final design

STAGE 2 Southbound Carriageway Existing Lenaghans Drive







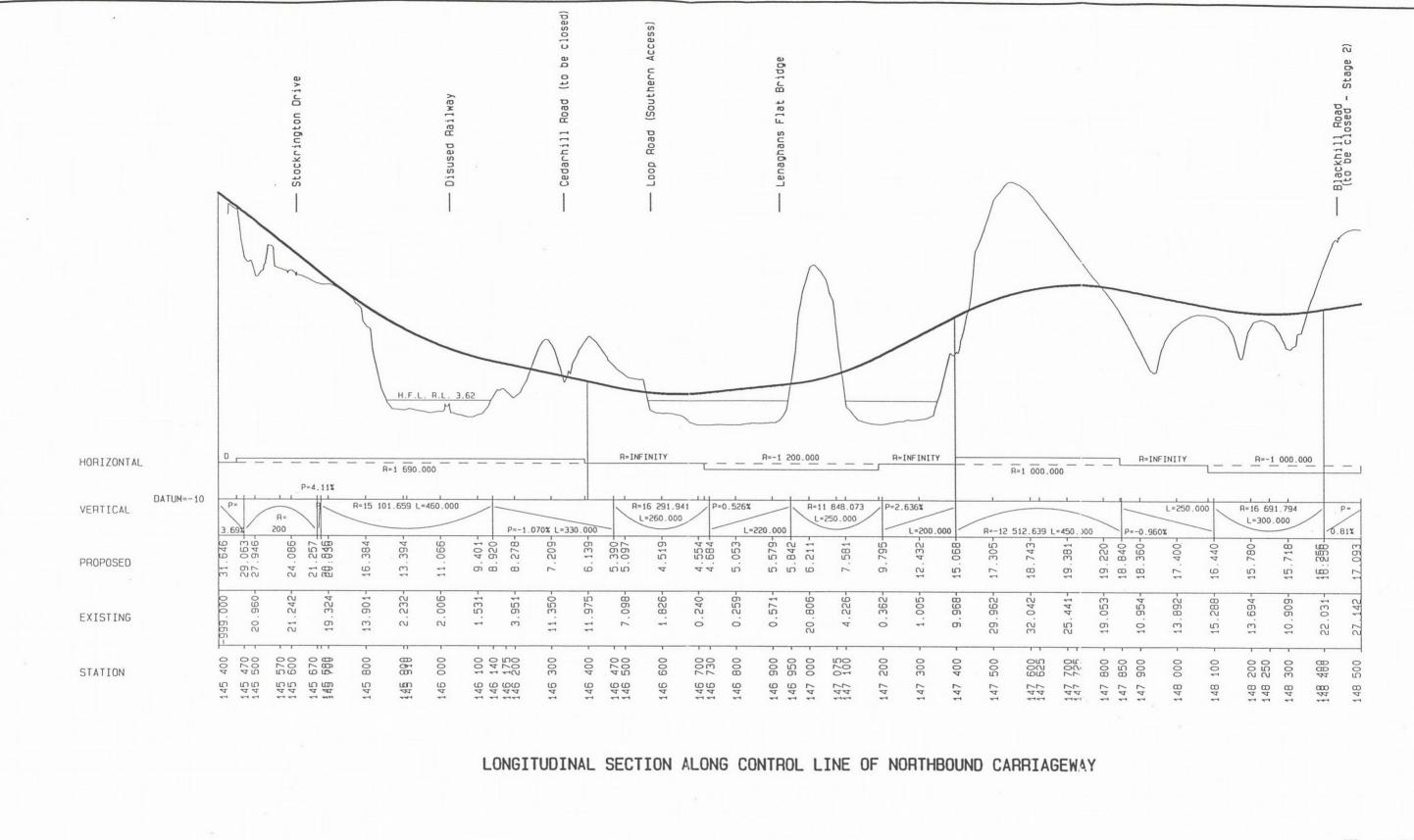
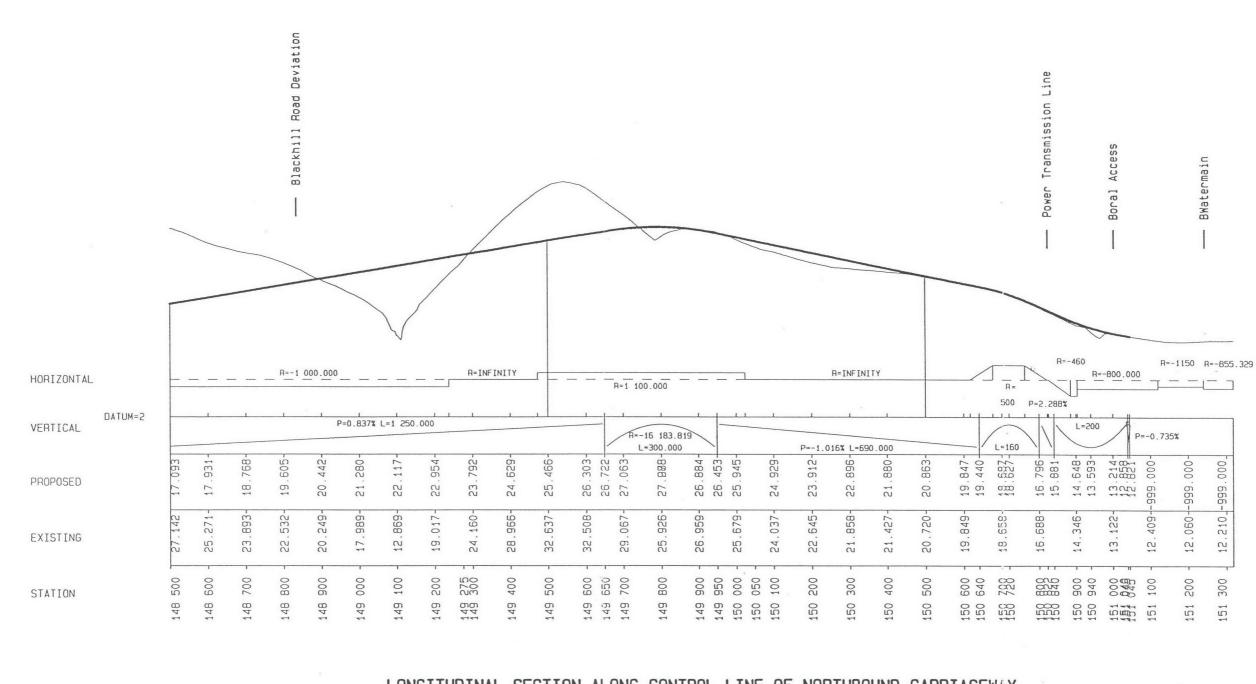


Figure 7.4 (Sheet 1)

"PRELIMINARY DESIGN ONLY"

-				SCALES	MAJOR PROJECTS NORTHERN REGION	ROADS AND TRAFFIC AUTHORITY NSW	FILE No.	No. SHEETS	SHEET No.
				LONG - 1: 10000 hor.	Designed	F3 CITY OF NEWCASTLE NATIONAL HIGHWAY CONNECTION	325.1780	2	11
No.	Description AMENDMENT BLOCK	Init.	Date	0 5 10 500 15 Vert.	Recommended	MINMI TO BERESFIELD LONGITUDINAL SECTION 145km450 - 148km500	6003.325.RC	C.MP02	



LONGITUDINAL SECTION ALONG CONTROL LINE OF NORTHBOUND CARRIAGEWAY

Figure 7.4 (Sheet 2)

"PRELIMINARY DESIGN ONLY"

				SCALES	MAJOR PROJECTS NORTHERN REGION	ROADS AND TRAFFIC AUTHORITY NSW	FILE NO.	No. SHEETS	SHEET No.
			-	LONG - 1: 10000 hor.	Designed	F3 CITY OF NEWCASTLE	325.1780	5	10
				0 100. 200. 300. 400.		NATIONAL HIGHWAY CONNECTION	REG. No.		1 2
No.	Description AMENDMENT BLOCK	Init.	Date	o 5 1: 500 15 Vert.	Recommended	MINMI TO BERESFIELD LONGITUDINAL SECTION 148km500 - 151km317.903	6003.325.RC	.MP02	

SUMMARY OF REPRESENTATIONS

NATIONAL HIGHWAY INTERIM CONNECTIONS - EIS REPRESENTATIONS

ISSUES	REPRESENTATIONS
A. NOISE	1,12,16,24,63,73,74,79,89
B. LOOP ROAD	3,4,20,21,22,25-56,67,71
C. ACCESS	5,8,11,12,14,16,59,60,63,67,68,69,84
D. PUBLIC UTILITIES/GOVT AUTHORITIES	6,7,9,10,13,23,57,64,65,66,70,76,78,80,82,87,89
E. STOCKRINGTON RAIL LINE	8,15,88
F. HERITAGE/WETLANDS/EROSION/ SEDIMENTATION	10,18,63,64,67,69,83,87,89
G. STAGES 2, 3 TIMING	11,12,14,16,17,19,24,58,59,60,68,75,77,85
H. SPEED LIMIT/SAFETY	12,14,19,24,62,63,68,69
I. RELOCATE PROPOSAL	3,4,24,61,74
J. ROUTE PLANNING	19,63,68,69,71,81,84
K. TRAFFIC VOLUMES	63,84,85
L. VISUAL/INTRUSION	12,63
M. COMPENSATION	63,73
N. OTHER PROPOSALS	2,69,72

Note: In the "Issues in Summary" column of the table following, the issues raised in each representation are denoted by the letters A to N, which are defined above.

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
1.	Mrs V Bell Secretary Lenaghans Drive Concerned Citizens Group 4 Phoenix Road BLACKHILL 2323	23 April 93 [reply 6 May 93]	11 Noise issues where further details requested from the RTA. [Reply sent 6 May 1993 direct from noise consultant, Environmental Planning Section, RTA.]
•	M. D.M.W.	14.4 (1.02)	[A]
2.	Mr B M Watts 22 McLean Avenue CHATSWOOD 2067	14 April 93	No comment to make specific to EIS, but consider connections from Freeway should be across Hexham swamp following the old Railway line. [Reply sent from Zone Planner re Pacific Highway 19 May 1993].
			[N]
3.	Mr Crockett Loop Road Lenaghans Flat	20 April 93 Residents Group Meeting	Loop Road flooding, vibration effects on Loop Road home, cattle access, effect on Crockett Home (30% taken). Request to lessen effect on home. Concerns about land acquisition. [Reply sent re: land acquisition 21 April 93]
			[B,C,I]
4.	Mrs Hardes Loop Road Lenaghans Flat	20 April 93 Residents Group Meeting	Issues as above.
-	W C	20.4 . 11.02	[B]
5.	Mrs Green Dairy Corner Lenaghans Drive	20 April 93 Residents Group Meeting	Great concern about safe road access to family home. [C]
6.	Hunter Water Corporation Limited PO Box 5171B NEWCASTLE WEST Attn: Mr Bruce Petersen	20 April 93 Hunter Water Corporation	No objections but notes major crossing of Corporations water supply. [Further advice re protective measures for existing and proposed pipelines to be provided]

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
7.	Newcastle City Council PO Box 489 NEWCASTLE 2300 Attn: Mr A Bowditch	28 April 93	Newcastle City Council will consider issues at meeting on 25 May 93 and make late submission.
	Attii. Wii A Bowditcii		[D]
8.	Coal & Allied Operations Pty Limited PO Box 54 MAYFIELD 2304 Attn: Mr I F McLeod	28 April 93	Stockrington rail line not abandoned as stated in EIS. RTA is expected to provide adequate safety precautions at Cedar Hill Drive crossing of rail line. Consideration should be given to access to R W Miller land (C & A Subsidiary) north and south of John Renshaw Drive.
			[E, C]
9.	Mine Subsidence Board 117 Bull Street NEWCASTLE WEST Attn: Mr J O'Donnell	3 May 93	Mine Subsidence Board has no objections to proposals. Board approval is required for any works within proclaimed mine subsidence districts. [Previous letter 11 Sept 92 advised that no special design parameters are required to cater for mine subsidence]
			[D]
10.	Australian Heritage Commission GPO Box 1567 CANBERRA ACT Attn: Ms Sharon Sullivan	3 May 93	Hexham Swamp is included in the Interim List of the Registrar of the National Estate as part of the Hunter River Estuary. Hexham Swamp is of National Estate significance for water fowl, Bird and other Animal habitat reasons. The protective erosion and sedimentation measures appear adequate.
			[NCC] [F, D]
11.	Mr & Mrs Stephen and Robyn Lilly 14 Forsythe Parade THE MEADOWS	5 May 93	With children at Blackhill school, concerned about School Bus crossing Lenaghans Drive. Also concerned about general level of driver safety on Lenaghans Drive. Consider it a great priority that Stages 2 and 3 completed at same time.
			[C, G, H, L, A]

