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Abbreviations

ADDA	Aboriginal Due Diligence Assessment
AGD	Australian Geodetic Datum
Biosis	Biosis Pty Ltd
Burra Charter	The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance
c.	Circa
CBD	Central Business District
CHL	Commonwealth Heritage List
DA	Development Application
DDCP	Dungog Development Control Plan 2014
Dungog LEP 2014	Dungog Local Environmental Plan 2014
DP	Deposited Plan
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cth)
Heritage NSW	Heritage NSW, Department of Climate Change, Energy the Environment and Water
Heritage Act	Heritage Act 1977 (NSW)
ICOMOS	International Council on Monuments and Sites
LEP	Local Environmental Plan
LGA	Local Government Area
NHL	National Heritage List
NSW	New South Wales
PSDCP	Port Stephens Development Control Plan 2023
Port Stephens LEP 2013	Port Stephens Local Environmental Plan 2013
REF	Review of Environmental Factors
SEPP (T&I)	State Environmental Planning Policy (SEPP) (Transport and Infrastructure) 2021
SHR	State Heritage Register
SoHI	Statement of Heritage Impact



Study area East Seaham Road, East Seaham, NSW



Summary

Biosis Pty Ltd (Biosis) was commissioned by Port Stephens Council to undertake a Statement of Heritage Impact (SoHI) to assess the potential heritage impacts of a proposed road upgrade at East Seaham Road, East Seaham and Clarence Town, New South Wales (NSW) (Figure 1 and Figure 2), referred to as the study area herein. Port Stephens Council proposes to widen and seal the existing gravel road, install safety barriers where required and to provide a clear zone up to 2.5 metres wide. Council anticipates that a significant number of trees and other vegetation will need to be removed as part of the works. The project length covers Stages 5 and 6 of East Seaham Road and is approximately 3.2 kilometres in length (Figure 1). The study area is located approximately 1.4 kilometres southeast of Clarence Town and approximately 34.3 kilometres north of the Newcastle central business district (CBD).

The study area, defined by the area of impact of the proposed works, encompasses a 3.2 kilometre stretch of East Seaham Road beginning 1.26 kilometres south from its intersection with Limeburners Creek Road. The study area is bounded to the east by Wallaroo National Park and to the west by rural lands and residential properties. A physical inspection of the study area was undertaken by Molly Crissell (Heritage Consultant, Biosis) on 13 November 2023.

This SoHI assesses potential direct heritage impacts to the heritage item of road itself and potential indirect heritage impacts to the two heritage items in the vicinity of the proposed development. Where potentially adverse heritage impacts are identified, recommendations to further mitigate those impacts are given.

Heritage values

Heritage items identified within the study area include:

- One heritage item listed on the Port Stephens Local Environmental Plan 2013 (Port Stephens LEP 2023):
 - Road Alignment (Item no. I5), general heritage item.

Heritage items identified in the vicinity of the study area include:

- Two heritage items listed on the Dungog Local Environmental Plan 2014 (Dungog LEP 2014):
 - Homestead, "Fotheringay" (Item No. I17), general heritage item approximately 450 metres west of the study area across the Williams River.
 - Marshall & Lowe "Deptford" shipyard site, Fotheringaye (Item No. I150), archaeological site approximately 410 metres west of the study area across the Williams River.

It should be noted that spellings vary in the heritage listings between 'Fotheringay' and 'Fotheringaye', including in the Dungog LEP 2014. For this report, 'Fotheringay' will be used when not referring specifically to the heritage item Marshall & Lowe "Deptford" shipyard site, Fotheringaye (Item No. I150).

Impact to heritage values

Based on the exploration of the potential impacts to heritage significance for the heritage items Road Alignment, Homestead "Fotheringay" and Marshall & Lowe "Deptford" shippard site, Fotheringaye, the proposed works are generally considered to have a minor but acceptable level of impact. While the removal of trees would have a significantly adverse impact to the heritage item Road Alignment, as part of the design Council have compromised on the recommended extent of trees under the Austroads guidelines so as to reduce these impacts while still ensuring safety of road users.



While the study area has been assessed as holding low archaeological potential for archaeological resources of heritage significance, should any of the stone culverts noted in the heritage inventory sheet for the heritage item Road Alignment be present within the study area, further assessment will be required as to their heritage significance.

Legislation and policy

An assessment of the project against key heritage legislation and policy is provided and summarised below.

Legislation	Relevant heritage feature on site	Permit / Approval required	
Heritage Act 1977	Possible archaeological resources	Section 140 Excavation Permit - To be confirmed, depending on presence of stone culverts	
Environmental Planning and Assessment Act 1979	Road Alignment (Item no. I5)	Approval under a Review of Environmental Factors	

Recommendations

The following recommendations have been formulated to respond to client requirements and the significance of the site. They are guided by Australia ICOMOS' (International Council on Monuments and Sites) *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance* (Burra Charter). The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained.

Recommendation 1 Treatment of stone culverts

No instances of stone culverts, which are noted in the heritage inventory sheet for the heritage item Road Alignment, were identified within the study area as part of this assessment. However, this does not preclude their presence, as they may have been modified or not be visible due to overgrown vegetation or sediment build up.

Should any stone culverts be identified within the study area and areas of proposed work as the design develops and/or during the course of construction, heritage advice should be sought regarding their condition and assessment of heritage significance. During construction, this might take place in the form of having a heritage representative on site during works, or on standby to undertake site visits to inspect any finds.

Ascertaining the presence and significance of possible stone culverts by detailed survey prior to the finalisation of the design of the works would mitigate the design risk of their discovery once the works have commenced. However, such a survey could not be properly carried out without the clearing of low vegetation at the edge of the road so that the ground and drainage can be seen.

Recommendation 2 Unexpected finds protocol

Relics are protected under Section 139 of the *Heritage Act 1977* (Heritage Act). The study area has been assessed as holding low archaeological potential for archaeological resources of heritage significance. However, it is recommended that an unexpected finds protocol be implemented as part of the construction management plan for the project to ensure that any unexpected archaeological finds are assessed and managed appropriately and in accordance with the Heritage Act.

¹ (Australia ICOMOS 2013)



Recommendation 3 Heritage induction

Due to the presence of part of a heritage item, Road Alignment, within the study area, it is recommended that all staff, contractors and subcontractors working on site undertake a heritage induction. This is recommended so that all staff, contractors and subcontractors are made aware of the heritage item, its elements and significance, as well as their responsibilities under and penalties for breaching of the Heritage Act or carrying out unapproved works that impact the heritage values of the site.



1 Introduction

1.1 Project background

Biosis was commissioned by Port Stephens Council to undertake a SoHI for the 3.2 kilometre stretch of East Seaham Road, East Seaham and Clarence Town NSW (Figure 1 and Figure 2), referred to as the study area herein. Port Stephens Council is proposing to widen and seal the existing gravel road, install safety barriers where required and to provide a clear zone up to 2.5 metres wide. Council anticipates that a significant amount of tree removal will be required to undertake the proposed works. The project length covers Stages 5 and 6 of East Seaham Road and is approximately 3.2 kilometres in length. This assessment will support a Review of Environmental Factors (REF) under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.2 Location of the study area

The majority of the study area is located within the suburb of East Seaham, Port Stephens Local Government Area (LGA) with a smaller northern portion within the suburb of Clarence Town, Dungog LGA (Figure 1). The study area encompasses a 3.6 kilometre stretch of East Seaham Road beginning 1.26 kilometres south from its intersection with Limeburners Creek Road. It is bounded to the east by Wallaroo National Park and to the west by rural lands and residential properties. It encompasses approximately 14.2 hectares of public land currently zoned in majority as RU1 – Primary Production and to a smaller extent as C1 – National Parks and Nature Reserves.

The study area is within:

- The suburbs of East Seaham and Clarence Town.
- The LGAs of Port Stephens and Dungog.
- The Parish of Wilmot.
- The County of Gloucester.

1.3 Scope of assessment

This report was prepared in accordance with current heritage guidelines including *Assessing Heritage Significance*, *Assessing Significance for Historical Archaeological Sites and 'Relics'* and the Burra Charter.² This report provides a heritage assessment to identify if any heritage items or relics exist within or in the vicinity of the study area. The heritage significance of these heritage items has been investigated and assessed in order to determine the most appropriate management strategy.

The following is a summary of the major objectives of the assessment:

Identify and assess the heritage values associated with the study area. The assessment aims to
achieve this objective through providing a brief summary of the principle historical influences that

² (DPE 2023, NSW Heritage Branch, Department of Planning 2009, Australia ICOMOS 2013)



have contributed to creating the present-day built environment of the study area using resources already available and some limited new research.

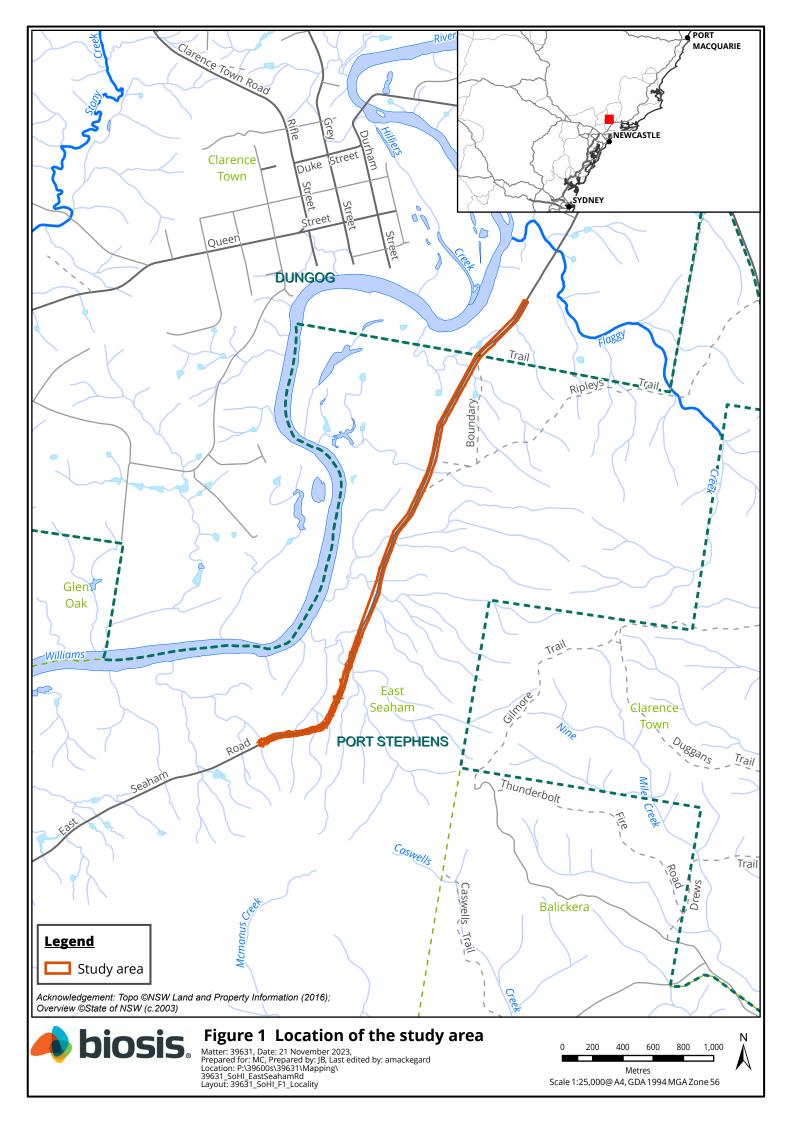
- Assess the impact of the proposed works on the cultural heritage significance of the study area.
- Identify sites and features within the study area which are already recognised for their heritage value through statutory and non statutory heritage listings.
- Recommend measures to avoid or mitigate any negative impacts on the heritage significance of the study area.

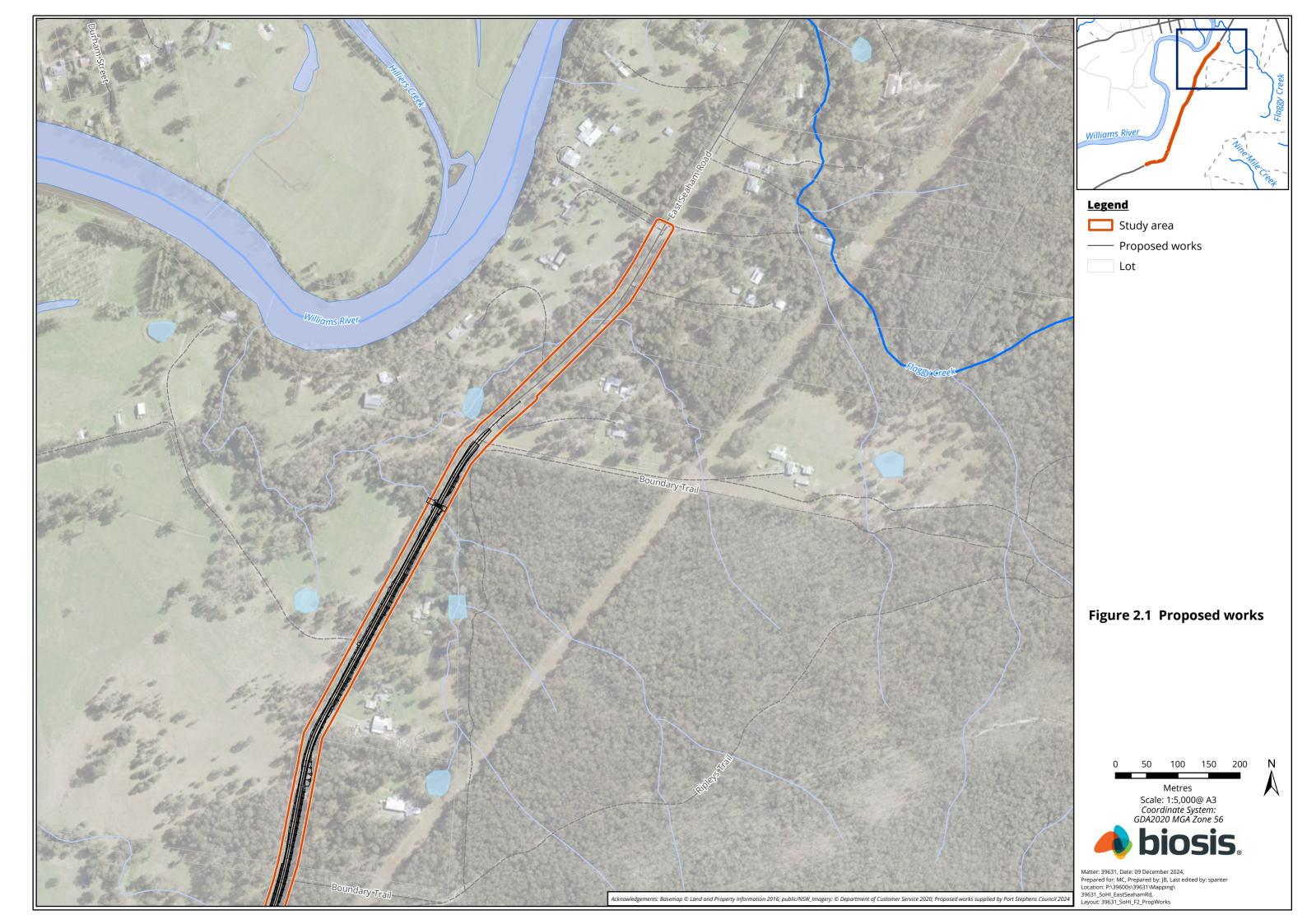
1.4 Limitations

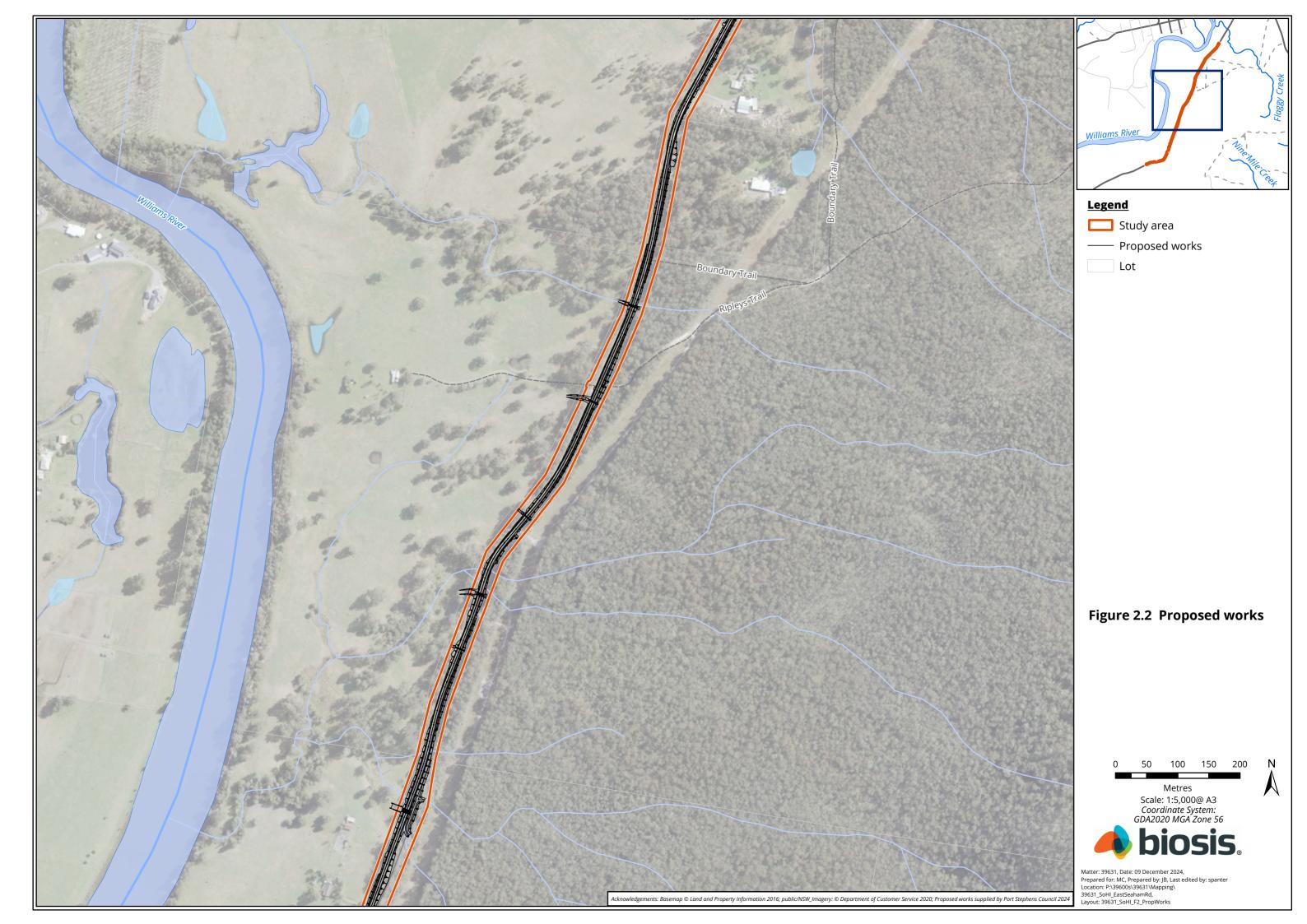
This report is based on historical research and field inspections. It is possible that further historical research or the emergence of new historical sources may support different interpretations of the evidence in this report. Limitations were encountered during the archaeological survey, within the heritage listing it is noted 'some culverts are of local rock and are of interesting construction techniques and may have archaeological significance'. The whole of the listed item was travelled by vehicle. However, only the potentially affected area of the heritage item Road Alignment was inspected in more detail by foot. No culverts constructed of local stone were identified. However, these may have been overgrown or in other sections of the historical listing which were not inspected in detail.

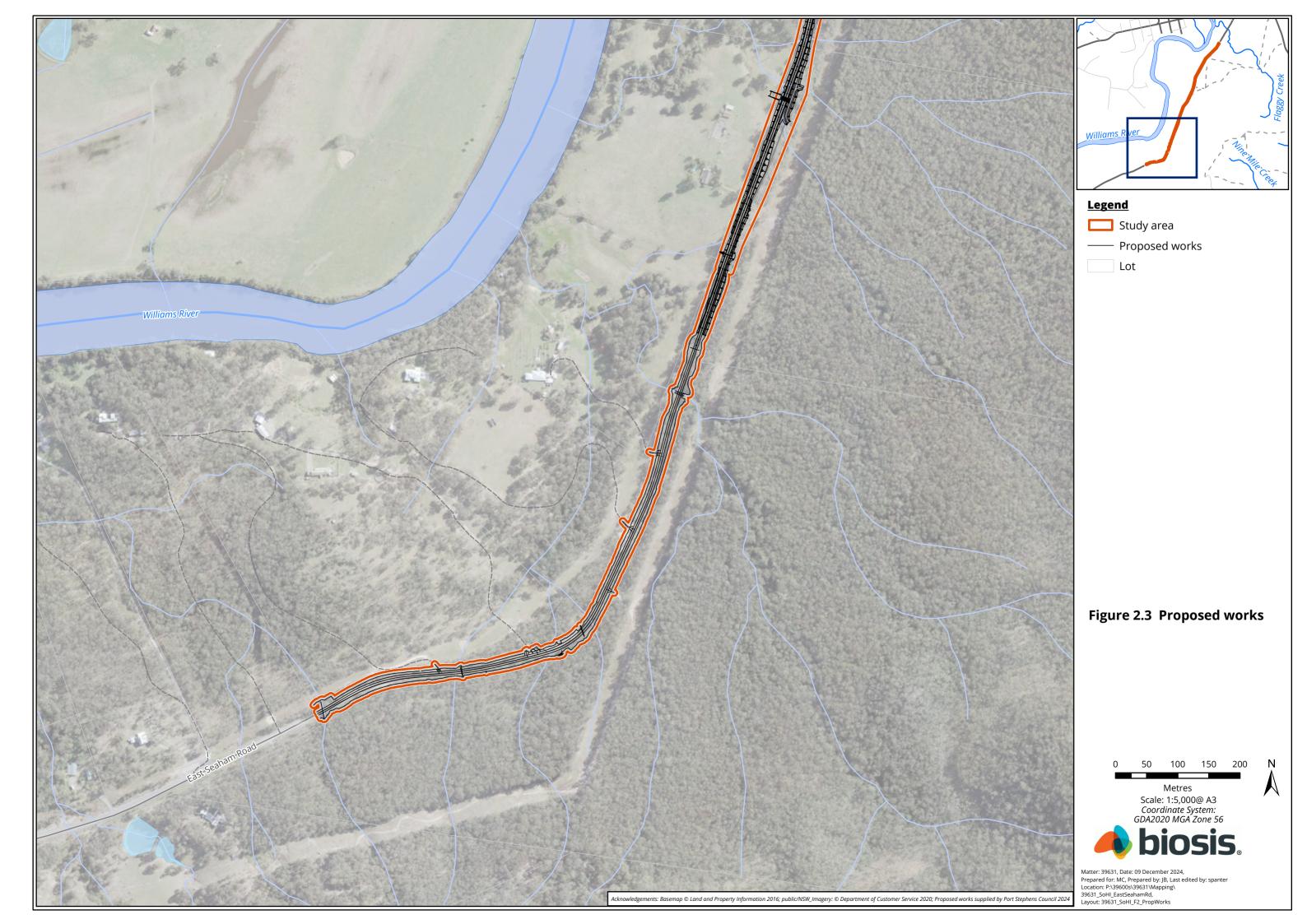
Although this report was undertaken to best archaeological practice and its conclusions are based on professional opinion, it does not warrant that there is no possibility that additional archaeological material will be located in subsequent works on the site. This is because limitations in historical documentation and archaeological methods make it difficult to accurately predict what is under the ground.

The significance assessment made in this report is a combination of both facts and interpretation of those facts in accordance with a standard set of assessment criteria. It is possible that another professional may interpret the historical facts and physical evidence in a different way.











2 Statutory framework

This assessment will support a REF under Part 5 of the EP&A Act. In NSW cultural heritage is managed in a three-tiered system: national, state and local. Certain sites and items may require management under all three systems or only under one or two. The following discussion aims to outline the various levels of protection and approvals required to make changes to cultural heritage in the state.

2.1 Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The Environment Protection and Biodiversity Act 1999 (EPBC Act) is the national Act protecting the natural and cultural environment. The EPBC Act is administered by the Australian Government Department of Climate Change, Energy, the Environment and Water. The EPBC Act establishes two heritage lists for the management of the natural and cultural environment:

- The National Heritage List (NHL) contains items that have been assessed to be of outstanding significance and define 'critical moments in our development as a nation'.³
- The Commonwealth Heritage List (CHL) contains that are natural and cultural heritage places that are on Commonwealth land, in Commonwealth waters or are owned or managed by the Commonwealth. A place or item on the CHL has been assessed as possessing 'significant' heritage value.⁴

A search of the NHL and CHL did not yield any results associated with the study area.

2.2 Heritage Act 1977 (NSW)

Heritage in NSW is principally protected by the Heritage Act (as amended) which was passed for the purpose of conserving items of environmental heritage of NSW. Environmental heritage is broadly defined under Section 4 of the Heritage Act as consisting of the following items: 'those places, buildings, works, relics, moveable objects, and precincts, of State or Local heritage significance'. The Heritage Act is administered by the Heritage Council, under delegation by Heritage NSW, Department of Climate Change, Energy the Environment and Water (Heritage NSW). The Heritage Act is designed to protect both known heritage items (such as standing structures) and items that may not be immediately obvious (such as potential archaeological remains or 'relics'). Different parts of the Heritage Act deal with different situations and types of heritage and the Act provides a number of mechanisms by which items and places of heritage significance may be protected.

2.2.1 State Heritage Register

Protection of items of State significance is by nomination and listing on the State Heritage Register (SHR) created under Part 3A of the Heritage Act. The Register came into effect on 2 April 1999. The Register was established under the *Heritage Amendment Act* 1998. It replaces the earlier system of Permanent Conservation Orders as a means for protecting items with State significance.

http://www.environment.gov.au/heritage/about/commonwealth/criteria.html

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³ 'About National Heritage' http://www.environment.gov.au/heritage/about/national/index.html

⁴ 'Commonwealth Heritage List Criteria'



A permit under Section 60 of the Heritage Act is required for works on a site listed on the SHR, except for that work which complies with the conditions for exemptions to the requirement for obtaining a permit. Details of which minor works are exempted from the requirements to submit a Section 60 Application can be found in the Guideline 'Standard Exemptions for Works requiring Heritage Council Approval'. These exemptions came into force on 1 December 2020 and replace all previous exemptions.

There are no items listed on the SHR within the study area. The following conservation areas items are listed as partially within the study area:

Wallaroo National Park

The Wallaroo National Park has heritage restrictions outlined within the *Karuah, Medowie and Wallaroo Group Plan of Management*. There are no relevant development controls or recommendations for heritage management for land within the Wallaroo National Park.

2.2.2 Archaeological relics

Section 139 of the Heritage Act protects archaeological 'relics' from being 'exposed, moved, damaged or destroyed' by the disturbance or excavation of land. This protection extends to the situation where a person has 'reasonable cause to suspect' that archaeological remains may be affected by the disturbance or excavation of the land. This section applies to all land in NSW that is not included on the SHR.

