



**PACIFIC HIGHWAY UPGRADE
SAPPHIRE TO WOOLGOOLGA PROJECT**

Modification Request

Golden Arrow Mine

MACCUES ROAD, MOONEE BEACH

AUGUST 2010

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1 INTRODUCTION

1.1 The Approved Project

The RTA's concept design plan for the upgrade of the Pacific Highway from Sapphire to Woolgoolga (the Project) was described and assessed in Environmental Assessment (EA) prepared by Connell Wagner in November 2007. The EA also included Statements of Commitments (SoC) setting out certain environmental and other objectives for the Project.

The EA was placed on public exhibition from December 2007 to February 2008 and submissions were received from the community and agencies in response. Connell Wagner (on behalf of the RTA) prepared a Submissions Report (July 2008) that included additional SoCs and some changes to the Project made in response to issues raised during the public exhibition of the EA.

The Minister for Planning granted approval to the Project under Part 3A of the *Environmental Planning and Assessment Act 1979* (the EP&A Act) on 13 January 2009 (the Approved Project) subject to conditions.

The Project was declared a critical infrastructure project under section 75C and a major project under section 75B(1)(b) of the *Environmental Planning and Assessment Act 1979* through NSW Government Ministerial orders 10507 and 10509.

The ministerial order specifies the Project will entail:

'Development for all associated or ancillary works, activities, uses, structures or facilities for the purposes of the Project, and includes (but is not limited to) works, activities, uses, structures or facilities for the following:

- a) Construction (including demolition works) and operation (excluding maintenance) of the Project;*
- b) Access for construction and operation of the Project including access for pedestrians, public transport and vehicles;*
- c) Environmental management and pollution control for the Project;*
- d) Associated interchanges, intersections, bridges, overpasses, ramps, service roads and road modifications for the Project;*
- e) Any changes to the route of the existing carriageway or road for the Project;*
- f) Any re-alignment, modification, demolition or replacement of the existing carriageway or road for the Project; and*
- g) Any winning or obtaining extractive material as part of the construction work for the Project.*

Development does not include activities comprising of surveys, test drilling, test excavations, preliminary geotechnical investigations or the like associated with the design and environmental assessments required for the Project prior to the commencement of construction.'

1.2 The Golden Arrow Mine

Subsequent to the approval of the Project, a disused gold mine (Golden Arrow Mine) dating from the 1930s was discovered near the intersection of Maccues Road and the Pacific Highway, Moonee Beach.

Archaeological & Heritage Management Solutions (AHMS) was commissioned by the RTA to investigate the site and make any recommendations as per SoC NAH3. The AHMS report is included in this report as Attachment A.

The AHMS report found that the gold mine is of local historical significance in accordance with NSW Heritage Council criteria and falls within the definition of a 'relic' under the Heritage Act 1977. Excavation permits are normally required to remove or destroy a relic except where a Part 3A approval applies, as in this case.

The AHMS report made a number of recommendations, including whether the design of the Project could be modified to avoid or minimise impacting on the shaft (including an area within 2m of its sides). This recommendation is further discussed below.

Section 75W of the EP&A Act regulates the modification of a project approved under Part 3A. The proponent may request the Minister to modify an approval including revoking or varying a condition of the approval or imposing an additional condition. The Minister's approval for a modification is not required if the modified project will be consistent with the existing approval.

1.3 Project Approval European Heritage Requirements

As the discovery of the gold mine post dated the environmental assessment and approval process there are no specific approval conditions relating to non aboriginal heritage in the Approval other than the requirement in Condition 6.3(c) to prepare a Construction Heritage Management Plan (CHMP). The CHMP is required to set out the management and monitoring of aboriginal and non aboriginal heritage and is to be prepared in consultation with the Heritage Branch of the Department of Planning and the Department of Environment, Climate Change and Water (this plan has been prepared and approved as part of the Construction Environmental Management Plan (CEMP) for the Project).

As it was anticipated in the EA that non aboriginal heritage items may be discovered during the construction of the project, a Statement of Commitment (SoC) NAH3 was included in the EA and the Submissions Report. This SoC states:

"Should any additional heritage items be uncovered during works, all works in the vicinity of the find would cease until specialist heritage advice is obtained.

1.4 Approved Concept Design

The approved concept design of the Project in the vicinity of the intersection of Maccues Road and the Sapphire to Moonee Access Road (as part of the Upgrade works) was prepared in the absence of any knowledge of the existence of the Gold Mine.

The approved concept design is shown in Figure 1 (Appendix B) with the gold mine shaft located on the boundary of the cut batter and the eastern adit extending under the cut batter on the northwest corner of the future intersection

1.5 Review of Design Options

During design development the Joint Venture evaluated, in consultation with the RTA, several options for the design of the Maccues Road Intersection. The options investigated gave due consideration for the recommendation from the AHMS report to investigate options in the design and construction of the project to avoid impacting the mine shaft at the corner of the Pacific Highway and Maccues Road. The review of options also took account of the requirements of the relevant road safety design standards.

The options are documented in Position Paper *S2W- 20-2000-RD160A Difficult Sites item No. 03: Maccues Road T-Intersection & Design Philosophy* and attached in Appendix C. As detailed in the Position Paper, due to property boundary constraints, it is not possible to provide a left turn lane into Maccues Road off the Sapphire to Moonee Access Road (as part of the Upgrade works) that satisfies the turning paths for 19.0m semis safety without shifting the Maccues Road alignment over the Gold Mine.

An additional option of lowering the crest on the Access Road was also investigated however again due to property boundary constraints to the south and east and resulting increase in grade on Maccues Road this option was considered undesirable.

In consultation with the RTA, Option 2101 (detailed in position paper and shown in Figure 2 of Appendix B), was considered to be the preferred option. This option is marginally different to the approved concept design in this area however it accommodates a lane correct turning path for a 19.0m semi. Due to the widening required at the intersection the cut batter extends further to the northwest and this envelop the entire gold mine shaft and adits.

1.6 Justification of Proposed Modification to Design

Road safety and technical standards require heavy vehicles turning left into Maccues Road to be "lane correct" rather than utilising the opposing traffic lane and increasing risk of collisions with oncoming traffic. Due to project boundary constraints to the south and east of the intersection it is not possible to provide for a lane correct movement without encroachment of the access road alignment and associated cut batters, in the northwest corner of the intersection, over the mine site.

The presence of horizontal drives (adits) from the shaft at relatively shallow depth creates a risk for partial collapse of support in the road formation. As a consequence, it will be necessary to excavate to the adit level, then backfill both adits and shaft of the abandoned mine so that the new road foundation and cut embankment will be stable and not subject to future settlement.

1.7 Proposed Mitigation Measures

The AHMS report made a number of recommendations to be implemented in the event that impacts on the gold mine could not be avoided by modifying the design of the Project. These include:

1. Where detailed design cannot physically avoid the shaft the RTA should seek heritage advice on appropriate mitigation such as:
 - a. Archaeological monitoring and recording

- b. Photographic archival recording and surveyor mapping
2. The RTA seek to ensure that all records generated regarding the mine shaft are appropriately lodged with Council, the RTA, the local library and the local museum and other archives and repositories as appropriate
3. The RTA consider options for interpreting the shaft and the site's gold mining past in the proposed works such as providing interpretative materials in the public lay-way or rest area

The Joint Venture consulted with the Heritage Branch of the Department of Planning on the future management of the gold mine in the preparation of the CHMP. The Heritage Branch advised the Joint Venture (letter attached in Appendix D), that the recommendations in the AHMS report consisting of surveyor mapping and archival recording be implemented but that archaeological monitoring and recording is not necessary. The Joint Venture included these heritage management and mitigation measures in the CHMP which has now been approved as part of the CEMP for the Project

2 RECOMMENDATIONS

Options to avoid or minimise impacts on the Gold Mine were considered during the detailed design of the Project as outlined above.

The RTA considers that while the preferred option will result in impacts on the gold mine it is the most feasible option available. The factors in support of the proposed modification to the design of the Project are:

- Road safety and technical standards require heavy vehicles turning left into Maccues Road to be “lane correct” rather than utilising the opposing traffic lane and increasing risk of collisions with oncoming traffic;
- Due to project boundary constraints to the south and east it is not possible to provide for a lane correct movement without encroachment of the access road alignment and associated cut batters, in the northwest corner of the intersection, over the mine site;
- An additional option of lowering the crest on the Access Road was investigated however again due to property boundary constraints and resulting increase in grade on Maccues Road this option was considered undesirable; and
- The presence of horizontal drives (adits) from the shaft at relatively shallow depth creates a risk for partial collapse of support in the road formation. As a consequence, it will be necessary to excavate to the adit level, then backfill both adits and shaft of the abandoned mine so that the new road foundation and cut embankment will be stable and not subject to future settlement.

Consistent with the recommendations of the AHMS report the Joint Venture & the RTA have reviewed the design of the Project to avoid impacts on the gold mine. For the reasons given above, it is considered that impacts on the gold mine cannot be avoided.

Therefore, it is proposed that the recommendations in the AHMS report relating to survey, recording and interpretation of the site that were supported by the Heritage Office be implemented on the Project as part of this modification. These are as follows:

- A survey of the Gold Mine be undertaken and a qualified heritage consultant will be engaged to prepare an archival recording of the Gold Mine;
- The archival recording and survey of the Gold Mine be lodged with Council, the RTA, the local library and the local museum and any other archives and repositories as considered appropriate; and
- Interpretative options be developed for the RTA's consideration (such as providing information and materials on the gold mine in the nearest public bus shelter, lay-way or rest area).

The RTA requests that the Project Approval be modified consistent with this proposal and the mitigation measures referred to above.

REFERENCES

Minister for Planning 2007. *Project Approval Section 75J of the Environmental Planning and Assessment Act 1979*. Instrument dated 13 January 2009 and subsequently modified on 14 November 2009 and 22 February 2010.

Coffs Harbour Highway Planning, Sapphire to Woolgoolga Section, Environmental Assessment, November 2007 (Connell Wagner).

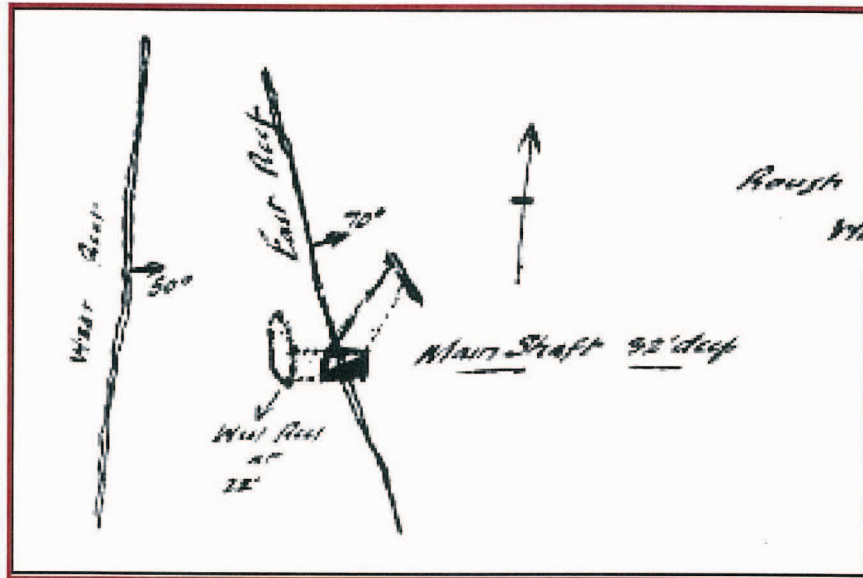
Coffs Harbour Highway Planning, Sapphire to Woolgoolga Section, Environmental Assessment Submissions Report, July 2008 (Connell Wagner).

Roads and Traffic Authority 2001. *Environmental Impact Assessment Policy Guidelines Procedures*. Version 4, amendment 5 dated June 2005.

APPENDIX A AHMS HERITAGE REPORT

HERITAGE IMPACT ASSESSMENT FOR A MINE SHAFT AT WOOLGOOLGA, NSW.

FOR AURECON



Sketch Map of Workings within Golden Arrow Mine Lease June 1931

By Laura Matarese and Graham Wilson

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EXECUTIVE SUMMARY

This report forms a Heritage Impact Assessment undertaken by Archaeological and Heritage Management Solutions Pty Ltd for the mine shaft on the rural property at the corner of the Pacific Highway and Maccues Road, Moonee Beach.

This Heritage Impact Assessment has been undertaken on behalf of Aurecon for the NSW Roads and Traffic Authority as part of the proposed Sapphire to Woolgoolga Pacific Highway upgrade.

It is understood that the mine shaft will be impacted by the proposed works to Maccues Road as part of the Pacific Highway upgrade. It is further understood that the proposed Sapphire to Woolgoolga Pacific Highway upgrade is subject to Part 3A of the *Environmental Planning and Assessment Act 1979* and thereby works that might affect the mine shaft at Lot 2, DP 869098 Coffs Harbour are not subject to the 'relics' provisions of the *Heritage Act 1977*.

The Heritage Impact Assessment finds that:

- The mine shaft is part of the Golden Arrow Gold Mine lease is documented to have been started in 1931. However, mining at the site may have occurred earlier as an informal and locally known mine. The mine shaft has also been used as a source of water for local fruit growing since the 1940s;
- The mine shaft and associated potential archaeological resources was assessed using the NSW heritage Council heritage significance criteria and was found to be of local heritage significance; and
- The proposed works for the Pacific Highway upgrade are likely to have a negative impact to the form, fabric and heritage significance of the mine shaft and associated potential archaeological resources.

The Heritage Impact Assessment recommends that:

- Where possible within the constraints of the current project, all effort should be made through detailed design modification or similar, to avoid or minimise impacts to the shaft and an area of land about 2m from each edge of the shaft's opening;
- Where detailed design cannot physically avoid the shaft the RTA should seek heritage advice on appropriate mitigation such as
 - Archaeological monitoring and recording;

- Photographic archival recording; and
- Surveyor mapping.

- The RTA seek to ensure that all records generated regarding the mine shaft are appropriately lodged with Council, the RTA, the local library and the local museum and other archives and repositories as appropriate;

- The RTA consider options for interpreting the shaft and the site's gold mining past in the proposed works, such as providing interpretative materials in the nearest public lay-way or rest area.

1. INTRODUCTION

Aurecon has engaged Archaeological & Heritage Management Solutions Pty Ltd (AHMS) to undertake a Heritage Impact Assessment (HIA) for a mine shaft at the corner of the Pacific Highway and Maccues Road, Moonee Beach, N.S.W. This project has been undertaken on behalf the NSW Roads and Traffic Authority (RTA) as part of the Sapphire to Woolgoolga Pacific Highway upgrade.

It is understood the mine shaft (in part or in whole) may be impacted by (in part or in whole) or be in close proximity to, works to Maccues Road proposed as part of the Sapphire to Woolgoolga Pacific Highway upgrade. It is further understood that the works are subject to Part 3A of the *Environmental Planning and Assessment Act 1979*.

The HIA was recommended by an Initial Historical Archaeological Advice letter report prepared by AHMS on behalf of Aurecon, which identified the mine shaft had historical heritage significance and associated potential historical archaeological resources.

The purpose of the HIA is to provide a heritage significance assessment of the mine shaft including a brief impact statement. Importantly, the HIA provides the required documentation to ensure appropriate compliance with relevant NSW Heritage Council guidelines.

1.1 Project Aims and Objectives

The objectives of the Heritage Impact Assessment were to:

- Undertake historical research to identify the nature and use of the mine shaft at the site;
- Undertake a site recording of the mine shaft including a photographic recording and measured plans;
- Identify the potential for any historic archaeological resources or relics to survive and be buried (located sub-surface) at the site;
- Determine the likely significance of the mine shaft and any associated historic archaeological resources or relics at the site;
- Determine whether or not the proposed development has potential to impact on the mine shaft and any associated historic archaeological resources or relics;

- Identify potential historical heritage constraints for the proposal and provide appropriate management recommendations to mitigate possible impacts on the archaeological deposits at the site (if any); and
- Identify legislative requirements and recommendations for managing any archaeological resource that may be on the site and which may be impacted by the proposal in accordance with the statutory requirements of the *Heritage Act 1977* (NSW).

1.2 Report Structure

This historical archaeological assessment was undertaken in accordance with the NSW Heritage Council guidelines 'Archaeological Assessments' (1996), 'Assessing Heritage Significance' (2001) and the NSW Heritage Manual (1996). The report is divided into the following sections:

- Section 2 - provides an overview of the study area and a description of the project;
- Section 3 - summarises relevant heritage legislation and presents the results of a search of Statutory and non-Statutory heritage registers for any heritage listed items within the site;
- Section 4 - presents the development and occupation history of the site;
- Section 5 - outlines the results of the site inspection;
- Section 6 - presents an assessment of the heritage significance of the site using the NSW Heritage Council heritage significance criteria;
- Section 7 - presents an impact assessment of the proposed development on the fabric and form of the mine shaft and its heritage significance values; and
- Section 8 - outlines the conclusions and recommendations of the heritage impact assessment.

1.3 Limitations

This assessment has briefly considered the impacts of the proposed concept works to the mine shaft however at the time of writing the report the proposed works had not reached the detailed design stage. Substantial alterations to the proposed works may require re-evaluation of the Statement of Heritage Impact and recommendations.