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
12.	Mr Gary Green 'Unara', Lenaghans Drive BLACKHILL 2322	27 April 93	Present access situation unsafe. Concerned at proposed access arrangements (two way Lenaghans). Also wish lower speed limit. Noise and pollution have already increased since upgrading of Lenaghans Drive. Want trees to screen noise and fumes. Why can't Government afford to complete Freeway to Stockrington Road but not another 5 Kilometres.
			[A, C, G, H, L]
13.	Department of Mineral Resources PO Box 51 SINGLETON 2320 Attn: Ms Jacqui Bamberry	7 May 93	EIS Reviewed and no objections raised.
14.	The University of Newcastle University Drive NEWCASTLE 2308 Attn: Mr Kent Gillman	17 May 93	Access, Noise and Safety concerns associated with University owned residence in Phoenix Drive. University is of strong opinion that Stages 2 and 3 must be completed at the same time to minimise any detrimental effect from the opening of the freeway. Assurances are sought regarding access and noise.
			[C, H, G]
15.	Mr Bryan Robinson Secretary Richmond Vale Preservation Co-Op Society PO Box 184 ADAMSTOWN 2298	12 May 93	Providing the bridge outlined in the EIS is constructed, the Society has no objection to the proposals.
			[NCC] [E]
16.	Mr John Smeaton 18 Phoenix Road BLACK HILL 2322	7 May 93	Requests guarantees that Stages 2 and 3 will be completed within a reasonable timeframe. Local road segregation a safety imperative. Requests advice on noise abatement measures. Requests details of how Blackhill Road will connect with Lenaghans Drive.
			[G,A,C]

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY	
17.	Karen Morgan 65 Lenaghans Drive BLACKHILL 2322	Rec'd 14 May no date	Separation of local road must be a priority. Want Stage 2 and Stage 3 completed at same time.	
18.	Dept of Conservation and Land Management (CaLM) Attn: John Wright	20 May 93	A number of soil conservation and erosion measures outlined together with the need to employ a specialist soil conservationalist in the early stages. Generally, soil conservation during construction has been addressed adequately.	
19.	F Attwooll 4511 Lenaghans Drive BLACKHILL 2322	20 May 1993	[NCC] [F] With increased use by industrial vehicles writer submits that Stage 2 and Stage 3 should be completed at the same time. Speed limit on Lenaghans Drive should be 80 kph as increase in journey time only 1.35 minutes extra but would achieve marked increase in safety. Extending the Freeway another 9km would allow it to connect to more meaningful destinations and Pacific Highway. Upgrading of Lenaghans Drive a waste of public money and shows lack of forward planning.	
20.	J Beck No Address	19 May 93	[G,H,J] Disapprove of preferred option. Traffic noise and vibration over the bridge and increased risk of flooding given as concerns. Use of the Loop Road would affect wildlife. These reasons given for not re-opening the Loop Road.	
21.	Mr A Morris 225 Maitland Road MAYFIELD 2304	19 May 93	[NCC] [B] Opening the Loop Road to Traffic will put at risk the "Winston Court" home considered to be a heritage building and will risk increased flooding. These reasons given for the Loop Road to remain closed. [NCC] [B]	

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
22.	Dr Gerald Mah 30 Newcastle Road WALLSEND 2287	17 May 93	Object to the re-opening of the Loop Road because of traffic and flooding consequences on Loop Road and "Winston Court", considered a heritage home.
23.	Shortland Electricity The Shortland County Council Abbott Street Depot WALLSEND 2287	21 May 93	[NCC] [B] No objections to the proposal. However, statutory ground clearances will have to be maintained to all power lines in the area.
24.	Graham Davey 2 Phoenix Road Blackhill via THORNTON 2322	21 May 93	Safety - Stages 2 and 3 must be completed at the same time. Speed-suggest 80 kph speed on Lenaghans Drive in Stage 1, Noise - claim only 30 mins of noise monitoring at residence. Noise monitoring should be considered again. Moving the road West will lesson noise and visual problems for 'Meadows' residences. [G,H,A,I]
25.	Stephen Berry Anambah Anambah Road MAITLAND 2320	20 May 93	As heritage adviser to Newcastle City Council, advises that "Winston Court" is an important heritage item, although not listed as such. Upgrading of Lenaghans Flat Loop Road will cause detrimental effect on the building. Vibration will harmful to the fabric of the building. Altering the road level adjacent to the building visually and from flooding aspect, detrimental. Please reconsider re-opening of Loop Road.
26.	R Partridge Lenaghans Drive BLACKHILL	17 May 93	[NCC] [B] Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'. [NCC] [B]

DEENO	ADDRECC		ECCUPO IN CVINANA A DAY	
REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY	
	D Partridge Lenaghans Drive BLACKHILL	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
	Stanley Seymour No Address	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
29.	Barbara Heckman 52 Flinders Street EAST MAITLAND	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
30.	M Keating 19 Galemia Street Adamstown Heights 2289	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
	8		[NCC] [B]	
31	E Spoward C/o 52 Flinders Street E. Maitland	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
32.	Tracey Ducey 127 High Street EAST MAITLAND	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
33.	K J Campbell 9 Justine Drive TENAMBIT 2323	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
	A MARIA BATAMAR MUMU		[NCC] [B]	
34.	Darren McKin 79 Roket Street TENAMBIT 2323	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
	ILIANIDII 2323		[NCC] [B]	

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
35.	D M Fletcher Blackhill THORNTON	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
36.	L Bread 1/29 Date Street ADAMSTOWN	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
37.	C A McKinnon 79 Robert Street TENAMBIT	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
38.	Greame McKinnon 79 Robert Street TENAMBIT	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
39.	Lesley Arthur 22 Amy Street WALLSEND 2287	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
40.	Joan Cunningham 3/190 Beaumont Street HAMILTON	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
41.	J L Renel 114 Off Church Street NEWCASTLE 2300	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
42.	R Black 52 Merewether Street MEREWETHER 2291	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY	
43.	Tina Dudgeon 10 Heshbon Street GATESHEAD NEWCASTLE 2290	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
44.	Norma Macindoe 18 Thompson Street E. Maitland 2323	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
45.	W Eoningham No Address	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
46.	C L Fenwich No Address	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
47.	J K Smalley No Address	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
48.	C Banks No Address	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
49.	Maria Rae No Address	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	
50.	M J Smalley No Address	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.	
			[NCC] [B]	

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
51.	Jan Peaten 50 Tyrell Street WALLSEND	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
52.	S G Canter 9 Dangar Street WALLSEND	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
54.	L Meason 15 Caldwell Street MEREWETHER	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
	J E Cox 11 Albert Street MAYFIELD 2304	17 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
55.	J & E Ferguson 3/15 Wood Street SWANSEA 2281	21 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
			[NCC] [B]
56.	R & H Smith Dog Hole Road Stockrington	8 May 93	Please leave Loop Road closed in view of traffic and flooding consequences on 'Winston Court'.
	via MINMI		[NCC] [B]
57.	Natural Gas Company 619-623 Huler Street NEWCASTLE WEST	21 May 93	All proposals affect AGL natural gas trunk main. RTA to meet all costs of protective measures. Protective measures will be required where the pipeline is crossed by both the Freeway and the Cedar Hill Road. More detailed road design required by AGL to allow protective measures to be determined.
			[D]

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
58.	Lenaghans Drive Concerned Citizens Group 4 Phoenix Road BLACKHILL 2327	Undated	Representation to Mr E Fitzgibbon, MP received 30.4.93. Option E (Stage 3) meets the highest standard, is good value for money, has the lowest environmental impact and has the lowest social impact. Increased safety will not be evident until the completion of Stage 3.
			[G]
59.	John Price, MP Member for Waratah	20 May 93	New carriageway adjacent to Lenaghans vital. Duplication to dual carriageway should follow immediately. The flyover at John Renshaw Drive/New England Highway should proceed forthwith. Main concerns are traffic build up at local road intersections. Anderson Drive East West, Thornton road, Weakleys Drive. Residents of Tarro, Beresfield and Woodberry not considered. Suggest that consideration be given to constructing at grade roundabout to control local access points.
60.	Margaret Spencer No address	10.5.93	Return Lenaghans Drive to a local road as soon as possible. Need to use the road for essentials of living. Could be 10 years before dual carriageways achieved. Need to segregate local access. [C,G]
61.	Mr B and Mrs D Whalan Lot 71 Lenaghans Drive Blackhill C/o O'Sullivan & Saddington 118 Darby Street Cooks Hill NSW 2300	14 May 93 (Letter rec'd RTA 24.5.93) postmarked 14.5.93)	Request extension of time to consider EIS. Suggest moving freeway eastwards to avoid the home. Extreme personnel reasons for wishing land near the house to be avoided. Details provided.
	110 11 2300		m

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
62.	Mr David G Wilson 28 Forsythe Parade BLACKHILL 2322	14 May 93	The F3 Sydney Newcastle Freeway is an accomplishment. Why cannot it be extended another 7km to the New England Highway. If not continued it will become another motoring blackspot.
63.	Kevin Bull 6 Phoenix Road BLACKHILL		Mis-information Pre-EIS hid the fact that Pacific Highway traffic would use Lenaghans Drive. In view of the natural constraints why was there no planning of the projected F3 route. A 250% increase in traffic on Lenaghans Drive since 1984 is unacceptable. Property backs on to Lenaghans Drive with all its problems Traffic Noise has already increased substantially and is present early morning until evening. If Stage 3 not implemented safety routes of great concern. The freeway will dominate the main view from the home, for which the site was chosen. Traffic volumes means that access to the meadows will be difficult and slow and the school bus crossing and Wayaba Road to Blackhill Road is a prime concern. Stress related problems will become a routine part of life as a result of the project. The Meadows has no services and access to such will be via busier roads. Increasing number of motorists call for assistance (telephone etc) and create intrusion and personal safety threat. Adverse environmental impact. Wishes compensation for changes to value of property.
64.	Dept of Conservation & Land Management (CaLM) 464 King Street NEWCASTLE ATTN: P J Owyer	18 May 93	[J,K,L,C,H,F,M] Recommend to Newcastle City Council that stringent erosion and sedimentation controls be required as part of Councils wetlands filling development application consent and that advice be sought by RTA from CaLM during design of controls. [NCC] [F]

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
65.	NSW Fisheries PO Box 489 ATTN: Mr Graeme Lindsay	18 May 93	No objection to the proposal, subject to conditions: Compensatory wetlands to be provided, erosion and sedimentation control methods to be employed, road verges vegetated to reduce runoff and sedimentation.
			[NCC] [F]
66.	Mine Subsidence Board NSW Govt Offices 117 Bull Street NEWCASTLE WEST 2302	3 May 93	The Board has no objection to the proposed developments. The part of the proposal in the filling of the wetlands is not in a mine subsidence area and as such, the Boards' approval is not required.
			[NCC] [D]
67.	Joint Submission Hardes/Crockett/Green LENAGHANS DRIVE	19 May 93	Winston Court, the Family home is considered an historic home and disapprove of the re-opening of the Loop Road. The effect of flooding and traffic on the home a real risk. Upgrading the road will exacerbate the annual flooding problem in the area. Excavation of the Loop Road would reinstate the wetland. Concerned at possible loss of access between Roads bisected by the freeway and loss of access to Lot 7.
			[NCC] [B,F,C]