Amendments to the Heritage Act made in 2009 changed the definition of an archaeological 'relic' under the Act. A 'relic' is defined by the Heritage Act as:

Any deposit, object or material evidence:

(a) Which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and

(b) Which is of State or Local significance.

It should be noted that not all remains that would be considered archaeological are relics under the NSW Heritage Act. Advice given in the *Archaeological Significance Assessment Guidelines* is that a 'relic' would be viewed as a chattel and it is stated that,

In practice, an important historical archaeological site will be likely to contain a range of different elements as vestiges and remnants of the past. Such sites will include 'relics' of significance in the form of deposits, artefacts, objects and usually also other material evidence from demolished buildings, works or former structures which provide evidence of prior occupations but may not be "relics".⁶

If a relic, including shipwrecks in NSW waters (that is rivers, harbours, lakes and enclosed bays) is located, the discoverer is required to notify the NSW Heritage Council.

Section 139 of the Heritage Act requires any person who knows or has reasonable cause to suspect that their proposed works will expose or disturb a 'relic' to first obtain an Excavation Permit from the Heritage Council of NSW (pursuant to Section 140 of the Heritage Act), unless there is an applicable exception (pursuant to Section 139(4)). Excavation permits are issued by the Heritage Council of NSW in accordance with Sections 60 or 140 of the Heritage Act.

Exceptions under Section 139(4) to the standard Section 140 process exist for applications that meet the appropriate criterion. It is an exception from the requirement to obtain a Section 140 permit and reflects the nature of the impact and the significance of the relics or potential relics being impacted upon. A heritage

⁵ (NSW National Parks and Wildlife Service & Office of Environment & Heritage 2016)

⁶ (NSW Heritage Branch, Department of Planning 2009, pp. 7)



management document must be produced assessing the works and justifying the appropriateness of the exception. This does not need to be submitted to the Heritage Council, but must be kept and made available to the Heritage Council if requested.

If an exception has been deemed appropriate and, during the course of the development, substantial intact archaeological relics of state or local significance, not identified in the archaeological assessment or statement required by this exception, are unexpectedly discovered during excavation, work must cease in the affected area and the Heritage Office must be notified in writing in accordance with section 146 of the Heritage Act. Depending on the nature of the discovery, additional assessment and, possibly, an excavation permit may be required prior to the recommencement of excavation in the affected area.

2.2.3 Section 170 Heritage and Conservation Registers

Section 170 of the Heritage Act requires that culturally significant items or places managed or owned by Government agencies are listed on departmental Heritage and Conservation Register. Information on these registers has been prepared in accordance with Heritage NSW guidelines.

Statutory obligations for archaeological sites that are listed on a Section 170 Register include notification to the Heritage Council in addition to relic's provision obligations. There are no items within or adjacent to the study area that are entered on a State government instrumentality Section 170 Register.

2.2.3.1 Wallaroo National Park

Part of the study area falls within the curtilages of Wallaroo National Park (Figure 1). The Karuah, Medowie and Wallaroo Group Plan of Management⁷ provides information on managing heritage values within the parks in *Section 3.4 Historic heritage values*:

 Record historical sites and assess them for heritage value. Undertake works if necessary to retain any sites of high heritage value. Management response priority – Medium.

The Plan of Management notes the following sites are associated with Wallaroo National Park; however, their precise locations are not provided in the report and distances to the names roads are included below for reference:

- Cattle yards on Ripleys (intersects with the central portion of the study area) and Callaghans (7.2 kilometres south-east of the study area) trails.
- An old sawmill site, a post-and-rail fence line near Ten Mile Road (6.1 kilometres east of the study area).
- Two bridges on Drews Road (2.5 kilometres south-east of the study area).
- A bridge on Ten Mile Road (6.1 kilometres east of the study area).

2.3 Environmental Planning and Assessment Act 1979 (NSW)

2.3.1 Environmental Planning Instruments

2.3.1.1 Port Stephens Local Environmental Plan 2013

The Port Stephens LEP 2013 contains schedules of heritage items that are managed by the controls in the instrument. As the project is being undertaken under Part 5 of the EP&A Act, council is responsible for

⁷ (NSW National Parks and Wildlife Service & Office of Environment & Heritage 2016)



approving controlled work via the development application system. Heritage items within the curtilages and in the vicinity of the study area are identified in Figure 3.

Within the study area is as an item of local significance listed on the Port Stephens LEP 2013 Schedule 5:

• Road Alignment (Item No. I5), East Seaham Road and road reserves, East Seaham. General heritage item of local significance, the northern 3.14 kilometres of which falls within the study area.

2.3.1.2 Dungog Local Environmental Plan 2014

The study area is also situated within the vicinity of one heritage item and one archaeological site both of local significance listed on Schedule 5 of the adjacent Dungog LEP 2014:

- Homestead, "Fotheringay" (Item No. I17), 221 Fotheringay Road, Fotheringay, Lot 3, DP 1221980.
 General heritage approximately 450 metres west of the study area across the Williams River. The boundary of the listed item, Fotheringay, is almost 500 metres to the west and across the Williams River. Potential impacts to the setting and view to and from Fortheringay are assessed in Section 8.
- Marshall & Lowe "Deptford" shipyard site (Item No. I150), Crown reserve (No street frontage), Clarence Town, Lot 7303, DP 1132982. Archaeological site approximately 410 metres west of the study area across the Williams River. As there will be no excavation of Deptford archaeological site, there will be no impact upon it.

2.3.1.3 State Environmental Planning Policy (Transport and Infrastructure) 2021

Section 5.31 in Part 5.5 of the *State Environmental Planning Policy (SEPP) (Transport and Infrastructure) 2021* (SEPP (T&I)) provides that before granting consent to any development on land on which a heritage item is located or land in the vicinity such land, a consent authority may require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item.⁸

SEPP (T&I) does not identify heritage items but defines 'local heritage item' as meaning, among other things, 'a place, building, work, relic, tree, archaeological site or Aboriginal object that is identified as a heritage item (or by a similar description) in a local or regional environmental plan'. As SEPP (T&I) is not inconsistent with the local environmental plans, the status of those heritage items listed in the Port Stephens LEP 2013 and the Dungog LEP 2014 that are identified in the preceding sections stands.

This SoHI assesses the extent to which the carrying out of the proposed development would affect the heritage significance of those items.

2.3.2 **Development Control Plans**

2.3.2.1 Application of Development Control Plans

Section 5.5 of the EP&A Act provides that a determining authority (here Council) has a duty to consider environmental impact for the purpose of attaining the objects of the EP&A Act. The E&A Act includes as an object the promotion of the sustainable management of built and cultural heritage. The duty includes the examination and taking into account to the fullest extent possible all matters affecting or likely to affect the environment. While it is not known whether the controls of the relevant DCPs apply to assessment of the proposed development according to law, they are discussed below so that the effects are examined to the fullest possible extent.

⁸ (NSW Legislation 2021)



2.3.2.2 Port Stephens Development Control Plan 2023

The *Port Stephens Development Control Plan 2023* (PSDCP) outlines-built form controls to guide development. The PSDCP 2023 supplements the provisions of the Port Stephens LEP 2013.

The PSDCP 2023 mandates that a heritage impact statement is provided with the development application for development that is likely to impact the heritage significance of a heritage item. This statement must demonstrate how the proposed development conserves and mitigates for the protection of the identified heritage significance. Highlighted is the importance of protecting the setting of the heritage item, removing alterations and additions that are unsympathetic to the heritage significance of the heritage item, and using materials, fittings and finishes that are appropriate with the stylistic period of the heritage item. Whilst these controls seem to be written with the intention of protecting built heritage, they may also apply to general items of heritage significance.

The PSDCP 2023 also mandates that a Council issued tree permit is required for any removal or pruning of a tree or other vegetation that is part of a heritage item. Furthermore, a Council issued development consent is required for any removal or pruning of a tree or other vegetation that forms part of a heritage item which the Council is not satisfied is of a minor nature or is for the maintenance of that item, area, object or place and will not adversely affect the significance of that item, area, object or place.

2.3.2.3 Dungog Development Control Plan 2014

The *Dungog Development Control Plan 2014* (DDCP) controls developments that may impact the heritage significance of items I17 and I150 within the Dungog LGA. This document was consulted as the heritage significance of the visual catchment or setting of these heritage items may be considered as being impacted by development within the study area, given their proximity to the study area and the local landscape. The DDCP 2014 references the Burra Charter in that conservation requires the retention of an appropriate visual setting and other relationships that contribute to the cultural significance of the place. New construction, demolition, intrusions, or other changes which would adversely affect the setting or relationships are not appropriate.

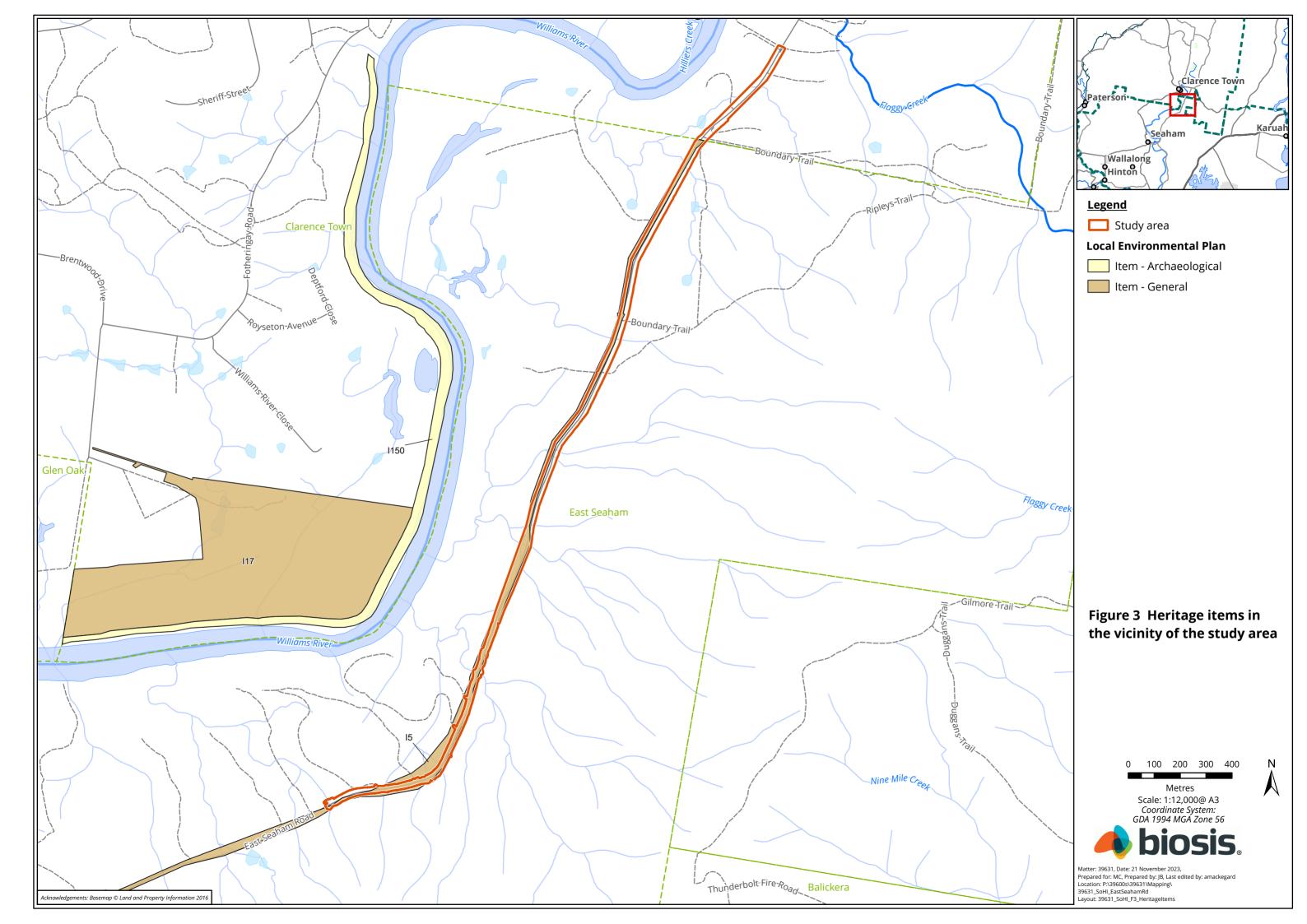
2.4 Summary of heritage listings

A summary of heritage listings within and in the vicinity of the study area is presented in Table 1 and Figure 3.



Table 1 Summary of heritage listings within and adjacent to the study area

Site number	Site name	Address / Property description	Type of Listing	Instrument	Significance
15	Road Reserves	East Seaham Road and road reserves, East Seaham	General heritage Item	Port Stephens LEP 2013	Local
I17	Homestead, "Fotheringay"	221 Fotheringay Road, Fotheringay, Lot 3, DP 1221980	General heritage Item	Dungog LEP 2014	Local
I150	Marshall & Lowe "Deptford" shipyard site, Fortheringaye	Crown reserve (No street frontage), Clarence Town, Lot 7303, DP 1132982	Archaeological site	Dungog LEP 2014	Local





3 Historical context

Historical research has been undertaken to identify the land use history of the study area, to isolate key phases in its history and to identify the location of any built heritage or archaeological resources which may be associated with the study area. The historical research places the history of the study area into the broader context of Port Stephens.

3.1 Topography and resources

The study area is located within the North Coast Bioregion. The eastern extent of this bioregion is characterised by a coastal sand barrier, which transitions to low foothills and ranges, ending with steep slopes and gorges associated with the Great Escarpment in the west.⁹ The study area itself is positioned at the base of foot slopes east of Wallaroo National Park and west of Williams River, though the landforms associated with both have been modified via grading for the creation of East Seaham Road.

The study area is overlapping several geological units made complex due to the association with a dense network of hydrological structures stemming from Williams River. Alluvial valley deposits overlay the Newtown Formation, which encompasses the study area's northern extent and approximately 200 metres of the southern extent, and the Vacy Ignimbrite Member which occupies the southern length of the study area. A small portion of the Wallaringa Formation encompasses the northern most 150 metres of the study area. Raw materials suitable for artefact manufacture may have been acquired from gravels and cobbles transported within alluvial deposits and quarries from tuff deposits located within the Newtown Formations. The Vacy Ignimbrite Member, being associated with very coarse-grained materials, is not suitably associated with the site types commonly associated with the Port Stephens regions. The Glen William and Ten Mile Road soil landscapes are present within the study area. The study area.

The wider Port Stephens region includes distinct ecological zones, including open forest and open woodland, with riparian vegetation extending along many of the watercourses. Vegetation species associated with the Ten Mile Road soils landscape include spotted gum *Eucalyptus maculata*, white mahogany *E. acmenoides*, white stringybark *E. globoidea*, and grey ironbark *E. paniculata*. The Glen William landscape is associated with spotted gum *Eucalyptus maculata*, grey ironbark *E. paniculata*, and broad-leaved ironbark *E. fibrosa*. Due to the level of clearing that has been undertaken, mature vegetation which may hold evidence for resource gathering is unlikely to be present within the study area.¹¹

As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. Animal species that have been commonly observed with the study area and the surrounds include the Red-necked Wallaby *Notamacropus rufogriseus*, Common Brushtail Possum *Trichosurus vulpecula*, Swamp Wallaby *Wallabia bicolor*, Koala *Phascolarctos cinereus* and Short Beaked Echidna *Tachyglossus aculeatus*.¹²

⁹ (NSW Department of Planning and Environment 2016)

¹⁰ (NSW Department of Planning and Environment 2016)

¹¹ (Atlas of Living Australia 2023)

¹² (Attenbrow 2002) (Atlas of Living Australia 2023)



3.2 Aboriginal past

It has been argued that Aboriginal people have occupied the Hunter Valley for at least 20,000 years.¹³ East Seaham and Clarence Town are part of the Port Stephens area which was traditionally inhabited by the Worimi people. Worimi territory extended from north of the Hunter River to Forster near Cape Hawke, along the coastline, encompassing Port Stephens and stretching inland close to Gresford, and as far south as Maitland.¹⁴ The Worimi were considered to be hunter-gatherers and it has been suggested that the territories of the Worimi were established to include a variety of habitats rich in raw materials and food resources. Trade, intermarriage, and the sharing of ceremonial places were central to the Worimi nation's interaction with neighbouring tribal groups, such as the Awabakal, Kamilaroi, Gringai, Wanaruah, and other tribes of the region.¹⁵ Little is known about the size of the population of the Worimi tribe within Port Stephens before European settlement, however it is agreed that numbers declined rapidly after contact.¹⁶

3.3 Port Stephens - historical development

3.3.1 Exploration (1770 to 1825)

The first instance of European contact with Port Stephens took place in 1770, when Captain James Cook and the *Endeavour* passed the harbour on 11 May, naming it for Sir Phillip Stephens, Secretary to the Admiralty.¹⁷ Around two years after the arrival of the First Fleet in 1788, a group of escaped convicts are believed to have entered the region, including William and Mary Bryant; it is understood that they discovered coal near Newcastle.¹⁸ The convict ship *Salamander* entered the harbour in late 1791, of which a sketch was made of some of its waterways.¹⁹ In February 1795, Surveyor-General Charles Grimes visited Port Stephens on the orders of Lieutenant-Governor Paterson; Grimes reported that the land was low and sandy, and did not recommend further visits.²⁰ In August, the HMAS *Providence* took shelter in the harbour, where the captain, W.R. Broughton, encountered four surviving convicts who had escaped from Parramatta and were living with the Worimi people.²¹ The following year, a fishing boat was driven ashore nearby.²²

Further visits were made to the Port Stephens area in the first few decades of the 19th century. In December 1811 and January 1812, Governor Lachlan Macquarie and his wife inspected Port Stephens as part of a plan to establish a settlement north of Newcastle. Macquarie noted that while the port was 'Good, safe, and capacious', the land was not inviting to settlement and farming. As a result, no government settlement was made. John Oxley and a team including Surgeon John Morris and Surveyor Evans surveyed the coastline from Port Macquarie to Newcastle as part of his 1818 expedition to western and northern NSW. Hy 1823 a successful cedar getting industry had developed within the region, but the area became over-exploited and

¹³ Koetigg 1987

¹⁴ Tindale 1974

¹⁵ Sokoloffnov 1977

¹⁶ Dean-Jones 1990

¹⁷ Endeavour: Captain Cook's Journal 1768-71, cited by Great Lakes Council et al. 2007, 14

¹⁸ Currey 1966; Engel et. al 2000, 8, cited by Great Lakes Council et al. 2007, 14

¹⁹ Port Stephens Council n.d.

²⁰ Dowd 1966; Engel *et. al* 2000, 8, cited by Great Lakes Council et al. 2007, 14; Suters Architects 2007, 23; Port Stephens Council n.d.

²¹ Port Stephens Council n.d.

²² Clive Lucas, Stapleton & Partners Pty Ltd 2013, 24

²³ Port Stephens Council n.d.

²⁴ Clive Lucas, Stapleton & Partners Pty Ltd 2013, 24; Great Lakes Council et al. 2007, 14; Port Stephens Council n.d.



resources dwindled within several years.²⁵ However, once the Australian Agricultural Company were offered a land grant at Port Stephens in 1825, the area began to be more fully explored.²⁶

3.3.2 Developments to Port Stephens during the 1800s

The Williams River flows through the Hunter Region and provided fertile banks upon which many small agricultural communities were established in the early 1800s. The river also offered a prolific route of transport for trade and thoroughfare. Villages along the river were subject to intense development, particularly with regards to the timber, soap, leather, flower, and beer industries. Timber in particular became key to the region's economy; beginning as early as 1804, timber clearing was undertaken for preparing land for settlement and agriculture, commercial sale, construction purposes, and fuel.²⁷

The Australian Agricultural Company had been established in 1824 as part of a collective whose purpose was to improve waste lands for agriculture and farming, but mainly for the production of wool. The Macarthur family initially held most of the committee positions, who advised the company directors on local conditions and matters within the colony. Surveyor-General John Oxley was consulted on the most appropriate location for a land grant; after rejecting the Liverpool Plains and head of the Hastings River, the Company settled on Port Stephens. By 1828, 23 pastoral stations had been established in Port Stephens, all connected by roadways, with multiple farms and gardens to provide food for a population of almost 600. In 1833, half of the Port Stephens grant was exchanged for land on the Peel River and at Warrah. While the agricultural endeavours of the Company failed at Port Stephens, settlers were encouraged to settle on the Port Stephens Estate.²⁸

The County of Gloucester was officially marked off in 1829. Three more prominent towns had emerged to significance along the Williams River by the 1820s and 1830s, largely driven by the timber industry: Clarence Town; Raymond Terrace; and Seaham.²⁹ Clarence Town, which sits across from the study area, saw economic activity in the form of cedar cutting by convict labourers as early as 1801, and is thought to be the seventh oldest colonial settlement in Australia.³⁰ The local region, which was being progressively cleared, proved to be increasingly prolific as grounds for dairy farming, grazing, and agriculture. Infrastructure in the region developed, namely post offices, roads, and boating yards.³¹ Grants of land in the region were allocated to new and existing settlers, closely tied to how wealthy the recipient was, or if they were retired from military or naval service. An idea of the contemporary landscape is depicted in Photo 1.

²⁵ Engel et. al 2000, 10, cited by Great Lakes Council et al. 2007, 14

²⁶ Great Lakes Council et al. 2007, 14

²⁷ (Hunter & Port Stephens Council 2001)

²⁸ Turner et al. 1980, 10–20

²⁹ (Hunter & Port Stephens Council 2001, Museums and Galleries of NSW 2023)

^{30 (}Dungog Shire Council 2023)

³¹ (Dungog Shire Council 2023)





Photo 1 Watercolour from between 1857 and 1888 depicting Raymond Terrace with the Hunter and Williams Rivers (Source: Lloyd 1857)

Local infrastructure is not especially well-documented. While many notices and articles referencing roads are abundant in contemporary newspapers, the terminology used to identify them are not definitive. East Seaham Road was officially named in 1990, previously known as New Line Road (which retains a southern portion named as such), and a more general 'East Seaham Road'.³² Before local roads were definitively named, they were identified by the two locations they connect and contemporary sources can therefore be ambiguous. An article discussing 'the road from Raymond Terrace to Clarence Town,' for example, could be referencing several such roads. The first in text reference to a road more definitively identifiable as East Seaham Road comes from 1918, and it was likely the road referred to as 'East Seaham Road' that appears in numerous articles throughout the rest of the 20th century.³³ Despite this, the physical 'East Seaham Road' can be seen on maps dated significantly earlier.

3.3.3 Early documentation of the study area

The local orientation of the road relevant to the study area appears to have changed several times over the course of its history. The earliest depiction of the study area found was within a map of proposed roads between Dungog and Maitland by S. Perry from 1839 (Photo 2).³⁴ This map depicts East Seaham Road in dark red, noted by the cartographer to represent roads that have already been proclaimed or are about to be proclaimed. The intersecting yellow road is noted to depict already existing tracks. This yellow road roughly correlates with modern day Limeburners Creek Road, though its intersection point with the Williams River has

³² (Government Gazette of the State of New South Wales 1990, pp. 3360, Government Gazette of the State of New South Wales 1982, pp. 1253)

³³ (Port Stephens Shire Council 1918, pp. 3)

^{34 (}Perry 1839)



likely been modified. Originally, the main crossing to Clarence Town crossing the Williams River was a ford that would consistently flood with the river and become unusable.³⁵ The main crossing was rerouted to a bridge towards the northeast of town constructed in 1879.³⁶ As multiple early maps show East Seaham Road reaching the southeast corner of Clarence Town, it is assumed that this was the location of the original ford crossing (Photo 2, Photo 3, and Photo 4).

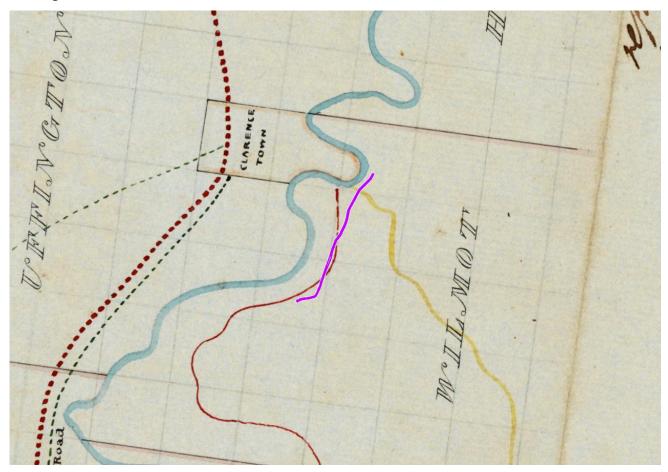


Photo 2 Georeferenced map of the proposed roads between Dungog and Maitland from 1839; the study area is indicated in purple, the original alignment of East Seaham Road is in red (Source: Perry 1839)

The Church and Schools Corporation was established in 1825 under the Church of England for the purposes of amassing the revenue needed to provide schools, churches, and livelihoods for their clergy and teaching staff. A seventh of the Crown lands in each NSW county were granted to the Corporation to support this cause. Between its inception in 1825 and its dissolution in 1833, the Church and Schools Corporation was

³⁵ (CLARENCE TOWN. 1879, pp. 39)

³⁶ (The Government Gazette. 1879, pp. 32)



awarded a large grant of land that stretched along the east side of the Williams River included the study area (Photo 3 and Photo 4). 37

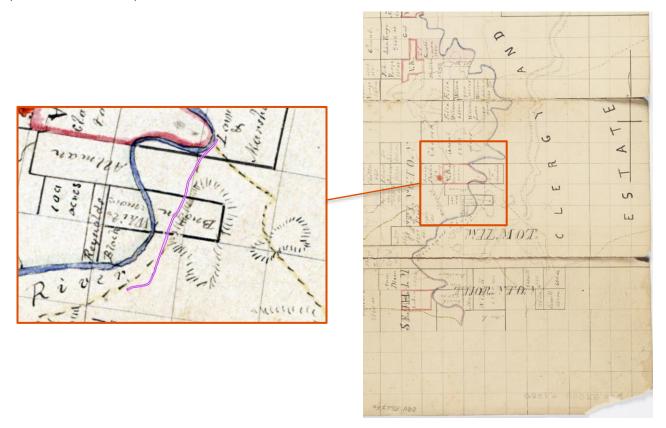


Photo 3 Georeferenced historic map from the mid- to late-1800s[?] of the Williams River area showing the Schools and Church Corporation Grant (titled Clergy and School Estate) spanning the east of the river; a magnified portion, indicated with an orange border, shows a road on the east side of the Williams River running north to south from Clarence Town, relatively consistent with the study area (Source: Australian Agricultural Company Grant 1800)

³⁷ (Perumal, Wrathall and Murphy Pty Ltd Environmental Planners. 1988)



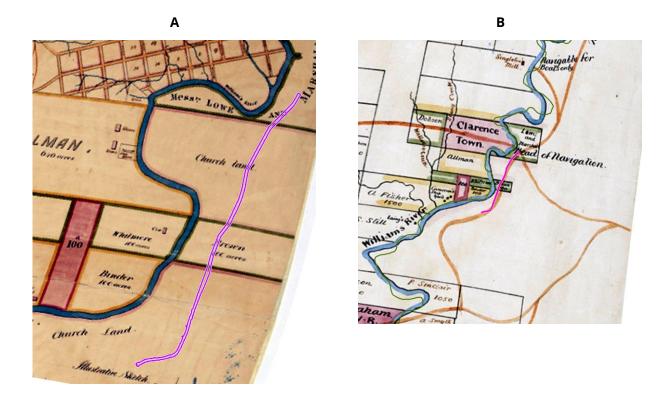


Photo 4 Two georeferenced images taken from a historical map from 1857[?]; image A portrays detail of the study area (outlined in purple) without the road but with the Schools and Church lands noted along with Brown's 100 acres, while image B shows the study area (outlined in pink) in relation to the wider locality, and a notable lack of grants compared to the west bank of the Williams River (Source: Wells 1857)

These historical maps also show that the study area crossed lands owned by Lowe and Marshall within the Dungog LGA at its northern aspect, and through a 100-acre property owned by 'Brown'.³⁸

In 1860, a government notice announced the opening and making of a road from Clarencetown to Raymond Terrace, and to feature a branch road to Seaham. Despite objections, the road was declared, with some local residents intending to claim compensation, presumable due to it transecting their properties. In 1863, the road had been formally marked and was open for public use.³⁹

3.3.4 The study area throughout the 20th century

A map from 1904 demonstrates the changes to the landscape of the study area during the late half of the 19th century and into the 20th century. The map shows that East Seaham Road has extended to meet Limeburners Creek Road, which would then be the primary access route to Clarence Town across the new bridge. The previous road leading to the ford is still present. More grants have appeared and the study area passes through several. The stretch of East Seaham Road within the study area is not consistently classed as a public road, according to these maps. Within the lots numbered 9 and 10 (owned by H. G. Douglas) and 17 (owned by Mary. A, Hackett) of the 1906 map (Photo 5), the road is not depicted as public. By 1914 only the road within H. G. Douglas' properties was not considered public (Photo 6).