During the site recording, the pump structure and timber supports over the mine shaft opening were unable to be removed for OH&S reasons. Prior to any works being undertaken to the mine shaft, or in proximity to the mine shaft, a survey should be undertaken and added as a supplement to this report.

The report does not consider Aboriginal heritage potential at the site.

1.4 Authorship and Acknowledgements

This report was authored by Laura Matarese, Archaeologist AHMS and Graham Wilson, Senior Historical Archaeologist, AHMS. A quality assurance review of the report was undertaken by Lisa Newell, Associate Director, AHMS.

The assistance of Charlie Shackell (Aurecon), Mr. Stumps (land owner) and the Coffs Harbour District Library is gratefully acknowledged. The invaluable information and advice provided by Terrie Beckhouse and the team at the Coffs Harbour District Museum is also appreciated.

2. PROJECT DESCRIPTION

2.1 Study Area

The mine shaft is located in a rural property at the corner of the Pacific Highway and Maccues Road, Moonee Beach (Figure 1). The real property location of the mine shaft is Lot 2 DP 869098 Coffs Harbour.

The Study Area is located on a ridge which Maccues Road traverses, and is nearby several banana farms.

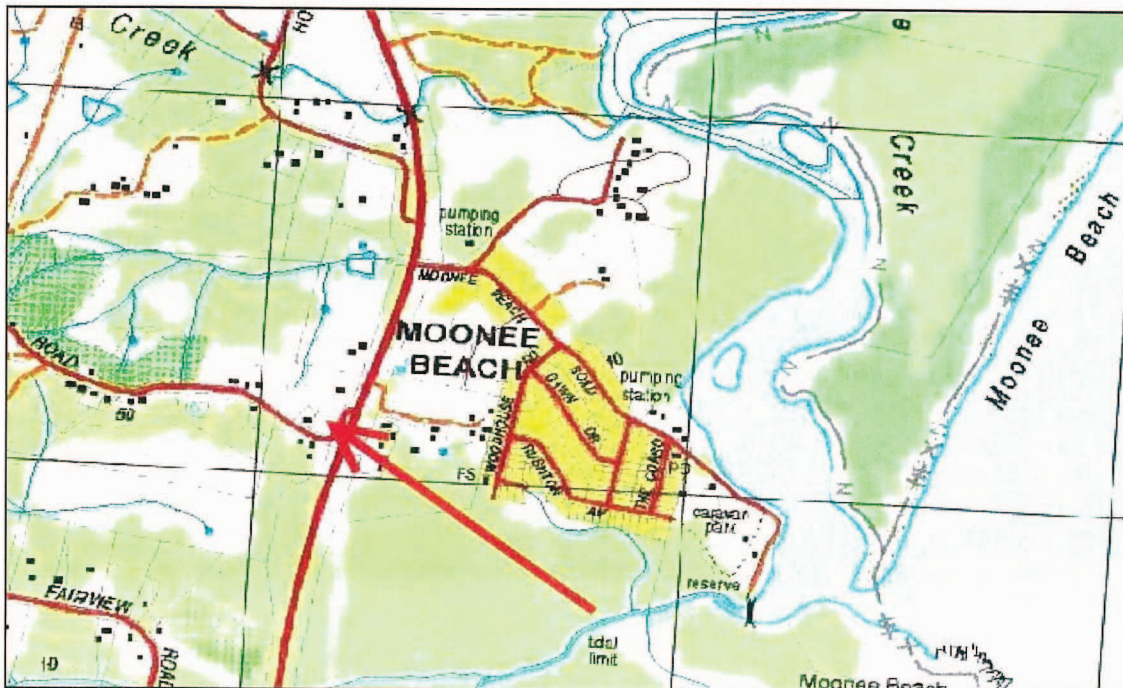


Figure 1. Mine location indicated by red arrow on current topographic map (Source: Six Viewer, NSW Department of Lands).



Figure 2. Mine location indicated by red dot shown within cadastral data (Source: Six Viewer NSW Department of Lands).

2.2 Proposed Development

Detailed design for project works at Maccues Road of the Sapphire to Woolgoolga Pacific Highway upgrade has yet to be completed by the RTA, however indicative impacts of the works to Maccues Road and the Study Area have been provided by Aurecon.

The works potentially would include vertical excavation across the mine shaft area. This excavation would consist of essentially cutting several metres off the top of the study area including the mine shaft, infilling the shaft and then ‘capping’ and constructing a road over the top of the shaft.

3. APPLICABLE STATUTORY CONSIDERATIONS AND HERITAGE LISTINGS

The *Environmental Planning and Assessment Act 1979* (EP&A Act) in conjunction with the *Heritage Act 1977* provide the statutory framework for managing historic heritage in New South Wales.

The system of heritage management in NSW and Australia more broadly comprises a system of heritage listings associated with the legislation (identified above). Historic heritage listing in NSW currently consists of both statutory and non-statutory registers administered by local and State Government agencies in addition to 'not for profit' community organizations.

The relevant historic heritage legislation and associated statutory and non-statutory registers reviewed for this assessment are outlined below.

3.1 Environmental Planning & Assessment Act, 1979

The EP&A Act is the dominant piece of legislation that provides a statutory framework for planning processes required for development in NSW. The Act sets out specific statutory assessment processes for proposed developments within the State under Parts 3A, 4 and 5.

Sapphire to Woolgoolga Pacific Highway upgrade has received project approval from the Department of Planning as a Part 3A (Critical Infrastructure) project.

Non Aboriginal heritage was found not to be a key issue in the Environmental Assessment. The heritage mine shaft described in this report was identified post project approval. The findings of this report will form part of an RTA Consistency Assessment and notification to Department of Planning.

Projects which are assessed under Part 3A undergo a streamlined development assessment and approval process. This means separate approvals, outlined in 75U of the EP&A Act including Section 140 and Section 60 under the *Heritage Act, 1977*, are not required. Part 3A Projects are determined by the (NSW) Minister for Planning.

3.2 Heritage Act 1977 (NSW)

The *NSW Heritage Act* is legislation designed to conserve the environmental heritage of NSW and is used to regulate development impacts on the State's heritage assets. In addition to buildings and items listed on the State Heritage Register (SHR), archaeological features and deposits are afforded automatic statutory protection by the relic's provisions of the *NSW Heritage Act 1977*¹. The Act defines a 'relic' as:

"any deposit, object or material evidence relating to the settlement of the area that comprises NSW, not being Aboriginal settlement, and which is fifty or more years old."

Excavation permits from the NSW Heritage Council are normally required to remove, destroy or affect a 'relic' except where Part 3A of the EP&A Act (or certain other Acts or part of Acts) may apply, or where an 'Exception' from the requirement for a permit has been obtained.

3.3 Statutory Heritage Registers

Heritage listings for sites are made on either statutory or non-statutory registers. In New South Wales protection for heritage items listed on statutory registers is provided by the *NSW Heritage Act 1977* (as discussed above) and the *Environmental Planning and Assessment Act 1979*.

3.3.1 The State Heritage Register (SHR)

The SHR is a statutory list of places and items of State heritage significance made by the Minister for Planning at the recommendation of the NSW Heritage Council. The Register lists a diverse range of places, including archaeological sites, that are particularly important to the State and which enrich our understanding of the history of NSW.

State Heritage significance is defined by the Act as:

*"significance to the State in relation to the historical scientific, cultural, social, archaeological, architectural, natural or aesthetic value of an item"*².

Places and items listed on the SHR are legally protected under the Act and require approval from the Heritage Council of NSW prior to undertaking work that results in their alteration or modification.

¹ Heritage Act 1977 (NSW) - Note that at the time of writing this Assessment, changes to the definition of "relics" as specified in the Heritage Amendment Act 2009 (NSW) have not yet been enacted.

² Section 4A of the Heritage Act 1977

The mine shaft and Study Area are not listed on the State Heritage Register.

3.3.2 The State Heritage Inventory

The State Heritage Inventory (SHI) is an electronic database of statutory listed heritage items in NSW that are protected by heritage schedules within Environmental Planning Instruments (EPI) such as Local and Regional Environmental Plans, by the SHR or on the S170 Heritage and Conservation Register of State Government Agencies in NSW.

The applicable Local Environmental Plan (LEP) is the Coffs Harbour LEP 2000.

The mine shaft and Study Area is not listed on the State Heritage Inventory or under Heritage Schedule (5) of the Coffs Harbour LEP 2000.

3.4 Non-Statutory Heritage Listings

There are a number of non-statutory heritage listings held by various agencies and organisations, such as the National Trust of Australia (NSW), and may constitute an authoritative statement regarding a site's heritage significance. While they do not impose any legal constraints upon future development of a site or place, they may provide an indication of the community's recognition of that site or place's heritage significance and the need for its conservation.

The mine shaft and Study Area is not listed on any non-Statutory heritage listings, including the National Trust Register.

4. HISTORY

4.1 Preamble

Historical research undertaken for this assessment was based on primary and secondary source material. Documentary material was sourced from the State Library NSW, Department of Mines and more locally at the Coffs Harbour regional museum and library. The historical investigation was site specific and examined development of the site within the local historical context of the site.

4.2 Contextual History

The Coffs Harbour area was first settled by Europeans in the early 1840s. These settlers were timber cutters, attracted by the plentiful hard wood growing in the area. The timber industry played an important role in the development of the region and characterises the early history of the area. Along with timber cutting, other types of industry have shaped the character of the Coffs Harbour area including gold mining, dairying and fruit growing.

Gold was first discovered in the area at Nana Glen in 1881 by Thomas Wood and as a consequence the Orara Goldfield was proclaimed on 12 August in the same year and encompasses a large area including Nana Glen and Moonee Beach (**Figure 3**).³ A number of mines were opened in the Orara Goldfields from this date with varying degrees of success. Mines in the goldfield are recorded as decreasing production or closing down in the first years of the 1900s.

³ Gillet et al, 1980.

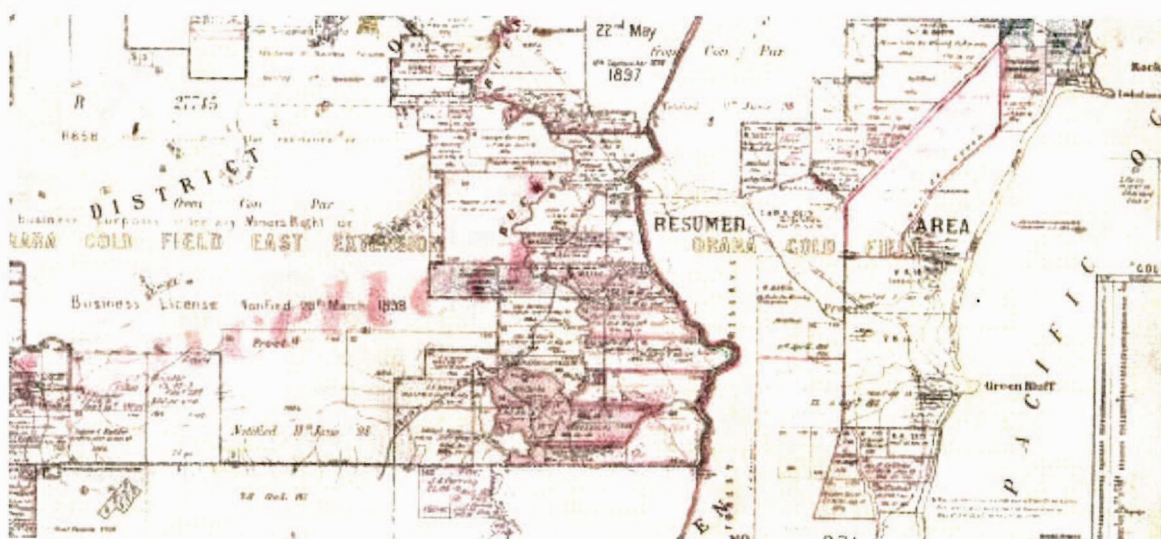


Figure 3. 1891 Parish Map of Moonee with Orara Gold Fields including Nana Glen, west of Bucca Creek and what would later be known as Moonee Beach along the Pacific Ocean (Source: NSW Department of Lands)

4.3 Site History

The mine shaft site that is the subject of this report lies within the Orara Goldfield East Extension.

Although gold mining had been carried out in the Orara Goldfields since 1881, the first written records of mining within the Study Area do not appear until 1931 when the Sydney Daily Telegraph and the Coffs Coast Advocate newspapers reported that gold mining had resumed in Moonee. The Coffs Coast Advocate reported that 'gold fever' hit the area once again as a 'very rich reef' had been rediscovered in an old shaft at Moonee. The Sydney Daily Telegraph⁴ carried a story in which the 'Golden Arrow Gold Mine' at Moonee had been sold by Messrs Wright, Green and Son to a Sydney syndicate. The article described the mine as consisting of a 'blue reef of quartz that shows free gold right through' and it was expected that a number of men would be employed at the mine.

The Sydney Telegraph article further describes the Golden Arrow Mine at Moonee as consisting of a No1 shaft that was exploiting a reef of 4' wide quartz vein, with a drive at the 22' level exploiting another 2'6" wide reef. The main reef was struck at a depth of 28'. The article indicates that approximately 12 acres of land around the mine had been pegged out by other prospectors.⁵ The Department of Mines sought to determine the location of the Golden Arrow Gold Mine referred to in the article. The Charting Branch determined that the mine was on a parcel of land consisting of part of Portion 215 (applied

⁴ Sydney Telegraph, 4 May 1931

⁵ NSW Department of Primary Industries File: MR02305 (R00045802) Golden Arrow Mine, Coffs Harbour

for under license by J. R. Breen on 23 March 1931) and 12 acres forming part of the adjoining Portion 213 (applied for by C. W. Wright on 10 March 1931).⁶ By 1935 this larger area had been reduced to an area of 3 roods 13 ½ perches as Gold Lease No. 258 Parish of Moonee, County of Fitzroy (Figure 7). This location covers the study area.

Following the opening of the Golden Arrow Mine in early 1931 the mine was inspected by the Department of Mines in late May 1931. The location is described as being at the intersection of the Coffs Harbour to Woolgoolga Rd (Pacific Highway) and the Bucca Rd (Maccues Rd). The mine itself was opening up two reefs about 30' apart. These works consisted of surface trenches along the lines of the reefs over a length of 60' and by two shafts. The main shaft operated on the eastern reef and had been sunk vertically to a depth of 32' where the western reef was struck. At a depth of 22' and 8' west the western reef was struck again. At this same depth a drive was extended from the main vertical shaft to the northeast and struck the eastern reef at a distance of 18'. At this stage ore was being put through Henderson's Battery at Bucca for crushing.

The mine shaft on the corner of Maccues Road and the Pacific Highway is therefore part of the Golden Arrow Gold Mine lease, inspected by the Department of Mines and it is likely to be the mine shaft reported on by the Sydney Daily Telegraph. The use of the past tense in the Sydney Daily Telegraph article suggests that the Golden Arrow Gold Mine shaft was established prior to 1931. It is unknown if the mine shaft described in the Coffs Coast Advocate is the same shaft that is the subject of this report, however it is likely that the mine discussed in the article is at the least within the lease area of the Golden Arrow Gold Mine. The use of the past tense and description of the mine in the Advocate article also indicates that mining in Moonee had been undertaken prior to 1931.

Although documentary evidence suggests that mining in the Moonee area occurred prior to 1931, there is a lack of official records for such exploration, as kept by the Department of Mines or shown in local parish maps. The 1891, 1905 and 1916 parish maps indicate that no mining leases had been placed on the site by this date (Figures 4-6 respectively).

The resurgence of interest in gold mining in the area in the 1930s is likely to be due to the changes in gold prices during the Great Depression. In 1931, the price of gold was lifted from three pounds an ounce (which had been the price of gold since the 1870s) to eight pounds an ounce.⁷ The changes in the price of gold made prospecting and the further exploration of older mines an attractive potential money earner in a time of hardship.

⁶ *ibid*

⁷ Secomb, 1987, pp56.