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
68.	Lenaghans Drive Concerned Citizens Group 4 Phoenix Road BLACKHILL 2322 ATTN: V Bell	17 May 93	There is Community outrage that the local road has also to serve Pacific Highway and the National Highway. Insufficient consideration has been given to the traffic implications. Severe strain will be placed on local intersections. The proposal will "lock in" the residents of Beresfield, Thornton and Blackhill. EIS treatment not sufficient. Weakleys Drive should be closed to through traffic. Cedar Hill Drive proposal approved of. Access during Stage 2 remains a concern particularly between the Loop Road and Dairy Corner. The mix of local traffic and high speed through traffic is lethal. As Stage 3 earthworks are to be carried out simultaneously with Stage 2 works, it is illogical to defer building Stage 3 for another 10 years. The residents of the area have already had 10 years roadworks disruptions. Residents must use Lenaghans Drive for all basic journeys and realise the road cannot be continually policed. Loss of amenity and house value is a consequence. It is vital that Stages 2 and 3 are constructed simultaneously.
69.	Mr N & Mrs W Robson "Happy Days" Lenaghans Drive	23 May 93	[C,J,H,G] Serious reservations about Stages 1 & 2 for safety reasons. Eastern snake necked turtle crosses Lenaghans Drive in an annual migration and is already killed in large numbers. Request a fence to
	BLACKHILL 2322		channel turtles to the wetlands underpass. Concern about safety of access to Loop Road and Stopping Sight distance/speed of vehicles. New England Highway/Weakleys Drive intersection has difficult right turns. A roundabout or signals should be installed. Lenaghans Drive should be speed limited to 80 kph until Stage 3. While Stage 3 is a reasonable proposal, Stages 1 and 2 are irresponsible, reflecting a lack of planning. [NCC] [H,F,C,N,J]

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
70.	Hunter Water Corporation Ltd PO Box 517B NEWCASTLE WEST Attn: Bill Brown	20 May 93	The Chichester pipeline crossed by Lenaghans Drive is the only supply to the Coalfields area. Provision will need to be made for a new pipeline 3.5m east of the existing pipeline, to be replaced about year 2000.
			[D]
71.	Newcastle City Council	26 May 93	Council dismay expressed at having to determine Stage 2 and Stage 3 interim connection works in the absence of a determined route for the National Highway
			Council reaffirmed its preferred option as: (a) the construction of divided dual carriageways, west of the existing Lenaghans Drive to cater for both northbound and southbound Freeway traffic. Such works will facilitate Lenaghans Drive reverting to a local access road.
			(b) the construction of a full grade separated interchange at the intersection of John Renshaw Drive and the New England catering for all traffic movements. Such works will facilitate Weakleys Drive reverting to a local access road in due course.
			(c) Lenaghans Drive and an upgraded Weakleys Drive be utilised as the temporary National Highway for a maximum period of three (3) years to facilitate the construction of the above-mentioned works.
			Further comments made by Council included: • The economic advantages of deferring stage 3 does not consider social and environmental factors. • The provision of a dual carriageway link to Pacific Highway should have equal if not greater priority than the extension of the National Highway.

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
71. [Cont'd]	Newcastle City Council	26 May 93	The absence of a half grade separated intersection treatment at Weakleys Drive is considered unacceptable. An opportunity exists to rationalise the current intersections of the New England Highway with Thornton Road, Weakleys Drive and Anderson Drive. The limiting of the project focus to only essential New England Highway connections is considered a major deficiency in the EIS. The EIS fails to address the Status of the legal status of the Railway line. The proposal to use the Loop Road is unacceptable for flooding and alignment reasons.
			[G,N,J,E,B]
72	Trevor Raymond 36 Mumford Avenue THORNTON NSW 2323	Undated	Proposes "huge roundabout" incorporating Weakleys Drive, John Renshaw Drive and New England Highway.
			[N]
73.	R B & V J Mullins 71 Allendale Street BERESFIELD 2327	Undated	Considers traffic signals at the John Renshaw Drive/New England Highway intersection will increase the noise and pollution problem and will affect the value of nearby homes.
			[A,M]

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
74.	Mr I Bell 4 Phoenix Road BLACKHILL 2322	18 May 93	Details 6 objections to the EIS: (1) Proposal must be moved further west away from residential area; (2) The noise assessment must look at the increase in noise from 1984 and result in noise barriers being erected. (3) Closes- Meadows homes are only 180m from the proposal and visual residential screening must be installed; (4) Provision must be made for a bus layby on Lenaghans Drive; (5) Forecast traffic figures disputed. A 177% growth in Pacific Highway traffic forecast by Newcastle University is suggested. Indicating stage 2/3 should be concurrent; (6) Concerns for fauna. Require faunal fencing.
75.	J E & K M Kennedy 13 Forsythe Parade BLACKHILL 2322	18 May 93	Request that Stages 2 and 3 get carried out at the same time. [G]
76.	Public Works Department L23, McKell Building Rawson Place SYDNEY 2000	18 May 93	Has no comments to offer on the proposal. [NCC] [D]
77.	W Lilly 20 Forsythe Parade BLACKHILL 2322	19 May 93	Human lives are a priority and as such sufficient funds should be found to complete stages 2 and 3 concurrently. [G]
78.	Department of Water Resources 3-5 Market Street MUSWELLBROOK PO Box 297 Attn: Mr G W Hunt	20 May 93	The SEPP Wetlands being in the tidal zone is administered by the Public Works Department. [D]

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
79.	J & J Rae 82 Allendale Street BERESFIELD + 7 other signatories from 4 separate street addresses.	19 May 93	Dissatisfied with RTA response to noise questions passed to LDCCG. Object specifically to noise and pollution at the John Renshaw Drive/New England Highway intersection. [79]
80.	Pacific Power Northern Region, Newcastle Area Wirra Crescent off University Drive PO Box 93 WARATAH 2298	20 May 93	The proposal undercrosses a 330 KV double circuit transmission in line (Nos 82 and 95W/2). Vehicle access to the easement will require to be maintained, disturbance of roadworks to be a minimum of 15m from existing homes, no plant/machines to be higher than 4.3m. 30m either side of transmission line, line may have to be raised at total cost to RTA. RTA to liaise in design detail. [80]
81	J & S E Pridue Lenaghans Drive BLACKHILL 2322	23 May 93 (notice given before 21 May)	Serious reservations about Stages 1 & 2 for safety reasons. Eastern snake necked turtle crosses Lenaghans Drive in an annual migration and is already killed in large numbers. Request fence to channel turtles to the Wetlands underpass. Concern about safety of access to Loop Road and stopping sight distance/speed of vehicles. New England Highway/Weakleys Drive intersection has difficult right turns. A roundabout or signals should be installed. Lenaghans Drive should be limited to 80 kph until Stage 3. Stages 2 & 3 should be constructed concurrently.
			[NCC] [H,F,C,N,J]
82	CaLM Department of Conservation and Land Management.	25.5.93	No Crown Land issues are involved. The soil conservation matters have been addressed adequately.

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
83	Hunter Bird Observers Club Inc.	25.5.93 late submission	Proposals appear to provide considerable safeguards. Provision should be made to monitor water quality. Suggest an emergency plan for a toxic run off to wetlands.
*			[NCC] [F]
84	Carrington Holdings Pty Ltd 11 Bond Street Newcastle 2300 Attn: L H Savage Managing Director	2 June 1993 (late submission)	Economic analysis and rationale for evaluating options not adequate. Weakleys Drive proposed works are only just adequate and Carrington Holdings are preparing a development application for land west of Weakleys. Weakleys Drive may act as the temporary National Highway for many years. Local intersections outside the study area need to be addressed. The impact of heavy vehicle volumes is not addressed and ability of Weakleys Drive to carry additional heavy traffic questioned. Weakleys Drive amenity adversely affected. EIS evaluation to be reviewed once final route of National Highway established. Access for proposed (Carrington) development to be accommodated in upgrading works.
			[C,J,K]
85	Garry Smith 5 Fourth Street SEAHAMPTON NSW 2286	5 June 1993 rec'd 8 June 1993 (late submission)	Lenaghans Drive as a southbound carriageway is unacceptable and will hinder local traffic. It will not reduce traffic on the local road. Stages 2 and 3 should start concurrently. Because of potential fuel savings on Pacific Highway, traffic bound for that route should not be underestimated. Dual carriageway should be constructed to connect to Pacific Highway. The fourth lane in John Renshaw Drive should be constructed immediately. Need to consider the implications of the final route of the National Highway. Options, E,G,I should be constructed as soon as possible in conjunction with the other Maitland By-Pass extension of the F3 Freeway to link up with the New England Highway.
			[K,G]
86	Commonwealth Environment Protection Agency	7 June 1993 Not a Submission but a procedural comment.	N.A.

REF NO.	ADDRESS	LETTER DATE	ISSUES IN SUMMARY
87	National Parks & Wildlife Service	2 June 1993	Concerns over nutrient and particular matter that may enter the Swamp. Requires further investigation and water quality monitoring.
			[D]
88	Coal & Allied Operations Pty Ltd	9 June 1993	The Company does not rely on the 1900 Railway Act for ownership of the rail line, but on a conveyance.
Mary Service			(E)
89	Environment Protection Authority, NSW	3 August 1993	Concern that adequate drainage link be provided between the two SEPP14 wetlands. Erosion control measures during construction and operations are necessary to prevent siltation of wetlands. Retention basins or other measures should be constructed to trap accidental chemical spills. Attempt should be made to regenerate Typha reed in disturbed wetland. Abatement measures are required to reduce construction noise levels. The age of vehicles should not be considered when assessing noise impacts. At Beth Street, Beresfield the noise levels will be well above the EPA environmental goals and exceed the RTA noise level objectives. Monitoring of pollutants and nutrients in runoff and the wetlands should occur after completion of the project.
			[A,F]

NEWCASTLE CITY COUNCIL DETERMINATION OF DEVELOPMENT APPLICATION



Newcastle City Council

NEW SOUTH WALES AUSTRALIA. City Administration Centre Wheeler Place NEWCASTLE Postal Address: PO Box 489 NEWCASTLE NSW 2300 Phone: (049) 29 9111 Fax: (049) 296157

ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979

NOTICE TO APPLICANT OF DETERMINATION OF 'DESIGNATED DEVELOPMENT' APPLICATION

To: Environmental Planning RTA

Of: **GPOBox 28**

SYDNEY NSW 2000

Being the applicant in respect of Development Application No. 172/93 for consent to:-

 Partial filling of Wetlands to support construction of F3 freeway connection north of Minmi

Pursuant to Section 92 of the Act, notice is hereby given of the determination by the Council of Development Application No. 172/93 relating to the land described as follows:

 Part Lot 1 DP 719479 No's 48, 58, 68, 72, 76, 84, 90, 96 Lenaghans Drive Minmi & Lenaghan

The Development Application has been determined by:

 granting of CONSENT subject to the conditions specified in Schedule 1, attached.

Endorsement of date of consent: 16th November 1993

Note:

Section 97 of the Act confers on an applicant who is dissalisfied with the determination of a consent authority a right of appeal to the Land and Environment Court exercisable within 12

(2)

consent authority a right of appeal to the Land and Environment Court exercises which is months after receipt of this notice.

Section 98 of the Act confers upon an objector against 'designated development', who is dissatisfied with Council's decision to grant consent, the right of appeal to the Land and Environment Court against such decision within 28 days from the date of notification.

Section 93 of the Environmental Planning and Assessment Act provides that, in the case of 'designated development' to which an objection has been made under Section 87, Council's consent shall become effective and operate from the expiration of 28 days from the date of consent and created them the Notice of Determination, subject to there being no appeal made (3) consent endorsed upon the Notice of Determination, subject to there being no appeal made under Section 98 in the meantime.

(4) To ascertain the extent to which the consent is liable to lapse refer to Section 99 of the Act.

WHGRAN	NT, BENERAL MANAGER
Don	Drafter to
Date:	1.6. NOV 1993
	1995

SCHEDULE 1

DA NO: 172/93

The proposed development being carried out in accordance with 1. the details set out in the Environmental Impact Statement, the draft Environmental Impact Assessment Report and the Environmental Management Plan to Minimise Impacts on Wetlands, submitted to the Department of Planning on 6th October, 1993, as amended by the following conditions.

Reason: To confirm and clarify the terms of Council's approval.

All road works, drainage works, erosion and sedimentation 2. control works shall be monitored to accord with the requirements of the Department of Conservation and Land Management for the entire design and construction phase of the project. The Roads and Traffic Authority is to seek the advice of the Department of Conservation and Land Management on all erosion and sediment control matters.

Reason: To ensure appropriate measures are implemented to safeguard the wetlands from adverse environmental impacts.

3. All runoff from the new highway carriageways shall be directed into a series of sumps and drains for collection in earth-walled sediment basins. These basins shall have a minimum holding volume of 25m3 each. Each sediment basin shall be fitted with de-watering pipes and a floating boom to control pollutants from accidental spills.

Reason: To prevent the discharge of pollutants into the wetlands.