^{38 (}RESERVES FROM OCCUPATION UNDER MINER'S RIGHT OR BUSINESS LICENSE. 1898, pp. 34)

³⁹ (Heritage NSW n.d.)



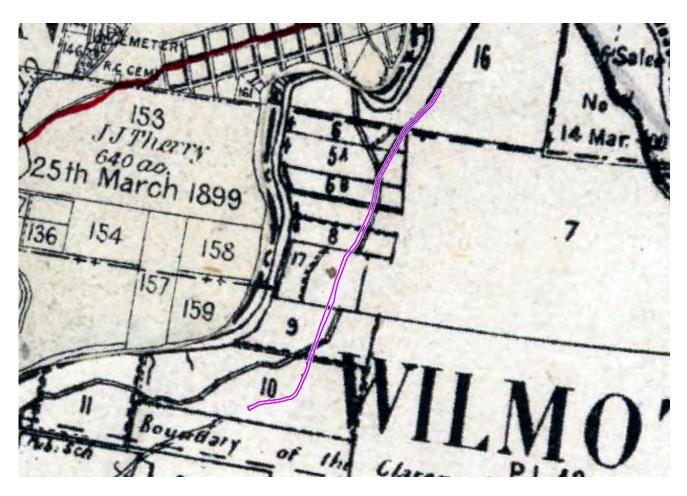


Photo 5 Georeferenced historic map from 1906 showing East Seaham Road with the study area outlined in purple; East Seaham appears to be broken within the lots numbered 9 and 10 as it was not public road within these properties (Source: New South Wales Department of Lands 1906)



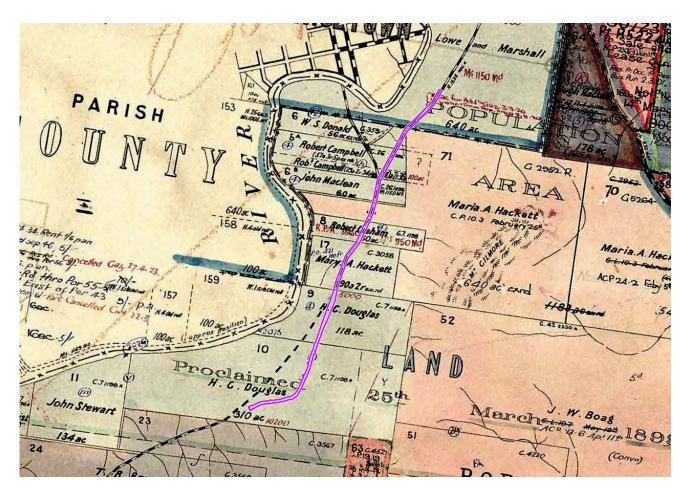


Photo 6 Georeferenced historic parish map from 1914 with the study area in purple (Source: Department of Lands 1914)

As the road leading west to Clarence Town is still marked on these maps as public road, it is assumed that the old ford crossing is still partially in use. The east bank of the Williams River was still largely used for dairying and grazing, agriculture, and likely as a local source of timber for the various timber culverts along 'East Seaham Road' mentioned in local newspapers during the early-20th century. A 1909 photograph looking over the study area provides an idea of how this landscaped looked (Photo 7). These riverside farms supported a relatively small population but East Seaham Road likely received a reasonable degree of traffic – the region was well placed along the route between Raymond Terrace and Dungog, as well as between Maitland and Port Stephens.

The land further inland from the river to the east of East Seaham Road is now largely State Forest, described in one report as 'mountainous and inhospitable'. The Wallaroo State Forest was declared in the early 1920s in an effort by the Crown to regulate and bolster forestry as a means of combating unemployment. As this regulation continued, the area dedicated to State forests expanded. Wallaroo was a source of high-quality hardwood employing approximately 100 individuals by the late 1930s.⁴²

⁴⁰ (Advertising 1908, pp. 5, 'Advertising', 1907, pp. 3850, Hunter & Port Stephens Council 2001, pp. 87)

⁴¹ (Hunter & Port Stephens Council 2001, pp. 77)

⁴² (Hunter & Port Stephens Council 2001, pp. 97)





Photo 7 1909 photograph looking towards Clarence Town across the Williams River from Mount Gillmore; this view corridor likely captures the study area near the tree line on the closer bank of the Williams River (Source: State Library New South Wales 1909)

Various improvements and works were completed upon the East Seaham Road throughout the 20th century, including building culverts, gravelling clay sections, and rolling.⁴³ In 1953 a notice was published discussing the prospects of using the timber along East Seaham Road, though it was thought risky due to the numerous fences in the area that would be impacted by the falling trees.⁴⁴ According to the Conservation Management Plan for Port Stephens, the Hackett family based in East Seaham cut timber as part of their industrial endeavours building steamboats and farming, and a grant to a Maria Hackett is visible on the 1914 parish map (Photo 6).

East Seaham Road is valued by local residents due to it providing evidence of historic culverts, native vegetation, and original alignments. The historic development of vegetation within the study area is observable with historic aerial imagery. The earliest available aerial image is from 1958 (Photo 8). This image shows that vegetation is thickest in the southern portion of the study area. Trees sporadically lining the road along East Seaham Road within the study area to various degrees of density, though the portion within

⁴³ (Dungog Chronicle: Durham and Gloucester Advertiser 1926, pp. 6) (Newcastle Morning Herald and Miners' Advocate 1949, pp. 4, 'Seaham Road Improvement', 1936, pp. 17)

⁴⁴ TIMBER ON EAST SEAHAM ROAD 1953, pp. 3

⁴⁵ (Hunter & Port Stephens Council 2001, pp. 139)



Dungog LGA is the most uniform. Trees are sparse on the west side of the most northern portion of the study area within the Port Stephens LGA. Another track can be seen on the southeast aspect of the study area running parallel to East Seaham Road. On the west side of the study area on the bank of the Williams River, some rural residential buildings are seen. An old track can be seen leading west from the northern aspect of the study area within the Port Stephens LGA. This may be the old road that once led to the access ford for Clarence Town. In this aerial, agricultural fields span the bank nearer Clarence Town.



Photo 8 Georeferenced historic aerial image from 1958 with the study area outlined in purple (Source: NSW Spatial Services 2023)

The historical aerial from 1974 (Photo 9) shows that the trees may have been thinned or even partially cleared in the northern portion of the study area within the Dungog LGA. At the northern aspect of the study area within the Port Stephens LGA as trees have been completely cleared along the eastern aspect and may have been thinned along the west. This may have been to clear the road alignment, or because the road alignment has been widened and trees were cleared to account for the wider road. Tree growth has thickened along the western side of the study area above where the old ford track joins to East Seaham Road. The alignment of where this track meets the study area has shifted slightly. Tree growth has also thickened along the western boundary of the study area beneath this junction down to where it is joined by Ripley's Track. This growth



continues further south from this junction to before the west-leading bend in East Seaham Road. Here along the western side of the study area both within and outside of its curtilages, there has been significant tree clearing. This channel of cleared trees may have been for the establishment of power lines that can also be seen within the forested area on the east side of the study area in modern Wallaroo State Forest.



Photo 9 Georeferenced historic aerial image from 1974 with the study area outlined in orange (Source: NSW Spatial Services 2023)

A historical aerial from 1984 shows further changes to the study area (Photo 10). In the Dungog LGA portion to the north, the tree line has moved closer to the road from the east and the trees along the western side of East Seaham Road have grown denser. South to this within the Port Stephens LGA, whilst the forest to the east of the study area has become thicker, there has been tree clearing on the east side of East Seaham Road running south to approximately where it runs closest to the powerline channel in Wallaroo State Forest. Between this intersection and the bend in East Seaham Road leading west the trees have thickened in the study area enough to obscure direct view of the road from the aerial perspective. At the southern end of the study area along the bank of the Williams River, the vegetation to the west has grown significantly, though



within the study area this growth appears only minor. During the mid- to late-1980s, Port Stephens Council made upgrades to parts of East Seaham Road, notably sealing short sections at either end.⁴⁶



Photo 10 Georeferenced historic aerial image from 1984 with the study area outlined in purple (Source: NSW Spatial Services 2023)

The historical aerial image from 2001 (Photo 11) shows that throughout the study area, the vegetation has grown much denser. The channel cleared along the eastern side of the study area to where it runs parallel to the powerline channel has been maintained. Tree growth along both sides of East Seaham Road has increased significantly within the Dungog LGA portion, though particularly so along its western side. The trees have also grown much denser along the entire western side of the road within the entire portion of the study area within the Port Stephens LGA. When compared with the previous aerials, much smaller portions of the road surface within the study area are visible aerially because of this tree growth. Part of East Seaham Road (including the study area) was listed in 2013 as an item of local heritage significance on the Port Stephens LEP 2013 for its historical, associative, aesthetic, social and rarity values. Further upgrades were made to East

⁴⁶ (Heritage NSW n.d.)



Seaham Road in 2015 by Port Stephens Council; this involved adding material to the road surface within the existing road alignment.⁴⁷



Photo 11 Georeferenced historic aerial image from 2001 with the study area outlined in purple (Source: NSW Spatial Services 2023)

3.4 Chronology of the study area

Based upon the historical research presented it is possible to summarise the chronology of the study area, this is presented in Table 2.

⁴⁷ (Heritage NSW n.d.)



Table 2 Chronological development of the study area

Reference	Development	Date
Section 3.3.2	East Seaham Road within study area likely constructed.	1801-1820s
Section 3.3.3	Land within study area likely granted to the Church and Schools Corporation.	1825-1833
Photo 2	First documentation of East Seaham Road within the study area.	1839
Photo 3	Historic map of the Williams River area shows the variation of the curtilages of East Seaham Road in early historical documents.	Mid to late 1800s[?]
Photo 4	Historic map shows further possible variation in the early curtilages of East Seaham Road.	1857[?]
Section 3.3.3	Old ford crossing to Clarence Town replaced by new Bridge off Limeburners Creek Road, likely impacting the use and curtilages of East Seaham Road.	1879
Photo 5	The curtilages of East Seaham Road appear to have changed to suit the new access route to Clarence Town. Land throughout the study area has been packaged in various grants, but the road is not consistently considered public.	1904
Photo 7	Historic photograph shows that the landscape around the study area is largely rural agricultural.	1909
Photo 6	The northern portion of the study area within the Port Stephens LGA has been divided into smaller properties. The non-public stretches of East Seaham Road within the study area are limited to those within H.G. Douglas's properties. The alignment of the road does not yet match its modern appearance.	1914
Section 3.3.4	Various roadworks carried out within the study area including culvert construction, gravelling, and rolling.	1910s-1970s
Photo 8	Historical aerial imagery shows the alignment of East Seaham Road and surrounding vegetation within the study area. Vegetation is thickest in the southern portion of the study area	1958
Photo 9	Historical aerial imagery shows changes to the vegetation within the study area.	1974
Photo 10	Historical aerial imagery shows changes to the vegetation within the study area.	1984
Photo 11	Historical aerial imagery shows changes to the vegetation within the study area.	2001
-	Homestead, "Fotheringay" listed as an item of local heritage significance.	2006
Section 3.3.4	East Seaham Road listed as an item of local heritage significance.	2013
-	Marshall & Lowe "Deptford" shipyard site, Fotheringaye.	2014



4 Physical inspection

A physical inspection of the study area was undertaken on 13 November 2023, attended by Molly Crissell (Heritage Consultant, Biosis). The principal aims of the survey were to identify heritage values associated with the study area. This included any heritage items, which can be buildings, structures, places, relics or other works of historical, aesthetic, social, technical/research or natural heritage significance. 'Places' include conservation areas, sites, precincts, gardens, landscapes and areas of archaeological potential.

The inspection was carried out on foot on both sides of the road. While the inspection generally covered the whole length of the heritage item by vehicle, only areas of proposed works were targeted for detailed investigation.

4.1 Site setting

The study area is located within a rural and forested landscape and is situated within East Seaham Road road reserve. The study area is adjacent to Wallaroo National Park to the east, and private properties and the Williams River to the west.



Photo 12 Views within the southern portion of the study area, facing north depicting East Seaham Road





Photo 13 Views within the southern portion, facing west towards Williams River



Photo 14 Views in the southern portion of the study area, facing south to East Seaham Road



Photo 15 South-west facing view of the southern portion of the study area, depicting East Seaham Road and the adjacent private property





Photo 16 North facing view of the Southern portion of the study area, depicting a portion of East Seaham Road which is treelined



Photo 17 South-west facing view of the southern portion of the study area, looking towards private properties in west and East Seaham Road travelling south



Photo 18 North-east facing view within the central portion of the study area depicting a rest area with access to private property driveway





Photo 19 West facing view within the central portion of the study area, depicting access to Wallaroo National Park



Photo 20 South-east facing view within the central portion of the study area depicting use of the road and undertaking unsealed road grading



Photo 21 South-west facing view within the central portion of the study area, depicting rest area of vehicles undertaking unsealed road grading





Photo 22 North facing view within the central portion of the study area, depicting densely vegetated shoulders on either side of East Seaham Road



Photo 23 North facing view within the central portion of the study area depicting densely vegetated shoulder to the east, and sparse tree lined shoulder to the west



Photo 24 North facing view within the northern portion of the study area, depicting clearance of vegetation to the west and densely vegetated shoulder to the west





Photo 25 North-east facing view of the northern portion of the study area, depicting grading works and densely vegetated shoulders on either side of road reserve

4.2 Landscape character assessment

The purpose of this section is to provide an analysis and description of the study area as part of a cultural landscape. The cultural landscape concept emphasises the landscape-scale of history and the connectivity between people, places and heritage items. It recognises the present landscape is the product of long-term and complex relationships between people and the environment. For the purposes of this report cultural landscapes are defined as: '... those areas which clearly represent or reflect the patterns of settlement or use of the landscape over a long time, as well as the evolution of cultural values, norms and attitudes toward the land'.⁴⁸

The study area is adjacent to the Wallaroo National Park to the east and private properties, Williams River and "Fotheringay" (Item No. I17) to the west, with East Seaham Road extending to the north and south. In the most northern portion of the study area where Wallaroo National Park ceases, private properties border East Seaham Road to the east. The entirety of the study area is comprised of roadways and associated infrastructure. East Seaham Road runs adjacent to the Williams River which is located 187 metres to the east at its closest point and 1.1 kilometres east at its furthest point.

The majority of the study area is located within a footslope landform which slopes westerly from Wallaroo National Park towards Williams River and "Fotheringay" (Item No. 117). The southern portion of the study area is located in a valley landform with the northern portion located partially within a slope landform which descends easterly towards the valley. Vegetation differs throughout the extent of the study area with the road being densely vegetated on the eastern portion due to Wallaroo National Park. Vegetation is sparse in areas on the eastern boundary of East Seaham Road, mostly due to driveways and private properties which have contributed to vegetation clearance.

4.2.1 Character areas

The study area consists of a single character area, which comprises the road reserve of East Seaham Road. However, the surrounding contexts includes the undulating valley with floodplains and grazing areas for

⁴⁸ (Context, Urban Initiatives, & Doyle 2002)



cattle in the western portion towards "Fotheringay" (Item No. 117). Whereas, to the east there is dense vegetation which inclines upward towards the Wallaroo National Park.



Photo 26 West facing view towards
Williams River and
"Fotheringay" depicting
grazing areas and
undulating landform



Photo 27 West facing view depicting access to Wallaroo National Park displaying dense vegetation





Photo 28 South facing view of East Seaham Road, displaying grazing area

4.2.2 Views to and from the study area

It is important to analyse and describe views to and from components within a cultural landscape to help understand how it is experienced and to understand the nature of an evolving landscape. This enables a greater understanding of what aspects of the landscape need to be conserved and protected. Significant views to, from and within the study area are shown below.



Photo 29 West facing view on western shoulder of East Seaham Road depicting track which access the power line route, with Wallaroo National Park in background





Photo 30 East facing view on eastern shoulder of East Seaham Road, depicting private property which leads to Williams River



Photo 31 North facing view of the northern portion of the study area depicting East Seaham Road with signage on the eastern shoulder for 'Ripley's Trail' with access to Wallaroo Nature Reserve to the west



Photo 32 East facing view within the northern portion of the study area, depicting private properties which lead towards Williams River



4.3 Built fabric assessment

The majority of the built fabric within the study area is comprised of the infrastructure associated with the alignment of East Seaham Road. The study area features large portions of gravel road, with the northern portion consisting of some portions containing sealed road. Throughout the study area there are various signs related to the road and LGAs.

Three culverts were located during the inspection; however, they were concrete and not stone as described in the heritage listing. Stone culverts as referred to in the listing, if they remain, may be in the southernmost portion of East Seaham Road outside the area of the proposed works. Alternatively, they may be in the area of proposed works but obscured by vegetation, sediment or similar.

The Environmental Constraints assessment conducted for the study area in 2016⁴⁹ identified eight culverts within that assessment area. While those were considered in relation to their use by local fauna, their materials, size, and assumed age was described and is extracted in Table 3. It should be noted that all the culverts identified by Eco Logical were concrete, suggesting some modification, loss, replacement, or obscuration/concealment of the earlier reported stone ones.

Table 3 Description of culverts identified by Eco Logical Australia (Source: (Eco Logical Australia 2016 Table 2)

Map reference	Type of culvert	Comments
17	2 x 500mm diameter concrete pipes	Fairly old pipes
33	2 x 500mm diameter concrete pipes	Fairly old pipes
36	1 x 500mm diameter concrete pipe	Newer pipe
39	3 x 500mm diameter concrete pipes	New pipes
40	2 x 500mm diameter concrete pipes	Older pipes
42	1 x 500mm diameter concrete pipe	Newer pipe
48	2 x 500 mm diam. concrete pipes	Older pipes
50	2 x 500 mm diam. concrete pipes	Older pipes

⁴⁹ (Eco Logical Australia 2016)



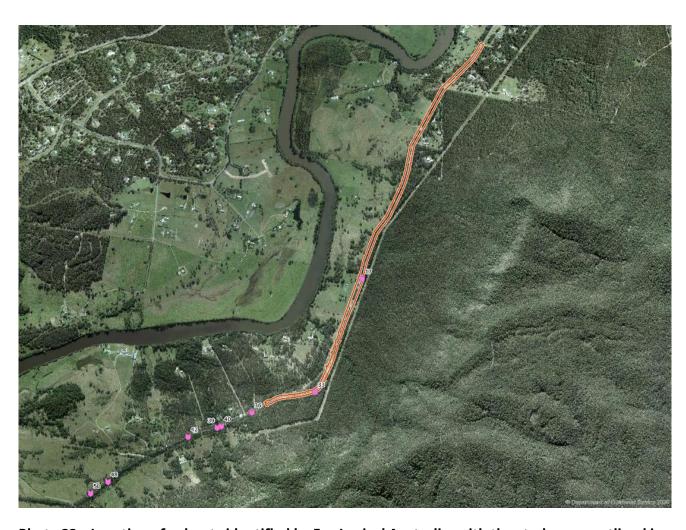


Photo 33 Location of culverts identified by Eco Logical Australia, with the study area outlined in red (Source: (Eco Logical Australia 2016 Figure 2)



Photo 34 South facing view of East Seaham Road in the central portion depicting unsealed road grading





Photo 35 North facing view of East Seaham Road in the northern portion of the study area depicting gravel to sealed road



Photo 36 South-east facing view in the northern portion of the study area depicting triple pipe cement culvert



Photo 37 South-west facing view in the northern portion of the study area depicting double pipe square culvert





Photo 38 West facing view in the northern portion of the study area depicting signage for Shire of Port Stephens and Shire of Dungog



Photo 39 South facing view in the northern portion of the study area depicting signage for Port Stephens LGA



5 Archaeological assessment

The potential archaeological resource relates to the predicted level of preservation of archaeological resources within the study area. Archaeological potential is influenced by the geographical and topographical location, the level of development, subsequent impacts, levels of onsite fill and the factors influencing preservation such as soil type. An assessment of archaeological potential has been derived from the historical analysis undertaken during the preparation of this report.

5.1 Archaeological resource

This section discusses the archaeological resource within the study area. The purpose of the analysis is to outline what archaeological deposits or structures are likely to be present within the study area and how these relate to the history of land use associated with the study area.

The historical context presented in this report indicates that parts of the study area have been utilised for transportation purposes as a roadway since 1839, and most of its current alignment since 1857. It is located within East Seaham which is bordered by the Williams River to the west and Wallaroo National Park to the east. The study area was originally utilised as part of a stock route as well as transportation for people throughout the Port Stephens LGA. The construction and establishment of the formal road could be archaeologically represented through cut and fill deposits for creating level road, compacted soils, stone, gravel, road surface layers and trenches for other infrastructure such as drainage. It is possible that the road was constructed using the McAdams method, based on observations from the physical inspection (Photo 40). However, it could well be a simple dirt road which has been built up with a variety of materials and graded over time.

Stone culverts are also noted in the heritage inventory sheet for the item. However, during the physical inspection only concrete culverts were observed. It is possible that the stone culverts are located in another part of the item outside of the study area. Alternatively, if any stone culverts were constructed within the study area, they may have been modified or replaced with more recent concrete culverts. Archaeological resources associated with these culverts would include a cut for the structure, the stone or concrete culvert structure, and backfill deposit.



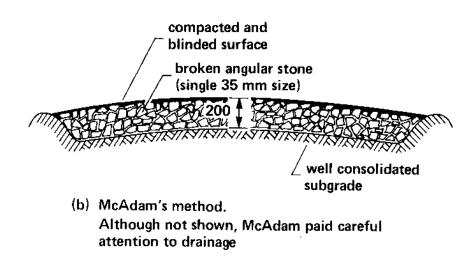


Photo 40 McAdam's method form of early road construction (Source: Holland & Lay 2001, pp. 348)

5.2 Integrity of sub-surface deposits

Sub-surface deposits can be disturbed or damaged by later development or taphonomic processes. Upgrade works were undertaken in the mid- to late-1980s, where by parts of East Seaham Road was upgraded from a gravel road to being sealed in short sections at either end of the road; at least one of these areas was observed during the physical inspection. Further upgrade works were undertaken in 2015 which involved adding to the road surface within the existing road alignment. A number of concrete culverts were observed during the physical inspection, and several have been identified by Eco Logical Australia in a previous assessment.⁵⁰ There is potential that these works have caused disturbance to archaeological resources within the study area.

Furthermore, the road has been in continual use since proclaimed a public road; grading occurs regularly on the gravelled portions. If the culverts located in the northern portion were updated from stone to concrete, it is likely that the deposits around the culverts were disturbed and potentially removed.

5.3 Research theme

Contextual analysis is undertaken to place the history of a particular site within relevant historical contexts in order to gauge how typical or unique the history of a particular site actually is. This is usually ascertained by gaining an understanding of the history of a site in relation to the broad historical themes characterising Australia at the time. Such themes have been established by the Australian Heritage Commission and Heritage NSW, and are outlined in synoptic form in historical themes.⁵¹

⁵⁰ (Eco Logical Australia 2016)

⁵¹ (Australian Heritage Council 2022, NSW Heritage Council 2001)



There are 38 State historical themes which have been developed for NSW, as well as six National historical themes and 30 associated sub-themes. These broader themes are usually referred to when developing sub-themes for a local area to ensure they complement the overall thematic framework for the broader region.

A review of the contextual history has identified one historical theme which relates to the occupational history of the study area. This is summarised in Table 4. A review was undertaken of the local thematic history but no local themes were presented in the document.⁵²

Table 4 Identified historical themes for the study area

Australian theme	NSW theme	Local theme
Building a Nation – Transport, Communication and infrastructure	Communication	There is no specific local theme identified within the thematic history. Activities relating to the creation and conveyance of information.
Understanding and Shaping the Land - Land, Water and resource use	Environment – cultural landscape	There is no specific local theme identified within the thematic history. Activities associated with the interactions between humans, human societies, and the shaping of their physical surroundings.
Understanding and Shaping the Land - Land, Water and resource use	Pastoralism	There is no specific local theme identified within the thematic history. Activities associated with the breeding, raising, processing and distributing of livestock for human use.
Building a Nation – Transport, Communication and infrastructure	Transport	There is no specific local theme identified within the thematic history. Activities associated with the moving of people and goods from one place to another, and systems for the provision of such movements.
Building a Nation – Transport, Communication and infrastructure	Utilities	There is no specific local theme identified within the thematic history. Activities associated with the provision of services, especially on a communal basis.

5.4 Research potential

Archaeological research potential refers to the ability of archaeological evidence to provide information about a site that could not be derived from any other source and which contributes to the archaeological significance of that site. Archaeological research potential differs from archaeological potential in that the presence of an archaeological resource (i.e. archaeological potential) does not mean that it can provide any additional information that increases our understanding of a site or the past (i.e. archaeological research potential).

The research potential of a site is also affected by the integrity of the archaeological resource within a study area. If a site is disturbed, then vital contextual information that links material evidence to a stratigraphic

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⁵² (Hunter & Port Stephens Council 2001)



sequence may be missing and it may be impossible to relate material evidence to activities on a site. This is generally held to reduce the ability of an archaeological site to answer research questions.

Assessment of the research potential of a site also relates to the level of existing documentation of a site and of the nature of the research done so far (the research framework), to produce a 'knowledge' pool to which research into archaeological remains can add. A discussion of research potential of the possible archaeology within the study area in association with the historical themes of the study area is presented in Table 5. Overall, although sub-surface deposits are likely to exist, these deposits would not be significant or have a high potential to hold relics or research potential, due to the type of archaeological resource it is and its location.