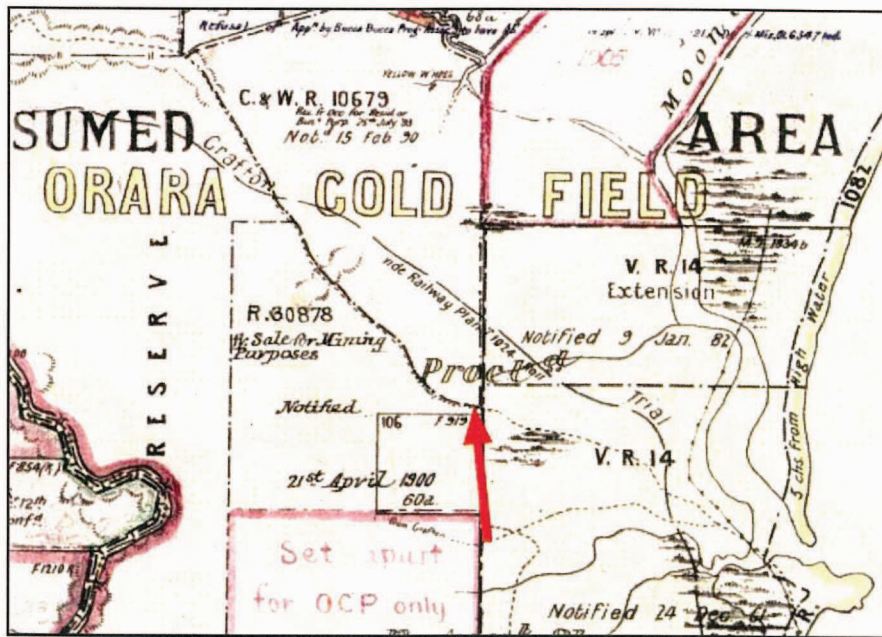


Figure 4. 1891 Moonee Parish Map with red arrow indicating location of the site. No mining leases are recorded. Also note the 'Grafton Railway' traversing the property to the north of the site. (Source: NSW Department of Lands)

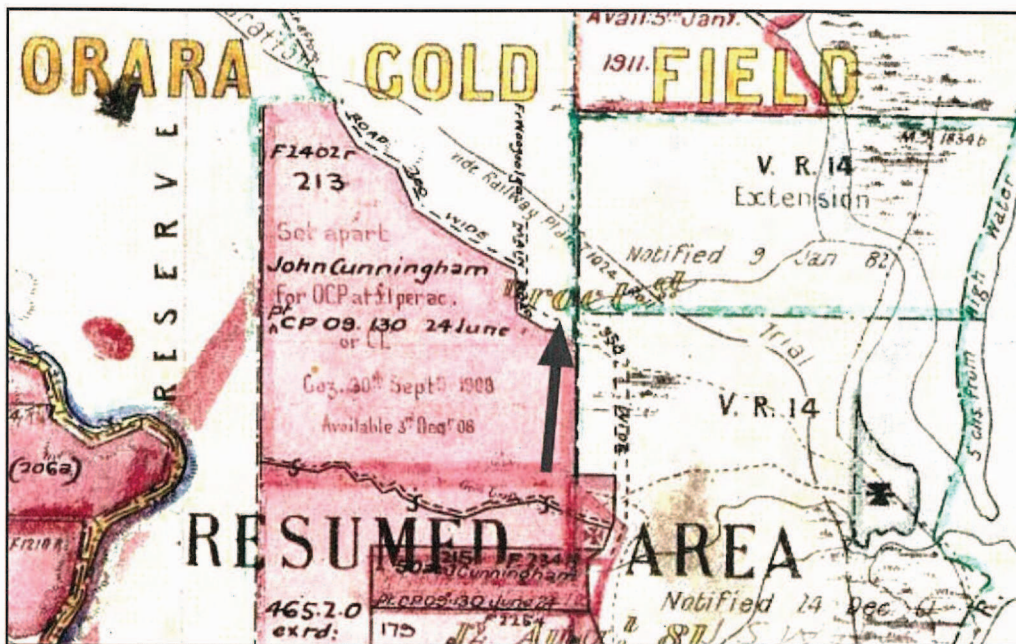


Figure 5. 1905 Moonee Parish Map with grey arrow indicating location of the site. No mining leases are recorded. Also note the 'Grafton Railway' traversing the property to the north of the site. (Source: NSW Department of Lands)

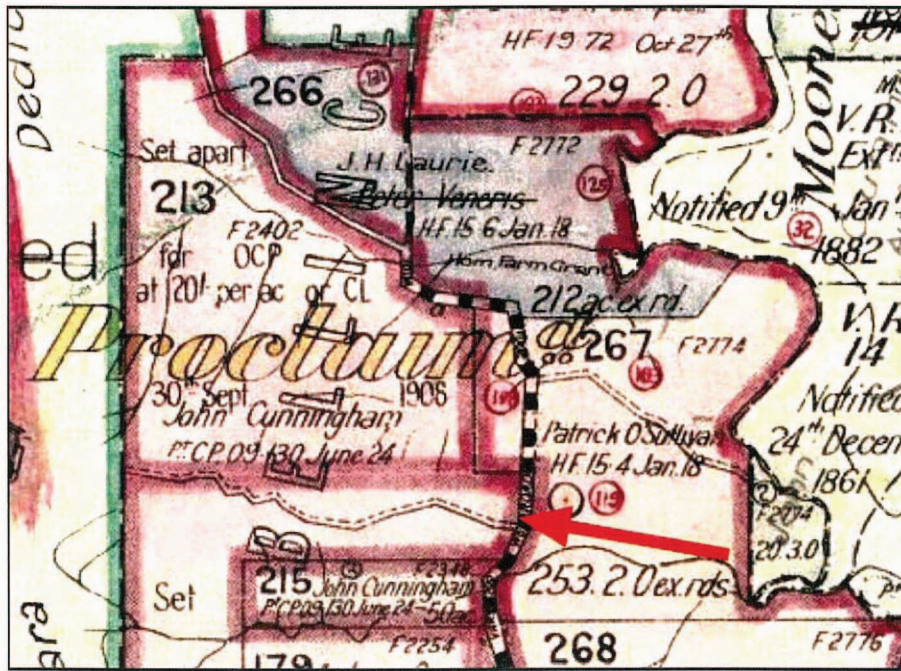


Figure 6. 1916 Moonee Parish Map with red arrow indicating location of the site. No mining leases have been recorded at the site. Also note the 'J.H Laurie' occupying the adjacent property to the north east of the site. (Source: NSW Department of Lands)

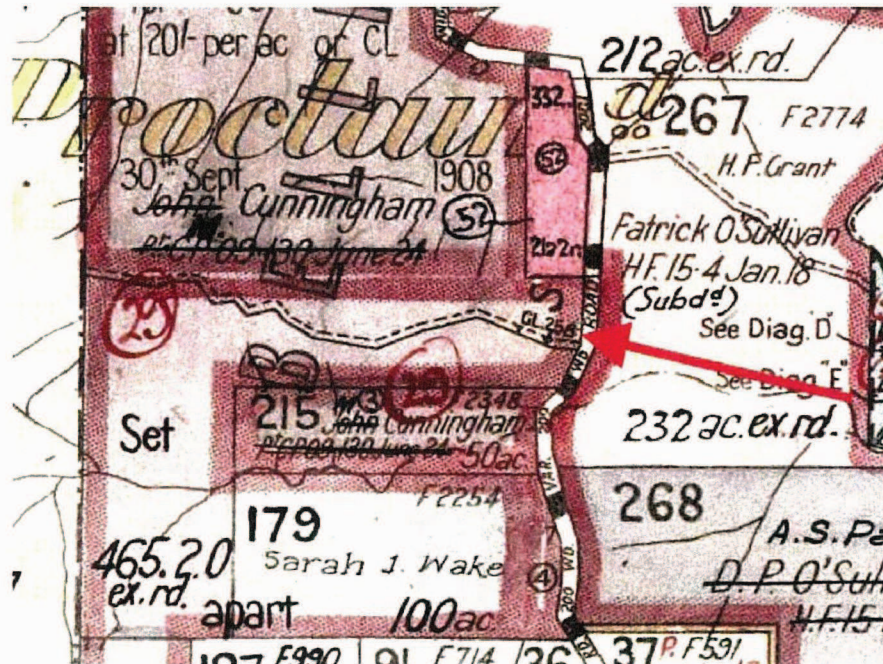


Figure 7. 1935 Parish Map 1935 - Moonee Parish, County Fitzroy showing the location of Gold Lease No 258 portions 213 and 215 within the study area (Study Area arrowed). (Source: NSW Department of Lands).

The sketch below (**Figure 8**) is from the Department of report filed on 10 June 1931 and is the only plan of the workings within the Golden Arrow Gold Mine lease located to date.

The initial works outlined in the 1931 inspection are likely to have been extended to the north and south (western reef) and then northwest and southeast (eastern reef) following the line of the veins discovered in 1931. The precise extent of these drives and the presence of other galleries has not been determined.

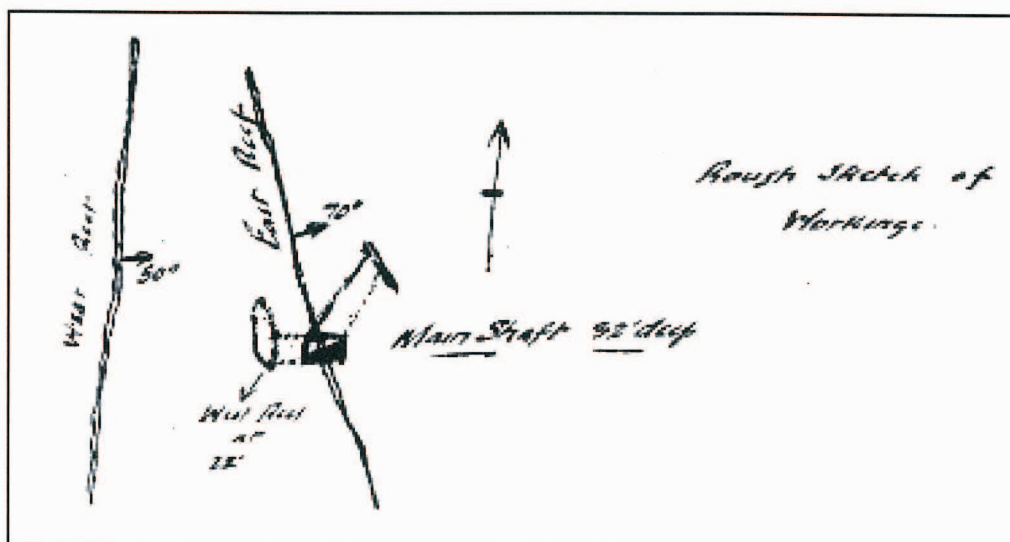


Figure 8. Sketch map of workings within the Golden Arrow Gold Mine lease from Mine Inspectors Report 10 June 1931. (Source: Department of Primary Industries File: MR02305 (R00045802). Golden Arrow Mine, Coffs Harbour)

The Department of Mines file on the Golden Arrow mine does not extend beyond 1931. The lease, however is marked on the Parish Maps of 1943 and 1951 indicating that the lease (if not the workings) were still active into the 1950s.

Local historian Terrie Beckhouse informed AHMS that the mine shaft that is the subject of this report was known to retain 'good gold'. An attempt was made by Andy Laurie to re-open the mine in the 1940s or 1950s. He may have been a member of the Laurie family who owned an adjacent property, as seen in the 1935 Parish Map (**Figure 6**). The shaft however had become an important water supply for local banana growing and this was considered to be a more valuable resource than any potential gold that could still be extracted from the mine. At present, the shaft is still being used as a water supply for fruit growing by the owner.

5. SITE RECORDING

An initial site inspection of the mine shaft was undertaken by Lisa Newell, Associate Director, AHMS and Charlie Shackell, Aurecon, on 9th April 2009 for an Initial Historical Archaeological Assessment and advice letter report. An additional detailed site inspection was undertaken for this report by Lisa Newell and Laura Matarese, Archaeologist, AHMS on 14th July 2009 to record the mine shaft.

The site inspection photographs and plans of the site are located in **Appendix 1** and **Appendix 2**, respectively. It should be noted however, that a structure supporting a water pump over the shaft could not be removed for OH & S reasons to reveal the extent of the opening of the mine and the site plans indicate the approximate extent of the mine shaft opening.

5.1 Physical Description

The inspection revealed that the shaft is covered with timber, aluminium and iron sheeting supported by timber bearers. Some of the timber bearers had two grooves running along the middle of the beam. It is likely that these beams are recycled bearers of timber tramways which were constructed in the region to connect the timber cutting areas with sawmills and jetties for export.⁸ The timber beams at the site may originate from a railway line that traversed an area in the vicinity of the mine shaft as seen in early parish maps, (**Figures 4-5**). A small water pump is also fixed on a bracketed platform in the centre of the structure.

The shaft is located on the northern edge of the ridge within which Maccues Road is located to its south. Immediately to its north is a deep farm dam. The ground around the shaft appears to have been built up and surface material includes skree consisting of finely crushed stone, which may be the remains of crushing tailings from processing in the proximity of the mine. Traces of a concrete garden edge or drain are immediately adjacent to the northern edge of the shaft. Bottle shards and other cultural material were extruding from this area. The finely crushed material is very localized and is replaced by larger rock fragments, perhaps mine mulloch remnants, to the west and south.

The inspection (and previous verbal advice to Aurecon from the land-owner), suggests that the shaft is approximately 4m x 2m wide at the top, with the dimensions reducing with depth. The standing water level within the shaft was observed on inspection to be about

⁸ Longworth, J. 2006.

3m below the surface and information from the land owner suggests that the depth of the shaft (measured using fishing line) is around 30m below surface level and that it extended horizontally to the south-west for an unknown distance. This correlates with historical information about configuration of the shaft however historical information also indicates that it included a second horizontal tunnel extending to the north-east. The depth of the shaft may need verification.

The interior of the shaft revealed only one partially extant in-situ timber beam, supporting the southern shaft face just above the water-line. The shaft walls are eroded primarily towards the surface and its original form (size and shape) is indistinguishable. Some remnant pick marks survive at depth.

Inspection along road cuttings and on other areas of the subject land did not reveal evidence of the horizontal shafts at surface level or in vertical cutting faces.

5.2 Historical Archaeological Resources

Relics relating to the original construction and operation of the mine shaft as well as later operation and change of use, survive in and around the shaft in the form of surviving shaft walls, support beam, and crushed and refuse rock. Cultural material in deposits around the shaft indicate that archaeological evidence relating to the construction and operation of the Golden Arrow Mine may also survive at the site.

5.3 Conclusions

The site inspection indicates that while disturbed and changed over time, the mine shaft at Lot 2, DP 869098 Coffs Harbour, is highly likely to be the extant main shaft of the 1931 Golden Arrow Gold Mine. The shaft retains a number of in situ elements associated with its use as a mine shaft, although there has been some damage due to erosion based on the movement of water and soil.

Additionally, the property to the south of Maccues Road is purported to include a second shaft of the Golden Arrow Gold Mine. It was not possible to be visited during the site inspection or the site recording.

6. HERITAGE SIGNIFICANCE ASSESSMENT

The following evaluation of the cultural heritage significance of the mine shaft and potential associated archaeological resources was made using the NSW heritage significance evaluation criteria published by the NSW Heritage Council.

The significance assessment is general as the shaft opening was unable to be accessed due to being covered by a pump and associated timber and tin support structure. The significance of the mine shaft is based on the results of the historical research and site recording; however it should be noted that the shaft itself was difficult to access and a detailed inspection of the interior of the shaft was unable to be undertaken.

The lack of heritage listings and popular appreciation for later mining history, as represented by the Golden Arrow Gold Mine shaft at Maccues Road, does not mean that remains of later mining are not of heritage value. As with many mining and industrial sites, they are rarely adequately represented on heritage schedules or popularly researched.

The Golden Arrow Gold Mine shaft at Lot 2 DP 869098 Coffs Harbour, because of its history and surviving form and fabric, is of *local* historical and technical heritage significance. The mine shaft meets two of seven NSW heritage significance criteria outlined by the NSW Heritage Council (Criteria A and E). An assessment of the mine shaft in accordance with the NSW Heritage Council criteria is outlined below:

Criterion A: An item is important in the course, or pattern, of Coffs Harbour's cultural or natural history.

The mine shaft is representative of the era of gold mining that occurred in the Coffs Harbour district since the 1880s. It also represents changes in the value of different resources to the local economy.

The mine shaft is likely to be the main extant shaft of the Golden Arrow Gold Mine lease. Although the official records indicate the Golden Arrow Mine started in 1931, other documentary evidence indicates earlier ventures may have been initiated at the site. A lack of official records for any early ventures at the site indicates mining may have started without major capital and may have had a more informal and local status for some time.

As a Depression Era working, the Golden Arrow Gold Mine shaft is representative of an era where individuals unable to secure income elsewhere, took up mining leases in an effort to gain a living. The working of the mine in 1931 represents the re-exploration of mines and prospecting in the area due to the dramatic changes in the value of gold at the time.

The mine shaft represents changes in the value of resources in the local economy. By the 1940s and 1950s, the water supply obtained from the shaft was a more valuable resource to supply fruit growing on the property than any potential gold that may be extant in the mine. Fruit growing had become a particularly important local industry in the mid to late 20th century, and the Coffs Harbour region continues to be well known for growing bananas.

The mine shaft meets this criterion at *local* level of heritage significance.

Criterion B: An item has strong or special association with the life or works of a person or group of persons, of importance to NSW's or Coffs Harbour cultural or natural history.

The mine shaft is not associated with any persons of State or local importance. The mine shaft is not associated with any particular group of persons or an individual's life works.

The mine shaft does not meet this criterion.

Criterion C: An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW or Coffs Harbour.

The mine shaft is not important in demonstrating aesthetic characteristics or a high level of technical achievement in NSW or locally. Many mine shafts in the local area and in the State have used the same or similar methods to mine gold and other minerals.

The mine shaft does not meet this criterion.

Criterion D: An item has a strong or special association with a particular community or cultural group in NSW or Coffs Harbour for social, cultural or spiritual reasons.

The mine shaft has no strong or special association with any particular group locally or within the State and it remains relatively unknown to the local community.

The mine shaft does not meet this criterion.

Criterion E: An item has potential to yield information that will contribute to an understanding of Coffs Harbour's cultural or natural history.

The mine shaft and associated potential archaeological resources in the immediate area have the potential to contribute to an understanding of gold mining in the Coffs Harbour area including the types of technology used for mining at the site and information relating to the miners themselves.