- 4. All sediment basins, traps and other soil conservation measures implemented shall be inspected and maintained at least once every three months as well as immediately following heavy rains. Reason: To safeguard the wetlands from adverse environmental impacts.
- 5. Several low fences shall be constructed on both sides of the road to prevent snake-necked turtles from walking onto the road and to direct them towards the drainage connection between Wetland 841a and 841b. The fences will comprise a continuous barrier to a height of 300mm and shall be solid or of a fine mesh material that will not injure or entangle the turtles in any way. The location of these fences shall be as indicated in Figure 1 of the Environmental Management Plan.

Reason: To minimise potential danger to snake-necked turtles from entering Lenaghans Drive and the proposed new roads.

> WH GRANT GENERAL MANAGER Date:1.6. NOV. 1993....

DA NO: 172/93

6. All road stormwater runoff from the proposed Cedar Hill Road deviation within 50m north and south of its crossing of Wetland 841a shall be drained so that no runoff enters any part of Wetland 841a.

Reason: To safeguard the wetlands from adverse environmental impacts.

7. The proposed twin bridges over the drainage connection between Wetlands 841a and 841b shall be constructed so as to minimise any disturbance to the wetlands. The course of the drainage connection shall not be altered or re-shaped and its bank sides and bed bottom shall not be stabilised or otherwise disturbed unless the Department of Conservation and Land Management advises such work is absolutely necessary to prevent erosion.

Reason: To safeguard the wetlands from adverse environmental impacts.

8. Testing of all soils that are to be excavated or disturbed for potential acid sulphate characteristics shall be carried out during construction. This testing shall cover an area within 20m of Wetlands 841a and 841b. If acid sulphate soils are detected lime shall be applied to neutralise acid and these soils shall be used as fill along the road distant from the wetlands.

Reason: To ensure appropriate measures are implemented to safeguard the wetlands from adverse environmental impacts.

9. All materials proposed to be used as fill within the wetlands area being tested for acid-sulphate material and in the event that acidsulphate soils are detected, such fill material being neutralised under the supervision of and to the satisfaction of the Soil Conservation Service of NSW.

Reason: To safeguard the wetlands from adverse environmental impacts.

10. An area shown on Figure 5.2 of the draft Environmental Impact Assessment Report cross shaded and marked "Possible area of Compensatory Wetland" shall be converted to the same wetland vegetation community as surrounding areas. This conversion shall involve the removal of fill, the testing of soil to ensure no potential acid-sulphate soils are present and, if not, excavation of soil may be necessary to ensure that the hydrological regime and re-vegetation program approximates, as much as possible with the surrounding wetland areas. This work shall be carried out in consultation with the Shortland Wetland Centre and in accordance with the requirements of the National Parks and Wildlife Service. The Hunter Bird Observers Club shall be consulted during the design, development and construction stages.

WH GRANT, GENERAL MANAGER
Per: Date: 1.6. NOV. 1993

WM ITV. 1/4/33

Reason: To ensure appropriate compensatory wetlands are provided and to safeguard the wetlands from adverse environmental impacts.

11. The Roads and Traffic Authority of NSW obtaining separate approval from Council under the provisions of the Environmental Planning and Assessment Act, 1979 prior to undertaking any works in regard to the provision of compensatory wetlands within the Loop Road reserve as shown in the plan at Attachment 5.2 of the draft Environmental Impact Assessment Report dated October, 1993 and detailed in Condition 10 above;

(Note: The Roads and Traffic Authority of NSW proposed to negotiate with Council towards removing the abandoned road embankment and allowing the unused road reserve to

revert to wetland.)

Reason: To confirm the necessity for submission of a separate Development Application in order to ensure compliance with the relevant planning instrument.

12. All other areas of land that come into RTA ownership as a result of future land acquisitions which are located along the edge of Wetlands 841a and 841b and are not needed for necessary drainage works shall be fenced off from grazing by cattle and shall be re-vegetated where appropriate to convert the area into the same wetland vegetation community as the adjoining SEPP 14 wetland. This work shall be carried out in consultation with the Shortlands Wetlands Centre and in accordance with the requirements of the National Parks and Wildlife Service. The Hunter Bird Observers Club shall also be consulted during the design preparation and construction stages.

Reason: To safeguard the wetlands from adverse

environmental impacts.

13. The use of machines within Wetlands 841a and 841b shall be kept to an absolute minimum. Wherever possible access to the wetlands required for construction and ongoing maintenance shall be by foot.

Reason: To minimise the extent of any damage to the wetlands.

- 14. To minimise opportunities for invasion of exotic weed species into the wetlands the following measures shall be implemented during and after the construction phase.
 - Landscape plantings to be used shall comprise only of species indigenous to the local area and which are grown from locally harvested seed.

WH GRANT GENERAL MANAGER
Per: A MANAGER

Date: 1 6 MOV 1993

DA NO: 172/93

SCHEDULE 1

b. Temporary cover crops used to stabilise exposed soil in the vicinity of the wetlands shall comprise a mix of sterile annual grasses and the perennial Couch (Cynodon dachtylon) which is native to the area.

- c. All fill in the vicinity of the wetlands shall be inspected, at least monthly, during construction. All undesirable weeds species identified during these inspections shall be removed.
- d. Monthly inspections to be carried out during construction and for at least 12 months after construction is completed to identify and remove undesirable weed and plant species at the interface between Wetlands 841a, 841b and the road and drainage works.

Reason: To minimise opportunities for invasion of evoke weak species into the wetlands.

- 15. Any waste construction materials or spoil being disposed of at Council's Waste Disposal Depot or other approved site;
 Reason: To prevent the indiscriminate dumping or use of waste material for the purpose of unauthorised land fill.
- 16. The wetlands areas adjacent to the proposed road works being regularly inspected during construction works and any identified noxious plant species being removed; Reason: To safeguard the wetland from environmental

degradation.

WH GRANT GENERAL MANAGER
PREDate: 1.6 MOV 1003

DEPARTMENT OF PLANNING RESPONSE TO REPRESENTATIONS



Department of Planning

Mr D G Kinnear Roads and Traffic Authority 51-55 Bolton Street Newcastle NSW 2300 Remington Centre 175 Liverpool Street, Sydney 2000 Box 3927 G.P.O. Sydney 2001 DX. 15 Sydney

Telephone:(02) 391 2000 Ext:

Fax No. :(02) 391 2111 2081

Contact:

Y Stone

Our Reference:

N91/00737

Your Reference:

Dear Sir

Interim Connection from F3 Freeway from north of Minmi to New England Highway at Beresfield

Thank you for your letter which forwarded copies of submissions received during the period of public exhibition for the above matter.

- 2. The Department has examined these submissions and considers that this proposal is appropriate for Roads and Traffic Authority determination without the need for a S119 Inquiry or Director's examination pursuant to S113(5) of the Environmental Planning and Assessment Act, 1979. No doubt you are aware that consideration of the proposed development should take into account all those matters specified in Clause 56 of the Environmental Planning and Assessment Regulation.
- 3. In this regard it is noted that concern has been expressed in the submissions about the matters raised in the EIS including:
- the staging of the proposed works relating to the use of Lenaghans Drive and Weakleys Drive;
- safety issues in relation to proposed interim measures including the standard of intersections and roads to handle volume of traffic;
- the impacts from the upgrading of the Loop Road;
- the extent that social and environmental impacts were taken into consideration in the selection of preferred options.
- the suitability of erosion and sedimentation and mitigation measures particularly in the wetland areas;
- the management of chemically contaminated run-off from the highway, due to the normal road use or from spills;
- the maintenance of corridors for wetland wildlife and fencing to prevent their access onto the carriageway.
- 4. The impact of disturbance of potential acid sulphate soils during the construction of the freeway through silt, clay or estuarine sediment soil types (see Figure 18 EIS) should be addressed prior to any works commencing. Because of the potential for severe impacts on the adjoining wetlands from the disturbance of acid sulphate soils during the construction of the road, drainage, sedimentation ponds and bridge works, it is recommended that the Roads

and Traffic Authority (RTA) should prepare a management plan for acid sulphate soils to the satisfaction of Department of Conservation and Land Management for these sections of the project.

- 5. This plan should also address procedures to be undertaken in the construction of compensatory wetlands. The EIS suggests that the wetlands would be constructed by earthmoving to the extent necessary to achieve a substrata of comparable depth to the adjacent wetland (page 75 EIS). Prior to these works being undertaken, the RTA should establish the extent of potential acid sulphate soils in that area. If acid sulphate soils exist in these areas and they are exposed to air, not only will the wetlands be slow to establish, it is likely that the acidic water will have major impacts on adjacent wetland ecology.
- 6. Should acid sulphate soils be present, the risks associated with excavation of these soils must be considered. In these circumstances, alternative procedures for the development of compensatory wetlands should be considered in conjunction with Department of Conservation and Land Management, National Parks and Wildlife Service and Hunter Bird Observers Club. These alternatives could include fencing of currently graized areas to improve their wetland habitat value or conversion of redundant road sections back to wetlands (for instance, sections of the Loop Road).
- 7. The RTA should establish procedures to ensure that any fill material brought onto the construction site does not include acid sulphate material.
- 8. The Heritage Branch of the Department of Planning has reviewed the EIS and have no comment to make with regard to European built heritage archaeology.
- 9. Roads and Traffic Authority should satisfy itself that it has adequate information to determine the application. It would be appreciated if three copies of the Clause 64 Report could be forwarded to the Department for our information and public display.

Yours faithfully,

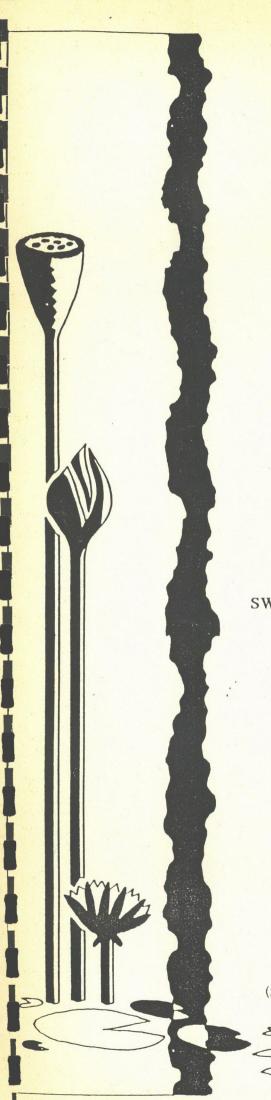
B. Adams

Manager

Assessments and Major Hazards Branch

00 (Coms 4/8/93

COMMENTS ON NATIONAL ESTATE LISTING OF HEXHAM SWAMP



F3 FREEWAY NORTH OF MINMI
TO THE NEW ENGLAND HIGHWAY
AT BERESFIELD

COMMENTS ON NATIONAL ESTATE LISTING OF HEXHAM SWAMP

Report to Roads & Traffic Authority by SWC Wetlands & Ecological Management Consultancy

June 1993

(SWC Wetlands & Ecological Management Consultancy is a division of Shortland Wetlands Centre Ltd - ACN 002 975 144)





STATEMENT OF AUTHORSHIP

This report, Interim Connection from the F3 Freeway North of Minmi to the New England Highway at Beresfield - Comments on National Estate Listing of Hexham Swamp.

and the study described therein were undertaken under contract by SWC Wetlands & Ecological Management Consultancy for Roads & Traffic Authority.

The author of the report was Geoffrey Winning whose qualifications are Assoc. Dip. Env. Stud. & Grad. Dip. Env. Man.

The information presented in this report is based on an objective study undertaken in response to the brief provided by the client. Any opinions expressed in the report are the professional, objective opinions of the author and are not specifically intended to advocate any particular proposal or pre-determined position.

This report should be reproduced in full in any document which seeks to use the study and its conclusions to support a development proposal.

1. INTRODUCTION

The Roads and Traffic Authority proposes to construct an interim connection from the F3 Freeway north of Minmi to the New England Highway at Beresfield, which will involve crossing of wetlands in the south-western corner of Hexham Swamp. In a submission on the environmental impact statement (EIS) for the proposal, the Australian Heritage Commission stressed the importance of the listing of Hexham Swamp in the Interim List of the Register of the National Estate¹.

The present report has been prepared at the request of the Roads and Traffic Authority with the brief of describing the extent of lands, occurring within the vicinity of the proposed roadworks, that are included on the Interim List of the Register of the National Estate, and evaluating the effect of this listing on the proposal.

2. THE REGISTER OF THE NATIONAL ESTATE

The Register of the National Estate was established under the Australian Heritage Commission Act 1975, which is a Commonwealth Act. The Register lists places and buildings that have "aesthetic, historical, scientific or social significance or other social value for future generations as well as for the present community" (ss. 22, 4(1), 3(1)).