Table 5 Research potential of archaeology in relation to historical themes for the study area

Australian theme	NSW theme	Discussion
Building a Nation – Transport, Communication and infrastructure	Communication	The study area has functioned as a travel route for the Port Stephens LGA and has aided in the communication throughout the neighbouring suburbs. However, while there may be both disturbed and undisturbed archaeological material present within the study area, it is unlikely that any resources would provide further information regarding communication associated with the use of the road within these towns, villages and suburbs that cannot be ascertained from historical documentation.
Understanding and Shaping the Land – Land, Water and resource use	Environment – cultural landscape	East Seaham Road is located within a cultural landscape with the valley and grazing areas located to the west and Wallaroo National Park located to the east. While there may be both disturbed and undisturbed archaeological material associated with this function within the study area, these ephemeral resources are unlikely to provide further information regarding the surrounding landscape that cannot be ascertained from historical documentation.
Understanding and Shaping the Land – Land, Water and resource use	Pastoralism	The study area has functioned as a travel route for stock and is associated with pastoral lands which border East Seaham Road to the west. However, while there may be both disturbed and undisturbed archaeological material present within the proposal area, it is unlikely that any resources would provide further information regarding utilities associated with pastoral use within these towns, villages and suburbs that cannot be ascertained from historical documentation.
Building a Nation – Transport, Communication and infrastructure	Transport	Parts of the study area functioned as a travel route from the 1830s and then most of the current alignment from the 1850s onwards to provide a better cross-country connection throughout the Port Stephens LGA. While there may be both disturbed and undisturbed archaeological material associated with this function within the study area, these ephemeral resources are unlikely to provide further information regarding transport that cannot be ascertained from historical documentation.
Building a Nation – Transport, Communication and	Utilities	The study area is associated with the development of the East Seaham suburb within the Port Stephens LGA. The establishment of the East Seaham Road is associated with the development and populating of



Australian theme	NSW theme	Discussion
infrastructure		the Port Stephens region. However, while there may be both disturbed and undisturbed archaeological material present within the proposal area, it is unlikely that any resources would provide further information regarding utilities associated with development of these towns, villages and suburbs that cannot be ascertained from historical documentation.

5.5 Summary of archaeological potential

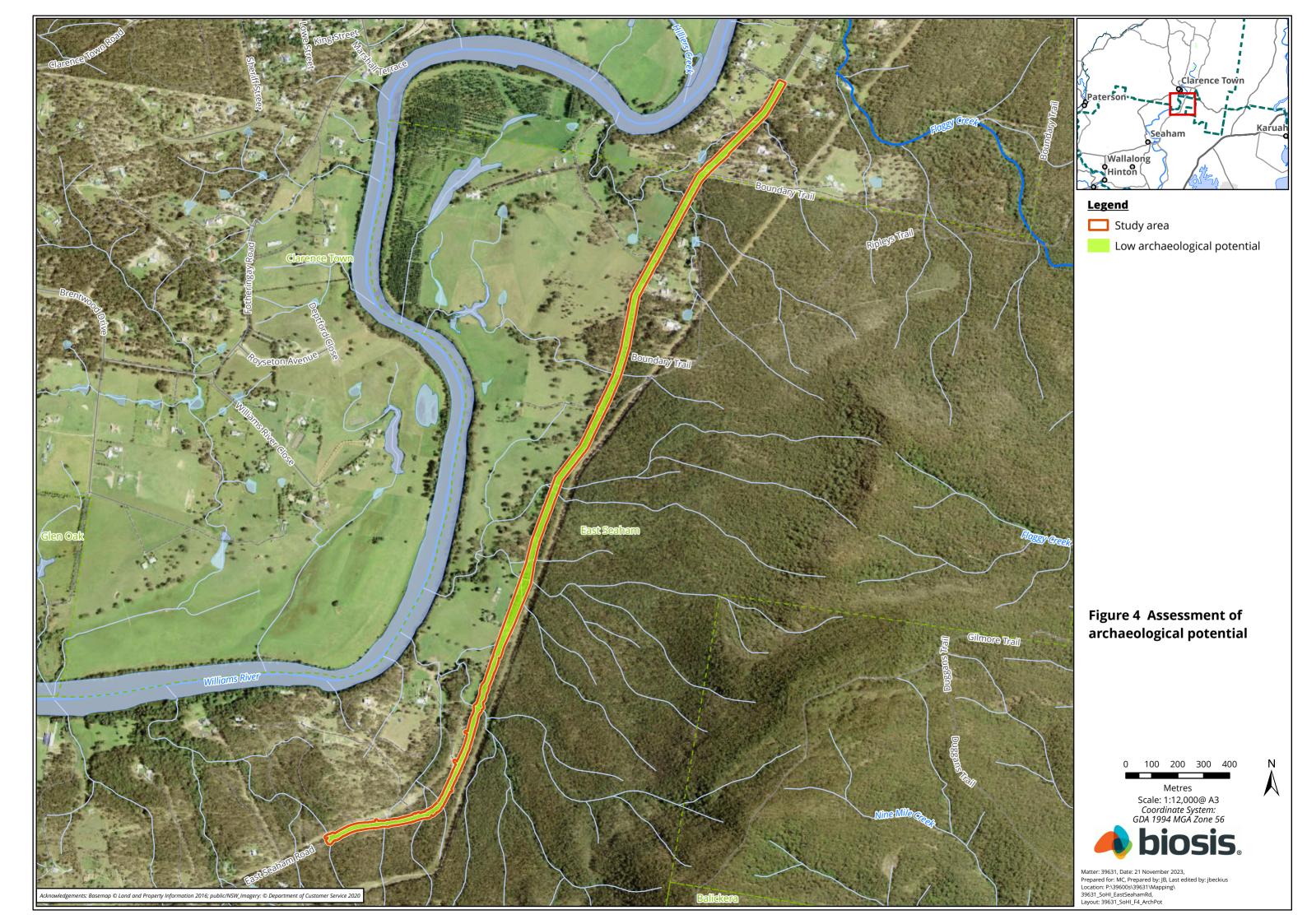
Through an analysis of the above factors a number of assumptions have been made relating to the archaeological potential of the study area, these are presented in Table 6 and Figure 4.

The assessment of archaeological potential has been divided into three categories:

- **High archaeological potential** based upon the historical context and documentary evidence presented within this report there is a high degree of certainty that archaeologically significant remains relating to this period, theme or event will occur within the study area.
- Moderate archaeological potential based upon the historical context and documentary evidence
 presented within this assessment it is probable that archaeological significant remains relating to this
 period, theme or event could be present within the study area.
- **Low archaeological potential** based upon the historical context and documentary evidence presented within this assessment it is unlikely that archaeological significant remains relating to this period, theme or event will occur within the study area.

Table 6 Assessment of archaeological potential

Description	Probable feature(s)	Possible construction date	Archaeological potential
East Seaham Road	Compacted layers of stone, gravels, soils, cut and fill deposits.	Possibly 1839 for parts, 1857-1863 for majority of alignment	Low
Culverts (stone)	Cut, culvert structure (stone), mortar, backfill deposit.	Post 1857-1863	Low
Culverts (concrete)	Cut, culvert structure (concrete), mortar, backfill deposit.	1980s, 2010s	Low





6 Confirmation of significance

6.1 Background to significance

An assessment of heritage significance encompasses a range of heritage criteria and values. The heritage values of a site or place are broadly defined as the 'aesthetic, historic, scientific or social values for past, present or future generations'. This means a place can have different levels of heritage value and significance to different groups of people.

The archaeological significance of a site is commonly assessed in terms of historical and scientific values, particularly by what a site can tell us about past lifestyles and people. There is an accepted procedure for determining the level of significance of an archaeological site.

A detailed set of criteria for assessing the State's cultural heritage was published by the (then) NSW Heritage Office. These criteria are divided into two categories: nature of significance, and comparative significance.

Heritage assessment criteria in NSW fall broadly within the four significance values outlined in the Burra Charter. The Burra Charter has been adopted by state and Commonwealth heritage agencies as the recognised document for guiding best practice for heritage practitioners in Australia. The four significance values are:

- Historical significance (evolution and association).
- Aesthetic significance (scenic/architectural qualities and creative accomplishment).
- Scientific significance (archaeological, industrial, educational, research potential and scientific significance values).
- Social significance (contemporary community esteem).

The NSW Heritage Office issued a more detailed set of assessment criteria to provide consistency with heritage agencies in other States and to avoid ambiguity and misinterpretation. These criteria are based on the Burra Charter. The following SHR criteria were gazetted following amendments to the *Heritage Act 1977* (Heritage Act) that came into effect in April 1999:

- Criterion (a) an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).
- Criterion (b) an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area).
- Criterion (c) an item is important in demonstrating the aesthetic characteristics and/or a high degree
 of creative or technical achievement in NSW (or the local area).
- Criterion (d) an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.
- Criterion (e) an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).

^{53 (}Heritage Office 2001)



- Criterion (f) an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).
- Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW's
 cultural or natural places; or cultural or natural environments; or a class of the local area's cultural or
 natural places; or cultural or natural environments.

6.1.1 Levels of heritage significance

Items, places, buildings, works, relics, movable objects or precincts can be of either local or state heritage significance, or have both local and state heritage significance. Places can have different values to different people or groups.

Local heritage items

Local heritage items are those of significance to the local government area. In other words, they contribute to the individuality and streetscape, townscape, landscape or natural character of an area and are irreplaceable parts of its environmental heritage. They may have greater value to members of the local community, who regularly engage with these places and/or consider them to be an important part of their day-to-day life and their identity. Collectively, such items reflect the socio-economic and natural history of a local area. Items of local heritage significance form an integral part of the State's environmental heritage.

State heritage items

State heritage items, places, buildings, works, relics, movable objects or precincts of state heritage significance include those items of special interest in the state context. They form an irreplaceable part of the environmental heritage of NSW and must have some connection or association with the state in its widest sense.

The following evaluation attempts to identify the cultural significance of the study area. This significance is based on the assumption that the site contains intact or partially intact archaeological deposits.

6.2 Built heritage significance

6.2.1 Evaluation of significance - Road Alignment (Port Stephens LEP 2013, Item I5)

The following evaluation of significance is taken directly from the heritage inventory sheet for the heritage item Road Alignment (Port Stephens LEP 2013, Item I5).⁵⁴ No adjustments have been made to the assessment of heritage significance for the item.

Criterion A: An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).

An early road forming links with Raymond Terrace, Seaham and Clarence Town on the eastern side of the Williams River.

^{54 (}Heritage NSW n.d.)



Criterion B: An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area).

Associated with two early local landholders: John Melbourne Ireland and John McLean.

Criteria C: An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).

A richly tree-lined rural road, high tree canopy; numerous older trees link to form a beautiful overarching, tunnel effect. This gives the road a special character.

Criterion D: An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.

A special character of this tree-lined road is highly esteemed by members of the local community.

Criterion E: An item has the potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).

[Not addressed]

Criterion F: An item possesses uncommon, rare or endangered aspects of the area's cultural or natural history (or the cultural or natural history of the local area).

There are few roads left of this type in the Port Stephens area and this is the last remaining in this local area.

Criterion G: An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places, or cultural or natural environments. (or a class of the local area's cultural or natural places, or cultural or natural environments).

[Not addressed]

6.2.1.1 Statement of significance

The following statement of significance is taken directly from the heritage inventory sheet for the heritage item Road Alignment (Port Stephens LEP 2013, Item I5).⁵⁵ No adjustments have been made to the assessment of heritage significance for the item.

East Seaham Road is valued not only for its relationship to early transport but because its alignment, vegetation and construction are qualities that represent early access roads throughout the Local Government Area. The alignment of East Seaham Road follows closely the original alignment of New Line Road in relation to the lie of adjacent properties, the proximity to the Williams River and Wallaroo Nature Reserve. A fine example of a richly tree-lined rural road with high conservation and aesthetic values.

^{55 (}Heritage NSW n.d.)



6.3 Statement of significance - nearby heritage items

6.3.1.1 Homestead "Fotheringay"

The following statement of significance is taken directly from the heritage inventory sheet for the heritage item Homestead "Fotheringay" (Dungog LEP 2014, Item 17).⁵⁶ No adjustments have been made to the assessment of heritage significance for the item.

The study site contains the potential for archaeological remains pertaining to the domestic occupation and use of Fotheringay House for a period of more than 150 years. At present, from preliminary information obtained, the study site is considered to be of potential local archaeological significance. However as the exact construction period and year of the house itself is yet to be determined, without further research and assessment, the site must also be considered as holding potential for archaeological features and remains of state significance.

Fotheringay house can be considered to be one of the earliest and most prominent homesteads constructed in Clarence Town during the mid 19th century. The fact that the main road leading to the property is named Fotheringay Road is a direct example of its value to the local community. The size and scale of the main cottage dwelling and its position directly adjacent to the Williams River made Fotheringay house a desirable location. The two long term owners of the property, Charles Felix Holmes and William J. Crocker, both raised their families in Fotheringay House while engaging in the dairy industry as a means of income. The site is an excellent demonstration of the development of rural living in the greater Dungog region, having been continuously occupied for a period of more than 150 years. This in turns offers an extensive archaeological data set which may represent the development and change of domestic practices in Clarence Town during the 19th and 20th centuries.

6.3.1.2 Marshall & Lowe "Deptford" shipyard site, Fotheringaye

The heritage inventory sheet for heritage item Marshall & Lowe "Deptford" shipyard site, Fotheringaye (Dungog LEP 2014, Item I150) does not contain any details regarding the item's history, an evaluation of significance nor a statement of significance.⁵⁷ It is presumed there was a shipyard adjacent / on the Williams River. This assessment does not include an archaeological assessment of the heritage item. However, as there are no works proposed within or in the vicinity of this item, there would be no impacts to the item.

6.4 Archaeological significance

Archaeological research potential (NSW Heritage Criterion E)

The possible archaeological resources of the study area are considered to have low research potential and are unlikely to contribute to our understanding of the themes of communication, cultural landscapes, pastoralism, transport or utilities that cannot be obtained through other sources. The archaeological resources are unlikely to yield information regarding road building technology and culvert construction methods which would advance knowledge of these activities in the Port Stephens region or more widely in NSW, other than to confirm their type and form. Furthermore, the sub-surface integrity of archaeological resources is considered to be low to moderate due to maintenance works to the road and culverts in the 1980s and 2010s which are likely to have disturbed, removed or replaced deposits and structures.

The possible archaeological resources do not meet this criterion.

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⁵⁶ (Heritage NSW n.d.)

⁵⁷ (Heritage NSW 2014)



Associations with individuals, events or groups of historical importance (NSW Heritage Criteria A, B & D)

The historical research undertaken for this assessment has not identified any individuals, events or groups of historical importance associated with the study area or possible archaeological resources.

The possible archaeological resources do not meet these criteria.

Aesthetic or technical significance (NSW Heritage Criterion C)

The possible archaeological resources within the study area are unlikely to hold aesthetic or technical significance. The construction method of the road is uncertain, but it may have been constructed in the McAdam method, if any formal method was used at all. The McAdam method is a common construction method used across NSW. The heritage inventory sheet notes the presence of culverts made of 'local rock and are of interesting construction techniques and may have archaeological significance'. However, no further detail of the locations of these stone culverts or their construction are provided in the heritage inventory sheet. No stone culverts were identified during the physical inspection of the study area. Should any stone culverts be present within the study area, they would need to be assessed to determine their aesthetic and technical significance.

The possible archaeological resources do not meet these criterion based on current data, but further assessment may be required should instances of the stone culverts be encountered within the study area.

Ability to demonstrate the past through archaeological remains (NSW Heritage Criteria A, C, F & G)

The possible archaeological resources within the study area are associated with its use as a road connecting Clarence Town on the eastern side of Williams River to Raymond Terrace. The study area remains a public road, albeit used only by local traffic largely in part to its material condition and presence of unsealed portions. While the possible archaeological resource demonstrate continuity with the study area's current use, they are likely to have been impacted by past works and feature a low to moderate level of sub-surface integrity.

The possible archaeological resources do not meet these criterion based on current data.

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^{58 (}Heritage NSW n.d.)



7 Proposed Development

This SoHI has been prepared to address impacts resulting from the proposed redevelopment of the study area.

The study area contains one item of local heritage significance: Road Alignment, listed on the Port Stephens LEP 2013 (Item I5). This item has been previously assessed as holding significance for its historical associative, aesthetic, social and rarity values.⁵⁹ This assessment has determined that the study area does not hold archaeological significance. No further places of heritage significance have been identified as part of this report.

The SoHI identifies the level of impact arising from the proposed development and discusses mitigation measures which must be taken to avoid or reduce those impacts. This section of the report has been prepared in accordance with the Heritage Manual guideline *Statements of Heritage Impact*.⁶⁰

7.1 Proposal details

Port Stephens Council is proposing to widen and seal the existing gravel road of East Seaham Road, install road safety barriers where required and provide a clearzone up to 2.5 metres wide. The section of East Seaham Road (stage 5 and 6) is a gravel road which is heavily vegetated along the road alignment It is anticipated that a significant amount of tree removal will be required. The project length covering both stages 5 and 6 of East Seaham Road is approximately 3.2 kilometres.

The following drawings have been reviewed as part of this assessment:

- Port Stephens Council Civil Engineering Design East Seaham Road, East Seaham: Stage 5 Road Reconstruction, prepared by Barker Ryan Stewart, HU170024 Revision E, 1 December 2023 (Appendix 2)
 - Sheet 01 Cover sheet and index
 - Sheet 02 General notes (Plan no. HU170024-02)
 - Sheet 05 General arrangement plan (Plan no. HU170024-05)
 - Sheet 06 Typical section and details sheet (Plan no. HU170024-06)
 - Sheet 10 Detail Plan and Longitudinal Sheet 1 (Plan no. HU170024-10)
 - Sheet 11 Detail Plan and Longitudinal Sheet 2 (Plan no. HU170024-11)
 - Sheet 12 Detail Plan and Longitudinal Sheet 3 (Plan no. HU170024-12)
 - Sheet 13 Detail Plan and Longitudinal Sheet 4 (Plan no. HU170024-13)
 - Sheet 14 Detail Plan and Longitudinal Sheet 5 (Plan no. HU170024-14)
 - Sheet 15 Detail Plan and Longitudinal Sheet 6 (Plan no. HU170024-15)
 - Sheet 16 Detail Plan and Longitudinal Sheet 7 (Plan no. HU170024-16)

⁵⁹ (Heritage NSW n.d.)

^{60 (}Department of Planning and Environment 2023)



- Sheet 20 Cross Section Sheet 1 (Plan no. HU170024-20)
- Sheet 21 Cross Section Sheet 2 (Plan no. HU170024-21)
- Sheet 22 Cross Section Sheet 3 (Plan no. HU170024-22)
- Sheet 23 Cross Section Sheet 4 (Plan no. HU170024-23)
- Sheet 24 Cross Section Sheet 5 (Plan no. HU170024-24)
- Sheet 25 Cross Section Sheet 6 (Plan no. HU170024-25)
- Sheet 26 Cross Section Sheet 7 (Plan no. HU170024-26)
- Sheet 27 Cross Section Sheet 8 (Plan no. HU170024-27)
- Sheet 28 Cross Section Sheet 9 (Plan no. HU170024-28)
- Sheet 29 Cross Section Sheet 10 (Plan no. HU170024-29)
- Sheet 30 Cross Section Sheet 11 (Plan no. HU170024-30)
- Sheet 31 Cross Section Sheet 12 (Plan no. HU170024-31)
- Sheet 40 Drainage Culvert Section DR01 (Plan no. HU170024-40)
- Sheet 41 Drainage Culvert Section DR02 (Plan no. HU170024-41)
- Sheet 42 Drainage Culvert Section DR03 (Plan no. HU170024-42)
- Sheet 43 Drainage Culvert Section DR04 (Plan no. HU170024-43)
- Sheet 44 Drainage Culvert Section DR05 (Plan no. HU170024-44)
- Sheet 45 Drainage Culvert Section DR06 (Plan no. HU170024-45)
- Sheet 50 Linemarking and Signage Plan Sheet 1 (Plan no. HU170024-50)
- Sheet 51 Linemarking and Signage Plan Sheet 2 (Plan no. HU170024-51)
- Sheet 52 Linemarking and Signage Plan Sheet 3 (Plan no. HU170024-52)
- Sheet 60 Setout Plan Sheet 1 (Plan no. HU170024-60)
- Sheet 61 Setout Plan Sheet 2 (Plan no. HU170024-61)
- Sheet 70 Erosion and Sediment Control Plan (Plan no. HU170024-70)
- Sheet 71 Erosion and Sediment Control Details (Plan no. HU170024-71)
- Sheet 80 Driveway Plan Property No. 791 (Plan no. HU170024-80)
- Sheet 81 Driveway Plan Property No. 775 and National Park (Plan no. HU170024-81)
- Sheet 82 Driveway Plan Property No. 817 and No. 829 (Plan no. HU170024-82)

Drawings for Stage 6 showing the extent of proposed works for road reconstruction have also been provided to Biosis (Port Stephens Council – East Seaham Road, East Seaham – Stage 6 Road Reconstruction – W12575 – SEG 130 and 140, prepared by Ryan Barker Stewart, 240458-01 Revision E, 3 January 2025). These drawings include culverts, line markings, tree removal and other features. These drawings have been reviewed but not referenced in this assessment.



Biosis understands from liaison with Port Stephens Council that any trees or vegetation within the footprint of the works will be impacted (i.e. removed). The presence of trees and vegetation lining East Seaham Road is noted as part of the aesthetic heritage values of the item Road Alignment (Port Stephens LEP 2013, Item I5).



8 Impact assessment

This section discusses direct physical impacts to heritage items in the study area as well as visual and other indirect impacts to heritage items in the vicinity of the study area.

8.1 Matters for consideration

8.1.1 Fabric and spatial arrangements

The road will be resurfaced, road traffic signs installed, vegetation within the works footprint removed, and drainage added. The proposed works will significantly change the landscape character of the study area and vicinity, and the portion of the Road Alignment heritage item within the study area.

8.1.2 Setting, views and vistas

Regarding the setting within heritage item Road Alignment, the proposal will alter the significant setting of the item. The proposed will also have minor indirect impacts on views from heritage item Homestead "Fotheringay".

8.1.3 Landscape

As mentioned above in Section 8.1.2, the landscape character of the heritage item Road Alignment will significantly change as a result of the proposed works.

8.1.4 Use

Use of the heritage item Road Alignment as a road is fundamental to the place's significance. Use of the road will continue as a result of the works, with the objective of the works being to reinforce this use.

8.1.5 Demolition

As is noted in Sections 8.1.1, 8.1.2 and 8.1.3, there is significant removal of vegetation proposed as part of the works.

8.1.6 Curtilage

As is noted in Sections 8.1.1, 8.1.2 and 8.1.3, there is significant removal of vegetation proposed as part of the works.

8.1.7 Moveable heritage

There are no moveable heritage components associated with the heritage item Road Alignment nor with the study area.

8.1.8 Aboriginal cultural heritage

Aboriginal cultural heritage is being assessed separately in an Aboriginal Due Diligence Assessment (ADDA) also being prepared by Biosis. The outcome of the ADDA confirmed that no new Aboriginal sites were identified within the study area, and that there is low archaeological potential within the study area.

8.1.9 Historical archaeology

The study area and heritage item Road Alignment is considered to have low archaeological potential. The possible archaeological resources within the study area have been assessed not to hold heritage significance.



However, further assessment would be required should any instances of stone culverts be identified within the study area.

The nearby heritage item Marshall & Lowe "Deptford" shipyard site, Fotheringaye is listed as an archaeological item. However, this item is located 410 metres west of the study area across the Williams River and no works are proposed within this item. No impacts to heritage will occur within the heritage item Marshall & Lowe "Deptford" shipyard site, Fotheringaye.

8.1.10 Natural heritage

The statement of significance for the heritage item Road Alignment includes aspects of natural heritage / ecological values. Ecological impacts are not being assessed in this report but are understood to be or have been assessed by others.

8.1.11 Conservation areas

The study area is not contained within a conservation area.

8.1.12 Cumulative impacts

The proposed works will alter 3.1 kilometres of the 7.6 kilometre length of the heritage item Road Alignment. If similar works carried out elsewhere along the roadway, cumulative impacts would be intensified.

8.1.13 Conservation Management Plan

There is no Conservation Management Plan for the heritage item Road Alignment, or the wider place.

8.1.14 Other heritage items in the vicinity

Please refer to Section 8.1.2 above.

8.1.15 Commonwealth/National heritage significance

The heritage item Road Alignment or the wider place is not a Commonwealth or National heritage place.

8.1.16 World heritage significance

The heritage item Road Alignment or the wider place is not a World Heritage site.

8.2 Discussion of heritage impacts

The discussion of impacts to heritage can be centred upon a series of questions which must be answered as part of a SoHI which frame the nature of impact to a heritage item. The Heritage Manual guideline *Statements* of *Heritage Impact* includes a series of questions in relation to indicate the criterion which must be answered.⁶¹ Responses to relevant questions are presented in Table 7.

Table 7 Responses to relevant questions regarding impacts to heritage significance

Question	Response
Partial demolition of a heritag	e item (including internal elements)
Is the partial demolition	Yes, it is essential for road safety along East Seaham Road to be improved, for example
essential for the heritage	safety barriers and compliance with current traffic / road standards. Council have

^{61 (}Department of Planning and Environment 2023)



Question	Response
item to function?	 confirmed the following: The proposed works have been designed in accordance with Austroads design guidelines, with some compromises in order to adapt to the site constraints. The current vertical alignment of the road does not comply to Austroads standards due to the natural topography of the land and limiting earthworks. Current vertical curves have also been compromised and do not comply to Austroads standards. Signage has been included in the design as a mitigation measure where the vertical curves do not comply. The horizontal curves do not comply to Austroads standards as Council has retained the existing alignment as much as possible. Advisory signage has been included in the design to mitigate this non-compliance. Cut batters have been increased to 1:3 when less than 0.5m in height to reduce the impact to the environment and construction footprint. Hazards exist within the clear zone as defined by Austroads design guidelines. It is understood Council are aware of this design deficiency. It could be assumed that the hazards (culverts and trees) be considered general roadside environment, and that drivers will be more alert to the existing hazards (similar to adjacent sections of East Seaham Road). The clearzone will be substantially improved compared to existing due to tree removal within the design earthworks footprint. In order to meet Austroads clearzone requirements, substantial tree removal or guardrail installation would be required.
If partial demolition is proposed because of the condition of the fabric, can the fabric be repaired?	Yes, it is proposed because of the condition of the fabric. However, that is due to its form as an unsealed road in the majority of locations and not because of deterioration or alteration of an earlier known state comprised of significant fabric. The restoration of fabric by returning to unsealed road along its entire length would not improve its condition.
Are important features and elements of the heritage item affected by the proposed partial demolition (e.g. fireplaces in buildings)?	Yes, the trees lining the road are important features of the onsite heritage item and would be affected by the proposed partial demolition through their removal. From referenced drawings and liaison with Council it is understood that all trees within the footprint would be removed. This would result in a significant impact to the onsite heritage item.
Will the proposed partial demolition have a detrimental effect or pose a risk to the heritage item and its significance? If yes, what measures are proposed to avoid/mitigate the impact?	Yes, the partial demolition would adversely affect aesthetic characteristics for this portion of the onsite heritage item. This could be partly mitigated by reducing the degree of change in vegetation and the extent of removal of vegetation.
Identify and include advice about how significant elements, if removed by the proposal, will be salvaged and reused.	Salvage and transplant of trees is not proposed, and, subject to arboricultural advice, would not seem feasible.