The shaft retains visible structural evidence used in the construction of the mine and it retains visible evidence of the methods used to mine the site. This information has the potential to contribute to our understanding of a Depression Era (and possibly any earlier) workings.

The site has the potential to contribute to our understanding of the techniques used in the construction of mine shaft and the methods used on site to process the ore. The potential archaeological resources immediately surrounding the mine shaft may also contribute to our understanding of the spatial layout of the mine and reveal evidence relating to the daily operations and lives of the miners who worked at this site.

The mine shaft meets this criterion at *local* level of heritage significance.

Criterion F: An item possesses uncommon, rare or endangered aspects of NSW's or Coffs Harbour's cultural or natural history.

The mine shaft is a common aspect of Coffs Harbour's cultural history and of the State's cultural history. There are many examples of similar mine shafts throughout the State used to mine gold and other metals. Locally, there are several older mine sites in Coffs Harbour area, one of which is listed on the Coffs Harbour Local Environmental Plan.⁹ Additionally it is noted that another mine shaft is purported to be in a property south of Maccues Road, and is possibly associated with the Golden Arrow Gold Mine lease.

The mine shaft does not meet this criterion.

Criterion G: An item is important in demonstrating the principal characteristics of a class of NSW's or Coffs Harbour's cultural or natural places or environments.

The mine shaft is not important in demonstrating the principal characteristics of gold mines in Coffs Harbour area or in the State. There are several examples of gold mines in the State which can demonstrate the principle characteristics of mines more effectively than the mine shaft at Maccues Road.

The mine shaft does not meet this criterion.

⁹ George's Gold Mine at Lowanna under Schedule 5 of the Coffs Harbour Local Environmental Plan (2000).

Statement of Significance:

The form and function of the Golden Arrow Gold Mine shaft is of *local* heritage significance in accordance with the NSW Heritage Council criteria and guidelines.

The Golden Arrow Gold Mine shaft at the corner of Maccues Road and Pacific Highway played a role in the local industry and the local economy over the last 80 years. It is a visible reminder of a local mining venture that was undertaken during the Depression. Although initial ventures at the site may be of an earlier date, the Depression era workings represents an era when individuals took up mining leases in an effort to generate an income during a time of severe economic hardship. Mining undertaken at this time represents change in the local and broader economy over the 20th century, particularly in relation to the dramatic changes in the price of gold.

The function of the mine shaft has evolved over time. Its use demonstrates change in the types of industry being undertaken in the Coffs Harbour area. The mine shaft also demonstrates the changing value of different types of resources key to these local industries, that is, the value of water for banana growing superseded the value of gold left in the mine. The shaft's use as a water supply for banana growing may be unique to the local area.

The form of the mine shaft has the potential to yield information about the mining technology used at the Golden Arrow Gold Mine and about the lives of the miners who worked at the site. Tangible reminders remain in and around the shaft of the methods of construction and processes that occurred at the site.

The Golden Arrow Gold Mine shaft has the potential to yield information and contribute to our understanding of local gold mining ventures and the history of gold mining in the Coffs Harbour area. The site also has the potential to demonstrate the evolution of various industries that characterise the Coffs Harbour area including fruit growing.

7. IMPACT ASSESSMENT

Currently, concept design works to the Maccues Road portion of the Sapphire to Woolgoolga Pacific Highway upgrade would likely impact the fabric and form of the mine shaft and its heritage significance values.

The current works would likely include vertical excavation of a portion of the shaft, infilling and stabilisation works along with a mine shaft 'capping' cover. The road or road reserve of the Service Road constructed as a part of the upgrade project would then go over the top of the capped mine shaft.

The vertical excavation of the mine shaft and immediate surrounds would destroy and disturb potential archaeological remains, the fabric and the form of part of the mine shaft and the evidence of the workings (such as pick marks and remains of a timber support structure) within the mine itself. Capping or covering would result in the mine shaft no longer being visible or accessible. It would also change its current use as a water source for farming.

The proposed impact would have a negative affect on the local heritage significance values of the item. Capping the shaft would result in it no longer being a tangible reminder of the gold mining and fruit growing history of the Coffs Harbour area or of the mine shafts existence. It would physically truncate the shaft and has the potential to irreversibly impact its heritage significance.

Notwithstanding the detrimental affect the proposed works would have on the mine shaft, it should be noted that another shaft, most likely associated with the same Golden Arrow gold mining lease, is reported to be located in a property south of Maccues Road. This shaft however, was not seen by the authors of this report and remains unconfirmed. There is also no documentary evidence to support the existence of this second shaft.

8. CONCLUSIONS AND RECOMMENDATIONS

The Golden Arrow Mine shaft on the corner of Maccues Road and the Pacific Highway (Lot 2, DP 869098 Coffs Harbour) is of local heritage significance in accordance with the NSW Heritage Council criteria and guidelines.

The current approved concept design works for the Pacific Highway upgrade between Sapphire and Woolgoolga would impact the form, fabric and heritage significance of the mine shaft and any associated potential archaeological resources in the immediate vicinity of the shaft.

The Golden Arrow Gold Mine shaft, because of its date of construction, falls within the definition of a 'relic' under the *Heritage Act 1977*. Excavation permits from the NSW Heritage Council are normally required to remove, destroy or affect a 'relic', except where Part 3A of the *Environmental Planning and Assessment Act 1979* applies. Sapphire to Woolgoolga Pacific Highway Upgrade is an approved Part 3A (Critical Infrastructure) project.

Notwithstanding the implications for heritage items under Part 3A of the *EP & A Act 1979*, the heritage significance of the mine shaft suggests that it should be afforded best practice management very similar to that which would occur should the 'relics' provisions of the Heritage Act apply.

Considering the above, it is recommended that:

- Where possible within the constraints of the current project, all effort should be made through detailed design modification or similar, to avoid or minimise impacts to the shaft and an area of land about 2m from each edge of the shaft's opening;
- Where detailed design cannot physically avoid the shaft the RTA should seek heritage advice on appropriate mitigation such as
 - Archaeological monitoring and recording
 - Photographic archival recording and
 - Surveyor mapping.
- The RTA seek to ensure that all records generated regarding the mine shaft are appropriately lodged with Council, the RTA, the local library and the local museum and other archives and repositories as appropriate;

- The RTA consider options for interpreting the shaft and the site's gold mining past in the proposed works such as providing interpretative materials in the nearest public lay-way or rest area.

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Gillet, J. *et al.* 1980. Looking Back: Nana Glen 1879-1979. The Advocate Opinion, Coffs Harbour.

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Secomb, M. 1987. Red Gold to Green Grass: The Early History of the Upper Orara Valley. The Upper Orara-Karangi Centenary Association 1886-1986. North Coast News Pty Ltd, Coffs Harbour.

Sydney Daily Telegraph, 4 May 1931. "Sydney Syndicate Buys Mine- Rush to Peg Out Claims".

APPENDIX 1- SITE INSPECTION PHOTOGRAPHS



View of exterior of mine shaft (looking south-west) covered by timber and metal platform with water pump. Note skree and mining mulloch visible in foreground.



View of dam in the background and skree and mining mulloch in the foreground. Metal platform covering the exterior of the mine shaft in bottom left hand corner of the image (looking north).



View of water pump and platform covering mine shaft in the foreground and the property and landscape to the west of the shaft in the background (looking west).



View of exterior of mine shaft (looking south) covered by timber, aluminium and iron sheeting supported by timber bearers. A water pump is located at the centre of the structure.



View of the exterior of mine shaft showing metal sheeting covering supported by timber bearers (looking south).



View of the exterior of the mine shaft showing timber platform, bearers and water pump (looking south).



View of the exterior of the mine shaft showing metal sheeting supported by timber bearers (looking south).



View of the exterior of the mine shaft (looking east) covered by timber, aluminium and iron sheeting supported by timber bearers. A water pump is located at the centre of the structure.



Exterior of the mine shaft showing timber bearers on the western side of the platform (looking south east).



Detail of timber bearers with grooves on western side of platform (looking south).



Interior view of the mine shaft.



Interior view of the mine shaft.



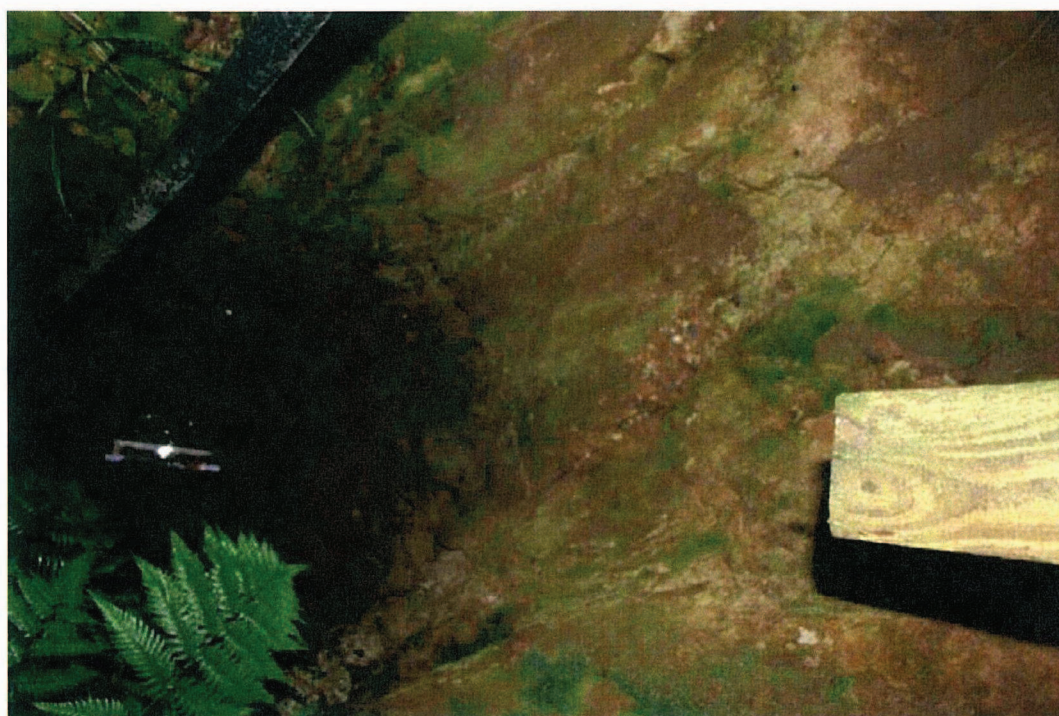
Interior view of the mine shaft.



Interior view of the mine shaft.

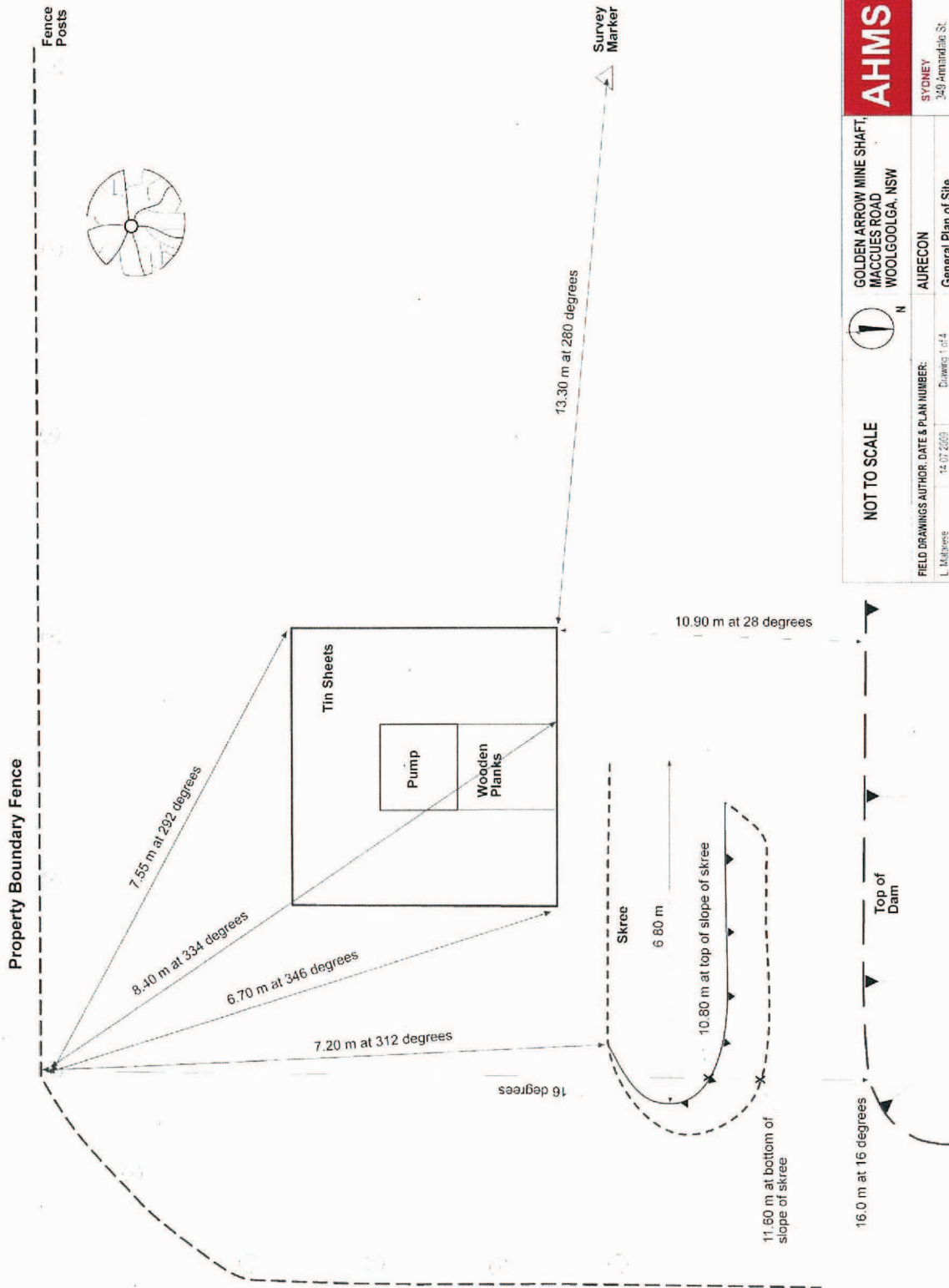


Interior view of the mine shaft.



Interior view of the mine shaft.