Listing on the register provides only limited protection for a site, and only against activities of Commonwealth Government bodies. Section 30 of the Act requires all Commonwealth Ministers and agencies not to take or allow any action (including the making of a decision, or granting permission) that adversely affects a listed place or building unless they are satisfied that there is no real alternative and that every effort will be made to minimise environmental damage. (Farrier, 1988)

The legal implications of the relevance of these provisions to a proposal being undertaken by a NSW Government authority but being partly funded by a Commonwealth Government agency is beyond the scope of this report, and legal advice should be sought on this aspect.

Letter from Australian Heritage Commission to Roads and Traffic Authority dated 3 May 1993 (ref: 1/9/63/19DW).

3. NATIONAL ESTATE LISTING HEXHAM SWAMP

3.1 Status of Listing

Hexham Swamp is included on the Interim List of the Register of the National Estate as part of the listing of the Hunter River Estuary. In its submission to the EIS, the Australian Heritage Commission indicated that Hexham Swamp was of National Estate significance for the following reasons:

- it is the largest remaining waterfowl habitat on the lower north coast of New South Wales;
- it contains 37% of the remaining non-tidal wetland habitat on the lower Hunter floodplain;
- it supports a high diversity of bird species including over 30 species protected by international migratory bird treaties;
- · it provides a valuable breeding and roosting area for birds; and
- it contains the largest samples of the nine vegetation types found on the Hunter River floodplain.

Some of these points are considered to be somewhat inaccurate by this report, largely due to changes which have occurred in the vegetation and habitats of Hexham Swamp in recent years (it is suspected that the information on the Register is based on outdated early reports). However, the reasons for listing of Hexham Swamp are not relevant to the present issues. The inclusion of Hexham Swamp on the Interim List, whether justified or not, confers the protection of the Australian Heritage Commission Act on the site.

Sites are listed on the Interim List pending further advice on their suitability for listing on the Register. Inclusion on the Interim List affords the same protection to a site as being fully registered.

3.2 Extent of Listing

As mentioned above, Hexham Swamp is included on the Interim List of the Register of the National Estate as part of the listing of the Hunter River Estuary. Unfortunately, despite relatively precise descriptions on the List of other components of the estuary, Hexham swamp is described merely as "Hexham Swamp", with no delineating data (AHC, pers. comm.).

The term "Hexham Swamp" is obviously a fairly broad description which would be open to a range of interpretations. The boundaries of natural communities such as wetlands are typically fuzzy, and defining such a boundary not only depends on interpretation of ecological factors, but also on the purposes of the delineation. For example, in considering a Draft Interim Development Order and preparing a Local Environmental Plan covering the Hexham Swamp area, Newcastle City Council defined the boundary of the "swamp core" which did not include wetlands in the vicinity of Lenaghans Drive, the location of the proposed works (Newcastle City Council, 1981) - see Figure 1. However, later mapping in 1985 of Hexham swamp for State Environmental Planning Policy 14 did include wetlands in the Lenaghans Driver area, although it did not include other wetlands covered by the Newcastle Council mapping - see Figure 2.

Although all delineations would presumably agree on the central parts of the swamp, there is considerable scope for various interpretations of the limits of Hexham Swamp, such as in the vicinity of Lenaghans Drive.

In the absence of an "official" delineation of the boundary of Hexham Swamp, it is difficult to be certain of the extent of the National Estate coverage. Knowledge of the nominator of the Hunter Estuary to the National Estate may assist in determining the description of Hexham Swamp on which the nomination was based, but the Australian Heritage Commission has a policy of not releasing the names of nominators.

However, it seems most likely that the nomination of the Hunter Estuary to the Register of the National Estate was based on the National Trust's "classification" of these wetlands. In a 1974 report, the National Trust described and delineated wetlands of the Hunter River Estuary, including Hexham Swamp. These areas were subsequently "classified" by the National Trust in 1977 (Joint Committee, 1978). The extent of Hexham Swamp "classified" by the National Trust does not include the wetlands in the vicinity of Lenaghans Drive - see Figure 3.

4. EFFECT OF NATIONAL ESTATE LISTING ON PROPOSAL

Based on the above discussion, despite the listing of Hexham swamp on the Interim List of the Register of the National Estate, it seems likely that the proposed F3 Freeway interim connection does not actually impact on the area covered by the National Estate listing.

Even if it is considered that the proposal directly impacts on a National Estate area, the mitigation measures detailed in the EIS would be expected to effectively prevent any adverse impacts on Hexham Swamp. This point was acknowledged by the Australian Heritage Commission in its submission on the EIS.

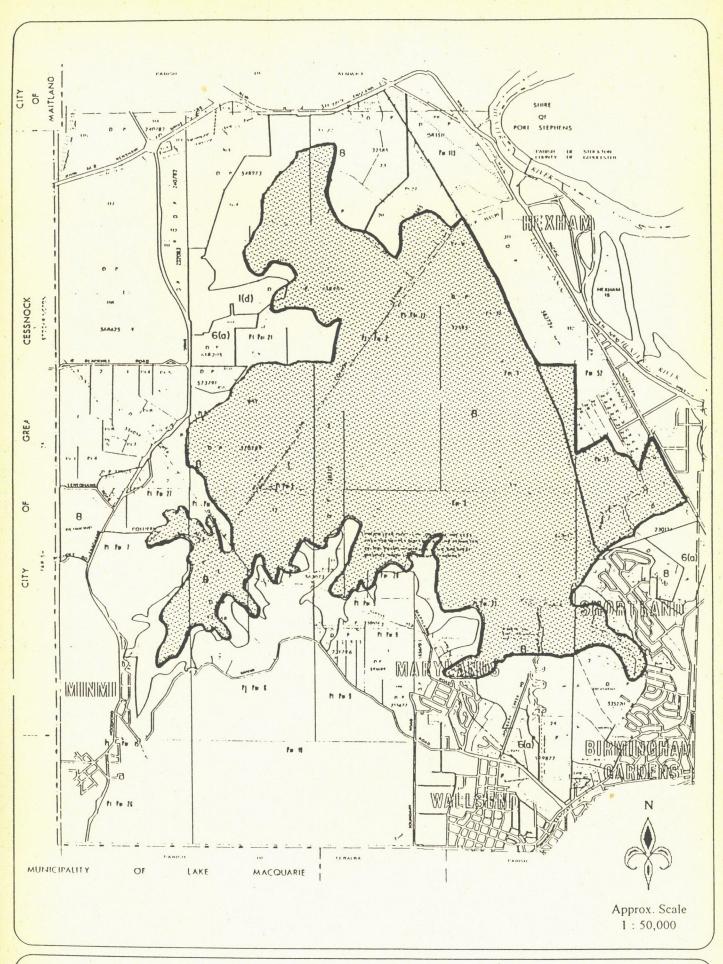
Accordingly, it is considered that the listing of Hexham Swamp on the Interim List of the Register of the National Estate does not present any constraints to the proposed construction of an interim connection from the F3 Freeway north of Minmi to the New England Highway at Beressield.

5. REFERENCES

- Farrier, D. (1988) Environmental law handbook. Planning and landuse in New South Wales.

 Redfern Legal Centre Publishing, Sydney.
- Joint Committee to Advise on Landuse Policy for Hexham Swamp (1978) Report. NSW Planning & Environment Commission. Unpublished.
- National Trust of Australia (1974) Hunter River Estuary. Hunter 2000: supplement no. 1.

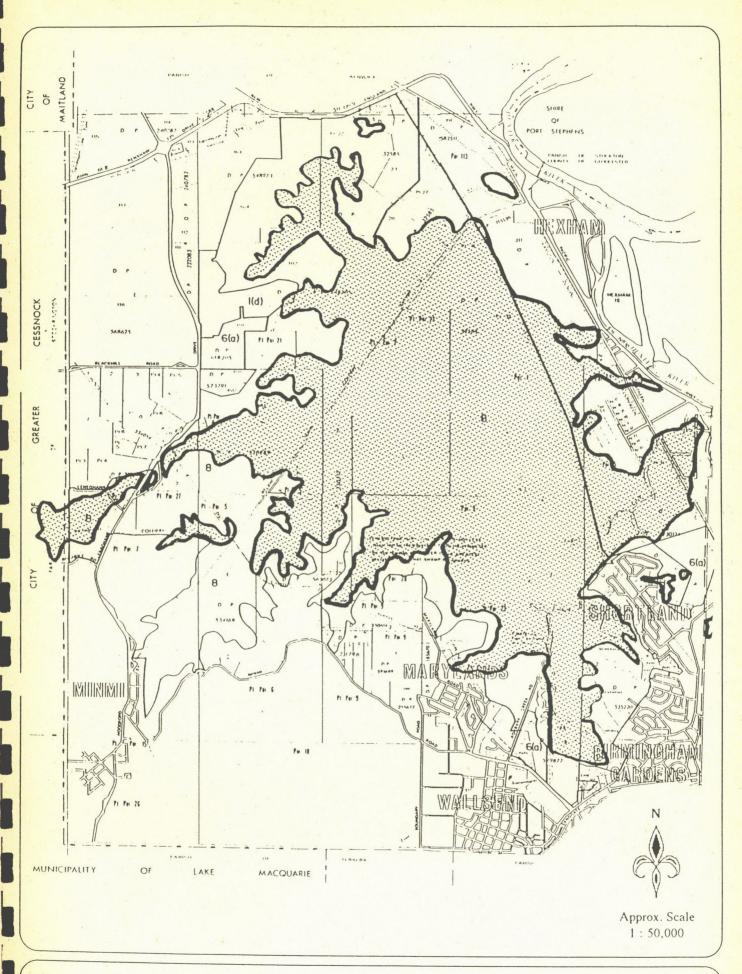
 National Trust of Australia (NSW), Sydney.
- Newcastle City Council (1981) Local Environmental Plan for the Hexham Swamps: statement of policies for the determination of submissions to the exhibited draft Interim Development Order and preparation of a draft Local Environmental Plan. Policy adopted by Newcastle City Council at its meeting on 17 March 1981. Cited in Winston, 1983.
- Winston, R. (1983) The Hexham Swamp Local Environmental Plan. In Managing the Ironbark Creek ecosystem. (P.G. Irwin, ed.). University of Newcastle, Newcastle.



SWC Wetlands & Ecological Management Consultancy

FIGURE 1 - Hexham Swamp 'Core' as Delineated by Newcastle Council

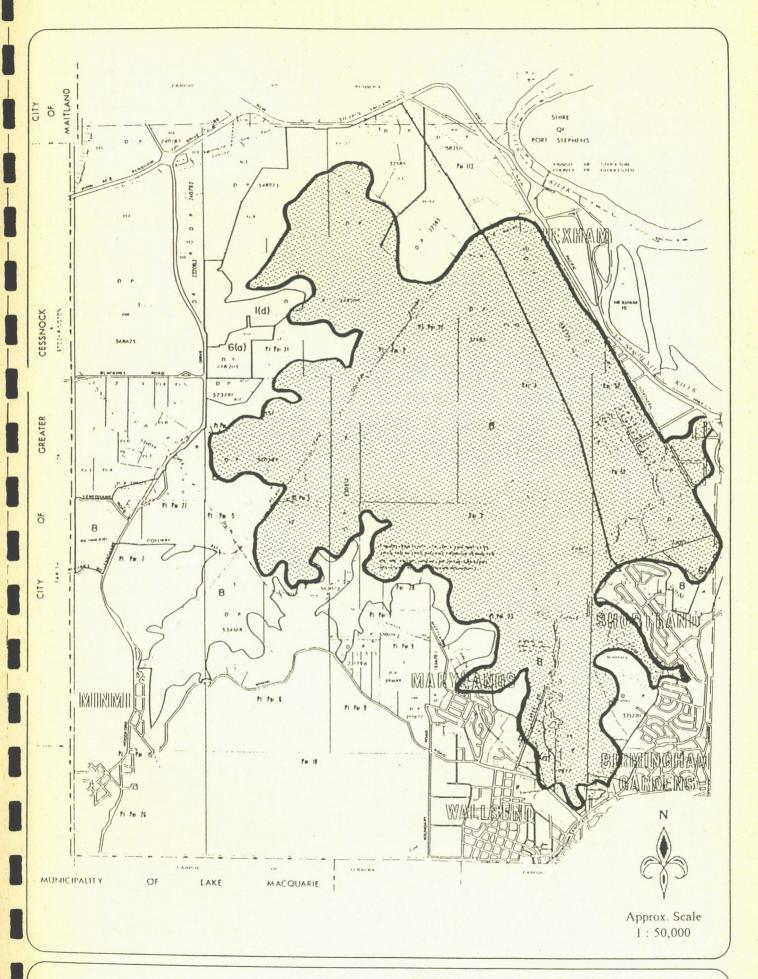
F3 Interim Connection - Comments on National Estate