Question	Response
Physical changes to fabric ider	ntified as significant
Has the fabric that will be impacted by the proposed works been assessed and graded according to its significance?	It is difficult to determine whether the stone culverts noted in the heritage inventory sheet for the onsite heritage item would be impacted if indeed they remain. The concrete culverts identified by Eco Logical Australia ⁶² and Biosis are relatively recent and are of low heritage significance. Should stone culverts be present in area of works they are likely to have some significance as an earlier element of the onsite heritage item.
Has specialist advice from a heritage professional, architect, archaeologist or engineer been sought?	This report forms the specialist advice from a heritage specialist.
New services and service upgr	ades
Are any of the existing services of significance? In what way are they affected by the proposed works?	See questions regarding physical changes to fabric—in particular the stone culverts.
How have the impacts of the installation of new services on heritage significance been minimised?	Most of the road surface would not require significant excavation and works impacting heritage significance are principally related to the removal of trees and vegetation adjacent to the road.
Are any known or potential archaeological deposits affected by the proposed new services?	The archaeological assessment has determined that there are no archaeological resources of heritage significance within the study area. However, further assessment would be required should any instances of stone culverts be identified within the study area.
Has specialist advice from a heritage consultant, architect, archaeologist or services engineer been sought?	This report forms the specialist advice from a heritage specialist.
New landscape works and fea	tures
How has the impact on the heritage significance of the existing landscape been minimised?	Council have confirmed that, as part of the designs, clearzones have been reduced from Austroad standards to adapt to the site constraints and reduce tree removal as much as possible.
Are works to the landscape or pathways necessary to comply with the access requirements of the Disability Discrimination Act	No, the study area and onsite heritage item are a roadway. However, works are needed to comply with current Austroad standards. Council have confirmed that some compromises to Austroads standards have been made as part of the design to reduce tree removal as much as practically possible while still providing a level of safety Council is willing to accept.
comply with the access requirements of the	compromises to Austroads standards have been made as part of the design to reduce tree removal as much as practically possible while still providing a level of safety

⁶² (Eco Logical Australia 2016)



Question	Response
1992?	
Has evidence (archival or physical) of previous landscape work been investigated? Is the original landscape work being reinstated?	Yes, aerial photographs indicate current level of vegetation in place since pre-1958, with some reduction at the western side of the southern portion of the study area, but increased vegetation on the eastern side of the study area. The earliest character of the roadway setting is unknown. Nor is the degree of revegetation known prior to available aerial photography.
Will any known or potential archaeological relics be affected by the landscape works? How will this be mitigated? Has advice been sought from a suitably qualified archaeologist?	Refer to response under New services and services upgrades category.
Do the proposed works impact views to, from and within adjacent heritage items?	Please refer to category below regarding affects for adjacent heritage items.
New signage	
How has the impact of the new signage on the significance of the heritage item been minimised?	It is understood that the proposed signage is the minimum required for road safety standards. Council have confirmed that updated suburb signage has been included in the design in accordance with Council's style guide requirements.
Have alternative signage forms been considered (e.g. free-standing)? Why were these alternatives rejected?	The proposed signage is free standing and is the minimum required for road safety standards.
Is the signage in accordance with required local planning provisions?	It is understood that the proposed signage is the minimum required for road safety standards.
Will the signage visually dominate or obscure the heritage item or streetscape of a heritage area?	The scale of the heritage item both in width and length comparative to the size and number of signs mean that the signage would not dominate the heritage item, nor would it clutter the setting. Functionally, the proposed signage must be highly visible both day and night. While beyond the scope of heritage impact assessment, it could be assumed that an ordinary motorist does not consciously assess the dominance of signage when passing at speed but reads its content while continuing to appreciate the setting of the path of travel.
Can the signage be externally illuminated rather than internally illuminated?	The proposed signage is not shown to be illuminated on the drawings.



Question	Response
Tree removal or replacement	
Does the tree proposed to be removed contribute to the heritage significance of the heritage item?	The trees are fundamentally intrinsic to the heritage value of the onsite heritage item as described in the listing documentation and to the place's broader setting.
Why is the tree being removed?	The trees are being removed to better comply with the Austroads standards. Council has confirmed that the number of trees required for removal under Austroads standards has been reduced to mitigate environmental and heritage impacts, while still ensuring safety for road users.
Has the advice of a qualified arborist, tree surgeon or horticultural specialist been sought and implemented?	Biosis understands the trees have been assessed for ecological values.
Is the methodology for tree removal adequately understood? Will the proposed works impact on the significance of the heritage item?	A methodology for tree removal is yet to be determined. The removal of trees would impact the heritage significance of the onsite heritage item and the wider place. However, this is based on their loss rather than the method of removal.
Is the tree being replaced? Where will it be replaced and with what species? Why?	The drawings indicate trees proposed to be removed would not be replaced. However, where practical, roadside batters would be mulched made from the felled trees giving some potential for regrowth of the same species of trees.
Access	
Will the heritage item be accessed by the public? If so, has the advice of an access consultant been sought to investigate options of Disability Discrimination Act compliant access that may have least impact on the heritage item?	Yes, the onsite heritage item would remain accessible to the public. It is currently a road and part of the public domain. The extent of public domain would not change. Regarding accessibility, the study area and heritage item is a road, and no pathways are indicated in the design. The road is designed for vehicle access rather than pedestrian use. For pedestrian use along the shoulder there are no separate pathways.
Interpretation	
Will the proposed works contribute to a continued understanding of the heritage item's history and significance?	The proposed works would reinforce the original and historically significant use of the heritage item as a public road. However, the history of the heritage item is not apparent to motorists and to passers-by. An understanding of the history of the place could be provide through heritage interpretation. Due to the narrow road corridor, there is limited opportunity to implement heritage interpretation. Consultation with the wider community is underway which may result in potential offsite heritage interpretation options.
Can interpretive features be integrated into the design?	Council does not intend to integrate interpretive features into the design.



Question	Response
Works adjacent to a heritage i	tem or within the heritage conservation area (listed on an LEP)
Will the proposed works affect the heritage significance of the adjacent heritage item or the heritage conservation area?	The proposed works would not directly affect the fabric or significance of heritage item Homestead "Fotheringay". However, the view from that heritage item would change as the road would be less hidden from view by vegetation and the view from the item would be of a road in front of a forest rather than a road intermittently apparent at the edge of a forest. The proposed works would not affect the significance of heritage item Marshall & Lowe "Deptford" shipyard site, Fotheringaye. This is an archaeological item, and there are no proposed works which would directly affect the archaeological resources associated with this item.
Will the proposed works affect views to, and from, the heritage item? If yes, how will the impact be mitigated?	The views from the heritage item Homestead "Fotheringay" would be changed in their nature. Currently it appears that the National Park area extends further into the valley because of the trees which line the study area. As a result of the works, view from that heritage item would change as the road would be less hidden from view by vegetation and the view from the item would be of a road in front of a forest rather than a road intermittently apparent at the edge of a forest. This is considered to be a minor but acceptable impact. There would be no affect to views for the heritage item Marshall & Lowe "Deptford" shipyard site, Fotheringaye as this is an archaeological item and all heritage values are sub-surface.
Will the proposed works impact on the integrity or the streetscape of the heritage conservation area?	Though sharing a visual catchment, the three heritage items do not comprise a streetscape or heritage conservation area. The direct impacts to the immediate setting of the heritage-listed road itself, is discussed in preceding headings.

8.3 Summary

In summary, the proposed road works including regrading, resurfacing, drainage and signage are generally considered to have a minor and acceptable level of impact. Council have accommodated several existing characteristics of the road to retain the existing alignment as much as possible. The removal of trees to the extent shown would have a significantly adverse impact on the identified significance of the onsite heritage item, Road Alignment, and alteration of the view to the road looking east from Homestead "Fotheringay". However, while it has not been possible to reduce the number of trees requiring removal as part of the detailed design, in general Council have compromised with the Austroad standards for tree removal where possible so as to reduce the impact to both heritage values and the environment.



9 Conclusions and recommendations

9.1 Conclusions

The study area contains part of a local heritage item, Road Alignment, and is in the vicinity of two other heritage items, Homestead "Fotheringay" and Marshall & Lowe "Deptford" shipyard site, Fotheringaye. While the study area has been assessed as holding low archaeological potential for archaeological resources of heritage significance, should any of the stone culverts noted in the heritage inventory sheet for the heritage item Road Alignment be present within the study area, further assessment would be required as to their heritage significance. Based on the assessment of impacts, overall the proposed works would have a minor but acceptable impact to heritage values of the above heritage items. While the removal of trees would have a significantly adverse impact to the heritage item Road Alignment, as part of the design Council have compromised on the recommended extent of trees under the Austroads guidelines so as to reduce these impacts while still ensuring safety of road users.

9.2 Recommendations

These recommendations have been formulated to respond to client requirements and the significance of the site. They are guided by Australia ICOMOS' Burra Charter. The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained.⁶³

Recommendation 1 Treatment of stone culverts

No instances of stone culverts, which are noted in the heritage inventory sheet for the heritage item Road Alignment, were identified within the study area as part of this assessment. However, this does not preclude their presence, as they may have been modified or not be visible due to overgrown vegetation or sediment build up.

Should any stone culverts be identified within the study area and areas of proposed work as the design develops and/or during the course of construction, heritage advice should be sought regarding their condition and assessment of heritage significance. During construction, this might take place in the form of having a heritage representative on site during works, or on standby to undertake site visits to inspect any finds.

Ascertaining the presence and significance of possible stone culverts by detailed survey prior to the finalisation of the design of the works would mitigate the design risk of their discovery once the works have commenced. However, such a survey could not be properly carried out without the clearing of low vegetation at the edge of the road so that the ground and drainage can be seen.

Recommendation 2 Unexpected finds protocol

Relics are protected under Section 139 of the Heritage Act. The study area has been assessed as holding low archaeological potential for archaeological resources of heritage significance. However, it is recommended that an unexpected finds protocol be implemented as part of the construction management plan for the

^{63 (}Australia ICOMOS 2013)



project to ensure that any unexpected archaeological finds are assessed and managed appropriately and in accordance with the Heritage Act.

Recommendation 3 Heritage induction

Due to the presence of part of a heritage item, Road Alignment, within the study area, it is recommended that all staff, contractors and subcontractors working on site undertake a heritage induction. This is recommended so that all staff, contractors and subcontractors are made aware of the heritage item, its elements and significance, as well as their responsibilities under and penalties for breaching of the Heritage Act or carrying out unapproved works that impact the heritage values of the site.



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Appendices



Appendix 1 Heritage inventory sheets

Item Details

Name

Road Alignment

SHR/LEP/S170

LEP #I5

Address

East Seaham Road and Road Reserve EAST SEAHAM NSW 2324

Local Govt Area

Port Stephens

Local Aboriginal Land Council

Unknown

Item TypeGroup/CollectionCategoryBuiltTransport - LandRoad

All Addresses

Addresses

Records Retrieved: 1

Stre et No	Street Name	Suburb/Town/Postc ode	Local Govt. Area	LALC	Parish	County	Electorate	Address Type
	East Seaham Road and Road Reserve	EAST SEAHAM/NSW/2324	Port Stephens	Unknown	Wilmot	Gloucest er	Unknown	Primary Address

Significance

Statement Of Significance

East Seaham Road is valued not only for its relationship to early transport but because its alignment, vegetation and construction are qualities that represent early access roads throughout the Local Government Area. The alignment of East Seaham Road follows closely the original alignment of New Line Road in relation to the lie of adjacent properties, the proximity to the Williams River and Wallaroo Nature Reserve. A fine example of a richly tree-lined rural road with high conservation and aesthetic values.

Criteria a)

Historical Significance

An Early road forming links with Raymond Terrace, Seaham and Clarencetown on the eastern side of the Williams River

Criteria b)

Historical Association

Significance

Associated with two early local landholders: John Melbourne Ireland and John McLean

Criteria c)

Aesthetic/Technical Significance

A richly tree-lined rural road, high tree canopy; numerous older trees link to form a beautiful overarching, tunnel effect. This gives the road a special character.

Criteria d)

Social/Cultural Significance

The special character of this tree-	ined road is highly es	steemed by members of the local community	
Criteria f)			
Rarity			
There are few roads left of this type	pe in the Port Stephe	ns area and this is the last remaining in this local area	
Integrity/Intactness			
High native conservation value of	the roadside environ	ment vegetation	
Owners			
		Re	ecords Retrieved: 0
Organisation		Stakeholder Category	Date
			Ownership
			Updated
		No Results Found	
Description			
Description			
Designer	Builder/Maker		
-	Port Stephens Counc	sil	
1863. Originally a bridle track	Fort Stephens Counc		
Physical Description		Updated	
	ad follows closely the	original alignment of New Line Road in relation to the lie	of adjacent properties,
		re Reserve (formerly Wallaroo State Forest).	
		in including Corymbia maculata (spotted gum), Eucalyptus	siderophloia (Iron Bark),
Eucalyptus fibrosa (iron Bark), Euc	alyptus tereticomis (Forest Red Gum), Eucalyptus punctata (Grey Gum)	
Physical Condition		Updated	
rnysical condition		Opuateu	
Modifications And Dates			
	the gravel road, coalir	og short sactions at aither and	
Mid to late 1980's PSC upgraded t Further upgrading of the road has		ig short sections at either end. In in 2015 by PSC. Council has consulted the Heritage Advis	sor and has undertaken
AHIMS checking prior to commen		ed is that the road works involve adding to the surface and	
existing road alignment.			
Further Comments			
Wallaroo Nature Reserve bounds	a portion of the road	: approximately 2.5 klm frontage to East Seaham Road, gra	evel section

Former Use

Current UsePublic Road

Listings

Listings

				Records Retrie		
Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazzette Number	Gazzette Page	
Local Environmental Plan	Port Stephens Local Environmental Plan 2013	15	12/23/2013 12:00:00 AM			

Procedures/Exemptions

Record:	Retrie	ved: 0
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Sectio n of Act	Description	Title	Comments	Action Date	Outcome			
	No Results Found							

History

Historical Notes or Provenance

Updated

Government Roads Fund notified 2nd March 1861, passed in Committee of supply to be expended on Roads other than Main Roads of the Colony. Appropriations advised include Clarencetown by east side of Williams River to Raymond Terrace, nineteen miles (Class Four) - £190.

Department of Lands, Sydney 22nd May 1862, refers to Government Notice dated 29th June 1860, relative to the opening and making of a parish road from Raymond Terrace to Clarencetown, with a Branch Road to Seaham. Notice given that having duly considered the objections which have been made to the proposed road, his Excellency the Governor confirms the road and declares expedient to open and make the road referred to with the deviations according to the plan and book of reference

to be seen at the Office of the Surveyor General, Sydney and at the Police Office, Raymond Terrace.

Also refers to persons intending to claim compensation in respect to the said line.

Tenders for clearing Branch Road forming the New Line of Road from Raymond Terrace and Clarencetown to be received by 18th June 1863, William McPherson, Secretary Road Trust Committee.

Department of Lands Sydney, 21st August 1863 - Road No 65. Notice given that the Line of Parish Road from Raymond Terrace to Clarence Town (east bank of the river) with a Branch Road there from to Seaham, mentioned in the Government Gazette of the 22nd May 1862 (No 92) has been formally marked and opened by the proper officer and that the same is now open for public use (John Robertson). Road construction/ repairs/ maintenance (advised in Government Reports to 1900)

Raymond Terrace / Seaham/ East side at Williams River - Commenced in 1884, £1,948.14s.2d expended at the 31st December 1888, £312.19s.10d expended in 1888.

Seaham was well and truly established by river trade with boats stopping there on their way to Newcastle - Raymond Terrace to Clarence Town. The main land connection was through Nelson Plains.

Aboriginal Heritage: The area along the Williams River has been noted as a travel route for Aboriginal People.

European Heritage: The early bridle track and public road opened 1863 and provided a necessary link for early settlers and travelling public on the eastern side of the Williams River.

Some culverts are of local rock and are of interesting construction techniques and may have archaeological significance.

The high nature conservation value of the roadside native trees and vegetation providing habitat, canopy and corridor for native wildlife, including threatened species, makes the roadside environment significant in terms of biodiversity. There are several old growth trees along East Seaham Road. Some older trees provide nesting sites for a variety of bird species in their hollows. there is one ironbark estimated to be between 200-300 years old (year 2000).

Historic Themes

Records Retrieved: 0

National Theme State Theme		Local Theme
	No Results Found	

Recommended Management

Management Summary

Management

Records Retrieved: 0

Management Category	Management Name	Date Updated			
No Results Found					

Report/Study

Heritage Studies

Records Retrieved: 2

Report/Study Name	Report/Study Code	Report/Study Type	Report/Stud y Year	Organisation	Author
Assessment/ Roadside Mangement			2000		Suzie Upston, Biodiversity Officer
East Seaham Road- Roadside Reserve			1999		Suzie Upston, Biodiversity Officer

Reference & Internet Links

References

Records Retrieved: 1

Туре	Author	Year	Title	Link
Written	Parsons Brinckerhoff	2005	RR301 Seaham Road and Clarence Town	
			Road - Route Development Study	

Data Source

The information for this entry comes from the following source:

Data Source Record Owner Heritage Item ID

Local Government Port Stephens Council 2280173

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Item Details

Name

Homestead, "Fotheringay"

SHR/LEP/S170

LEP #17

Address

221 Fotheringay Road CLARENCE TOWN NSW 2321

Local Govt Area

Dungog

Local Aboriginal Land Council

Unknown

Item Type Group/Collection Category

Complex / Group Farming and Grazing Homestead Complex

All Addresses

Addresses

Records Retrieved: 1

Stre et No	Street Name	Suburb/Town/Postc ode	Local Govt. Area	LALC	Parish	County	Electorate	Address Type
221	0-7	CLARENCE TOWN/NSW/2321	Dungog	Unknown			Unknown	Primary Address

Significance

Statement Of Significance

The study site contains the potential for archaeological remains pertaining to the domestic occupation and use of Fotheringay House for a period of more than 150 years. At present, from preliminary information obtained, the study site is considered to be of potential local archaeological significance. However as the exact construction period and year of the house itself is yet to be determined, without further research and assessment, the site must also be considered as holding potential for archaeological features and remains of state significance.

Fotheringay house can be considered to be one of the earliest and most prominent homesteads constructed in Clarence Town during the mid 19th century. The fact that the main road leading to the property is named Fotheringay Road is a direct example of its value to the local community. The size and scale of the main cottage dwelling and its position directly adjacent to the Williams River made Fotheringay house a desirable location. The two long term owners of the property, Charles Felix Holmes and William J. Crocker, both raised their families in Fotheringay House while engaging in the dairy industry as a means of income. The site is an excellent demonstration of the development of rural living in the greater Dungog region, having been continuously occupied for a period of more than 150 years. This in turns offers an extensive archaeological data set which may represent the development and change of domestic practices in Clarence Town during the 19th and 20th centuries.

Criteria a)

Historical Significance

Fotheringay house can be considered to be of historical local significance to the community of Clarence Town. The homestead was constructed, at the very latest during 1858, which marks the site as one of the earliest known homesteads to have been constructed on the outskirts of the centre of Clarence Town. The fact that the house has been continuously occupied for a period of more than 150 years signifies its importance within the historical and archaeological record; this is also demonstrated through the main road from Clarence Town having been named Fotheringay Road. Furthermore, this mid 19th century dwelling potentially offers an archaeological data set which demonstrates the domestic and residential development of Clarence Town since the mid 19th century.

Criteria b)

Historical Association

Significance

This site may hold local significance to members of both the Holmes and Crocker families, of who both resided at the estate for a considerable amount of time.

Criteria c)

Aesthetic/Technical Significance

Archaeological: This site is not significant according to this criterion.

Criteria d)

Social/Cultural Significance

It is unlikely that the site holds particular social significance to any group or community apart from the members of both the Holmes and Crocker families who may hold special association with the site.

Criteria e)

Research Potential

This site is not significant according to this criterion.

Criteria f)

Rarity

The site may be considered to be rare at a locally significant level when assessed from the view point of heritage architecture and the subsequent age, state and condition of the. However In terms of archaeological significance, the site does not appear to potentially contain archaeological features which are to be considered rare or uncommon to the historical record.

Criteria g)

Representative

Fotheringay Estate and Fotheringay House is a representation of mid 19th century domestic occupation running in direct correlation with agricultural practices which provided economic stability for those residents living on the property. The site is an excellent demonstration of the change and development of rural living within the greater Dungog region from as early as the mid 19th century and throughout the entire 20th century. The potential archaeological record may reveal information pertaining to domestic life and changing practices over a prolonged period of time, which in turn can be considered to be of potential local significance.

Integrity/Intactness

Very high archaeological integrity

Owners

		Records Retrieved: 0
Organisation	Stakeholder Category	Date Ownership Updated
	No Results Found	

Description

Designer Builder/Maker

Physical Description Updated

The study site is located approximately one mile south of the township of Clarence Town and currently contains a mid 19th century homestead and a shed which is likely of a later construction date. The site serves a residential and agricultural function, the rear of the property leading to the Williams River.

Physical Condition Updated

The original 'Fotheringay House' homestead is still standing, and it does not appear obvious that any major extensions have been made to the layout of the house, based on visual evidence from aerial photographs. Based on the approximate construction date of the house, is largely undeveloped state and long term occupation of the property, it can be suggested that there exists a moderate to high archaeological potential for features and deposits relation to the occupation and use of the site as a domestic residence since the mid 19th century. Archaeological evidence may be found in the form of occupation deposits, underfloor deposits, cesspits, wells, footings for sheds of outbuildings and rubbish pits associated with the occupation and use of the property as a domestic home.

N	/lod	lificat	tions	Δnd	Dates

Further Comments

Current Use

Cattle growing property, house vacant

Former Use

Farmhouse, dairy, homestead

Listings

Listings

				Records Retrieved: 3				
Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazzette Number	Gazzette Page			
Local Environmental Plan		17	5/1/2006 12:00:00 AM					
Heritage study								
Local Environmental Plan	Dungog Local Environmental Plan 2014	117	5/30/2014 12:00:00 AM					

Procedures/Exemptions

Records Retrieved: 0

Sectio n of Act	Description	Title	Comments	Action Date	Outcome		
	No Results Found						

History

Historical Notes or Provenance

Updated

During the 19th and early 20th century, Fotheringay House, to the local township of Clarence Town, was noted as one of the most prestigious properties to be built in this area, and visitors to the Dungog region who travelled through Clarence Town would often make mention of the beauty of the house in newspaper article and reports.

The earliest known reference to Fotheringay House dates to 1858, whereby the owner of the property at the time was Charles Felix Holmes. This reference was not addressing the house specifically, rather noting the death of Charles' first wife. Charles married Margaret Ferrier in 1854 and it can be suggested that at around this time Charles' either built Fotheringay House or purchased the property with the dwelling already standing. This marriage did not last long, Margaret having passed in 1858. Charles quickly remarried Margaret Papper Laurie in Paterson in 1862. They continued to live in Fotheringay House and together had three children; Lilly (b1863), Alice (b1865) and Felix (b1868).

During the occupation of Fotheringay House it is not known whether Charles used this particular land for agricultural purposes or simply as the residential home. However other newspaper advertisements dated to the 1860s show Charles offering pastoral land for lease, which is of greater size and a slightly different location to Fotheringay House:

"Wanted to let a superior dairy farm, or sheep run, with a never-failing supply of grass and water during the driest seasons, containing nearly 4000 acres of land, situate with a very short distance from Clarence Town, Williams River."

Based on this information, it can be assumed that Fotheringay remained specifically a homestead for the Holmes family, until their sale of the property in 1886. In September 1886, the property was advertised for sale and described as containing the following:

"The Fotheringay Estate, comprising 200 acres of grazing and agricultural land, fronting the Williams River and adjoining the surveyed land of the North Coast Railway. Cottage residence built of brick and stone, containing 7 spacious rooms, with kitchen, pantry, servant's room and dairy attached, also stable, coach house, large store room, sheds and all necessary surrounding. The fence which encloses the property as well as that forming the subdividing lines is of an excellent description, the whole rendering Fotheringay as perfect and compact a homestead as need be desired."

The Fotheringay Estate was purchased by William J Crocker from Charles Felix Homes in 1886. At some point in time, William must have purchased adjacent land owned by Charles Holmes, as an auction advertisement for the sale of Fotheringay House by William's son in 1949 noted that the property now consisted of 424 acres and included a dairy. Fotheringay House also appeared to have received some sort of minor extension, as the house was not described as containing 9 rooms:

"The improvements consist of a well built homestead, brick and stone of 9 rooms. Hay shed, car shed, stalls, dairy and bails, 2 silos each of 115 tonne capacity. Electricity and phone. Milk board license. Milk picked up twice daily."

Following this sale, it appears that the property has remained largely undeveloped, however continuously occupied since at least 1854. The adjacent dairy, based on newspaper advertisements, also appears to have been in operation almost as long as the house has been in existence, therefore offering a perception that Fotheringay house can be considered one of the most prominent estates in Clarence Town.

Historic Themes

Records Retrieved: 3

National Theme	State Theme	Local Theme
3. Economy	Pastoralism	Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes- rural l
3. Economy	Science	Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes- rural I
3. Economy	Science	Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes- rural I

Recommended Management

Prior to the approval of any development of the study location, that being the house structure and the greater surrounding curtlidge area, an archaeological assessment and, if appropriate, relevant endorsements from the Heritage Branch should be sought where archaeological remains may be affected. Assessment of the site should be made prior to impact or disturbance being made to the current ground level surface.

A full archaeological assessment and land titles search will be required in order to better determine the approximate construction period of the house and its potential for archaeological evidence of state significance, the site already having been considered to be of local significance.