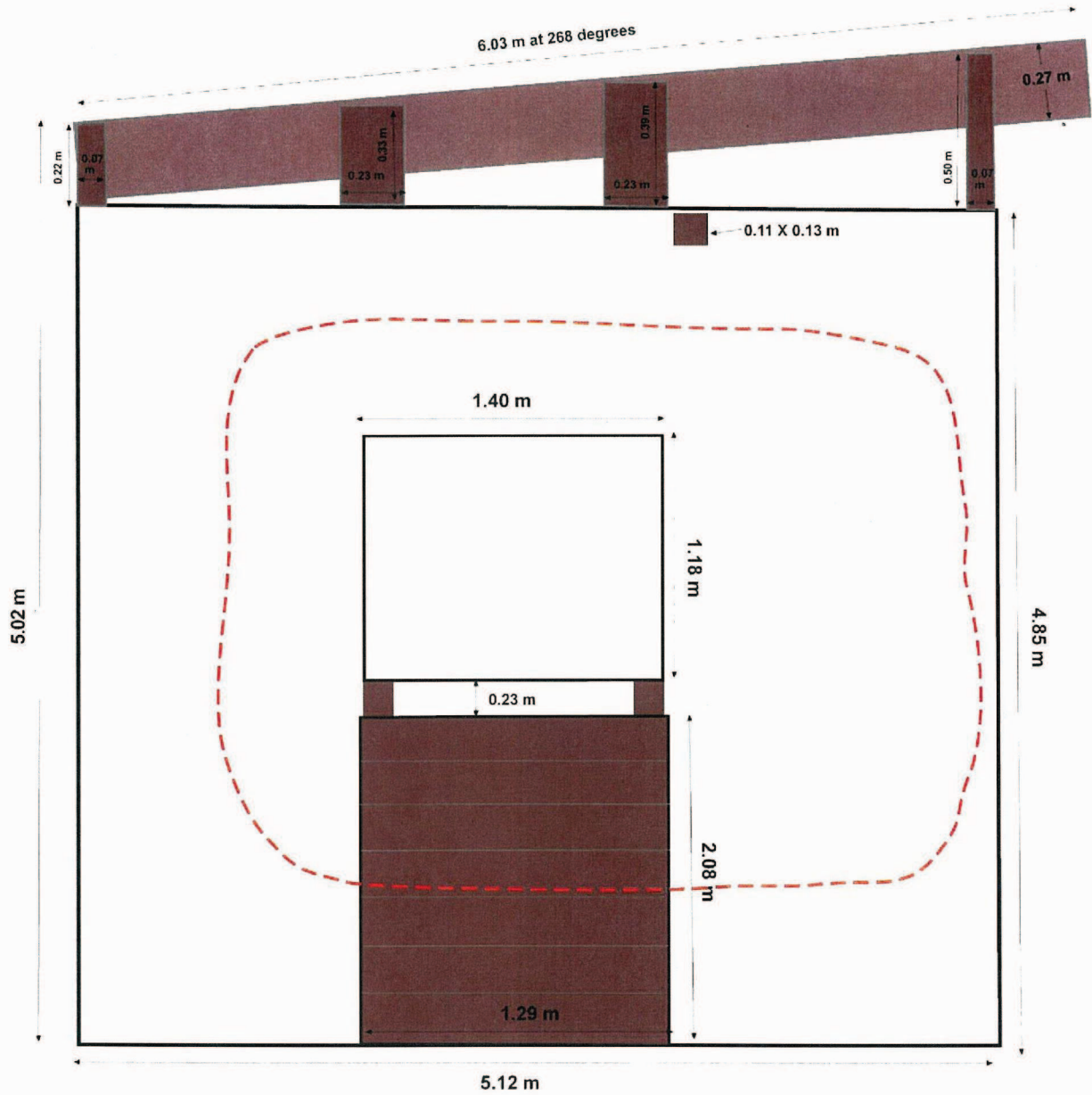
APPENDIX 2- SITE PLANS



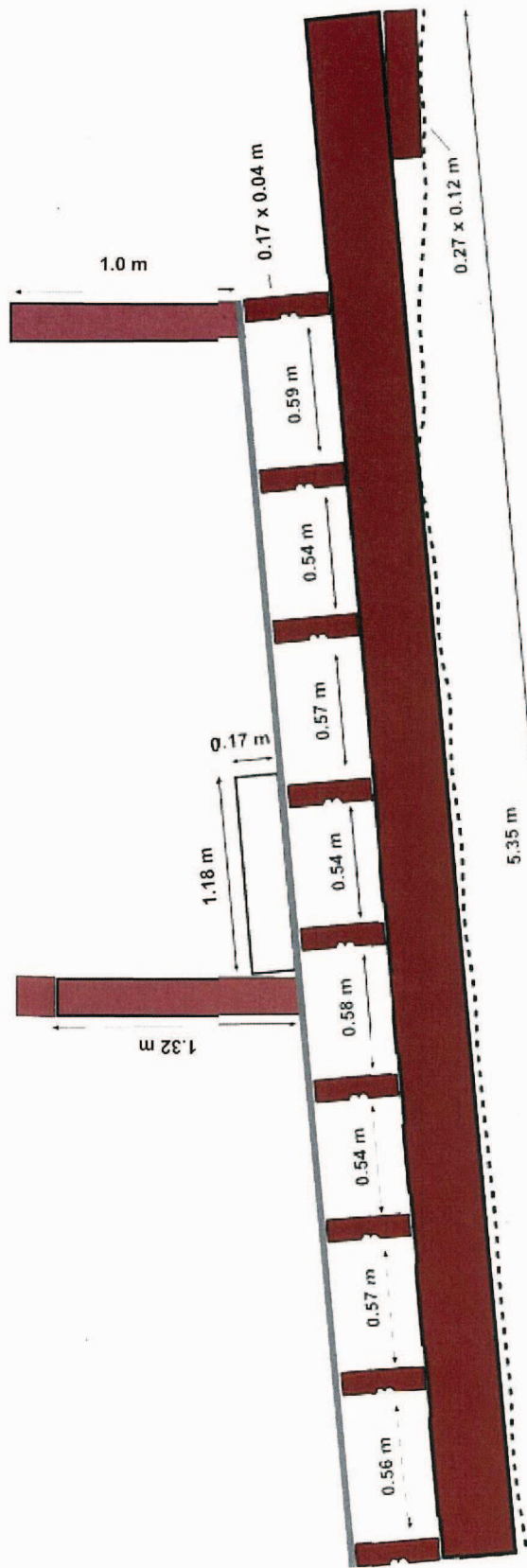
NOT TO SCALE		AHMS		ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD <small>A.C.N. 221 423 228 ABN 65 221 423 228</small>	
GOLDEN ARROW MINE SHAFT, MACCUES ROAD, WOOLGOOLGA, NSW		SYDNEY		MELBOURNE	
AURECON		340 Annandale St, Annandale, NSW 2038		PO Box 87, Heidecourt City, VIC 3032	
FIELD DRAWINGS AUTHOR: DATE & PLAN NUMBER:		L. Mulhese 14-07-2009 Drawing 1 of 4			
FINAL DRAWING: L. Mulhese 17-07-2009		General Plan of Site			



Legend Pump Timber Beams/Boards Tin Sheeting Location of Shaft (approx)	NOT TO SCALE		 N	GOLDEN ARROW MINE SHAFT, MACCUES ROAD WOOLGOOLGA, NSW	 AHMS ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD <small>ACN 060 018 388 ABN 45 060 058 383</small>	
	FIELD DRAWINGS AUTHOR, DATE & PLAN NUMBER:			AURECON	SYDNEY 349 Annandale St Annandale, NSW 2038	MELBOURNE PO Box 87, Highpoint City, VIC 3032
	L. Matarese 14 07 2009 Drawing 2 of 4	FINAL DRAWING: L. Matarese 17 07 2009		Plan of Pump and Structure over Mine Shaft		



Legend <input type="checkbox"/> Pump <input checked="" type="checkbox"/> Timber Beams/Boards <input type="checkbox"/> Tin Sheeting Location of Shaft (approx)	NOT TO SCALE			 N	GOLDEN ARROW MINE SHAFT, MACCUES ROAD WOOLGOOLGA, NSW	 ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD <small>A.U.N. 68 955 158 ABN 45 630 253 538</small>
	FIELD DRAWINGS AUTHOR, DATE & PLAN NUMBER: L. Matarrese 14.07.2009 Drawing 3 of 4 FINAL DRAWING: L. Matarrese 17.07.2009					



KEY: Timber beams Pump Platform Tin Sheeting Ground Surface	NOT TO SCALE		 N	GOLDEN ARROW MINE SHAFT, MACCUES ROAD WOOLGOOLGA, NSW	ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD <small>ACN 109 174 881 085, 45-261 292 338</small>
	FIELD DRAWINGS AUTHOR, DATE & PLAN NUMBER: L. Maltese 14.07.2009 Drawing 4 of 4 FINAL DRAWING: L. Maltese 17.07.2009				
					MELBOURNE PO Box 87 Highcourt City, VIC 3032

APPENDIX B APPROVED & PROPOSED DESIGNS

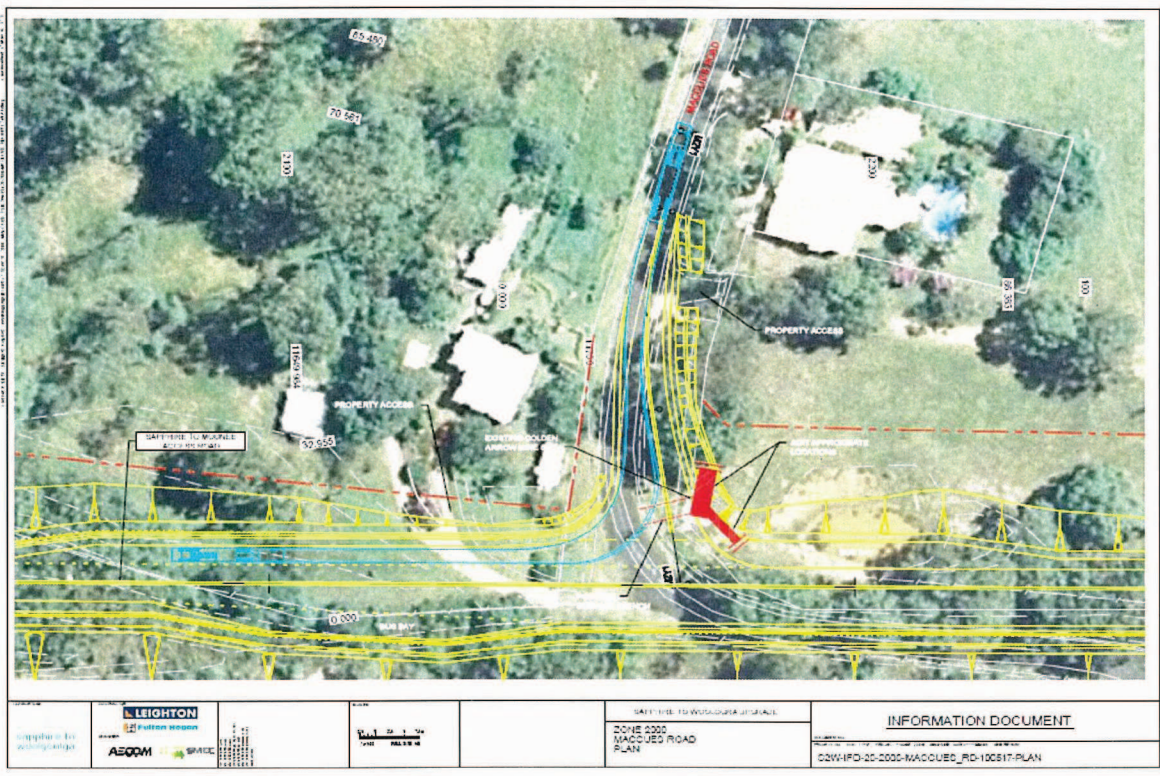


Figure 1 EA Approved Design

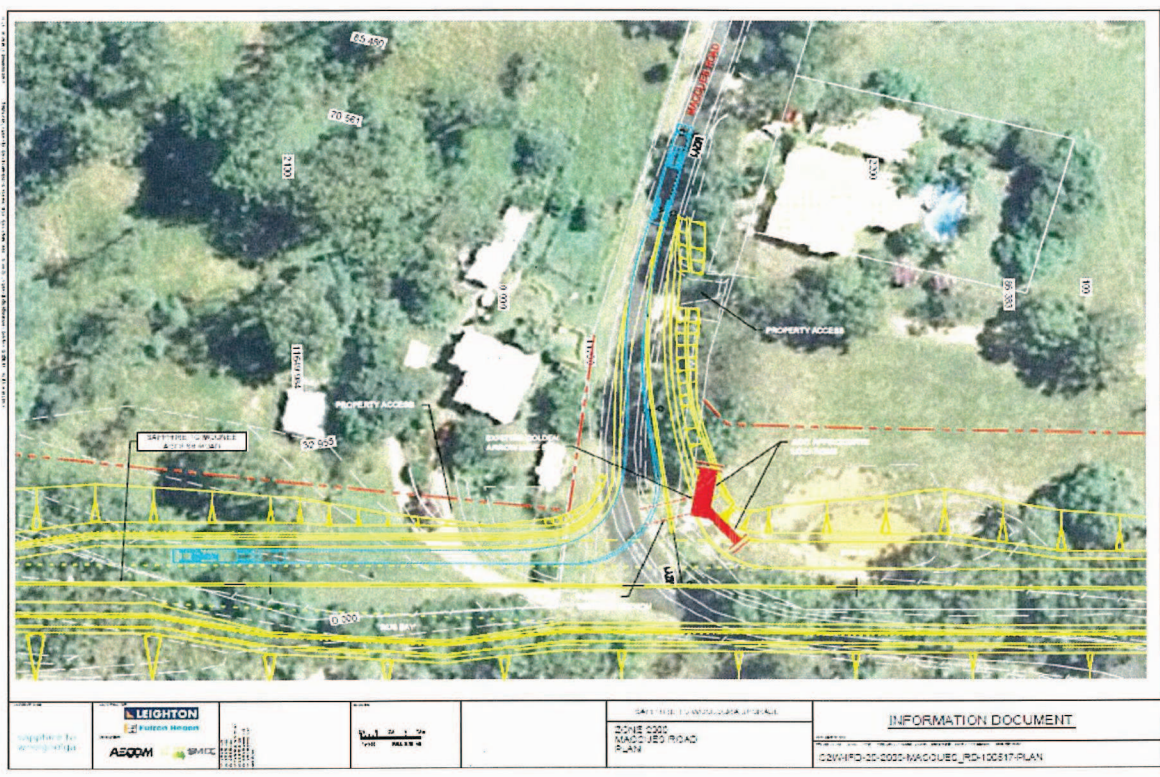


Figure 2 Proposed Modified Design

APPENDIX C
CONCEPT DESIGN POSITION PAPER
MACCUES ROAD T-INTERSECTION

Position Paper

Project : Sapphire to Woolgoolga Upgrade
Subject: Difficult Sites item No. 03: Maccues Road T-Intersection & Design Philosophy
Document No: S2W-REP-20-2000-RD160A-CD-02
Zone: 2000
Design Lot Number: S2W- 20-2000-RD160A
Phase: Concept Design
Agreed Disposition Number: 0010-RD
Date: 12-May-2010



1. Introduction

This Position Paper sets out the issues associated with provision of appropriate Approach Sight Distance for an 80 km/h design speed on the Proposed Sapphire to Moonee Access Road in the vicinity of the intersection with Maccues Road and the impacts on the access road vertical alignment.

2. Issues

The following issues in providing the Approach Sight Distance (ASD), for an 80 km/h design speed when compared to the Captured Design have been identified:

- ASD: 100m sight distance required resulting in a 430 m VC length ($K = 43$). The grade line would be required to be raised by a maximum of 4.45 m over a distance of 440m and by a maximum of approximately 1m over a further 440m when compared with that nominated in the captured design.

Refer attached Drawing Nos. S2W-1FD-20-2102-RD-100413-PLAN and LSEC_M2M1 (based on 80 km/h ASD at 1.15m to 0m).

The implications of raising the grade lines will result in additional fill and batter extensions which have the following impacts:

- The retaining walls between the Access Road and the mainline northbound carriageway to the South of Maccues Road will be extended by 50m and an additional 155m of wall will be raised by up to 2.5m in height. The retaining wall to the North will also be extended by 20m and a further 200m increased in height by up to 1m.
- Significant additional earthworks.
- The extended footprint reduces the area of land identified as being suitable for a water quality basin.

Also in order to avoid impacting on the Gold Mine heritage site it is not possible to provide a left turn lane that satisfies the standards for turn movements into Maccues Road. Left turning traffic will cross into the opposing traffic lane.

The turning paths for a 19.0 m semi have been checked and are attached. The Captured Design does not allow for a 19.0m semi to turn from the through lane into Maccues Road (without using the entire road pavement).

3. Options

3.1. Option 1 – Lower Access Road Alignment

This option involves lowering the alignment of the Access Road by a maximum of 1m at the intersection with Maccues Road. This reduces the extent and the increase in height of both retaining walls. However the extent of the increases is still quite significant over the captured design and the lowering of Maccues Road has knock on effects in that it may not be possible to accommodate the earthworks required in Maccues Road within the property boundary. There may also be unavoidable impacts on the heritage "Gold Mine" site.

3.2. Option 2101 – Provide SISD for 80km/h

Provide Safe Intersection Sight Distance (SISD) between the Access Road and Maccues Road (K Value 28), and extend the right turn bay on the Access road in order to provide adequate Approach Sight Distance (ASD) to the limits of the painted median. Whilst not providing full ASD at the Maccues Road junction the design speed is in excess of 70km/hr and the impact is mitigated by the proximity of the Moonee Beach Road intersection. This option removes the need to lower Maccues Road and minimises the increases in the length and height of the two retaining walls.

The Captured Design does not provide ASD to the left turn lane into Maccues Road from the south, based on the K=28 Option 2101 (achieving around 81.4m, refer attached sight distance checks). To achieve ASD to the start of the left turn lane would need to be extended approx 30-40m to the south.

Refer attached Drawing Nos. S2W-IFD-20-2101-RD-100412-PLAN and LSEC_M2M1

4. Suggested Disposition

The recommended disposition for this Difficult Site No.3 is:

To provide Safe Intersection Site Distance to the Maccues Road T-Intersection using a K value of 28 and extend the right turn bay and painted median to provide Approach Site Distance at the limits of the median as outlined in Option 2101 above.

Amendment 01: The left turn lane into Maccues Road from the south to be extended further south to provide ASD to the start of the left turn lane taper.

Amendment 02: The intersection layout to be amended to allow a 19.0 m semi to turn into Maccues Road without crossing into the opposing traffic lane. This will require a shift in the Maccues Road/Access Road alignment over the Gold Mine site.

5. Agreed Disposition

Suggested disposition to provide SISD using a K value of 28 agreed and accepted by RTA and will be adopted. Refer to **Attachment A** for RTA correspondence confirming acceptance.

Amendment 01 & Amendment 02 detailed above was agreed with the RTA at the Progress Design Group Meeting on 13-05-2010 and will also be adopted. The alignment design will progress assuming

that the Gold Mine is not a constraint. The treatment of the Gold Mine site will be dealt with as a separate process.

6. Supporting Attachments

Drawings:

- S2W-1FD-20-2102-RD-100413-PLAN and LSEC_M2M1
- S2W-1FD-20-2101-RD-100412-PLAN and LSEC_M2M1
- Turning Path diagrams and Sight Distance Checks

Attachment A

From: BULMER Michael G
Sent: Monday, 3 May 2010 9:49 PM
To: 'Russell, David'
Cc: 'Themis.prodromakis@hyderconsulting.com'; 'Edmond Lee'; 'Edwards, Tracy'; 'Clarke, Colin'; 'Adcock, Ken'; SOLOMON Colin D; CLARK Chris P; TOOTH Colton G
Subject: S2W Difficult Sites No. 03 - Maccues Road - Position Paper
Importance: High

David

I have reviewed Difficult Site Item No. 03: Maccues Road T-intersection & design Philosophy Document No. S2W-REP-20-2000-RD160A-CD-01 and advise the following:

- 1) I agree with providing a K 28 in accordance with Option 2101. Austroads does permit not achieving ASD on the major road if property impacts and cost implications are a concern. The mitigation factor of providing ASD to the right turn bay (by extending the bay) into Maccues from the north is accepted. Will the left turn bay into Maccues Road from the south be provided with ASD?
- 2) The linemarking for the right turn bay will need to be carefully considered so that we don't direct vehicles into the southbound bus bay, could be an issue for discussion with the bus company.
- 3) The possibility of lowering the crest at Maccues by 0.5m could be checked as it may have minor impact on Maccues Road, should still miss the mine and lower the height of the retaining wall.