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FIGURE 2 - Hexham Swamp as Delineated for SEPP 14

F3 Interim Connection - Comments on National Estate

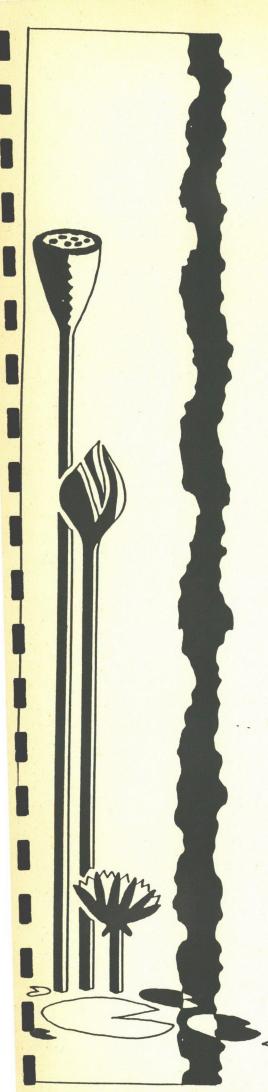


SWC Wetlands & Ecological Management Consultancy

FIGURE 3 - Hexham Swamp as Delineated by National Trust

F3 Interim Connection - Comments on National Estate

ENVIRONMENTAL MANAGEMENT PLAN TO MINIMISE IMPACTS ON WETLANDS



F3 FREEWAY NORTH OF MINMI
TO THE NEW ENGLAND HIGHWAY
AT BERESFIELD

ENVIRONMENTAL MANAGEMENT PLAN
TO MINIMISE IMPACTS ON WETLANDS

Report to Roads & Traffic Authority by SWC Wetlands & Ecological Management Consultancy

September 1993

(SWC Wetlands & Ecological Management Consultancy is a division of Shortland Wetlands Centre Ltd - ACN 002 975 144)



STATEMENT OF AUTHORSHIP

This report, Interim Connection from the F3 Freeway North of Minmi to the New England Highway at Beresfield - Environmental Management Plan to Minimise Impacts on Wetlands,

and the study described therein were undertaken under contract by SWC Wetlands & Ecological Management Consultancy for Roads & Traffic Authority.

The author of the report was Geoffrey Winning whose qualifications are Assoc. Dip. Env. Stud. & Grad. Dip. Env. Man.

The information presented in this report is based on an objective study undertaken in response to the brief provided by the client. Although conclusions were based on the available data, the essential variability of the natural environment coupled with the general lack of comparative research data required that some professional judgment be applied in reaching these conclusions. Whilst the use of such judgments is unavoidable, every attempt has been made to ensure the accuracy and objectivity of the report's conclusions.

Any opinions expressed in the report are the professional, objective opinions of the authors and are not specifically intended to advocate any particular proposal or pre-determined position.

This report should be reproduced in full in any document which seeks to use the study and its conclusions to support a development proposal.

Principal Author

1. INTRODUCTION

The proposed interim connection from the F3 Freeway north of Minmi to the New England Highway at Beresfield crosses wetlands that are part of the Hexham Swamp complex. A number of submissions to the environmental impact statement for the proposal expressed concerns regarding potential impacts on the wetlands likely to result from construction works and from the completed road.

In response to these concerns and to Newcastle City Council's draft conditions for approval of the development, NSW Roads & Traffic Authority (RTA) contracted SWC Consultancy to undertake an independent evaluation of the environmental controls to be employed on the project, and to prepare an environmental management plan addressing potential impacts on the wetlands and their mitigation.

Information presented in the management plan is based on the detailed specialist working papers prepared for the EIS, the submissions to the EIS of various government agencies and private individuals & organisations, as well as consultations with several agencies. In particular, meetings and/or site inspections were held with NSW Environment Protection Authority (EPA), NSW National Parks & Wildlife Service (NPWS), NSW Soil Conservation Service (SCS)¹, and Hunter Bird Observers Club, as well as engineers and planners from RTA.

The major issues identified in the draft conditions, submissions to the EIS and subsequent discussions were:

- control of erosion from exposed surfaces and consequent sedimentation in the wetlands, both during and after construction;
- control of potentially contaminated stormwater runoff from the constructed road, and control of accidental large chemical spills, especially hydrocarbons;
- the potential disturbance of acid-sulphate soils, and consequent pollution of the wetlands by acid runoff;
- loss of wetland area, and options for compensating this loss;
- the potential weed invasion of the wetlands;
- interference with fauna movement, especially turtles, and consequent road kills.

This plan discusses each of these issues, and details strategies to be employed to mitigate potential impacts, both during and subsequent to road construction.

NSW Soil Conservation Service is a division of NSW Department of Conservation & Land Management.

2. MANAGEMENT STRATEGIES

2.1 EROSION AND SEDIMENTATION

Land that has been cleared of vegetation is potentially subject to erosion as a result of stormwater runoff. Soil particles that have been thus eroded can be transported downslope by the runoff, usually settling in water courses or wetlands. This sedimentation can smother native vegetation, promote the growth of weeds, and increase the turbidity of water. Soil particles also typically act as a vector for nutrients, and the consequent transport of nutrients into wetlands and bushland can result in elevated nutrient levels, which in turn can adversely affect the ecology of the natural areas. For these reasons, control of erosion and sedimentation are major concerns, and were identified as such by NSW Department of Conservation and Land Management and NSW Environment Protection Authority.

Roads & Traffic Authority contracts for construction of roads typically include standard specifications for erosion and sedimentation control (Specification Part R1 - Control of Erosion and Sedimentation; Specification Part R2 - Temporary Erosion and Sedimentation Control). A copy of these specifications is presented in Appendix 1. These specifications are designed to minimise the potential for soil erosion, and to contain any erosion within the construction site. These specifications are consistent with Soil Conservation Service (SCS) guidelines (e.g. Wright, undated). In addition, RTA often contracts SCS to provide on-going advice and monitoring of erosion and sedimentation control for major projects.

It is considered that the strategies and techniques detailed in the RTA standard specifications for erosion and sedimentation control (R1 and R2) are appropriate for protection of the wetlands along the proposed interim connection, provided that SCS advice is sought in reviewing the erosion and sediment control plan for each catchment, and that SCS be contracted to regularly inspect (at least weekly) and report on (at least monthly) erosion and sediment controls during construction and for a period of 12 months after opening of the road. The SCS consultant will be empowered to direct the implementation of erosion and sediment controls in circumstances where controls are considered inadequate.

The sensitivity of the wetlands will be stressed in all contracts for construction works, and SCS monitoring of works in close proximity to the wetlands will be more frequent (at least twice weekly) than generally applies.

Following completion of the road, permanent erosion and sedimentation control structures would be inspected and maintained by RTA personnel at least once every three months, as well as following heavy rain events.

2.2 ROAD RUNOFF

Stormwater runoff from the constructed road will generally contain small quantities of hydrocarbons, as well as other possible pollutants. In large quantities, such pollutants can kill plants and animals by interfering with their physiological processes. Accordingly, it is essential that strategies and techniques be employed to mitigate the hazard of runoff from the road surface.

All runoff from the constructed road, including that part of the road that passes over the wetland, will be directed into a series of sumps and drains. Runoff from these drains will be collected in earth-walled 'chemical basins'. These basins have been designed with a minimum capacity of 25 cubic metres, sufficient to hold the full load of a tanker in the event of an accident involving one of these on the road. Stormwater runoff collected in these basins will be slowly released via a 'de-watering' pipe. A stop valve on this pipe will allow its closure in circumstances in which the basin is required to contain a large chemical spill. Such large spills will be pumped out and appropriately disposed of off-site. Smaller quantities of hydrocarbons that are collected in a basin will be prevented from flowing out of the trap by a floating boom or similar structure around the de-watering pipe.

A related issue is the possibility of a vehicular accident that results in the vehicle going over the edge of the road, and spilling fuel or other chemicals off the road. This would especially present a major problem in the case of a tanker transporting a large quantity of a chemical. Whilst it is not possible to allow for all possible occurrences of this nature, the road design includes earthen chemical traps to be constructed between the road and the adjacent catch drains. These catch drains are constructed, on average, at least 20 metres from the edge of the road, and are designed to divert 'clean' catchment runoff away from the road. The combination of the catch drains and chemical traps would effectively dam chemical spills which occur over the edge of the road in the vast majority of possible incidents.

Unfortunately, it is not possible to build such protective devices where the road crosses the wetland without filling a larger area of wetland to provide space for such facilities. Given the low likelihood of accidents involving a vehicle going over the edge of the road, and spilling a large quantity of fuel or other chemical, this is considered undesirable ².

As with erosion and sedimentation control structures, following completion of the road, chemical basins and traps would be inspected and maintained at least once every three months, as well as following heavy rain events.

The existing Lenagahans Drive has a low accident rate of 0.38 accidents per million vehicle kilometres compared with 0.485 for an undivided road for the Pacific Highway. This rate is expected to further decrease after construction of the interim connection (RTA, 1993a).

2.3 ACID-SULPHATE SOILS

Pyrite-rich soils often underlie estuarine wetlands and land previously covered by estuarine wetlands. If exposed to air as a result of drainage of the wetlands and/or excavation of the wetland soils, the pyrite oxidises to form sulphuric acid. Leaching of this acid into waterways can have adverse impacts on their ecology. Apart from the direct physiological impacts on living organisms of acid water, toxic chemicals such as aluminium are released into solution in acid water.

In a submission to the EIS, the NSW Department of Planning (DoP) suggested that any excavation of wetland soils could expose acid-sulphate soils. Excavation of wetland soils during construction of the proposed road will be minimal, with some possible removal of wetland soils associated with re-shaping of the existing drainage channel under Lenaghans drive. However, the EIS suggested the possibility of excavation of parts of the wetland margin to create artificial wetland areas in compensation for wetland that will be filled as part of the road construction. The DoP submission questioned the practicability of this proposal given the possibility of disturbing acid-sulphate soils. Although this is considered to be a low probability (soil sampling along the route of the proposed road indicated a low likelihood of occurrence of acid-sulphate soils (RTA, 1993b)), the wetland creation option has been dismissed for this reason.

Consequently, construction of the proposed road is unlikely to result in the disturbance of acid-sulphate soils. However, during construction, spoil from any excavations within the vicinity of the wetland will sampled and tested for acid-sulphate potential. If acid-sulphate soils are detected, these will be treated with lime to neutralise the acid, and will be used as fill along the road route distant from the wetland. Similarly, all fill to be placed in the wetland area will be sampled for acid-sulphate soils. Sampling for, and treatment of any acid-sulphate soils will be undertaken under the direction of SCS.

2.4 WETLAND LOSS

Whilst the proposed road has been designed so as to minimise impact on the wetland, construction of the road will necessarily result in the filling of approximately 1 ha of the existing wetland. The high conservation value of the Hexham Swamp wetlands was stressed in the flora and fauna study undertaken for the EIS (Shortland Wetlands Centre, 1992), as well as by the DoP, NPWS and Hunter Bird Observers Club submissions to the EIS.

The wetlands in the vicinity of the route of the proposed road are covered by *State Environmental Planning Policy 14 - Coastal Wetlands* (SEPP 14). This policy was established "to ensure that the coastal wetlands are preserved and protected in the environmental and economic interests of the State". In considering development proposals under SEPP 14, DoP recommends mitigation of impacts through minimising direct environmental impacts (such as detailed above), and/or by offsetting the loss of wetland values by contributing to corresponding wetland values either on-site or nearby (Dept. Environment & Planning, 1987).

The compensatory wetland proposed by the EIS was intended to offset the loss of wetland values resulting from the necessary filling of wetland for the construction of the road. However, as mentioned above, this proposal has been dismissed because of the possibility (albeit slight) of disturbance of acid-sulphate soils.

Several other measures have been identified that are considered to compensate for loss of wetland values. A section of the Loop Road has been identified as redundant and, subject to approval by Newcastle City Council, will be removed as part of the construction works. The removal of fill originally placed in this area will result in the creation approximately 0.3 ha of wetland. The alluvial soils on which the fill has been placed will not be excavated, thus avoiding the risk of exposing acid-sulphate soils.