Management

Records Retrieved: 0

Management Category	Management Name	Date Updated			
No Results Found					

Report/Study

Heritage Studies

Records Retrieved: 2

Report/Study Name	Report/Study Code	Report/Study Type	Report/Stud y Year	Organisation	Author
Dungog Heritage Study Review			2013		Carste Studio
Dungog Heritage Study Review			2013		Carste Studio

Reference & Internet Links

References

Records Retrieved: 12

Туре	Author	Year	Title	Link
Written	Carste Studio Pty Ltd: Williams, Michael	2012	"A History of Three Rivers. Dungog Shire Heritage Study- Thematic History"	
Written	Carste Studio Pty Ltd: Williams, Michael	2012	"A History of Three Rivers. Dungog Shire Heritage Study- Thematic History"	
Electronic	Singleton Argus	1949	"High Class Dairy Farm", 21st October 1949	
Electronic	Singleton Argus	1949	"High Class Dairy Farm", 21st October 1949	
Electronic	Maitland Mercury and Hunter River General Advertiser	1886	"Sale of Freehold Properties", 2nd October 1886	
Electronic	Maitland Mercury and Hunter River General Advertiser	1886	"Sale of Freehold Properties", 2nd October 1886	
Electronic	Maitland Mercury and Hunter River General Advertiser	1867	"Wanted to Let", 14th March 1867	
Electronic	Maitland Mercury and Hunter River General Advertiser	1867	"Wanted to Let", 14th March 1867	
Other	The Sydney Morning Herald	1858	Un-named article - 10th May 1858	
Other	The Sydney Morning Herald	1858	Un-named article - 10th May 1858	
Other	NSW Births, Deaths and Marriage		Records: 41B/1854; 3277/1858; 6989/1863; 7933/1865; 8286/1868	
Other	NSW Births, Deaths and Marriage		Records: 41B/1854; 3277/1858; 6989/1863; 7933/1865; 8286/1868	

Data Source

The information for this entry comes from the following source:

Data Source Record Owner Heritage Item ID

Local Government Dungog Shire Council 1540077

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Item Details

Name

Marshall & Lowe "Deptford" shipyard site, Fotheringaye

SHR/LEP/S170

LEP #I150

Address

Crown reserve (No street frontage) CLARENCE TOWN NSW 2321

Local Govt Area

Dungog

Local Aboriginal Land Council

Unknown

Item TypeGroup/CollectionCategoryComplex / GroupTransport - WaterShipyard

All Addresses

Addresses

Records Retrieved: 1

Stre et No	Street Name	Suburb/Town/Postc ode	Local Govt. Area	LALC	Parish	County	Electorate	Address Type
	Crown reserve (No street frontage)	CLARENCE TOWN/NSW/2321	Dungog	Unknown			Unknown	Primary Address

Owners

Records Retrieved: 0

Organisation	Stakeholder Category	Date
		Ownership Updated
	No Results Found	1

Description

Designer

Builder/Maker

Physica	Physical Description						ed		
Physica	l Condition					Update	ed		
Modific	ations And Dates								
Further	Comments								
Current	Use								
Former	Use								
Listin	as								
	<u> </u>								
Listings									
									Retrieved: 2
Heritag	e Listing	Listing Title	e		Listing Number	Gazette Da		Gazzette Number	Gazzette Page
Local Er	nvironmental Plan	Dungog Lo	cal Environm	ental Plan	1150		5/30/2014 12:00:00 AM		
Heritag	e study								
Proce	edures/Exemptio	ns							
								Records I	Retrieved: 0
Sectio n of Act	Description	Title		Comment	.s		Actio Date	n Out	come
				No Results	s Found				
Histo	ry								
Historic	Historical Notes or Provenance Updated								
Historic	Themes							Records I	Retrieved: 0
Nationa	al Theme		State Theme	2		Local Them	e		
				No Results	s Found		-		

Recommended Management

Management Summary

Management

Records Retrieved: 0

Management Category	Management Name	Date Updated				
No Results Found						

Report/Study

Heritage Studies

Records Retrieved: 0

Report/Study Name	Report/Study Code	Report/Study Type	Report/Stud y Year	Organisation	Author			
No Results Found								

Reference & Internet Links

References

Records Retrieved: 0

Туре	Author	Year	Title	Link			
No Results Found							

Data Source

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Data Source Record Owner Heritage Item ID

Local Government Dungog Shire Council 1540078

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Appendix 2 Proposed works

A3 HU170024 REVISION E

PORT STEPHENS COUNCIL CIVIL ENGINEERING DESIGN EAST SEAHAM ROAD, EAST SEAHAM

STAGE 5 ROAD RECONSTRUCTION
Prepared for: PORT STEPHENS COUNCIL



LOCATION OF WORKS

LOCALITY SKETCH NOT TO SCALE

SHEET INDEX

SHEET No.	DESCRIPTION
01	COVER SHEET & SHEET INDEX
02	GENERAL NOTES
05	GENERAL ARRANGEMENT PLAN
06	TYPICAL SECTION AND DETAILS SHEET
10	DETAIL PLAN AND LONGITUDINAL SHEET 1
11	DETAIL PLAN AND LONGITUDINAL SHEET 2
12	DETAIL PLAN AND LONGITUDINAL SHEET 3
13	DETAIL PLAN AND LONGITUDINAL SHEET 4
14	DETAIL PLAN AND LONGITUDINAL SHEET 5
15	DETAIL PLAN AND LONGITUDINAL SHEET 6
16	DETAIL PLAN AND LONGITUDINAL SHEET 7
20	CROSS SECTIONS SHEET 1
21	CROSS SECTIONS SHEET 2
22	CROSS SECTIONS SHEET 3
23	CROSS SECTIONS SHEET 4
24	CROSS SECTIONS SHEET 5
25	CROSS SECTIONS SHEET 6
26	CROSS SECTIONS SHEET 7
27	CROSS SECTIONS SHEET 8
28	CROSS SECTIONS SHEET 9
29	CROSS SECTIONS SHEET 10
30	CROSS SECTIONS SHEET 11
31	CROSS SECTIONS SHEET 12
40	DRAINAGE CULVERT SECTION - DR01
41	DRAINAGE CULVERT SECTION - DR02
42	DRAINAGE CULVERT SECTION - DR03
43	DRAINAGE CULVERT SECTION - DR04
44	DRAINAGE CULVERT SECTION - DR05
45	DRAINAGE CULVERT SECTION - DR06
50	LINEMARKING AND SIGNAGE PLAN SHEET 1
51	LINEMARKING AND SIGNAGE PLAN SHEET 2
52	LINEMARKING AND SIGNAGE PLAN SHEET 3
60	SETOUT PLAN SHEET 1
61	SETOUT PLAN SHEET 2
70	EROSION AND SEDIMENT CONTROL PLAN
71	EROSION AND SEDIMENT CONTROL DETAILS
80	DRIVEWAY PLAN PROPERTY No.791
81	DRIVEWAY PLAN PROPERTY No.775 AND NATIONAL PARK
82	DRIVEWAY PLAN PROPERTY No.817 AND No.829





SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4925 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842
barkerryanstewart.com.au

GENERAL NOTES

- ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH PORT STEPHENS COUNCIL'S WORKS SPECIFICATION AND/OR AS DIRECTED BY THEIR REPRESENTATIVE, TO THE BUILDING CODE OF AUSTRALIA, NSW CODE OF PRACTICE AND THE RELEVANT SERVICE CODES AS APPLICABLE.
- COUNCIL'S TREE PRESERVATION ORDER MUST BE OBSERVED AND NO TREE SHALL BE FELLED, LOPPED OR REMOVED WITHOUT THE PRIOR APPROVAL OF COUNCIL.
- ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE WORK HEALTH & SAFETY ACT 2011 AND ALL RELEVANT OCCUPATIONAL HEALTH & SAFETY POLICIES AND REGULATIONS.
- 4. DIMENSIONS SHALL NOT BE SCALED FROM THE PLANS. CLARIFICATION OF DIMENSIONS SHALL BE SOUGHT FROM THE SUPERINTENDENT OR REFERRED TO THE DESIGNER.
- 5. ALL LEVELS AND DIMENSIONS ARE TO BE CHECKED PRIOR TO THE COMMENCEMENT OF WORKS.
- 6. EXISTING SURFACE, CONTOURS AND LEVELS, STRUCTURES, BENCH MARKS AND BOUNDARIES HAVE BEEN COMPILED FROM DATA SUPPLIED BY THE SURVEYOR.
- . SURVEY MARKS SHOWN THUS ▲ SHALL BE MAINTAINED AT ALL TIMES. WHERE RETENTION IS NOT POSSIBLE THE ENGINEER SHALL BE NOTIFIED AND CONSENT RECEIVED PRIOR TO THEIR REMOVAL
- B. ALL NEW WORK IS TO MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS.
- THE CONTRACTOR IS NOT TO ENTER UPON NOR DO ANY WORK WITHIN OR ON ADJACENT LANDS WITHOUT THE PRIOR APPROVAL OF THE SUPERINTENDENT AND THE WRITTEN PERMISSION OF THE OWNERS.
- 10. SEDIMENT MEASURES SHALL BE IMPLEMENTED PRIOR TO SOIL DISTURBANCE IN KEEPING WITH THE 4th EDITION OF LANDCOMS "SOILS AND CONSTRUCTION MANAGING URBAN STORMWATER" MARCH 2004 TO THE SATISFACTION OF COUNCIL'S REPRESENTATIVE AND AS SHOWN IN THESE DRAWINGS
- 11. THE CONTRACTOR SHALL CLEAR AND DISPOSE OF ONLY THOSE TREES THAT ARE CONDEMNED BY THE PLANS. COUNCIL'S TREE PRESERVATION ORDER SHALL BE OBSERVED AND NO TREE SHALL BE FELLED, LOPPED OR REMOVED WITHOUT PRIOR APPROVAL.
- 12. VEHICLE ACCESS AND ALL SERVICES ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION WORKS SHALL BE MAINTAINED AT ALL TIMES.

UTILITY NOTES

- I. THE CONTRACTOR IS TO IDENTIFY, LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION WORKS AND WHERE NECESSARY MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE OR ADJUST WHERE NECESSARY.
- BARKER RYAN STEWART DOES NOT ACCEPT ANY LIABILITY FOR INACCURACIES IN THE SERVICE INFORMATION AS SHOWN.
- 3. CONDUITS SHALL BE LAID AFTER POSITIONS HAVE BEEN DETERMINED BY THE RELEVANT AUTHORITIES AND BEFORE FINAL A.C. IS LAID
- 4. THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO THE ADJOINING PROPERTIES.
- CARE SHALL BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. MECHANICAL EXCAVATION SHOULD BE AVOIDED OVER TELSTRA OR ELECTRICAL SERVICES, EXCAVATE WITH HAND TOOLS IN THESE AREAS.

EARTHWORKS NOTES

- UNSOUND MATERIALS AS DETERMINED BY COUNCIL'S REPRESENTATIVE SHALL BE REMOVED FROM ROADS AND LOTS PRIOR TO ANY FILLING.
- ALL SITE REGRADING AREAS SHALL BE GRADED TO THE SATISFACTION OF COUNCIL'S REPRESENTATIVE. THE CONTRACTOR SHALL TAKE LEVELS ON THE EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING ANY FILL OPERATIONS.
- 3. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED OR DISPOSED OF IN ACCORDANCE WITH THE CONTRACT, OR AS DIRECTED BY THE SUPERINTENDENT
- 4. ALL SITE FILLING SHALL BE PLACED IN LAYERS NOT EXCEEDING 300mm AND COMPACTED IN ACCORDANCE WITH COUNCIL'S SPECIFICATION AND BE TESTED AT THE REQUIRED INTERVALS BY AN APPROVED N.A.T.A. GEOTECHNICAL LABORATORY.
- MINIMUM 75mm THICK TOPSOIL SHALL BE SPREAD ON ALL BERMS, BATTERS AND SITE REGRADING AREAS. EXCESS TOPSOIL SHALL BE DISPOSED OF AS DIRECTED BY THE SUPERINTENDENT.
- 6. ALL LAND DISTURBED BY EARTHWORKS SHALL BE SPRAY-GRASSED, OR SIMILARLY TREATED TO ESTABLISH GRASS COVER. SEED MIXTURES ARE TO BE APPROVED BY COUNCIL PRIOR TO SPRAYING. ALL GRASSED AREAS SHALL BE REGULARLY WATERED AND MAINTAINED UNTIL EXPIRATION OF THE MAINTENANCE PERIOD.
- THE CONTRACTOR SHALL MAINTAIN DUST CONTROL THROUGHOUT THE DURATION OF THE PROJECT.

DRAINAGE NOTES

- ALL DRAINAGE LINES UNDER ROADS SHALL BE BACKFILLED WITH SHARP SAND AND HAVE AGRICULTURAL LINE WRAPPED IN AN APPROVED FILTER FABRIC FOR THE FULL LENGTH OF PIPELINE, DISCHARGING INTO THE DOWNSTREAM PIT.
- 2. SUBSOIL DRAINS SHALL BE CONSTRUCTED TO THE SATISFACTION OF
- ON COMPLETION OF PIPE INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION INCLUDING GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.
- 4. TRENCH WIDTHS ARE TO BE KEPT TO A MINIMUM CONSISTENT WITH THE LAYING AND BEDDING OF THE RELEVANT SERVICE AND CONSTRUCTION OF PERSONNEL ACCESS WAYS. REFER TO AUTHORITIES STANDARDS FOR MINIMUM TRENCH WIDTHS. STANDARD TRENCH WIDTHS ARE THE DIMENSIONS OF UNSUPPORTED TRENCHES. SUPPORT EXCAVATIONS TO THE REQUIREMENTS OF THE CONSTRUCTION SAFETY REGULATIONS 1950 UNDER THE CONSTRUCTION SAFETY ACT 1912 (AS AMENDED) APPLY.
- BACKFILL SERVICE TRENCHES TO REQUIREMENTS WITHOUT DELAY FOR THE SECTION OF PIPE THAT HAS BEEN COMPLETED AND APPROVED, IF POSSIBLE ON THE SAME WORKING DAY.

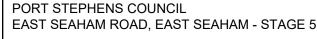
ROADWORKS NOTES

- PROVIDE VEHICULAR ENTRIES WHERE SHOWN OR WHERE DIRECTED BY THE SUPERINTENDENT TO PORT STEPHENS COUNCIL STANDARD.
- ALL DELINEATION IS TO BE IN ACCORDANCE WITH COUNCILS STANDARDS.
- ERECT STREET NAME SIGNS, CONDUIT WARNING SIGNS AND NO THROUGH ROAD SIGNS WHERE SHOWN OR WHERE DIRECTED BY COLINCIL'S REPRESENTATIVE
- 4. DRIVEWAYS TO BE CONSTRUCTED TO PORT STEPHENS COUNCIL STANDARDS OR TO PROFILES SHOWN IN THIS PLAN SET.
- 5. ALL EXISTING SIGNAGE TO REMAIN OR BE RELOCATED AS REQUIRED.
- TRAFFIC CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE RMS DOCUMENT "TRAFFIC CONTROL AT WORK SITES".









GENERAL NOTES SHEET

Designed: AS
Drawn: DKH
Checked: SB

Scales: Plan Horiz. Vert. X-Sect.

Datum:

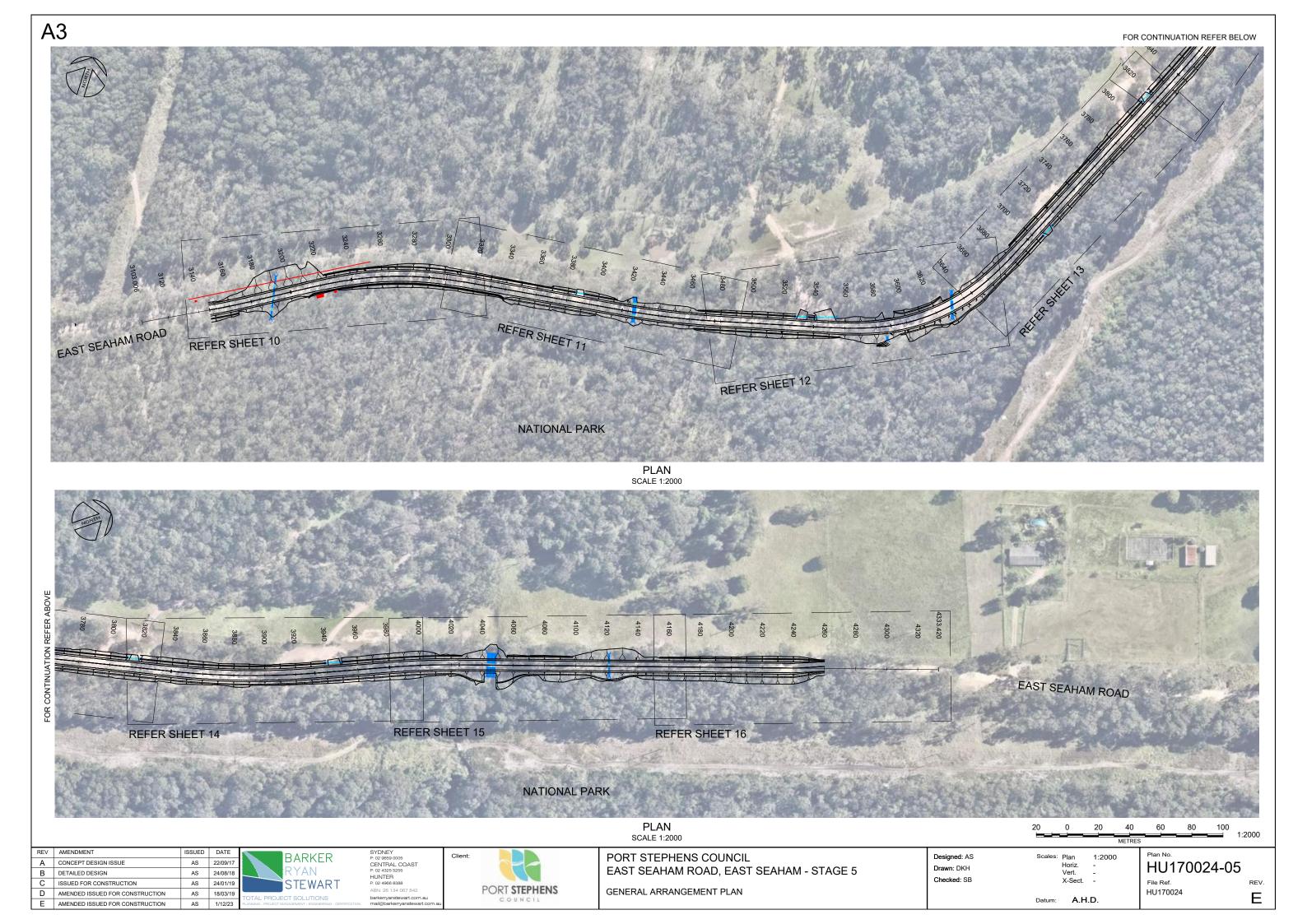
Plan No. HU170024-02

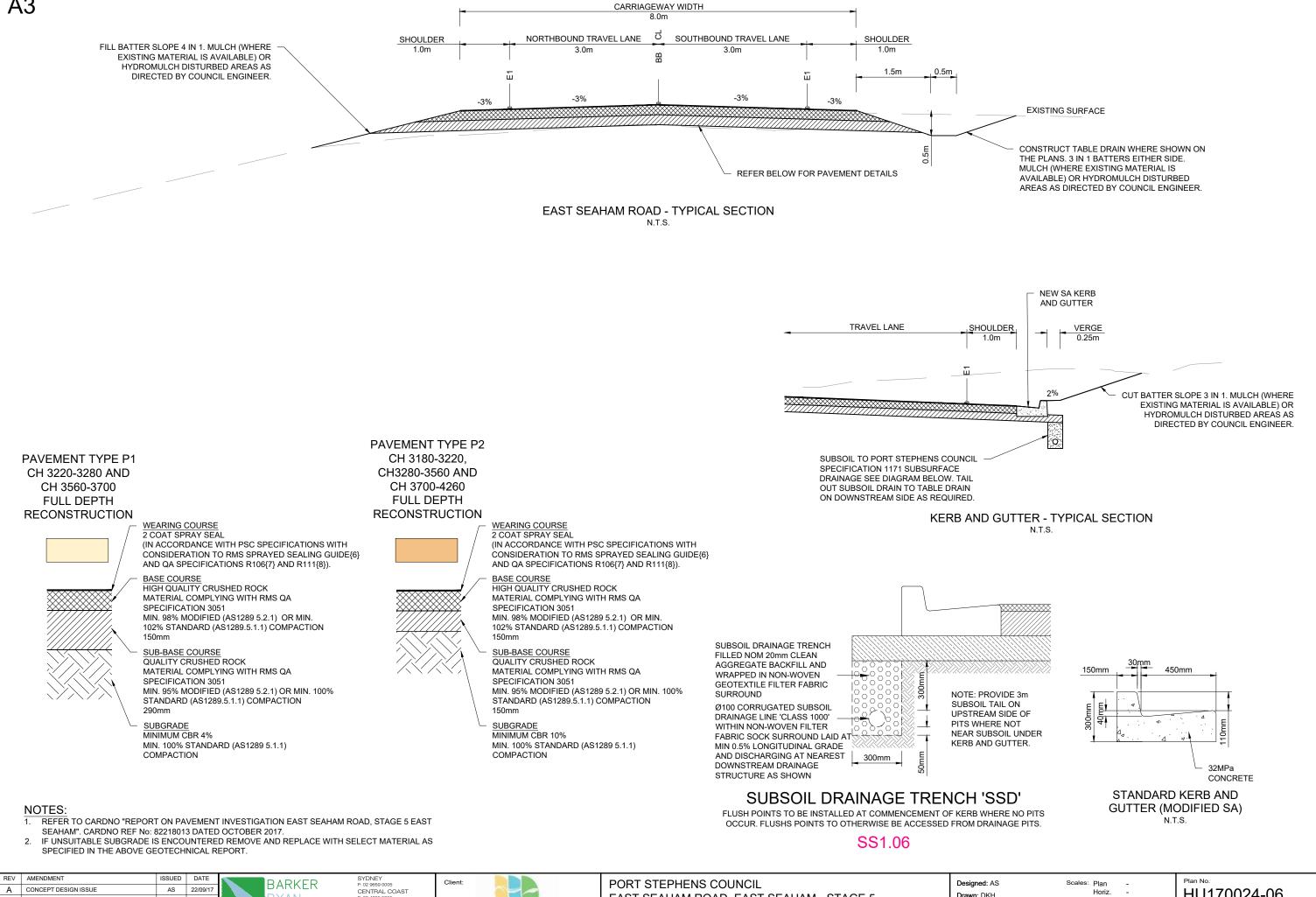
A.H.D.