Regards Mike Bulmer

MACCUES ROAD

SAPPHIRE TO WOOLGOOLGA
MACCUES ROAD
LEFT TURN IN

2200

11800

100
98.513

M2Y1

15.568

11700

15.339

11681.823

0.000

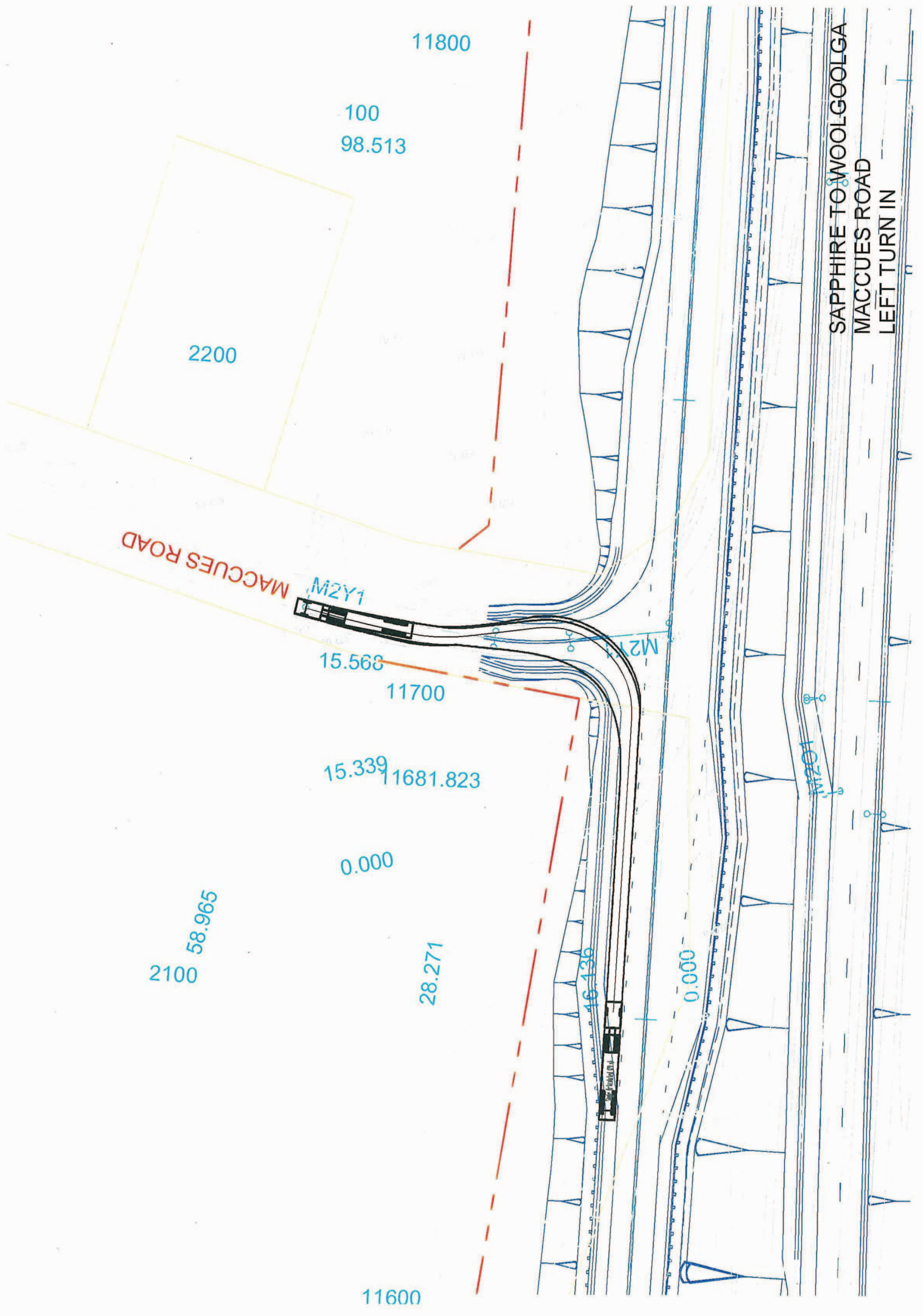
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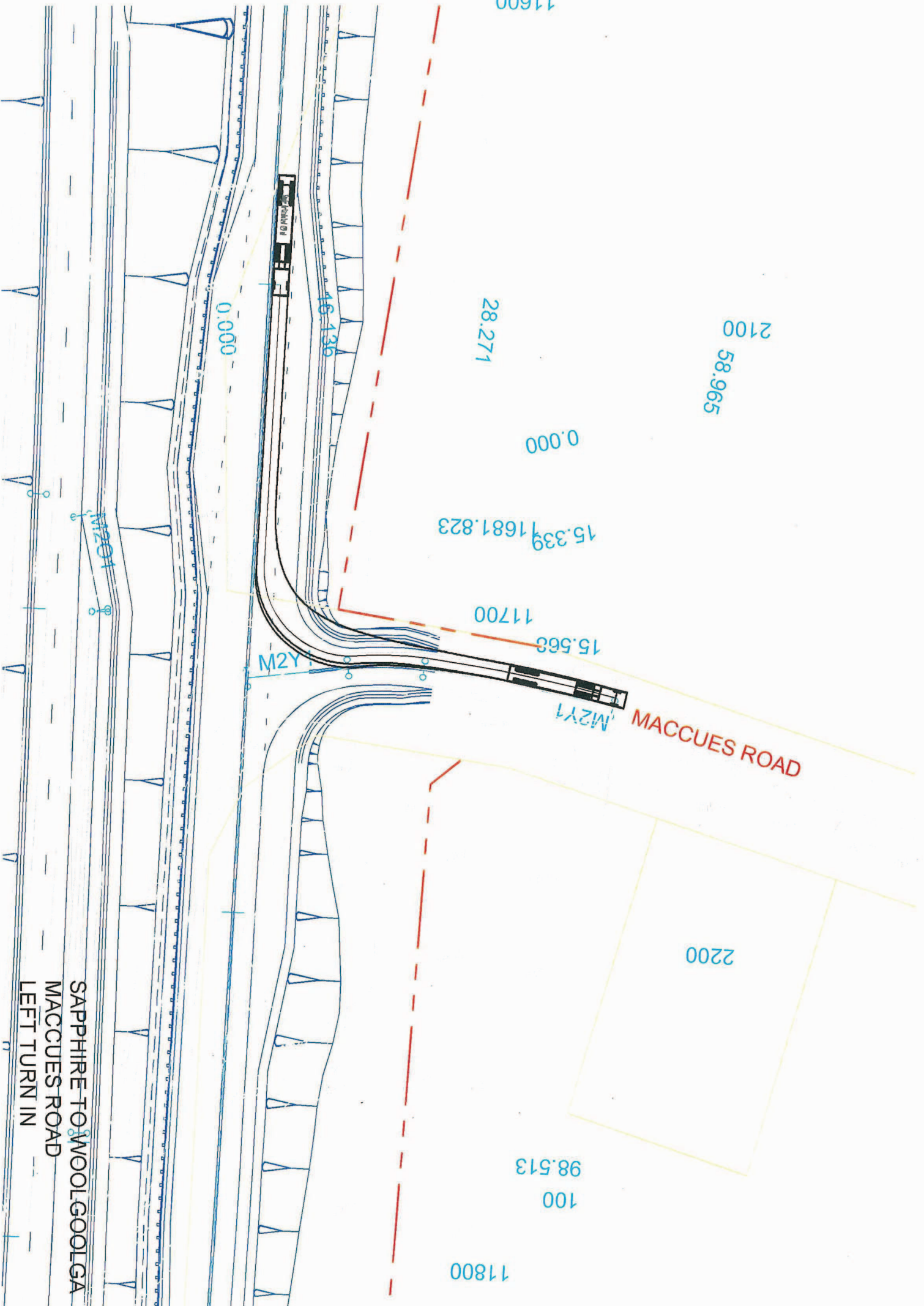
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11600





2100
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15.339
1681.823

28.271

11600

11700
15.563

MACCUES ROAD

2200

98.513
100

11800

0.000

16.136

M2W

M2Y1

SAPPHIRE TO WOOLGOOLGA
MACCUES ROAD
LEFT TURN IN

MACCUES ROAD

SAPPHIRE TO WOOLGOOLGA
MACCUES ROAD
LEFT TURN OUT

2200

11800

100
98.513

15.568

11700

15.339
1681.823

0.000

2100
58.965

28.271

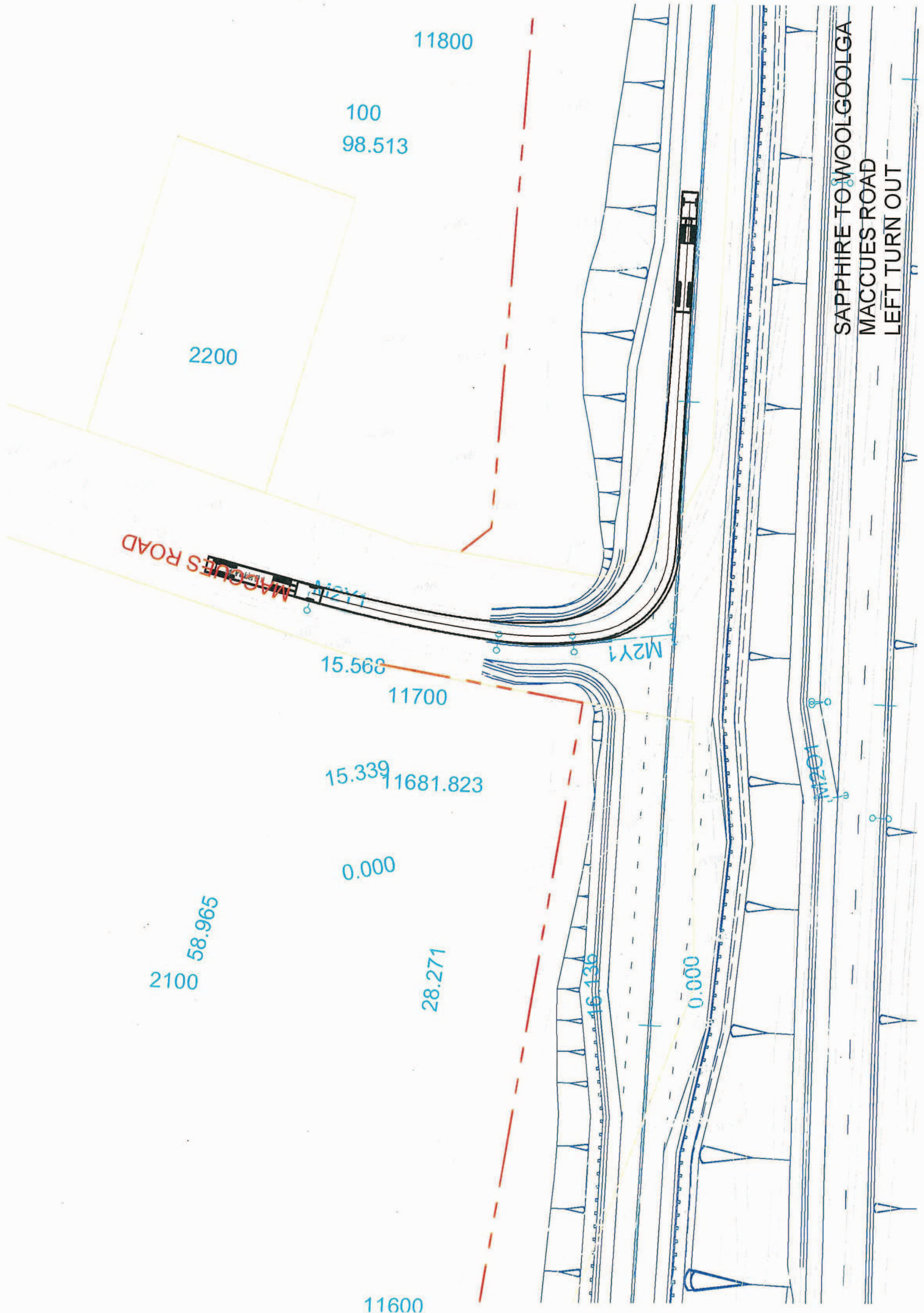
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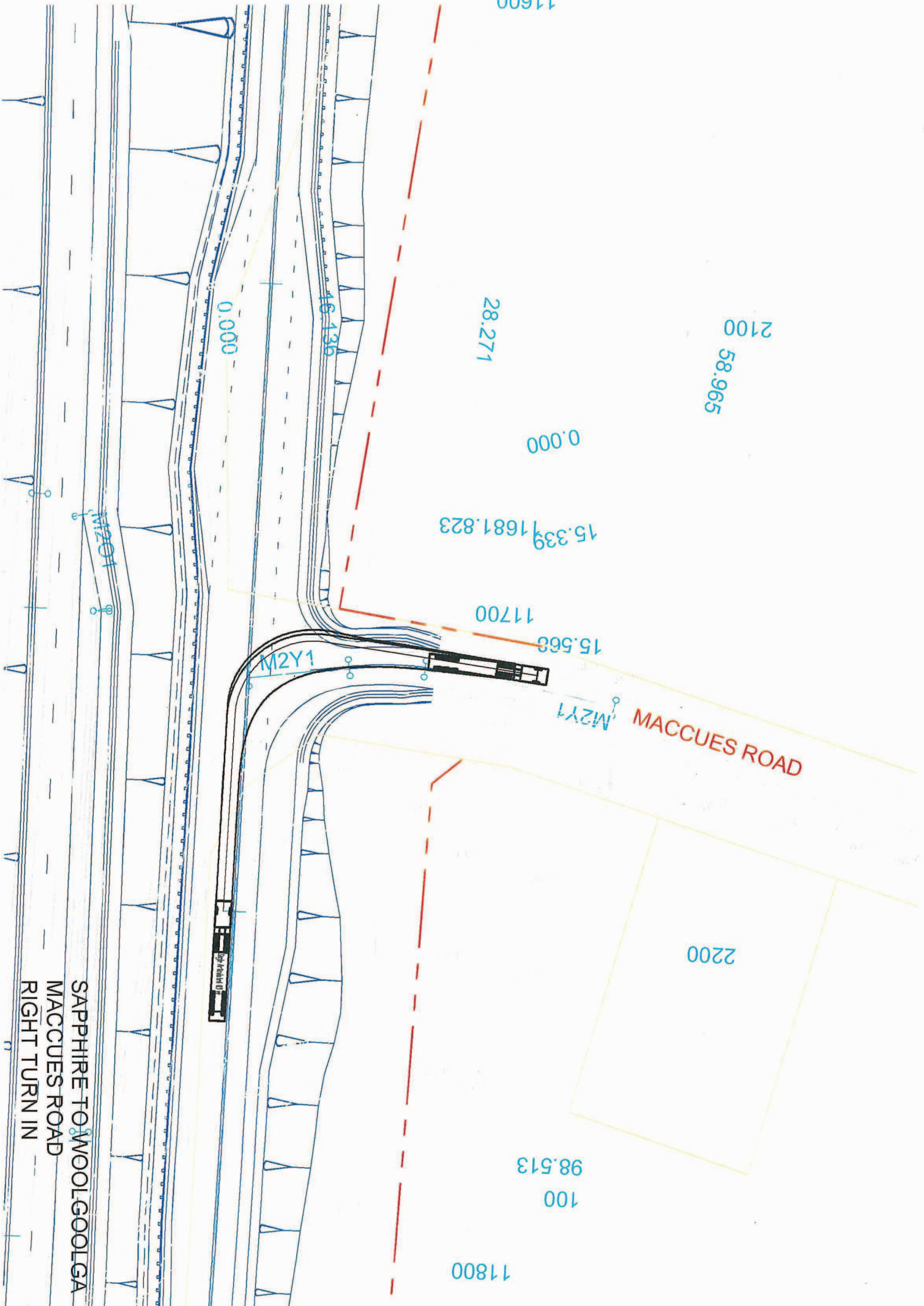
M2Y1