To enable construction of the road, RTA will need to acquire one or more properties to the west of Lenaghans Drive (or parts of those properties) that presently include substantial areas of wetlands. Whilst RTA is the owner of these wetlands it will undertake a program to control the growth of Water Hyacinth (*Eichhornia crassipes*) in these wetlands. A revegetation program will also be undertaken to replace some of the marginal forest habitat previously cleared from the wetland margin. The Water Hyacinth control and the revegetation programs will be undertaken in consultation with Newcastle City Council and Shortland Wetlands Centre.

After completion of construction of the road, transfer by sale of title of lands owned by RTA containing important wetlands will be offered to a suitable government agency, such as NSW National Parks & Wildlife Service, or a community conservation organisation, such as Shortland Wetlands Centre Ltd., to ensure appropriate long term management of the wetlands that would maintain or enhance their nature conservation values.

³ State Environmental Planning Policy 14 - Coastal Wetlands, clause 2.

2.5 WETLAND WEEDS

In its draft conditions of consent, Newcastle City Council required the implementation of controls to prevent weed species and nutrients from entering the wetlands. Elevated levels of nutrients in the wetlands could encourage growth of undesirable weeds, including Water Hyacinth which already occurs in some areas of the wetlands adjacent to the route of the proposed road.

The most likely source of nutrient input into the wetlands resulting from the road construction is through sedimentation in the wetlands. Nutrients are often adsorbed onto sediment particles. The erosion and sedimentation control program outlined above will effectively mitigate nutrient pollution of the wetlands.

Introduction of weeds into the wetlands (other than those presently occurring) could result from inappropriate landscape plantings, and from introduction of seeds in fill. As is RTA policy for such projects, landscape plantings will be restricted to species indigenous to the area, which will be grown from locally harvested seed, where possible. Temporary covers crops used to stabilise exposed soil in the vicinity of the wetlands will comprise a mix of sterile annuals grasses and the perennial Common Couch (*Cynodon dactylon*), which is native to the area.

To ensure that no weed species are introduced in fill, or inadvertently as part of landscaping, regular inspections (at least monthly) will be made in the vicinity of the wetlands during construction by Shortland Wetlands Centre personnel. Any undesirable weed species identified by these inspections will be removed as soon as practicable.

2.6 FAUNA MOVEMENT

A local resident's submission to the EIS raised the issue of road kills of Eastern Snake-necked Turtle (*Chelodina longicollis*). Individuals of this species often migrate considerable distances overland, mostly during spring and summer, presumably as part of breeding activities (males in search of mates, and females in search of suitable nesting sites). The existing Lenaghans Drive divides the remnant wetlands in the area, and thus presents as a partial barrier to movement of turtles between these two areas of wetland. The resident's submission reports that these turtles are often killed or injured by cars on Lenaghans Drive, and suggests that the problem would be worsened by the construction of the proposed road.

Accordingly, RTA will construct a low fence on either side of the road to prevent turtles from walking onto the road (including the existing Lenaghans Drive), and to direct them towards the drainage connection between the two areas of wetland, where they can move under the bridges. The fence will comprise a continuous barrier to a height of approximately 300 mm. The material to be used for the fence is yet to be determined, but it needs to be solid or of a fine mesh that would not allow turtles to become entangled in it, and needs to be relatively maintenance free. As far as possible, the fence will make use of existing fences posts, such as those installed along the road verge as part of guard rails. The approximate location of the proposed turtle fence is presented in Figure 1.

3. CONCLUSION

The wetlands that will be crossed by the proposed F3 Freeway interim connection in the vicinity of Lenaghans Drive have been identified as being of high nature conservation significance. Several submissions to the EIS for the proposed road raised the issue of the sensitivity of the wetlands to potential impacts associated with the construction and operation of the road.

These issues have been reviewed in this management plan, and impact mitigation strategies and techniques have been discussed. The measures presented in the plan are considered to appropriately address the issues and minimise potential impacts.

4. REFERENCES

- Department of Environment & Planning (1987) Environmental impact advisory paper no. 1: State Environmental Planning Policy 14 Coastal Wetlands. Dept. of Environment & Planning. Sydney.
- Roads & Traffic Authority (1993a) Road accidents after the construction of the National Highway connections Beresfield. In National Highway interim connections F3 Freeway to New England Highway. Environmental impact statement working papers.
- Roads & Traffic Authority (1993a) National Highway connections. F3 Lenaghans Drive to Beresfield. Geotechnical study for EIS purposes. In National Highway interim connections F3 Freeway to New England Highway. Environmental impact statement working papers.
- Shortland Wetlands Centre Ltd (1992) Interim connection from the F3 Freeway north of Minmi to the New England Highway at Beresfield. Flora and fauna study. Report to NSW Roads & Traffic Authority. Unpublished.
- Wright, B.J. (undated) State perspective problems, solutions, techniques, etc. Notes of presentation to various seminars, training courses and workshops conducted for NSW Department of Main Roads and NSW Roads & Traffic Authority by NSW Soil Conservation Service. Unpublished.

APPENDIX 1 - RTA Standard Specifications for Erosion and Sedimentation Control

CONTROL OF EROSION AND SEDIMENTATION

ROADS AND TRAFFIC AUTHORITY, NSW

DOCUMENT CMS-QA-R1 EDITION 1 REVISION 2, OCTOBER 1991

VERSION FOR:

DATE:

CONTROL OF EROSION AND SEDIMENTATION

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CONTROL OF EROSION AND SEDIMENTATION

R1.0 AMENDMENTS

This document is based on RTA Specification Part R1 - October 1991.

Any amendments to the base document have been indicated in the following manner:

- (i) Text which is additional to the base document and which is included in the Specification is shown in italics e.g. Additional Text.
- (ii) Text which has been deleted from the base document and which is <u>not</u> included in the Specification is shown struck out e.g. Deleted Text.

R1.1 GENERAL

The work to be executed under this Part of the Specification consists of the construction of structures and the implementation of measures to control erosion and sedimentation.

The Contractor shall plan and carry out the whole of the Works to avoid erosion and sedimentation of the site, surrounding country, watercourses, waterbodies and wetlands.

The Contractor shall comply with the requirements of the NSW Clean Waters Act 1970, the Soil Conservation Act 1938 and the Water Act 1912.

R1.2 REFERENCES

Standards and RTA Test Methods are referred to in abbreviated form (eg AS 1234). For convenience, the full titles are given below:

RTA Test Methods

T166 Determination of Relative Compaction
T215 Wet/Dry Strength Variation

Unless otherwise specified the applicable issue of a reference standard shall be the issue current at the date one week before the closing date for tenders.

R1.3 EROSION AND SEDIMENTATION CONTROL PLAN

For consideration of erosion and sedimentation control measures, the site shall be subdivided into sections based on the catchment area draining to each permanent drainage structure in the works. In addition to the area bounded by the road construction easement, the sections shall include:

- (i) Access and haulage tracks.
- (ii) Borrow pits.
- (iii) Compound areas, such as Contractor's facilities and concrete batching areas.

At least fourteen days before the natural surface is disturbed on each of these sections, the Contractor shall submit an Erosion and Sedimentation Control Plan for that section. This Plan shall be superimposed on half-sized drainage drawings of the works and shall be detailed for each catchment area of the work under the Contract.

The Plan shall consist of scale diagrams indicating the following:

- (i) Features of the site including contours and drainage paths.
- (ii) Relevant construction details of all erosion and sedimentation control structures.
- (iii) All permanent and temporary erosion and sedimentation control measures, including the control measures to be implemented in advance of, or in conjunction with, clearing and grubbing operations.
- (iv) An order of works based upon construction and stabilisation of all culverts and surface drainage works at the earliest practical stage.
- (v) Proposed time schedules for construction of structures and implementation of measures to control erosion and sedimentation.

The cost of preparing and submitting the Erosion and Sedimentation Control Plan shall be borne by the Contractor.

Submission of an Erosion and Sedimentation Control Plan shall constitute a HOLD POINT.

No earthworks excavation shall proceed on any section until the Contractor has installed the measures contained within the Erosion and Sedimentation Control Plan required for effective erosion and sedimentation control. The Contractor shall have full responsibility to provide whatever measures are required for effective erosion and sedimentation control at all times and an amended Plan shall be provided and the above process repeated if measures are ineffective.

R1.4 EROSION AND SEDIMENTATION CONTROL MEASURES

Erosion and sedimentation control measures shall include, but shall not be limited to, the following:

- (i) The installation of permanent drainage structures before the removal of topsoil and commencement of earthworks for formation within the catchment area of each structure.
- (ii) The prompt completion of all permanent and temporary drainage works, once commenced, to minimise the period of exposure of disturbed areas.
- (iii) The stabilisation of diversion and catch drains to divert uncontaminated runoff from outside the site, clear of the site. Catch drains shall be installed and lined, as specified, before the adjacent ground is disturbed and excavation is commenced.
- (iv) The passage of uncontaminated water through the site without mixing with contaminated runoff from the site.
- (v) The provision of contour and diversion drains across exposed areas before, during and immediately after clearing and the re-establishment and maintenance of these drains during soil removal and earthworks operations.
- (vi) The provision of sediment filtering or sediment traps, in advance of and in conjunction with earthworks operations, to prevent contaminated water leaving the site.
- (vii) The restoration of the above drainage and sedimentation control works on a day to day basis to ensure that no disturbed area is left without adequate means of containment and treatment of contaminated water.
- (viii) The limitation of areas of erodible material exposed at any time to those areas being actively worked.
- (ix) The minimisation of sediment loss during construction of embankments by means such as temporary or reverse superelevations during fill placement, constructing berms along the edge of the formation leading to temporary batter flumes and short term sediment traps.

(x) The progressive revegetation of the site as work proceeds.

R1.5 EARTHWORKS FOR PERMANENT SEDIMENTATION CONTROL BASINS/TRAPS

Earthworks for permanent erosion and sedimentation control basins/traps shall be to the planned levels and dimensions shown on the Drawings.

The entire storage and embankment foundation area of permanent erosion and sedimentation control basins/traps shall be cleared and grubbed and shall be stripped of topsoil. Unsuitable material under embankments shall be removed in accordance with the Specification Part for EARTHWORKS.

The embankments shall be constructed in layers not exceeding 200 mm in depth' and compacted so that the relative compaction, determined by Test Method T166, shall not be less than 95 per cent.

Material forming the embankment shall have a Plasticity Index neither less than 15 nor more than 30 and a grading such that neither less than 20 per cent nor more than 60 per cent, by mass of material, passes the 425 micron sieve.

Two 100 mm diameter perforated plastic subsoil pipes enclosed in tubular filter fabric shall be installed as shown on the Drawings where shown. No extra payment shall be made for this work which shall be regarded as part of the construction of the sedimentation control basin.

Alternative methods of draining the basins for sediment removal may be proposed by the Contractor. The use of alternative methods shall be subject to any extra cost resulting from their implementation being borne by the Contractor.

R1.6 INLETS, SPILLWAYS AND LOW FLOW OUTLETS FOR SEDIMENTATION CONTROL BASINS

Inlets and spillways shall be constructed using rock filled woven galvanised steel mattresses laid on a needle punched, mechanically bonded, non-woven geotextile filter fabric, as shown on the Drawings where shown. The rock filled mattresses shall be laid in accordance with the manufacturer's instructions. The rock filling shall have a minimum wet strength of 100 kilonewtons and a 10 per cent fines value, determined by Test Method T215, not greater than 45. The minimum size of rock shall be 75 mm and the maximum size of rock shall be two-thirds the thickness of the mattress or 250 mm, whichever is the lesser.

A low flow outlet consisting of a 150 mm diameter plastic pipe shall be installed as shown on the Drawings. No extra payment shall be made for this work, which shall be regarded as part of the construction of the sedimentation control basin.

Alternative methods of inlet and spillway construction and low flow outlets may be proposed by the Contractor. The use of alternative methods of construction shall be subject to any extra cost resulting from their implementation being borne by the Contractor.

R1.7 DROP INLET SEDIMENT TRAPS AND INLET CONTROL BANKS

Drop inlet sediment traps and inlet control banks shall be constructed on completion of each median gully pit. These drop inlet sediment traps and inlet control banks are additional to the temporary sedimentation control measures that may be required during construction of the median gully pits.

The drop inlet sediment traps are intended to remove sediment from the surface flow before it enters the drainage system. The inlet control banks shall be constructed across the median as required to prevent the surface flows bypassing the median gully pits.