HU170024

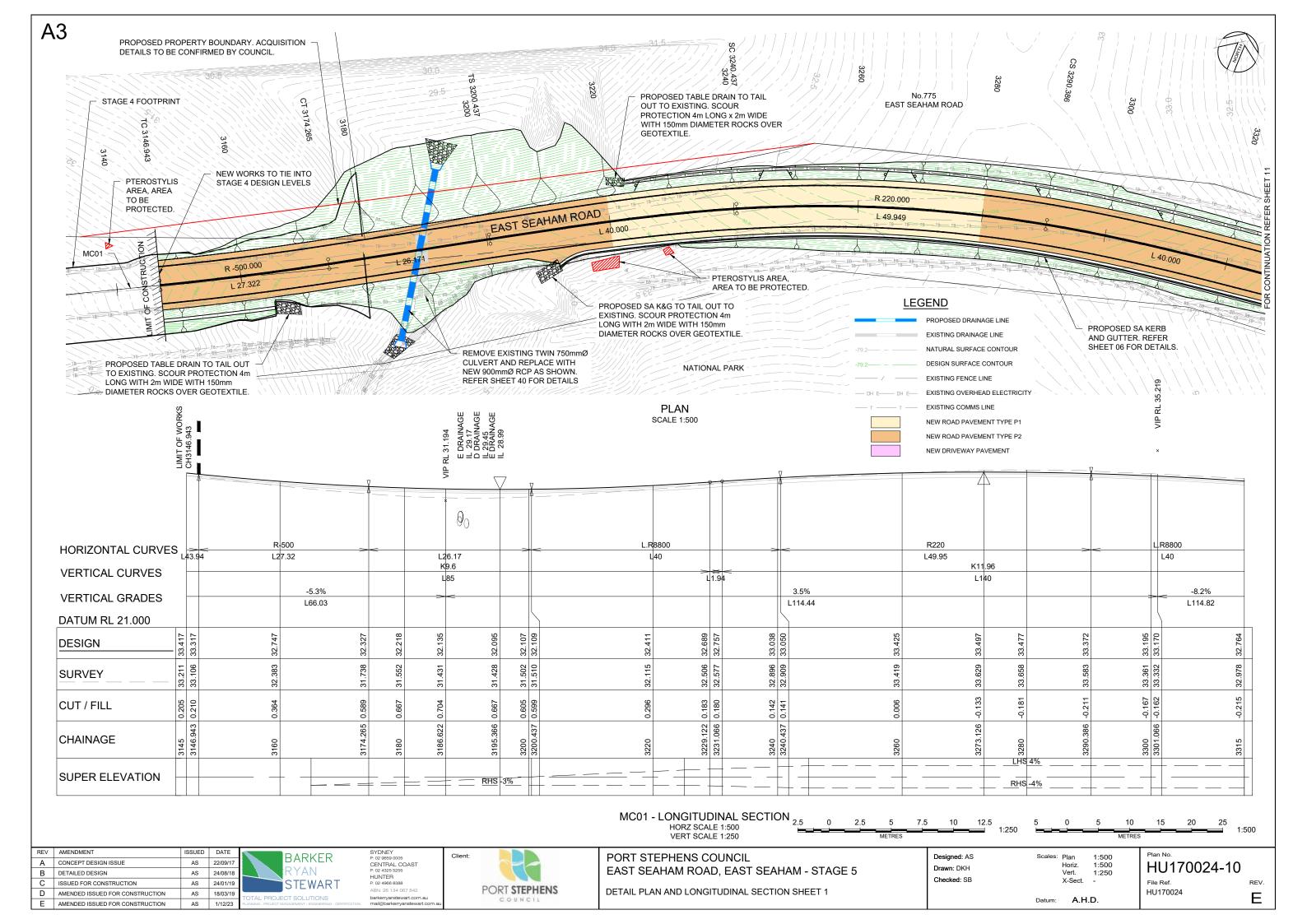
REV

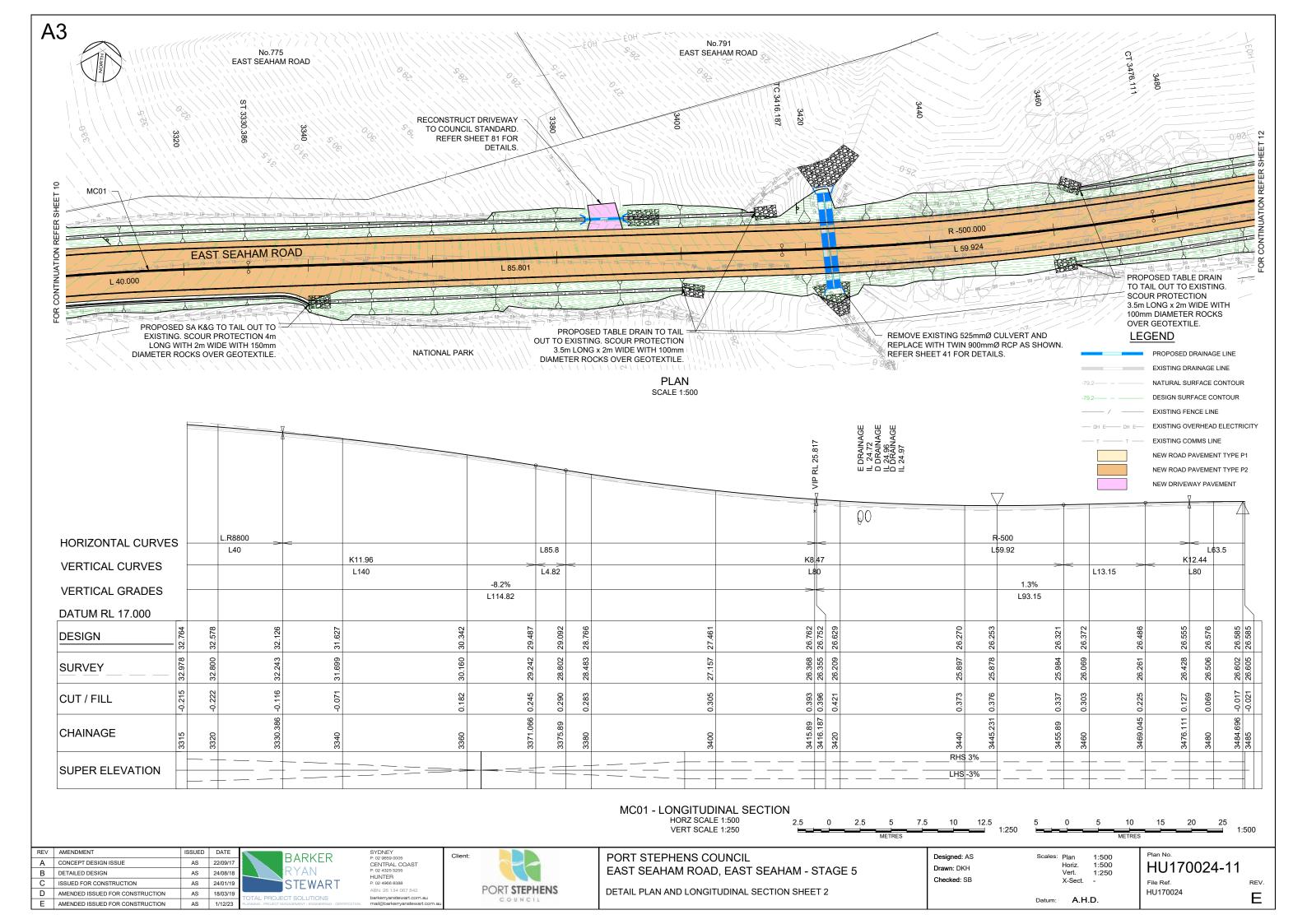
Ε

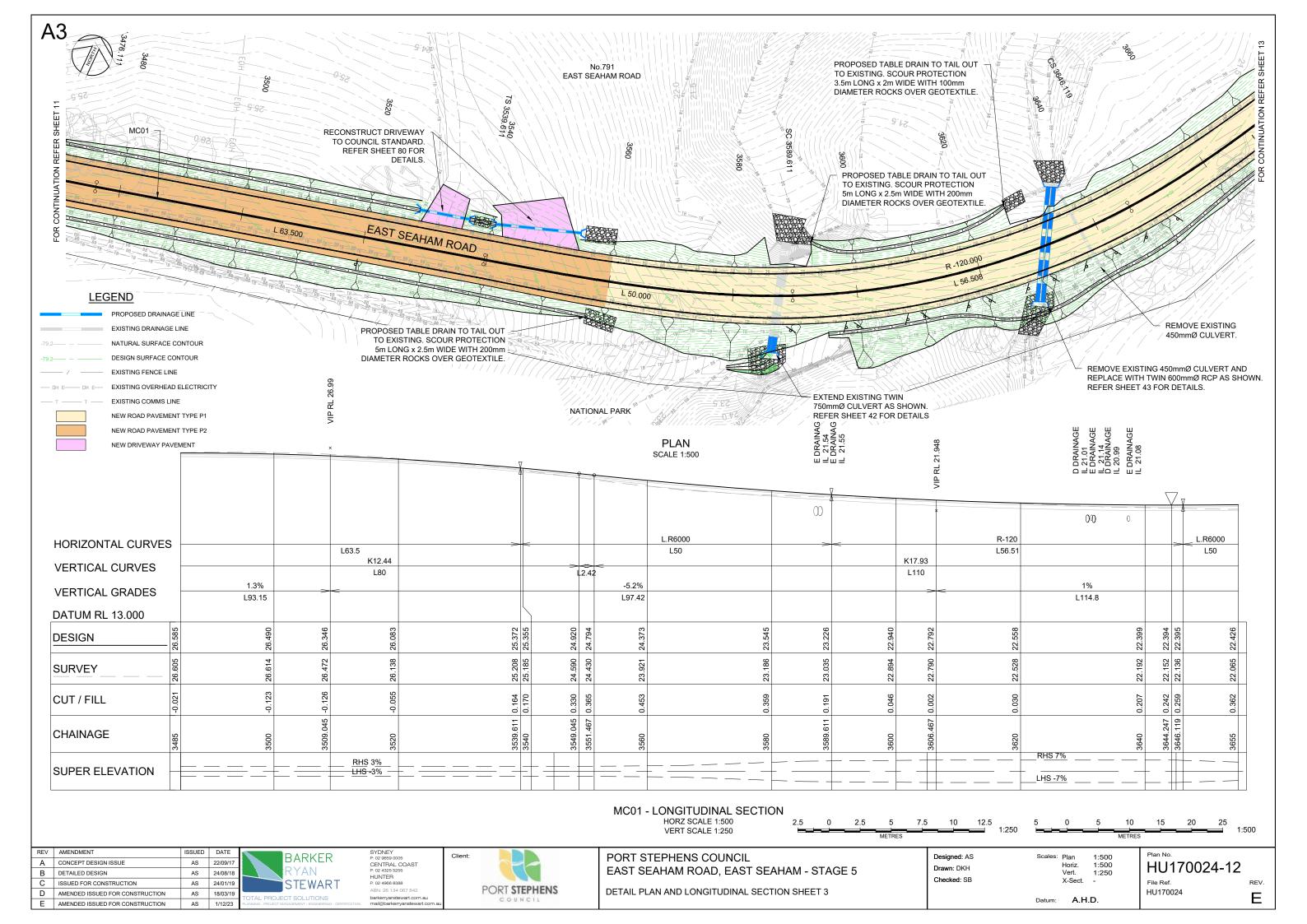


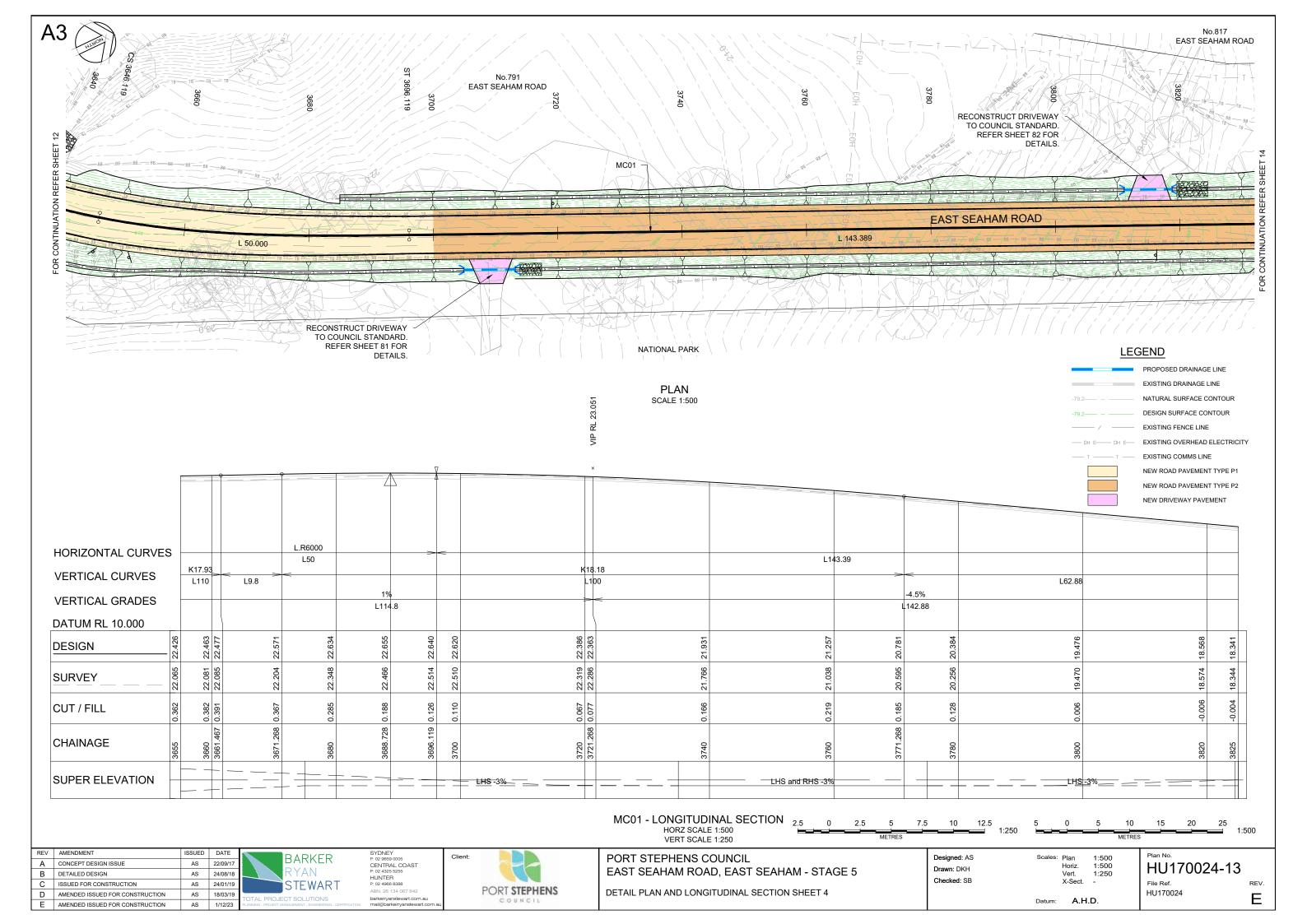


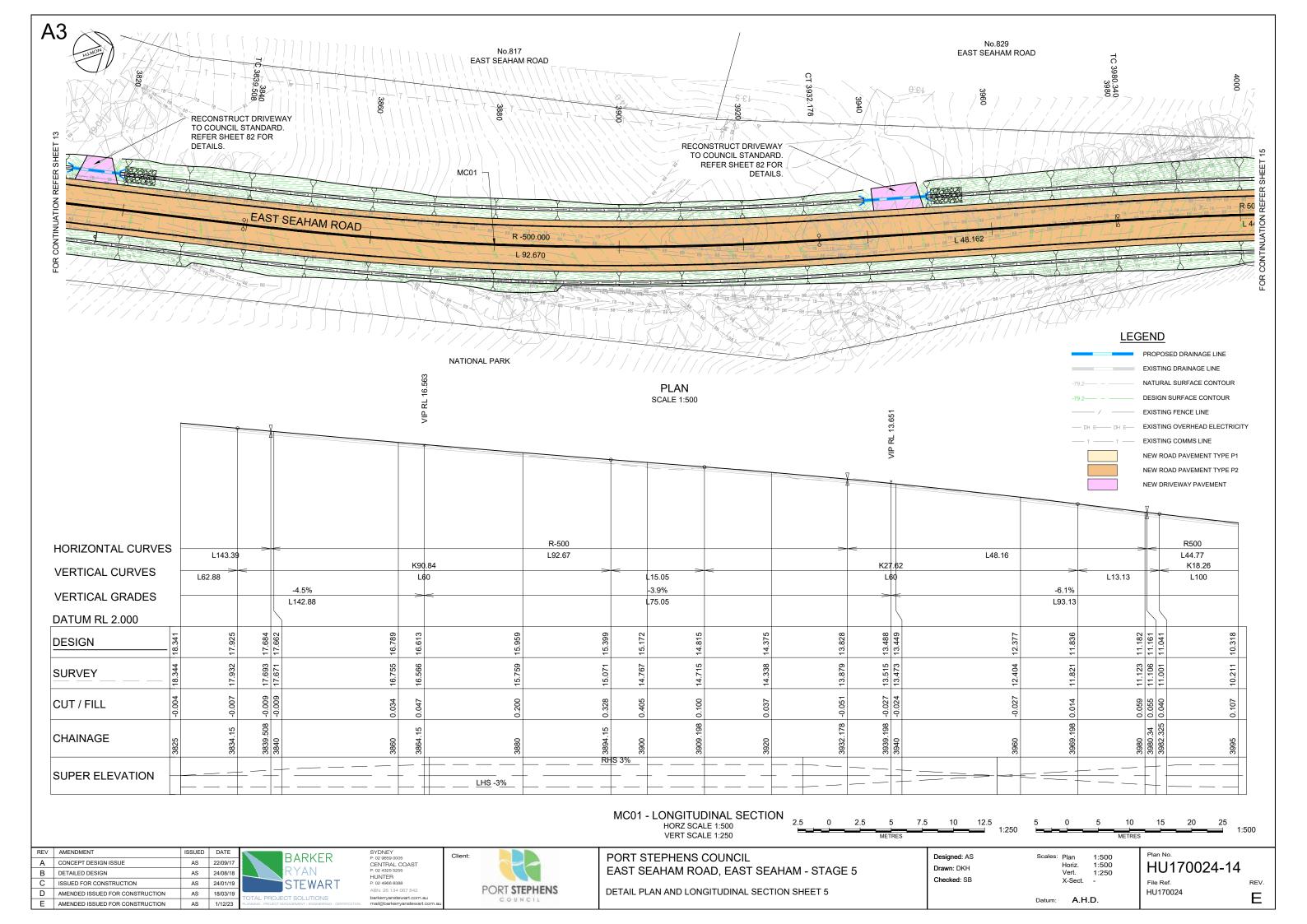
HU170024-06 Drawn: DKH EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5 B DETAILED DESIGN AS 24/08/18 Vert. HUNTER P: 02 4966 8388 ABN: 26 134 067 842 Checked: SB File Ref. ISSUED FOR CONSTRUCTION AS 24/01/19 STEWART PORT STEPHENS TYPICAL SECTION AND DETAILS SHEET HU170024 AMENDED ISSUED FOR CONSTRUCTION AS 18/03/19 Ε A.H.D. Datum: E AMENDED ISSUED FOR CONSTRUCTION AS 1/12/23

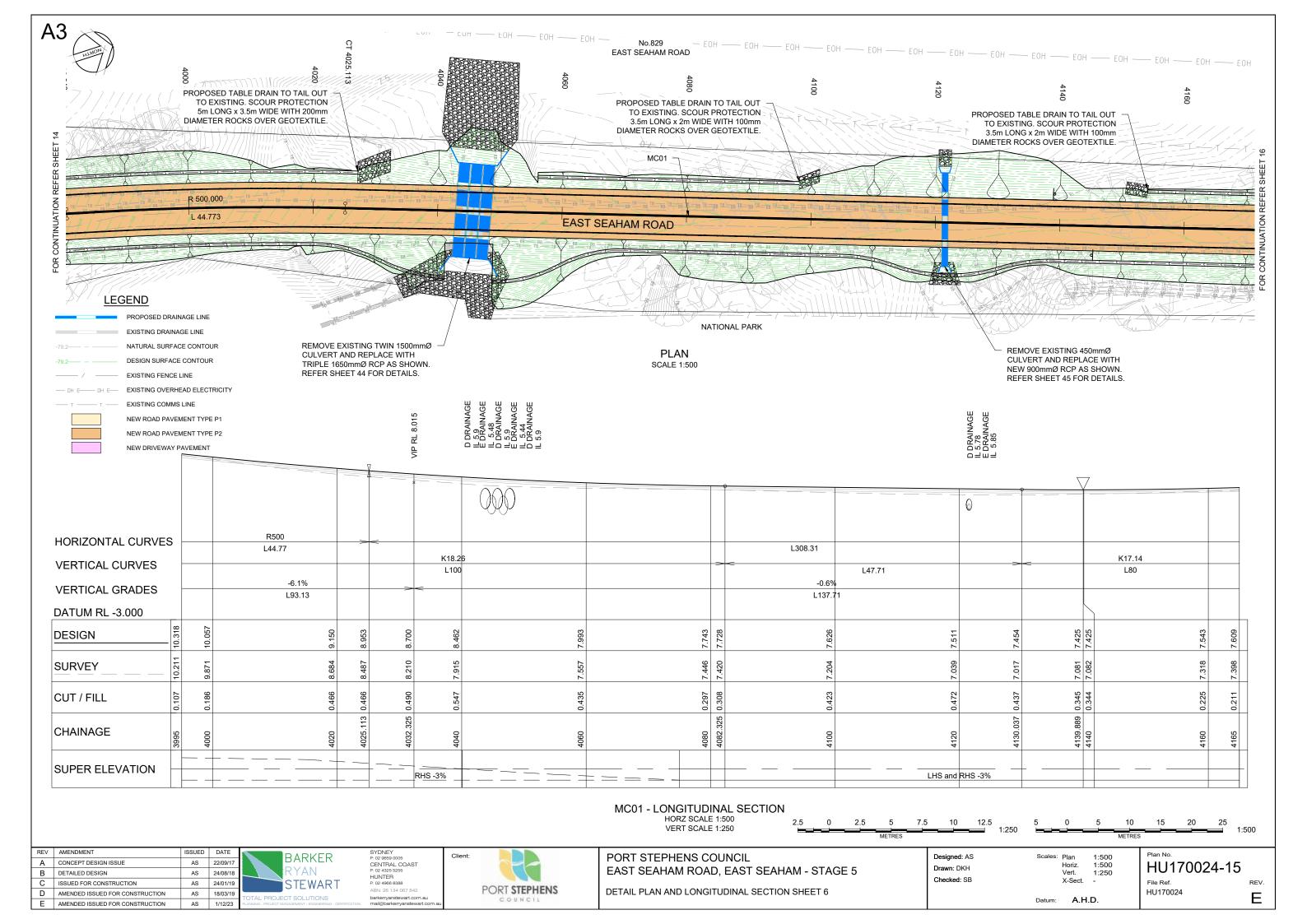


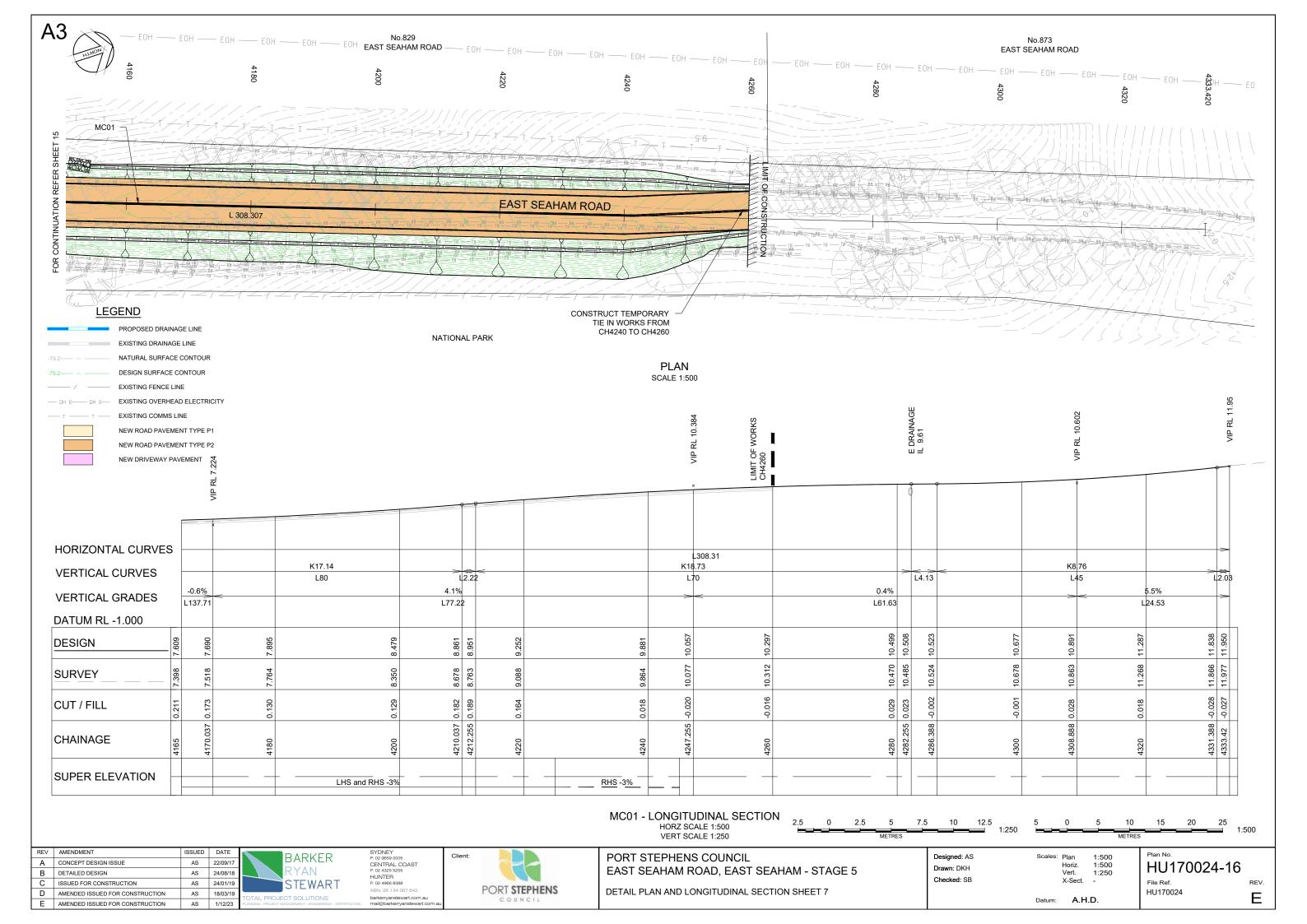


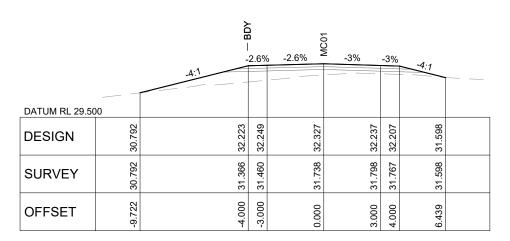








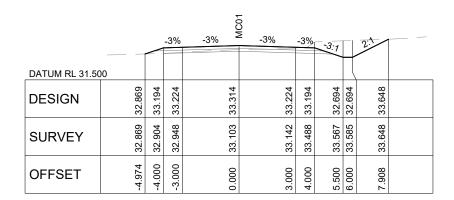




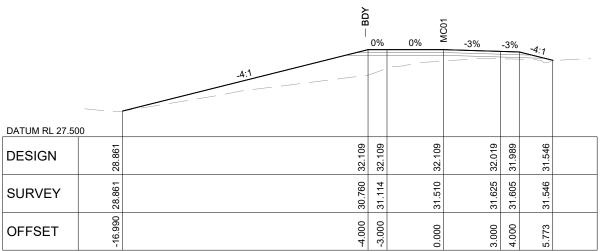
CH 3174.265

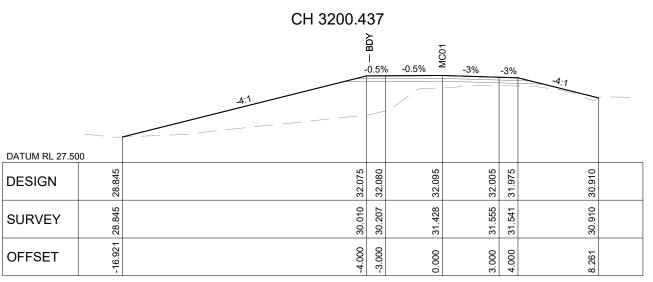
	- BD	-4:1		-3%	-3%		3 :1		2:^ <u>_</u>	
DATUM RL 31.00	00							ď		
DESIGN	32.117	32.627	32.657	32.747	32.657	32.627	32.127	32.127	32.629	
SURVEY	32.117	32.327	32.407	32.383	32.433	32.598	32.618	32.586	32.629	
OFFSET	-6.038	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.005	

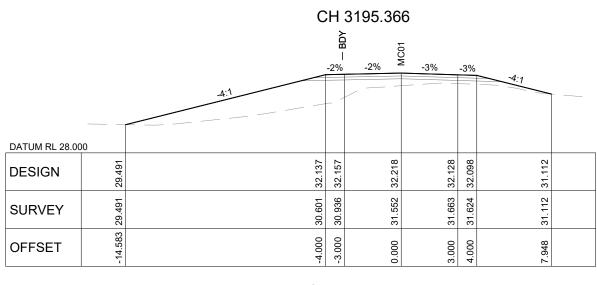
CH 3160



CH 3147







CH 3180

2	0	2	4	6	8	10	
			-	-			1:200
			METRES				

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	22/09/17
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
Е	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23

BARKER STEWART

SYDNEY P: 02 9659 00 P: 02 9659 0005 CENTRAL COAST P: 02 4325 5255 HUNTER P: 02 4966 8388 ABN: 26 134 067 842

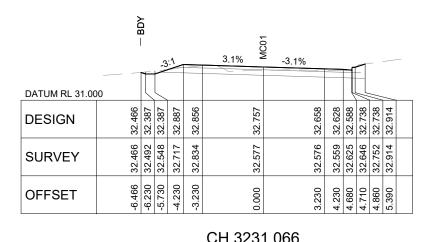


PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5 CROSS SECTION SHEET 1

Designed: AS Drawn: DKH	Scales:	Plan Horiz. Vert.	-
Checked: SB		X-Sect. 1:2	
	Datum:	A.H	.D.