M2O1

46.136

0.000





11600

2100
58.965

28.271

0.000

15.339
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11700

15.563

M2Y1

MACCUES ROAD

2200

98.513

100

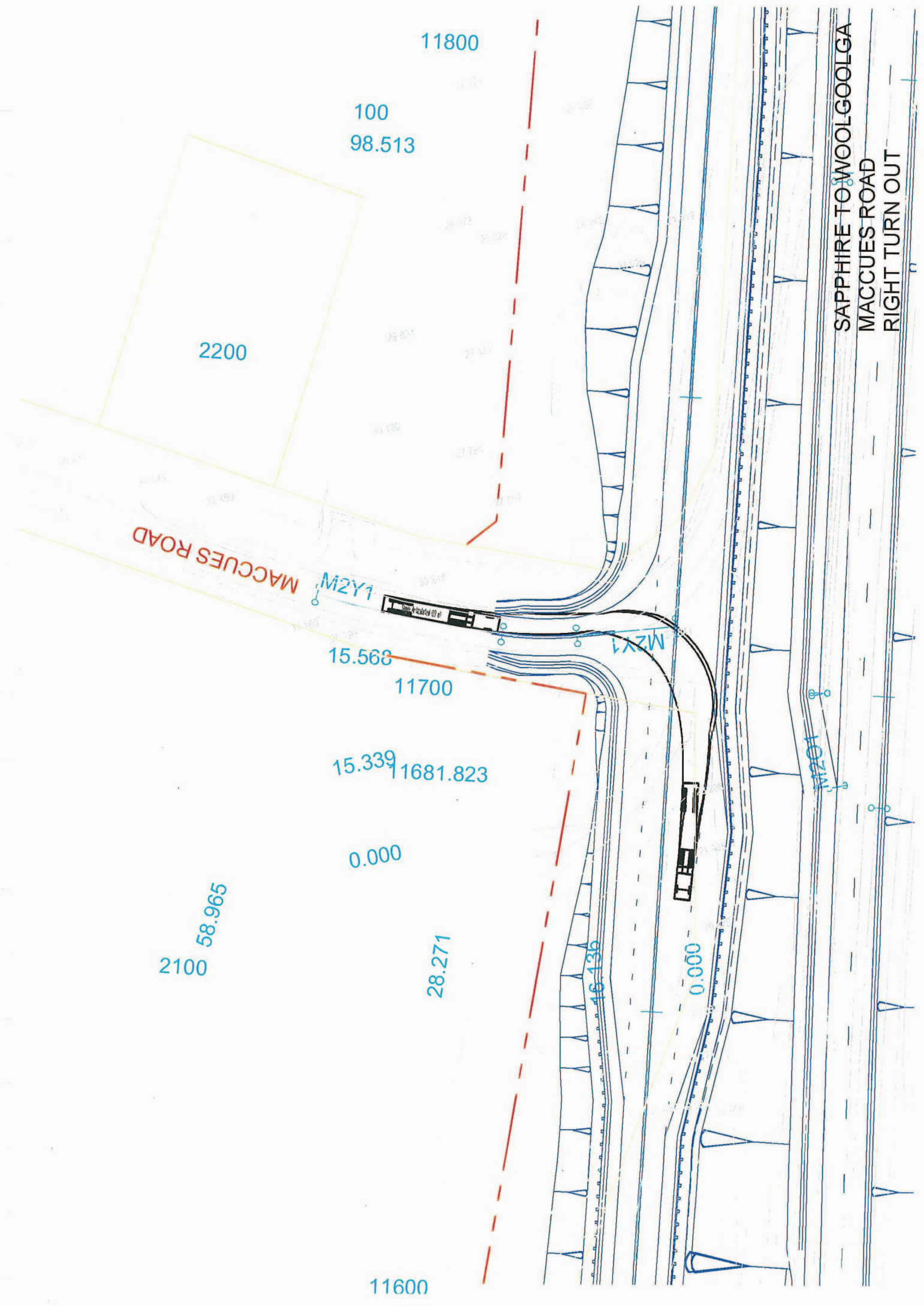
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0.000

16.135

M2Y2

SAPPHIRE TO WOOLGOLGA
MACCUES ROAD
RIGHT TURN IN



MACCUES ROAD

SAPPHIRE TO WOOLGOOLGA
MACCUES ROAD
RIGHT TURN OUT

11800

100
98.513

2200

15.568

11700

15.339
11681.823

0.000

2100
58.965

28.271

16.136

0.000

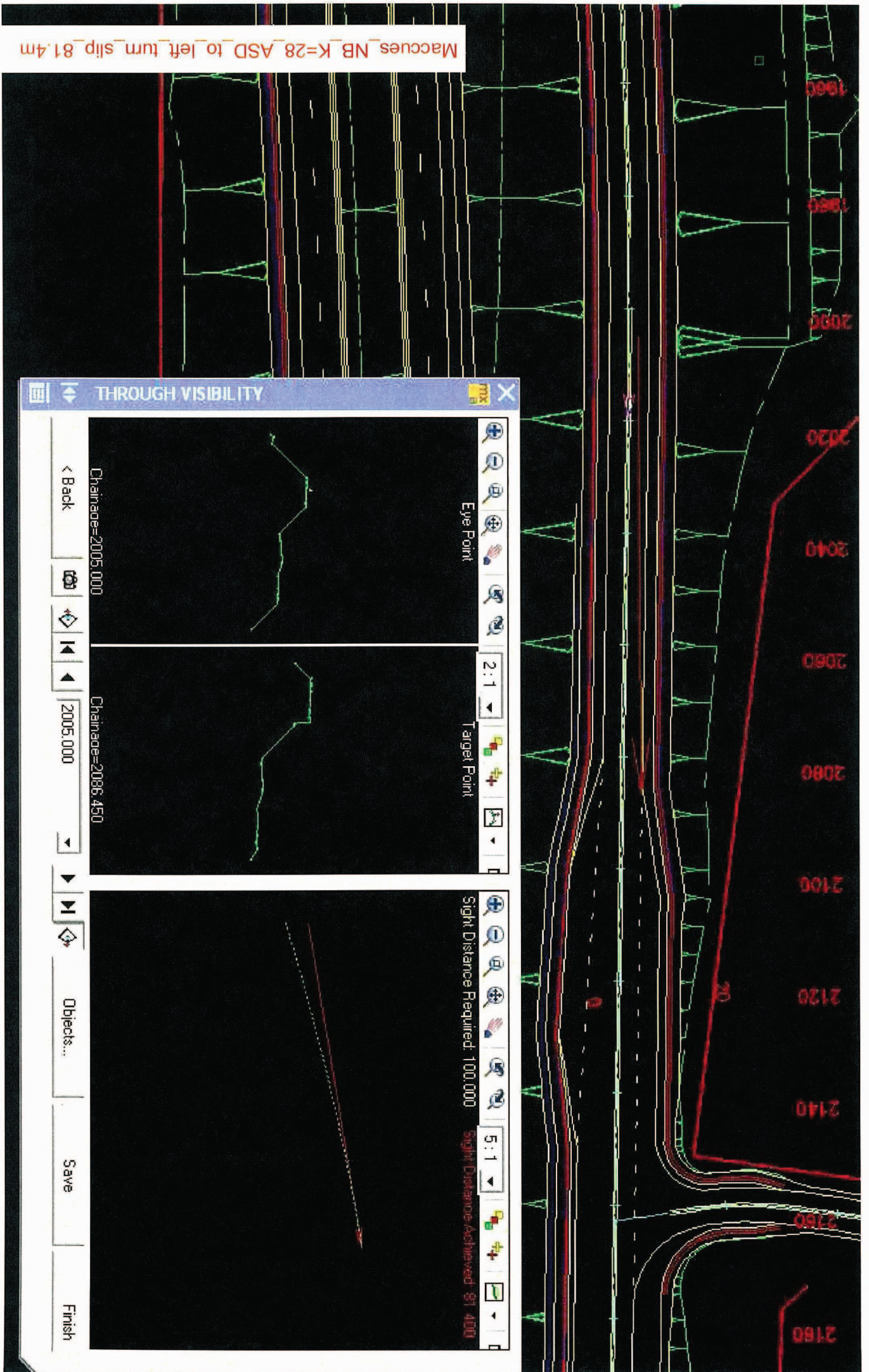
11600

M2Y1

M2X1

M2O1

Macques_NB_K=28_ASD_to_left_turn_slip_81.4m



THROUGH VISIBILITY

Eye Point

Chainage=2005.000

Target Point

Chainage=2086.450

Sight Distance Required: 100.000

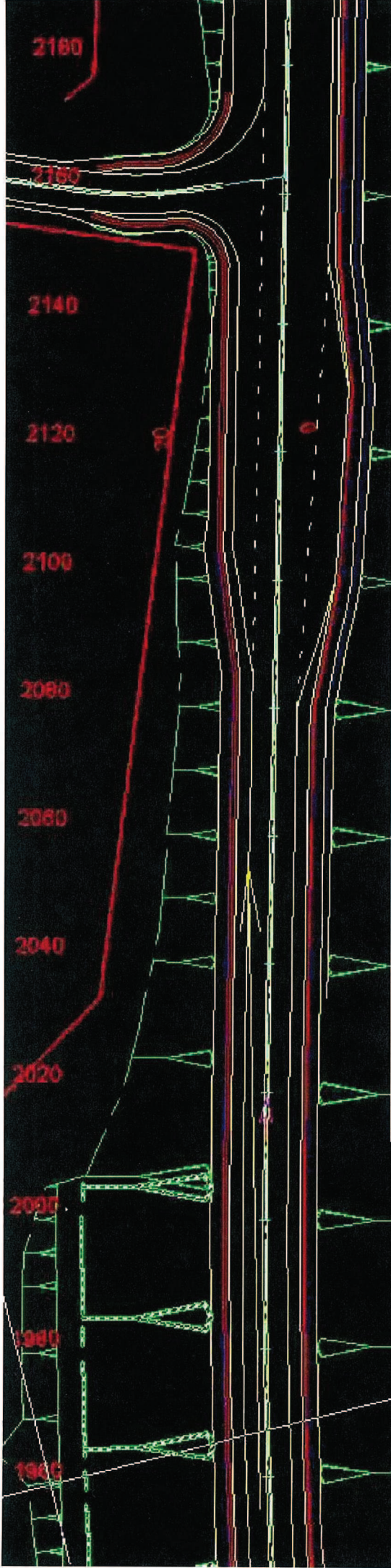
Sight Distance Achieved: 81.400

< Back

Objects...

Save

Finish



THROUGH VISIBILITY

Eye Point
Chainage=1955.000

Chainage=1955.000

Target Point
Chainage=2055.000

Chainage=2055.000

Sight Distance Required: 100.000

Sight Distance Achieved: 100.000

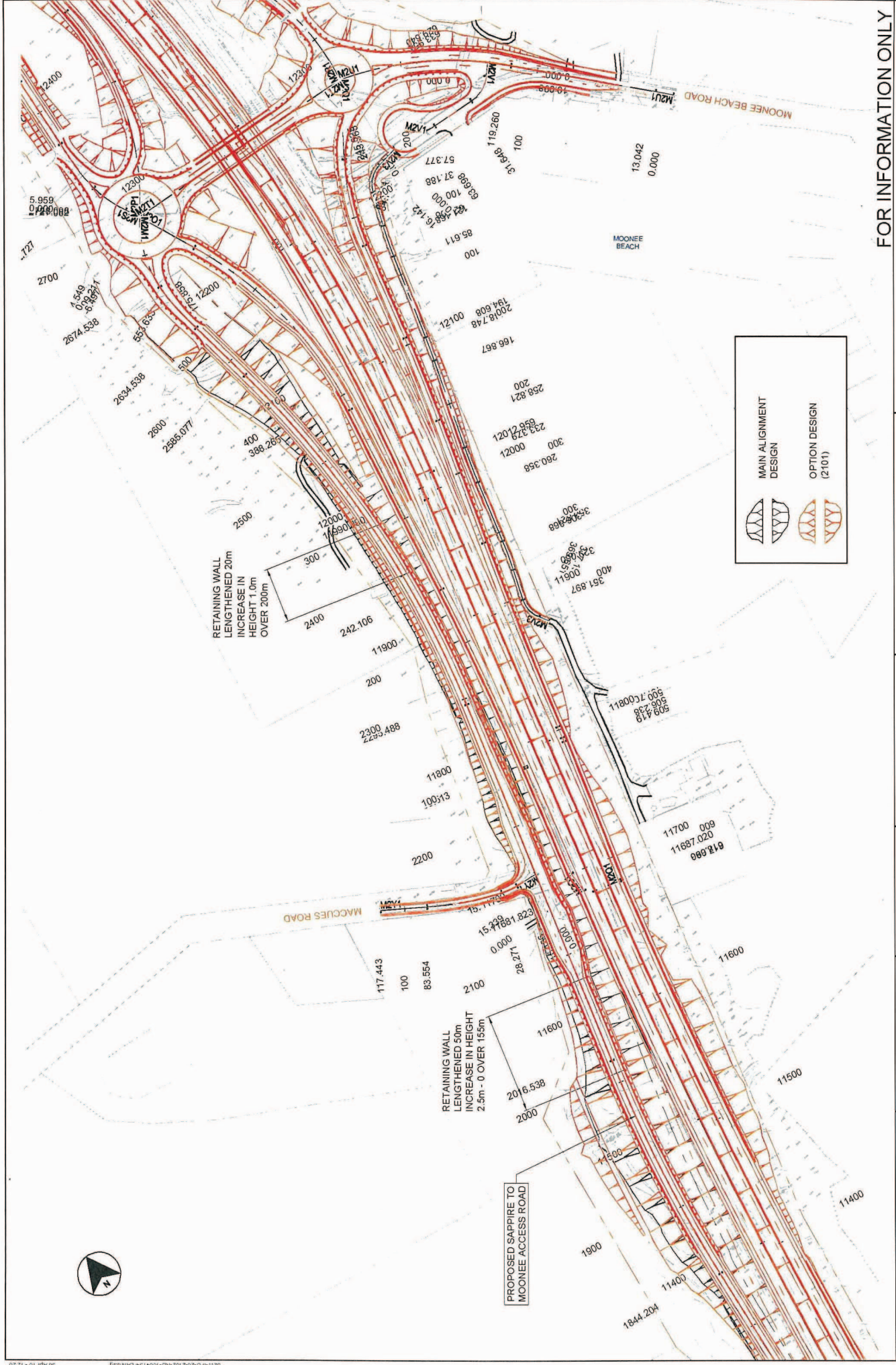
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Sight Distance Achieved: 100.000

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Objects... Save Finish

Maccues_NB_K=28_ASD_to_left_turn_slip_100m



FOR INFORMATION ONLY
 INFORMATION DOCUMENT

DOCUMENT NO.
 PROJECT NO.: SDC TYPE PROJECT PHASE ZONE DESCRIPTION DATE (YY/MM/DD) DESCRIPTION
 S2W-IFD-20-2102-RD-100413-PLAN

SAPPHIRE TO MOONEE ACCESS ROAD
 AT MACQUES ROAD
 OPTION 2102 K=43

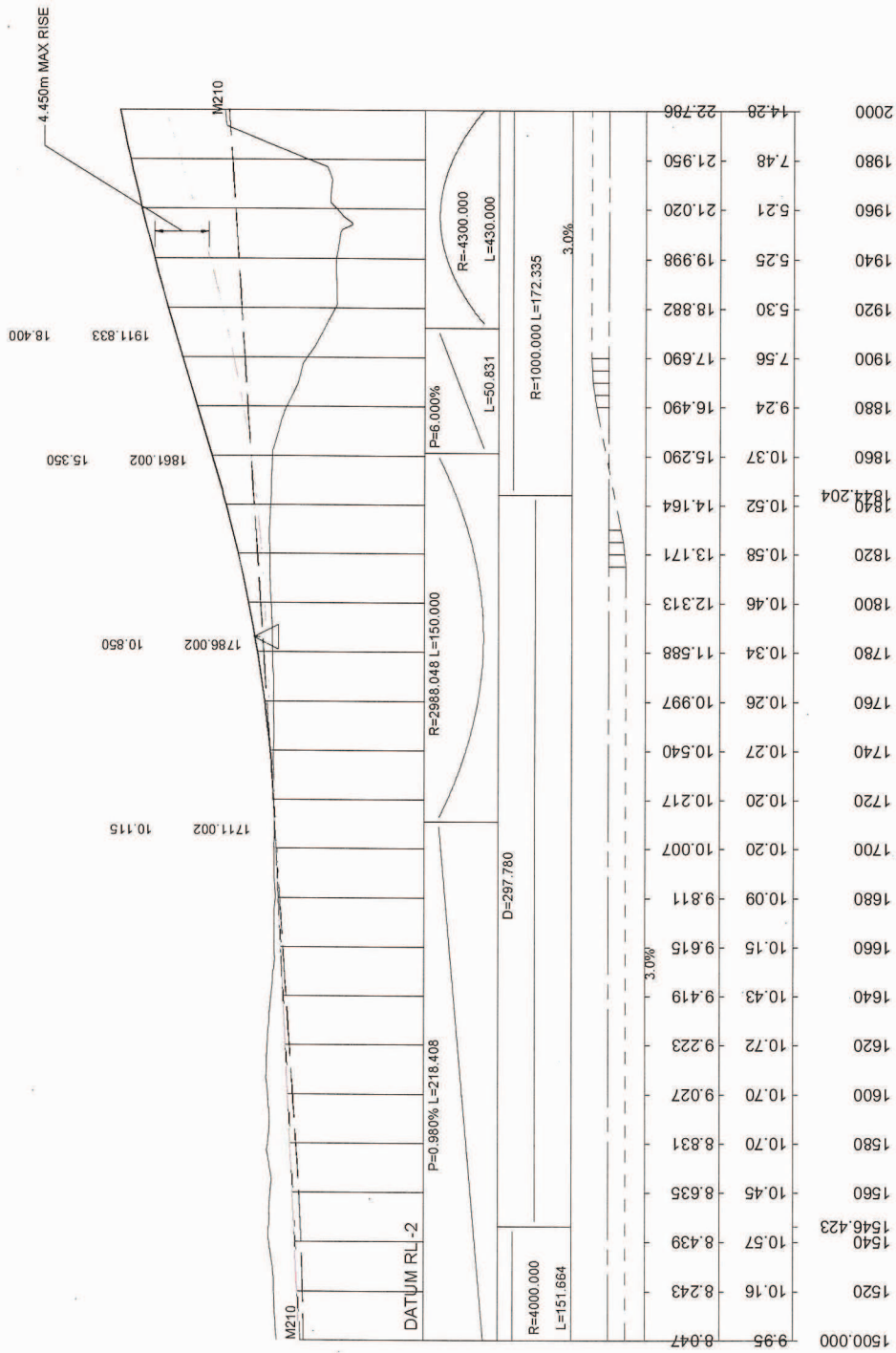
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 LEIGHTON
 Fulton Hogan
 AECOM
 SMIEC