The drop inlet sediment traps shall be constructed where shown on the Drawings. The associated inlet control banks shall consist of at least two courses of sandbags containing a 10:1 sand/cement mix. The bags shall be keyed at least 25 mm into the surface, dampened sufficiently to ensure hydration of the cement and tamped lightly to provide mechanical interlock between adjacent bags.

Alternative methods of achieving the same results may be proposed by the Contractor. The use of alternative methods shall be subject to any additional cost resulting from their implementation being borne by the Contractor.

R1.8 CLEANING PERMANENT SEDIMENTATION CONTROL STRUCTURES

The Contractor shall clean out permanent sedimentation control structures whenever the accumulated sediment has reduced the capacity of the structure by 60 per cent or more, or whenever the sediment has built up to a point where it is less than 300 mm below the spillway crest. All permanent sedimentation control structures shall be cleaned out as part of the work to be executed by the Contractor before Practical Completion of the Works.

Accumulated sediment shall be removed from permanent sedimentation control structures in such a manner as not to damage the structures. The sediment removed shall be disposed of in such locations that the sediment will not be conveyed back into the construction areas or into watercourses. The Contractor shall provide and maintain suitable access to permanent sedimentation control structures to allow cleaning out in all weather conditions.

R1.9 REMOVAL OF PERMANENT SEDIMENTATION CONTROL BASINS

Towards the end of the contract period, the Contractor where directed shall remove any or all of the permanent sedimentation control basins and spillways constructed in accordance with Sections R1.5 and R1.6. The work shall result in the restoration of the ground surface disturbed by the construction of the permanent sedimentation control basins to approximate that previously existing and shall include the following:

- (i) Removal of the rock mattresses from the spillway and their subsequent burial into the basin area or their use as scour protection or their removal from site.
- (ii) Spreading and compaction of the embankment material into the basin area.
- (iii) Removal of access roads.

The disturbed material shall be compacted to at least the relative density of the material existing in the adjacent ground.

Vegetation in the restored area shall be carried out and paid for in accordance with the Specification Part for VEGETATION.

R1.10 REMOVAL OF DROP INLET SEDIMENT TRAPS AND INLET CONTROL BANKS

Towards the end of the contract period, the Contractor where directed shall remove from the site any or all of the drop inlet sediment traps and associated inlet control banks constructed in accordance with Section R1.7.

R1.11 TEMPORARY EROSION AND SEDIMENTATION CONTROL

(a) General

The Contractor shall ensure that effective erosion and sedimentation control is provided at all times during the Contract.

Runoff from all areas where the natural surface is disturbed by construction, including access roads, depot and stockpile sites, shall be free of pollutants as defined in the Clean Waters Act 1970 before it is either dispersed to stable areas or directed to natural watercourses. The Contractor shall be responsible for all temporary erosion and sedimentation control measures required for this purpose.

The cost of installation, maintenance, inspection and removal of these measures shall be included in the rates and prices generally for the work under the Contract.

The Contractor shall provide and maintain slopes, crowns and drains on all excavations and embankments to ensure satisfactory drainage at all times. Water shall not be allowed to pond on the works unless such ponding is part of an Erosion and Sedimentation Control Plan.

Should damage occur the cost of rectification of such damage shall be borne by the Contractor and an amended Erosion and Sedimentation Control Plan implemented as required under Section R1.3.

The Drawings provide guidance on typical temporary erosion and sedimentation control measures which may be required.

(b) Temporary Dykes and Drains

Runoff from areas exposed during the works are to be controlled by construction of temporary contour and diversion drains. These drains generally take the form of a channel constructed across a slope, with a ridge on its lower side.

Contour drains are drains which follow points of the land of approximately the same elevation. They should be provided immediately after a construction site is cleared to intercept and divert runoff from the site to nearby stable areas at non-erosive velocities. The drains should be formed with a gentle grade (1 - 1.5%) and spaced at intervals between 20 and 50 m, depending on the erodibility of the exposed soil. Details of contour drains are shown on the Drawings.

Diversion drains should be provided across haul roads and access tracks when these are identified as constituting an erosion hazard due to either their steepness, soil erodibility or potential for concentrating runoff flow. They are formed to intercept and divert runoff from the road or track to stable outlets. Close spacing of these drains is generally required to maintain runoff at non-erosive velocities.

(c) Temporary Silt Traps

Temporary sediment trapping devices are required during construction to filter sediment-laden runoff from small areas (0.5 hectare or less). They are to be used to filter sediment from runoff before entering the natural watercourses or to protect adjacent lands.

(d) Maintenance and Inspection

The Contractor shall inspect all temporary erosion and sedimentation control works after each rain period and during periods of prolonged rainfall. Any defects revealed by such inspections shall be rectified immediately and these works shall be cleaned, repaired and augmented as required, to ensure effective control thereafter.

The Contractor shall provide and maintain access for cleaning out sediment control works. The sediment removed from such controls shall be disposed of at locations where it will not again erode onto the construction areas or into watercourses.

(e) Removal

Temporary control measures are to be removed by the Contractor when revegetation has established on formerly exposed areas or prior to the end of the contract. All materials used therein shall be removed from the site of the work or disposed of by the Contractor.

R1.12 MEASUREMENT AND PAYMENT

Payment shall be made for all activities associated with completing the work detailed in the Specification Part R1 entitled CONTROL OF EROSION AND SEDIMENTATION in accordance with Pay items R1P1 to R1P6 inclusive.

A lump sum price for any of these items shall not be accepted.

If any item for which a quantity of work is listed in the Schedule of Rates has not been priced by the Contractor it shall be understood that due allowance has been made in the prices of other items for the cost of the activity which has not been priced.

Pay Item R1P1 - Earthworks for Permanent Sedimentation Control Basins/Traps

The unit of measurement shall be the cubic metre of compacted volume of embankment.

The volume shall be determined by calculation using the end area method.

The schedule rate shall cover the excavation of material from within the sedimentation control basin and embankment construction and shall be an average rate for all types of materials.

The cost of excavating and transporting material for embankment construction which is obtained from within cuttings or from borrow shall be included in the schedule rates for earthworks under the Specification Part for EARTHWORKS.

Pay Item R1P2 - Inlets, Spillways and Low Flow Outlets for Sedimentation Control Basins

The unit of measurement shall be the square metre of surface area of rock filled mattress.

Pay Item R1P3 - Drop Inlet Sediment Traps and Inlet Control Banks

The unit of measurement shall be 'each' drop inlet sediment trap including inlet control bank.

Pay Item R1P4 - Cleaning of Permanent Sedimentation Structures

The unit of measurement shall be the in-place cubic metre of sediment removed from the structure.

The volume of sediment removed shall be determined by survey.

The schedule quantity is a provisional quantity.

Pay Item R1P5 - Removal of Permanent Sedimentation Control Basins including Spillways

The unit of measurement shall be 'each' permanent sedimentation control basin including spillway removed.

The schedule quantity is a provisional quantity.

Pay Item R1P6 - Removal of Drop Inlet Sediment Traps and Inlet Control Banks

The unit of measurement shall be 'each' drop inlet sediment trap including control bank removed.

The schedule quantity is a provisional quantity.

ANNEXURE R1/1 MINIMUM FREQUENCY OF TESTING

Clause	Characteristic Analysed	Test Method	Minimum Frequency of Testing
R1.5	Compaction of embankments	T166	One test per 500 cu m with a minimum of 2 per basin/trap
R1.6	Rock strength	Т215	One sample per 200 cu m

ANNEXURE R1/2 SCHEDULE OF HOLD POINTS

Reference	Description
R1.3	Submission of Erosion and Sedimentation Control Plan

TEMPORARY EROSION AND SEDIMENTATION CONTROL

ROADS AND TRAFFIC AUTHORITY, NSW

DOCUMENT CMS-QA-R2
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TEMPORARY EROSION AND SEDIMENTATION CONTROL

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TEMPORARY EROSION AND SEDIMENTATION CONTROL

R2.0 AMENDMENTS

This document is based on RTA Document CMS-QA-R2.

Any amendments to the base document have been indicated in the following manner:

- (i) Text which is additional to the base document and which is included in the Specification is shown in italics e.g. Additional Text.
- (ii) Text which has been deleted from the base document and which is <u>not</u> included in the Specification is shown in struck out e.g. Deleted Text.

R2.1 GENERAL

This Part of the Specification sets out the temporary erosion and sedimentation control measures required to control and filter runoff from areas disturbed by the Contractor's activities.

The Contractor shall comply with requirements of the NSW Clean Waters Act 1970, the Soil Conservation Act 1938 and the Water Act 1912.

The Contractor shall plan and carry out the whole of the works to avoid erosion and sedimentation of the site, surrounding country, watercourses, waterbodies and wetlands.

Runoff from all areas where the natural surface is disturbed by construction, including access roads, depot and stockpile sites, shall be free of pollutants as defined in the Clean Water Act 1970 before it is either disposed to stable areas or directed to natural watercourses. The Contractor shall be responsible for whatever temporary erosion and sedimentation control measures are required for this purpose in addition to any permanent works which may be shown on the Drawings. These measures may require progressive implementation and frequent alteration as the work progresses.

The cost of installation, maintenance and removal of these measures shall be deemed to be included in the rates and prices generally for the work under the Contract.

Any damage resulting from the Contractor not observing the Statutory requirements and the General Conditions of Contract shall be rectified by the Contractor at his cost.

The Drawings provide guidance on typical, temporary erosion and sedimentation control works which may be required during contract activities.

R2.2 METHODS OF CONTROL AND IMPLEMENTATION

The Contractor shall submit an Erosion and Sedimentation Control Plan as part of the documentation required under the Quality System Specification. The Plan shall include details of proposed temporary erosion and sedimentation control measures and the method and programme of incorporation of all such temporary control measures into the work under the Contract.

No work shall commence on any section until the Contractor has installed the measures contained within the Erosion and Sedimentation Control Plan required for effective erosion and sedimentation control.

The Contractor shall ensure that the measures are effective at all times during the Contract.

Erosion and sedimentation control measures shall include, but shall not necessarily be limited to, the following:-

- (i) The prompt completion of all temporary works, once commenced, to minimise the period of exposure of disturbed areas.
- (ii) The provision of contour and diversion drains across exposed areas.
- (iii) Provision of sediment filtering or sediment settlement traps, in advance of and in conjunction with Concrete Paving operations, to prevent contaminated water leaving the site.
- (iv) Maintenance of the above drainage and sedimentation control works on a day to day basis to ensure that no disturbed area is left without protection.
- (v) Limiting the areas of erodible material exposed at any time to those areas being actively worked.

R2.3 TEMPORARY DYKES AND DRAINS

Runoff from areas exposed during the works are to be controlled by construction of temporary contour and diversion drains. These drains generally take the form of a channel constructed across a slope, with a ridge on its lower side.

Contour drains are drains which follow points of the land of approximately the same elevation. They should be provided immediately after a construction site is cleared to intercept and divert runoff from the site to nearby stable areas at non-erosive velocities. The drains should be formed with a gentle grade (1 - 1.5%) and spaced at intervals between 20 and 50 m, depending on the erodibility of the exposed soil. Details of contour drains are shown on the Drawings.

Diversion drains should be provided across haul roads and access tracks when these are identified as constituting an erosion hazard due to either their steepness, soil erodibility or potential for concentrating runoff flow. They are formed to intercept and divert runoff from the road or track to stable outlets. Close spacing of these drains is generally required to maintain runoff at non-erosive velocities.

R2.4 TEMPORARY SILT TRAPS

Temporary sediment trapping devices are required during construction to filter sediment-laden runoff from small areas (0.5 hectare or less). They are to be used to filter sediment from runoff before entering the natural watercourses or to protect adjacent lands.

R2.5 MAINTENANCE AND INSPECTION

The Contractor shall inspect all temporary erosion and sedimentation control works after each rain period and during periods of prolonged rainfall. Any defects revealed by such inspections shall be rectified immediately and these works shall be cleaned, repaired and augmented as required, to ensure effective control thereafter.

The Contractor shall provide and maintain access for cleaning out sediment control works. The sediment removed from such controls shall be disposed of at locations where it will not again erode onto the construction areas or into watercourses.

R2.6 REMOVAL

Temporary control measures are to be removed by the Contractor when revegetation has established on formerly exposed areas or prior to the end of the contract. All materials used therein shall be removed from the site of the work or disposed of by the Contractor.