DESIGNER
 sapphire to woolgoolga

SCALE
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 FULL SIZE A3

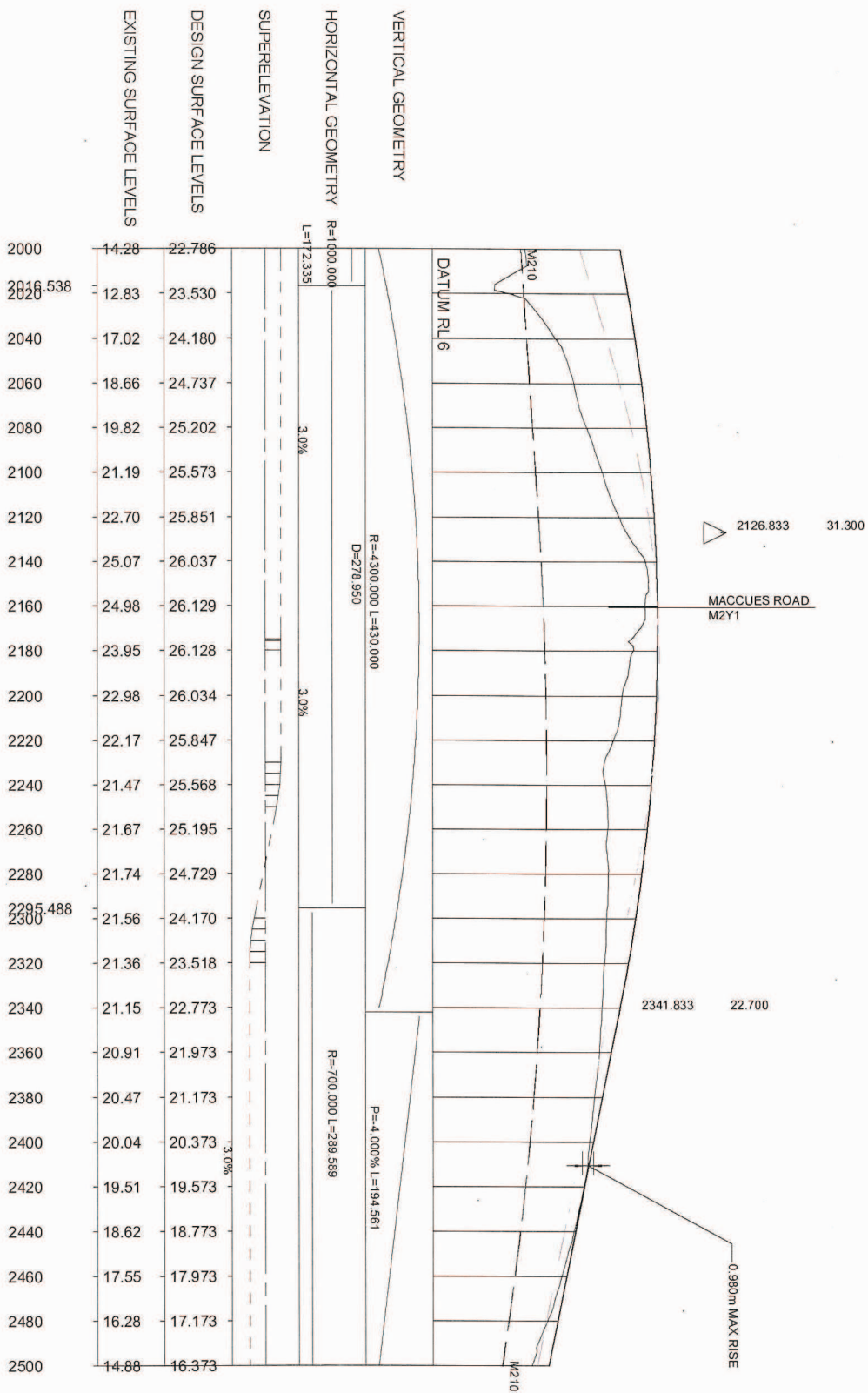
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 LEIGHTON
 Fulton Hogan
 AECOM
 SMIEC

DESIGNER
 sapphire to woolgoolga



ACCESS ROAD - CONTROL LINE M2M1

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				FOR INFORMATION ONLY



ACCESS ROAD - CONTROL LINE M2M1

FOR INFORMATION ONLY

INFORMATION DOCUMENT

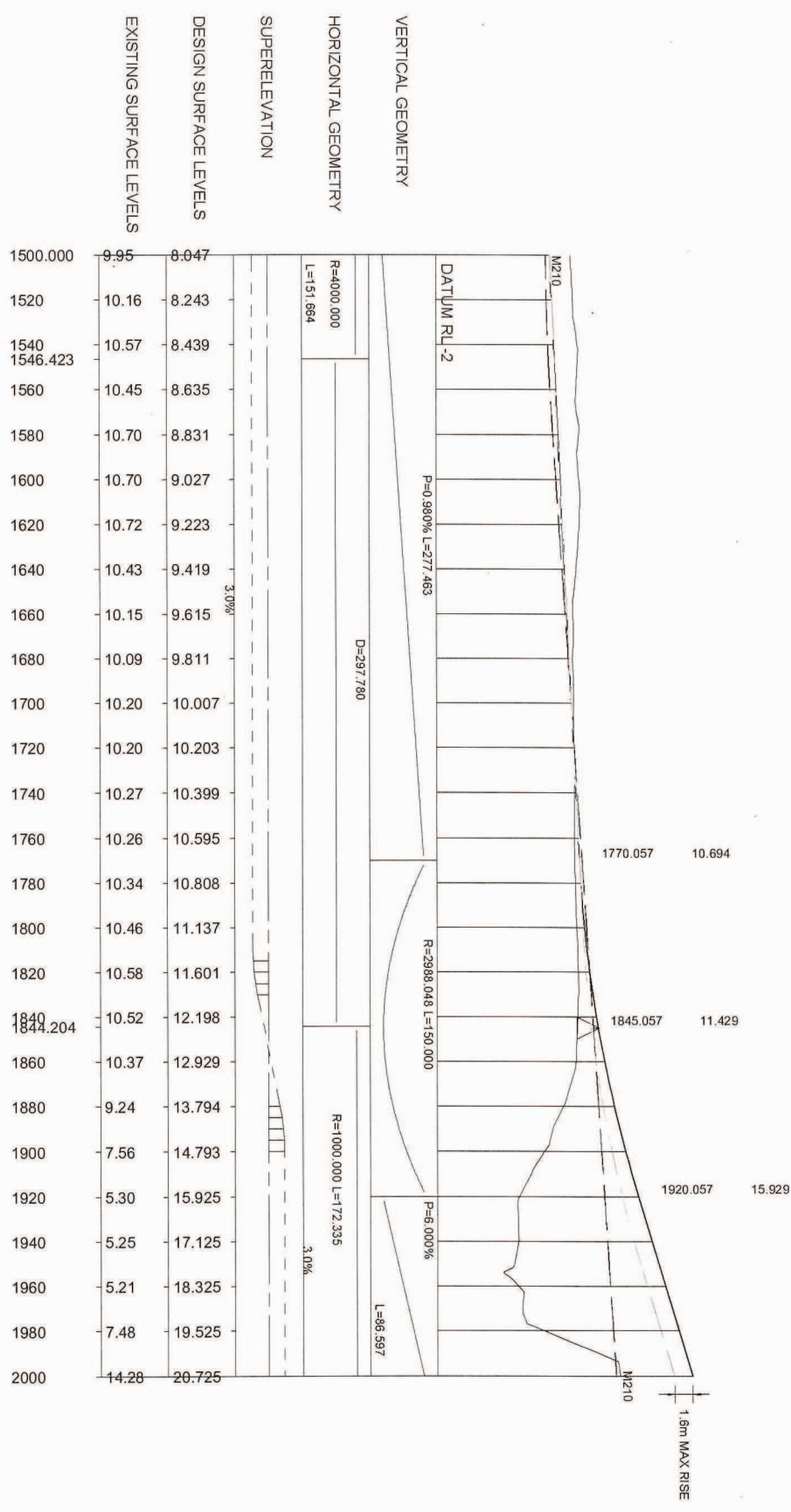
CONTRACTOR
LEIGHTON
 Fulston Hogan
 AECOM
 SMIEC

CONTRACT
 Sapphires to Woodgoolga

SCALE
 1:400 VERT
 1:2000 HOR

ACCESS ROAD
 LONGITUDINAL SECTION (M2M1)
 OPTION 2102 - K=43 SHEET 2 OF 3

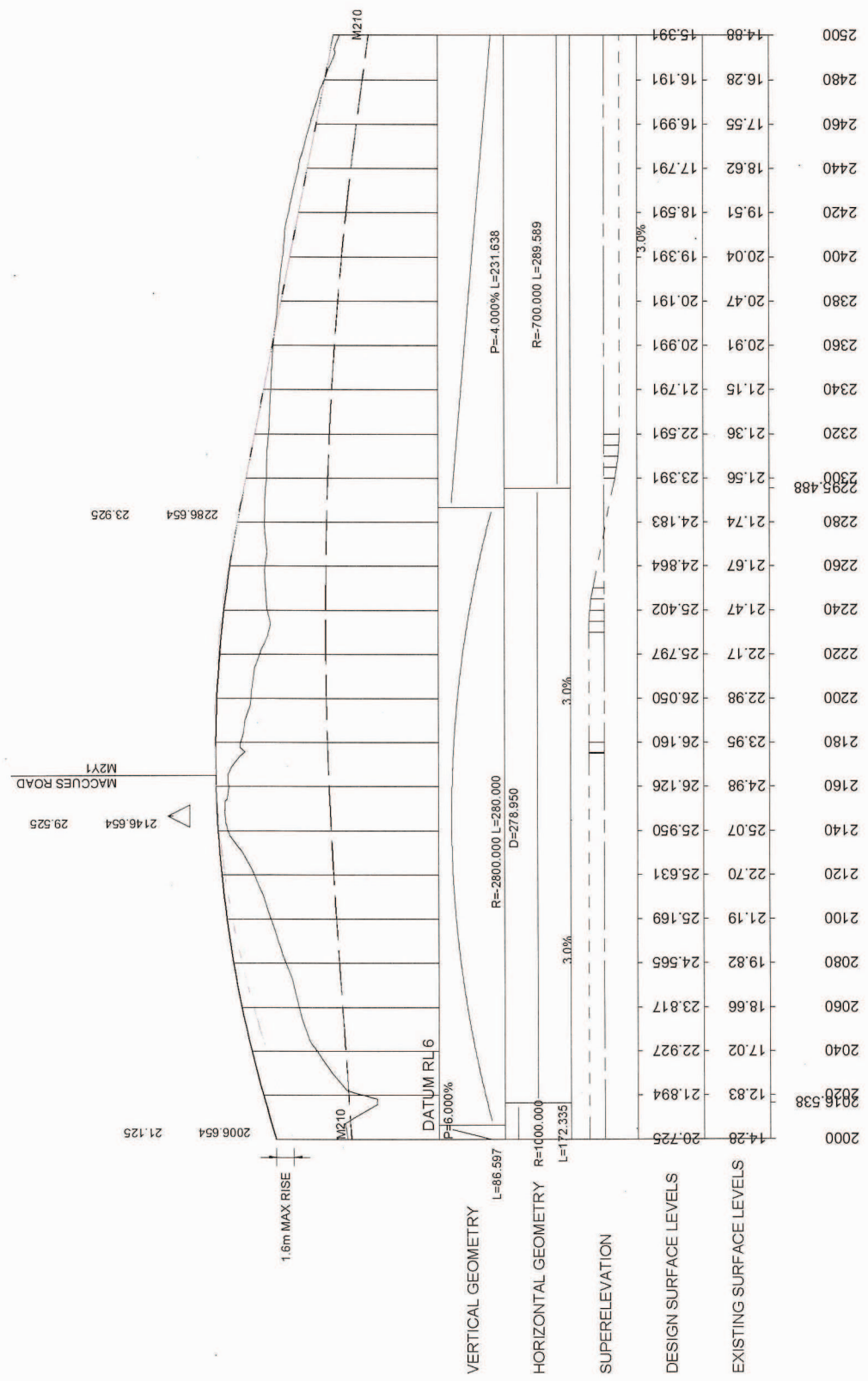
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ACCESS ROAD - CONTROL LINE M2M1

FOR INFORMATION ONLY

			ACCESS ROAD LONGITUDINAL SECTION (M2M1) OPTION 2101 - K=28 SHEET 1 OF 3	DOCUMENT NO: PROJECT NO: S2W-IFD-20-2101-RD-100413-LSEC_M2M1_01
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ACCESS ROAD - CONTROL LINE M2M1

FOR INFORMATION ONLY

			ACCESS ROAD LONGITUDINAL SECTION (M2M1) OPTION 2101 - K=28 SHEET 2 OF 3	INFORMATION DOCUMENT
				DOCUMENT NO: PROJECT NO - DOC TYPE - PROJECT PHASE - DATE - DOWNGRADE - DATE (YY/MM/DD) - DESCRIPTION S2W-IFD-20-2101-RD-100412-LSEC_M2M1_02

APPENDIX D
HERITAGE BRANCH LETTER



Planning

Contact: Katrina Stankowski
Phone: 02 98738569
Email: Katrina.Stankowski@planning.nsw.gov.au
Our ref: B94072

Your ref: N/A
File: 10/10991

Rob Dierkx
Project Director
Sapphire to Woolgoolga Upgrade
Leighton Fulton Hogan Joint Venture
PO Box 5276
WEST CHATSWOOD NSW 1515

Dear Mr Dierkx

Attention: Steve Fermio

Subject: Heritage Branch comments on Sapphire to Woolgoolga Upgrade Construction Heritage Management Plan.

The Heritage Branch received your letter (dated 14th May) on the 18th May requesting Heritage Branch comments on the Construction Heritage Management Plan (CHMP) for the Pacific Highway Sapphire to Woolgoolga Upgrade.

Accordingly, the Heritage Branch has reviewed the Management Plan and its associated documents and has the following comments:

1. As the mine shaft located at the corner of the Pacific Highway and Maccues Road was discovered subsequent to the project approval by the Minister for Planning, mitigation measures have not been included in the CHMP to ensure that this item is managed appropriately.

When referring to the gold mine, the CHMP states that a 'Consistency Assessment [is] to be undertaken' (Table 2.4) and 'If the mine can not be avoided appropriate mitigation measures would be developed and implemented' (Appendix B- Heritage Management and Mitigation Measures). This is not appropriate.

The Management and Mitigation Measures for the gold mine need to be determined in advance of works beginning. The Heritage Branch suggests that the Recommendations contained in the AHMS Heritage Impact Assessment for the mine consisting of Surveyor Mapping and Archival Recording be implemented as part of any mitigation strategy. Archaeological monitoring and recording is not seen as necessary for this site.

2. Appendix C – the Salvage and Curation Strategy contains no Curation Strategy (Section 5 – Methodology) for any anticipated or unanticipated historic archaeology or 'Relics' which may be encountered during the works. This needs to be remediated with appropriate policies included for this scenario.

3. In addition, Section 4 – Consultation, states that ‘Salvage and curation of Non-Aboriginal (Historic) objects (Relics) will be undertaken in consultation with the Coffs Harbour City Council and Heritage Office (Branch)’. This should be expanded to include consultation with the project heritage specialist in the first instance.
4. Step 2 in Appendix D – Heritage Management Tool: ‘Potential Heritage Item Encountered’ should make clear that unexpected finds could also consist of historic ‘Relics’. Should this be the case, under Section 146 of the Heritage Act (which is not turned off by Part 3A of the EP&A Act), the Heritage Council (or its Delegate, the Heritage Branch) is required to be notified of the discovery. The notification process under s146 should be articulated as part of this Step.
5. Throughout the CHMP and its accompanying documents, the Heritage Branch is referred to as the ‘Heritage Office’ or ‘NSW Heritage Office’. The Heritage Office no longer exists as a separate Department, and should be correctly referred to as the ‘Heritage Branch, Department of Planning’.

The Heritage Branch would be please to review any future reports which incorporate our comments. If you have any questions regarding the above, please feel free to contact Katrina Stankowski on 02 98738569.

Yours sincerely



25/05/2010

Vincent Sicari
Manger

Conservation Team

Heritage Branch

Department of Planning