HU170024-20 File Ref. REV. HU170024

Ε



	— BDY	3:1		-3:1		4%	-4%			3	.1_		_
DATUM RL 31.50	00								Į Į		_	L	
DESIGN	33.713	33.169	33.169	33.669	33.629	33.497	33.365	33.325	33.285	33.435	33.440	34.105	
SURVEY	33.713	33.678	33.621	33.627	33.627	33.629	34.016	34.066	34.089	34.090	34.110	34.105	
OFFSET	-7.934	-6.300	-5.800	-4.300	-3.300	00.00	3.300	4.300	4.750	4.780	5.180	7.175	

CH 3273.126

CH 3260

	— BDY	3:1	H	-3:1		4%	-4%		-		3:1_		
DATUM RL 31.50	00		Ц						Į		_		
DESIGN	33.519	32.867	32.867	33.367	33.327	33.195	23.00	33.023	32.983	33.133	33.133	33.138	33.666
SURVEY	33.519	33.374	33.379	33.397	33.382	33.361	00000	33.676	33.688	33.688	33.691	33.696	33.666
OFFSET	-8.257	-6.300	-5.800	-4.300	-3.300	0.000	000	4.300	4.750	4.780	4.930	5.180	6.765

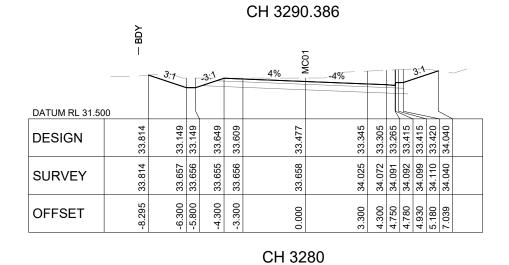
						CH 323	1.000							
		— BDY	-3	:1_		2.9%	5 ≥ × -3%							
		T								П				
DATUM RL 31.00	00									Į	L	<u></u>		
DESIGN	32.386	32.310	32.310	32.810	32.781	32.689		32.592	32.562	32.522	32.672	32.672	32.673	
SURVEY	32.386	32.404	32.461	32.630	32.754	32.506		32.511	32.493	32.488	32.509	32.614	32.673	
OFFSET	-6.443	-6.215	-5.715	-4.215	-3.215	0.000		3.215	4.215	4.665	4.695	4.845	4.935	

			Ť	3:1		4%	-4%		1	F	3:1	_		_
DATUM RL 31.50	00										_	_		
DESIGN	33.304	33.097	33.097	33.597	33.557	33.425	200.00	33.253	33.213	33.363	33.363	33.368	34.059	
SURVEY	33.304		33.361	33.435	33.445	33.419	000	33.794	33.843	33.846	33.862	33.883	34.059	
OFFSET	-6.920	-6.300	-5.800	-4.300	-3.300	0.000	000	4.300	4.750	4.780	4.930	5.180	7.255	

						CH 330	00							
	— BDY	3:1_		-3:1 ₋₁		4%	-4%		ıTI	⊤ 3	5:1	7	_	_
DATUM RL 31.50	0										_			
DESIGN	33.769	33.044	33.044	33.544	33.504	33.372	33.240	33.200	33.160	33.310	33.310	33.315	33.861	
SURVEY	33.769	33.614	33.612	33.608	33.605	33.583	33.826	33.900	33.933	33.935	33.943	33.946	33.861	
OFFSET	-8.476	-6.300	-5.800	-4.300	-3.300	000.0	3.300	4.300	4.750	4.780	4.930	5.180	6.819	

		CH	3229).12	22							
			— В D У			MC01						
				2%	2%	Ĭ	-3%	-3%		_		_
		A:1										
DATUM RL 29.50	00								Ĺ	Ļ	<u></u>	
DESIGN	30.892		32.493	32.473		32.411	32.317	32.287	32.247	32.397	32.403	
SURVEY	30.892		32.163	32.284	· •	32.115	32.206	32.169	32.146	τ. Ι	32.13 <i>/</i> 32.403	
OFFSET	-10.550		-4.147	-3.147		0.000	3.147	4.147	4.597	4.627	5.351	

	— BDY		-29	3:1_	4%	4%	MC01	-4%		-4%		3:	1			
DATUM RL 31.000		L	L									L	\leq	_	_	
DESIGN	32.849	32.722	32.722	33.222	33.182		33.050		32.918	32.878	32.838	32.988	32.988	32.993	33.348	
SURVEY	32.849	32.885	32.928	33.042	32.846		32.909		32.832	33.071	33.212	33.215	33.229	33.251	33.348	
OFFSET	-6.680	-6.300	-5.800	-4.300	-3.300		0.000		3.300	4.300	4.750	4.780	4.930	5.180	6.246	
						CH 3	3240	0.437								



REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	22/09/17
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
ш	AMENDED ISSUED FOR CONSTRUCTION	۸٥	1/12/22

BARKER STEWART

CH 3220

SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842

PORT STEPHENS

PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5 CROSS SECTION SHEET 2

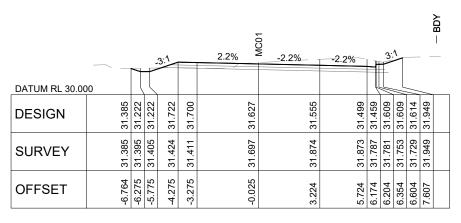
Designed: AS Scales: Plan Horiz. Vert. A.H.D. Datum:

HU170024-21 File Ref.

REV.

Ε

Drawn: DKH Checked: SB X-Sect. 1:200 HU170024



		3:1	<u> </u>	-3:1		-1.4%	1.4%		-3:1		3:1	
DATUM RL 27.50	00											
DESIGN	29.048	28.536	28.536	29.036	29.049	29.092	29.135	29.149	28.649	28.649	29.319	
SURVEY	29.048	28.826	28.721	28.768	28.799	28.769	29.532	29.566	29.582	29.587	29.319	
OFFSET	-7.761	-6.223	-5.723	-4.223	-3.223	-0.077	3.070	4.070	5.570	6.070	8.080	

		_A:1 _		-3%	3%			-4 :1	
DATUM RL 25.00									
DATOWINE 25.00	10					_			
DESIGN	26.272	26.629	26.659	26.752		26.845	26.875	26.122	
SURVEY	26.272	26.228	26.256	26.356		26.320	26.278	26.122	
OFFSET	-5.627	-4.200	-3.200	-0.100		3.000	4.000	7.011	

\neg	0040
. —	1 3 3 71 1 1
_ 1	3340

	~ _	<u> </u>	-3:1		3.2%	-3.2%		₽	Ŧ	1		_	
DATUM RL 30.50	0							Į	L	Ļ	_	_	
DESIGN	31.990		31.763	32.231	32.126	32.022	31.990	31.950	32.100	32.100	32.105	32.413	
SURVEY	31.990	32.007	32.020	31.998	32.242	32.422	32.501	32.536	32.538	32.550	32.569	32.413	
OFFSET	-6.970	(7)	-5.788	-3.288	-0.012	3.265	4.265	4.715	4.745	4.895	5.145	690.9	

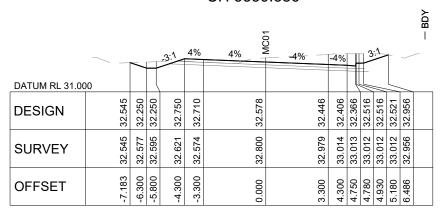
СН	3375.89	

		3:1	Ħ	-3:1		-0.9%	0.9%		-3:1	H	3:1	
DATUM RL 27.50	00		Ц									
DESIGN	29.404	28.951	28.951	29.451	29.459	29.487	29.515	29.524	29.024	29.024	29.805	
SURVEY	29.404	29.063	29.079	29.125	29.155	29.189	29.627	29.603	29.568	29.554	29.805	
OFFSET	-7.589	-6.230	-5.730	-4.230	-3.230	-0.070	3.091	4.091	5.591	6.091	8.436	

CH 3416.187

		3:1	7	.3:1		-3%	3%		-3:1		1-	
DATUM RL 25.50	00											
DESIGN	27.356	26.838	26.838	27.338	27.368	27.461	27.554	27.584	27.084	27.084	27.245	
SURVEY	27.356	27.406	27.418	27.045	27.093	27.158	27.243	27.242	27.242	27.243	27.245	
OFFSET	-7.753	-6.200	-5.700	-4.200	-3.200	-0.100	3.000	4.000	5.500	000.9	6.481	

CH 3330.386



CH 3371.066

			3:1_		0.2%		_	-3:1	П	3:1	- B
DATUM RL 28.50		\prod							Н		
DATUM RL 26.50	0		_						\vdash		
DESIGN	29.909	29.852	30.352	30.349	30.342	30.335	30.333	29.833	29.833	30.652	
SURVEY	29.909	29.915		29.975	30.161	30.451	30.591	30.635	30.650	30.652	
OFFSET	-6.420	-6.246	-4.246	-3.246	-0.054	3.138	4.138	5.638	6.138	8.596	

CH 3400

		3:4	<u>_</u> -	-3:1		-1.8%	1.8%		-3:1	H	3:1	
DATUM RL 27.00	00		\perp									
DESIGN	28.771	_	28.192	28.692	28.710	28.766	28.821	28.839	28.339	28.339	29.072	
SURVEY	28.771	28.745	28.415	28.468	28.500	28.484	29.027	29.137	29.215	29.222	29.072	
OFFSET	-7.954	.21	-5.718	-4.218	-3.218	-0.082	3.053	4.053	5.553	6.053	8.253	

CH 3320

CH 3360



REV	AMENDMENT	ISSUED	DATE	Ī
Α	CONCEPT DESIGN ISSUE	AS	22/09/17	l
В	DETAILED DESIGN	AS	24/08/18	l
С	ISSUED FOR CONSTRUCTION	AS	24/01/19	l
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19	l
Е	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23	l

		BARKER Ryan Stewart
-	TOTAL PROJECT MAN	T SOLUTIONS LAGEMENT - ENGINEERING - CERTIFICATION

SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842



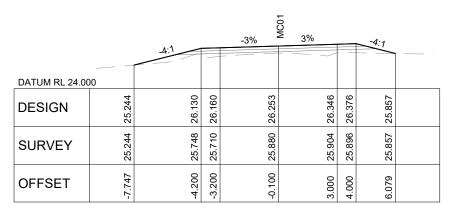
PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5 CROSS SECTION SHEET 3

Designed: AS Drawn: DKH	Scales:	Horiz.	-
Checked: SB		Vert. X-Sect.	- 1:20
	Datum:	A.H	.D.

HU170024-22 File Ref. HU170024

REV.

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			<u>-3:1</u>		-3%	3%		-3:1	حملت	+ /
DATUM RL 24.50	0									
DESIGN	25.974	25.863	25.863	26.393	26.486	26.579	26.609	26.109	26.109	<u>+</u>
SURVEY	25.974	26.005	26.057	26.133	26.262	26.326	26.279	26.323	26.421	t 5
OFFSET	-6.533	-6.200	-5.700	-3.200	-0.100	3.000	4.000	5.500	6.000	

		<u>-</u> 3:1		-3:1	-3%	-3%	3%	3%	-3 :1		-3:1	
DATUM RL 24.50	00	/	+							\prod		
DESIGN	26.347	25.962	25.962	26.462	26.492	26.585		26.708	26.208	26.208	26.847	
SURVEY	26.347	26.447	26.490	26.551	26.502	26.603		26.641	26.643	26.717	26.847	
OFFSET	-7.357	-6.200	-5.700	-4.200	-3.200	-0.100		3.000	5.500	000.9	7:917	

\sim ıı	3445.231	
. H	3445 / 3	
<i>-</i>	UTTU.LU	

			-3%	-3%	3%	3%	4:1	
DATUM RL 24.00		-4:1						
DESIGN	25.212	26.147	26.177	26.270	26.363	26.393	25.856	
SURVEY	25.212	25.707	25.728	25.901	25.789	25.827	25.856	
OFFSET	-7.937	4.200	-3.200	-0.100	3.000	4.000	6.147	

CH:	3469.	045
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		-A:1		-3%	3%			-4:1	
DATUM RL 24.00		4.							
DESIGN	25.432	26.249	26.279	26.372		26.465	26.495	25.931	
SURVEY	25.432	26.002	25.926	26.069		26.060	26.022	25.931	
OFFSET	-7.470	-4.200	-3.200	-0.100		3.000	4.000	6.259	

CH 3484.696

		\	_3:1_	-3%	-3%	3%	3%	-3:1	Ŧ	3:1	
DATUM RL 24.50	00										
DESIGN	26.267	25.953	25.953	26.483	26.576	26.669	26.699	26.199	26.199	26.708	
SURVEY	26.267	26.336	26.374	26.398	26.508	26 618	26.567	26.570	26.648	26.708	
OFFSET	-7.142		-5.700 4.200	-3.200	-0.100	3 000	4.000	5.500	0.000	7.526	

CH 3440

				-3%	5 2 2 3%		4:1	
		-A:1				_		
DATUM RL 24.50	00							
DESIGN	25.508	26.506	26.536	26.629	26 700	26.752	25.894	
SURVEY	25.508	26.076	26.107	26.209	26.046	25.917	25.894	
OFFSET	-8.191	-4.200	-3.200	-0.100	000 6	4.000	7.432	
	7	1	-7	1 7) 4		

CH 3460

				-3%	3%		-4:1	
		-A:1						
DATUM RL 24.00	00							
DESIGN	25.274	26.198	26.228	26.321	26.414	26.444	25.794	
SURVEY	25.274	25.884	25.840	25.986	25.964	25.920	25.794	
OFFSET	-7.895	-4.200	-3.200	-0.100	3.000	4.000	6.599	
	•							

CH 3480

			7	3:1	-3%	-3%	3	%	3%	-3:1	H	3:1	
DATUM RL 24.50	00												
DESIGN	26.174	ര	25.932	26.432	26.462	26.555		26.648	26.678	26.178	26.178	26.585	
SURVEY	26.174		26.268	26.378	26.309	26.429		26.553	26.464	26.485	26.550	26.585	
OFFSET	-6.927		-5.700	-4.200	-3.200	-0.100		3.000	4.000	5.500	000.9	7.221	

CH 3455.89

CH 3476.111



REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	22/09/17
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
Е	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23



SYDNEY
P. 02 9659 0005
CENTRAL COAST
P. 02 4555 5255
HUNTER
P. 02 4966 8388
ABN: 26 134 067 842
barkerryanstewart.com.au
mail@barkerryanstewart.com.au

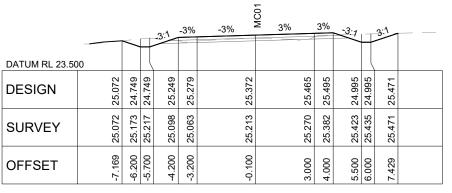


PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5 CROSS SECTION SHEET 4

Designed: AS Drawn: DKH	Scales:	Plan Horiz. Vert.	-
Checked: SB		X-Sect.	1:200
	Datum:	A.H	.D.

File Ref.

HU170024-23 REV. HU170024 Ε



25	25	25	25			37	,
0	0	0	6		SURVEY	23.68	Š
4.00	5.50	0.00	7.42			1	
				,	OFFSET	3.48	

DATUM RL 22.500

DESIGN

		3:1		3:1	-7%	-7%	7% ————————————————————————————————————	7%	-3:1	7	3:1	
DATUM RL 20.50	00									\perp		
DESIGN	22.692	22.107	22.107	22.618	22.688	22.940	23.192	23.262	22.762	22.762	24.693	
SURVEY	22.692	22.990	22.957	22.854	22.707	22.894	22.928	23.006	23.158	23.286	24.693	
OFFSET	-8.385	-6.631	-6.131	-4.600	-3.600	0000	3.600	4.600	6.100	0.09.9	12.393	

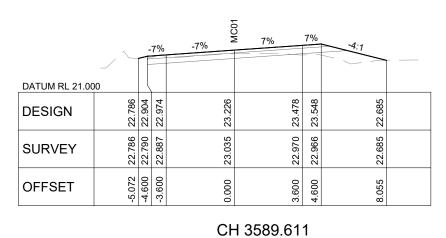
CH 3600

CH 3539.611

		3:1		3:1	-3%	-3%	00 3% −	3%	·3:1	Ц	3:1	
DATUM RL 24.00	0										_	
DESIGN	25.860	25.461	25.461	25.960	25.990	26.083	1	26.206		25.707	26.581	
SURVEY	25.860	25.953	25.992	25.961	26.044	26.139		26.465	26.460	26.465	26.581	
OFFSET	-7.399	-6.200	-5.700	-4.200	-3.200	-0.100		3.000	5.500	0.0009	8.623	

CH 3520

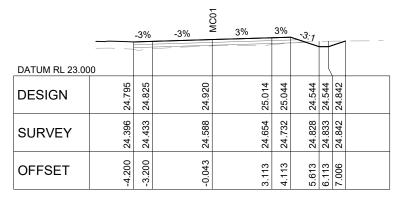
			-3%	3%_			-3 :1			
		_						П	1	
DATUM RL 23.00	0									
DESIGN	24.669	24.699	24.794		24.889	24.919	24.420	24.420	24.645	
SURVEY	24.248	24.264	24.428		24.522	24.609	24.634	24.638	24.645	
OFFSET	-4.200	-3.200	-0.029		3.142	4.142	5.642	6.142	6.817	



CH 3551.467

CH 3560

		3:1	-3:1	-3%	-3%_	3%	3%	-3:1		3:1	< <i>/</i>
DATUM RL 24.50	0										
DESIGN	26.288	25.867	25.867	26.397	26.490	26.583	26.613	26.113	26.113	27.033	
SURVEY	26.288	26.404	26.450	26.518	26.614	26.831	26.858	26.891	26.910	27.033	
OFFSET	-7.461	-6.200	-5.700	-3.200	-0.100	3.000	4.000	5.500	0.000	8.758	



DESIGN 23.086 23.348 23.742 25.362 23.348 23.267 25

CH 3500 CH 3549.045 CH 3580

2	0	2	4	6	8	10	1.200
			METRES				1.200

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	22/09/17
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
F	AMENDED ISSUED FOR CONSTRUCTION	ΔS	1/12/23

	BARKER
	RYAN ISTEWART
	ECT SOLUTIONS

SYDNEY
P. 02 9659 0005
CENTRAL COAST
P. 02 4325 5255
HUNTER
P. 02 4966 8388
ABN: 26 134 067 842
barkerryanstewart.com.au
mail@barkerryanstewart.com.au



PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5

23.866

23.

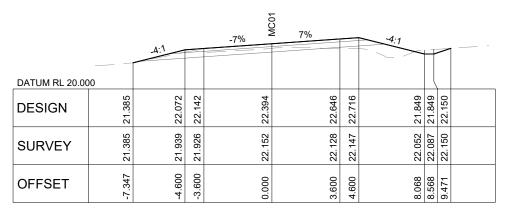
Designed: AS Drawn: DKH	Scales:	Plan Horiz. Vert.	-
Checked: SB		X-Sect.	
	Datum:	A.H	.D.

Plan No.
HU170024-24
File Ref. REV.

Ε

CROSS SECTION SHEET 5

File Ref. HU170024



		-A:1	4.9%	-4.9%	4.9%		4.9%	-3.2:1	ما	_	
DATUM RL 20.00											
DESIGN	21.644	22.262	22.311	22.477		22.642	22.691	22.165	22.165	22.412	
SURVEY	21.644	21.863	21.932	22.085		22.117	22.212	22.329	22.362	22.412	
OFFSET	-6.890	4.416	-3.416	0.000		3.416	4.416	6.111	6.611	7.352	

CH 3661.467

			-3:1 -		-3%	1%		~-3: ₁		3:1_	
		1	-3						H		
DATUM RL 21.00	0										
DESIGN	22.198	22.032 22.032	22.532	22.562	22.655	22.686	22.697	22.197	22.197	22.625	
SURVEY	22.198	22.235	22.383	22.266	22.466	22.413	22.537	22.562	22.571	22.625	
OFFSET	-6.587	-6.089	-4.089	-3.089	0.000	3.089	4.089	5.589	6.089	7.372	

\sim 11	3644.247	
(.H	3044 /4/	

		<u>-4:1</u>	5.1%	5.1%	5.1% 5.1%	5.1%	-3.3:1			
DATUM RL 20.00	0									1
DESIGN	21.672	22.239	22.289	22.463	22.637	22.687	22.136	22.136	22.405	
SURVEY	21.672	21.873	21.925	22.081	22.097	22.174	22.318	22.351	22.405	
OFFSET	-6.702	-4.433	-3.433	0000	3.433	4.433	6.246	6.746	7.554	

CH 3688.728

		<u> </u>		-3%	2.3%		-3:1	H ³	3:1	
DATUM RL 20.50	00									
DESIGN	22.019	22.508	22.538	22.634	22.706	22.728	22.228	22.228	22.588	
SURVEY	22.019	22.223	22.117	22.348	22.291	22.436	22.506	22.532	22.588	
OFFSET	-6.149	-4.193	-3.193	0.000	3.193	4.193	5.693	6.193	7.273	

			Ŧ	<u>-3.5:1</u>	-7%	-7%	7%	7%	-3.5:1	П	3:1	
DATUM RL 20.50	0											
DESIGN	22.022	21.736	21.736	22.236	22.306	22.558	22.810	22.880	21.831	21.831	22.186	
SURVEY	22.022		22.091	22.219	22.255	22.528	22.624	22.657	22.480	22.296	22.186	
OFFSET	-7.694	-6.836	-6.336	-4.600	-3.600	0.000	3.600	4.600	8.230	8.730	9.794	

		-A:1 <u> </u>	-7%	-7%	5 5 ≥ 7%	7%	-4:1	- 1		
								П		
DATUM RL 20.00	00									
DESIGN	21.446	22.073	22.143	22.395	22.647	22.717	21.869	21.869	22.170	
SURVEY	21.446	21.904	21.910	22.136	22.104	22.101	22.064	22.102	22.170	
OFFSET	-7.107	-4.600	-3.600	0.000	3.600	4.600	7.992	8.492	968.6	

CH 3660

CH 3680

		-A:1	3.5%	5 -3.5%	3.5%	3.5%	-3:1		
DATUM RL 20.00	no								
DESIGN	21.671	22.421	22.456	22.571	22 685	22.720	22.220	22.381	
SURVEY	21.671	21.991	21.987	22.204	20 202	22.320	22.352	22.381	
OFFSET	-7.297	-4.298	-3.298	0.000	3 208	4.298	5.798	6.780	

CH 3646.119 CH 3620

CH 3671.268

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	22/09/17
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
E	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23

DATUM RL 20.000

DESIGN

SURVEY

OFFSET

21.983 22.077 21.966 22.147

-3.600 -4.600

	BARKER RYAN STEWART
TOTAL PROJECT M	CT SOLUTIONS IANAGEMENT - ENGINEERING - CERTIFICATION

SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842

8.161 8.661 9.272



PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5

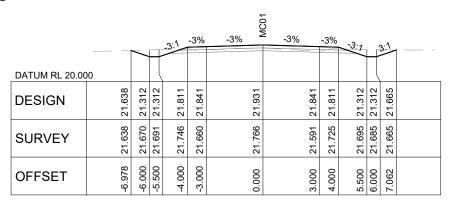
Designed: AS	Scales:		-
Drawn: DKH		Horiz. Vert.	-
Checked: SB		X-Sect.	1:200
	Datum:	A.H	.D.

HU170024-25 File Ref. HU170024

REV.

Ε

CROSS SECTION SHEET 6



		3:1	H	.3:1	-3%	3%	-2.5%	-2.5%	3:1		3:1	
DATUM RL 17.50	00		Ц									
DESIGN	19.538	18.856	18.856	19.356	19.386	19.476	19.403	19.378	18.878	18.878	19.531	
SURVEY	19.538	19.443	19.454	19.479	19.495	19.470	19.577	19.553	19.517	19.504	19.531	
OFFSET	-8.045	-6.000	-5.500	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.959	

CH 3800
CH 3800

			3:1_	-3%	-3%	-3%	-3%	-3:1		3:1_	
		\downarrow	13:50					3.7	H	3.	
DATUM RL 20.50	0		\						\Box		
DESIGN	22.030	l I -	21.766	22.296	22.386		22.296	21.766	21.766	22.198	
SURVEY	22.030	22.086	22.141	22.170	22.319		22.224	22.172	22.179	22.198	
OFFSET	-6.793	-6.000	-5.500	-3.000	000.0		3.000	5.500	000.9	7.297	

		3:1		3.1	-3%	-3%	-3%	-3%	-3:1		3:1	
DATUM RL 18.50	00											
DESIGN	20.395	19.764	19.764	20.264	20.294	20.384	20.294	20.264	19.764	19.764	20.297	
SURVEY	20.395	20.435	20.421	20.232	20.268	20.256	20.293	20.322	20.312	20.298	20.297	
OFFSET	-7.891	-6.000	-5.500	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.599	

CH 3771.268

		3:1		1	-3%	-3%	1.5%	1.5%	-3:1	H	3:1	
DATUM RL 16.00	00										\	
DESIGN	17.826	17.062	17.062	17.562	17.592	17.684	17.730	17.745	17.245	17.245	17.687	
SURVEY	17.826	17.750	17.737	17.524	17.578	17.694	17.567	17.816	17.759	17.739	17.687	
OFFSET	-8.392	-6.100	-5.600	-4.100	-3.100	-0.050	3.000	4.000	5.500	000.9	7.326	

-0.5% -0.5% -3:1

22.098 22.098

22.554

5.500

22.140 22.140

22.595

5.500

22.656

4.000

0%

CH 3740

		3:1	H	.3:1	-3%	-3%	-3%	-3%	-3:1	\vdash	3:1	
DATUM RL 19.00	00									$ \ $		
DESIGN	20.641	20.161	20.161	20.661	20.691	20.781	2000	20.661	20.161	20.161	20.606	
SURVEY	20.641	20.633	20.555	20.528	20.572	20.595	20,000	20.684	20.648	20.637	20.606	
OFFSET	-7.441	-6.000	-5.500	-4.000	-3.000	0.000	C	4.000	5.500	000.9	7.335	

		3:1-	Ц	-3:1	-3%	-3%	3 ≥ 1%	1%	-3:1	H	3:1	/ -
DATUM RL 16.00	0									Ц		
DESIGN	18.117	17.305	17.305	17.804	17.834	17.925	17.955	17.964	17.464	17.464	17.848	
SURVEY	18.117	18.053	18.040	17.854	17.817	17.933	17.815	17.941	17.905	17.893	17.848	

-4.064

OFFSET

СН	3700
011	0100

0%

-3%

						3						
		_	7	-3:1	-3%	-3%	-3%	-3%	-3:1	Н	3:1	
DATUM RL 19.50	0											
DESIGN	20.925	20.637	20.637	21.137	21.167	21.257	21.167	21.137	20.637	20.637	21.152	
SURVEY	20.925	20.955	20.976	20.909	20.989	21.038	21.168	21.158	21.158	21.158	21.152	
OFFSET	-6.862		-5.500	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.543	
-												

CH 3834.15

CH 3839.508

		3:1	H	.3:1	-3%	-3% E	-0.5%	0.5%	3:1	Н	3:1	
DATUM RL 16.50	00											
DESIGN	18.691	17.948	17.948	18.448	18.478	18.568	18.554	18.550	18.050	18.050	18.731	
SURVEY	18.691	18.585	18.552	18.391	18.489	18.574	18.431	18.643	18.578	18.569	18.731	
OFFSET	-8.230	-6.000	-5.500	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	8.043	

CH 3696.119

CH 3760

2	0	2	4	6	8	10	1.200
			METRES				

5.500 6.000 7.152

4.000

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	22/09/17
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
Е	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23

DATUM RL 20.500

DESIGN

SURVEY

OFFSET

DATUM RL 21.000

DESIGN

SURVEY

OFFSET

22.328 22.000 22.000

-6.985 -6.000 -5.500

22.339 22.339 22.375 22.020 22.394 22.020

-6.958 -6.000 -5.500

-4.000

22.500

-3.000

	BARKER
	RYAN
	STEWART
,	TOTAL PROJECT SOLUTIONS PLANNING - PROJECT MANAGEMENT - ENGINEERING - CERTIFICATION

SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842



PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5

Designed: AS	Scales: Plan	-
Drawn: DKH	Horiz. Vert.	-
Checked: SB	X-Sect.	1:20

A.H.D. Datum:

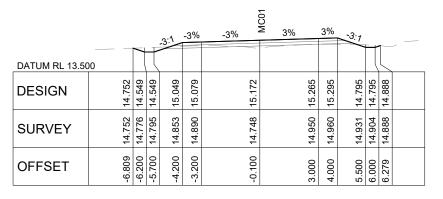
CH 3820

HU170024-26 REV.

Ε

CROSS SECTION SHEET 7

File Ref. HU170024



	-	1.6%	5 -1.6%	5 2 1.6%	1.6%	-3:1		0:1	
						9.7	H	3:1	
DATUM RL 11.50	00								
DESIGN	13.382	13.398	13.449	13.499	13.515	13.015	13.015	13.422	
SURVEY	13.330	13.319	13.470	13.166	13.272	13.367	13.387	13.422	
OFFSET	4.154	-3.154	-0.054	3.046	4.046	5.546	6.046	7.267	

				0.1	-3%	-3%	MC01	3%	3%	-3:1			
			Ŧ	-3:1							П		
DATUM RL 13.50	0											L	
DESIGN	15.076	4.	14.776	15.276	15.306	15.399		15.492	15.522	15.022	15.022	15.102	
SURVEY	15.076	5.1	15.135	15.179	15.182	15.058		15.194	15.194	15.133	15.112	15.102	
OFFSET	860.7-	-6.200	-5.700	-4.200	-3.200	-0.100		3.000	4.000	5.500	000.9	6.240	

		3:1	3:1	2.4%	6 -2.4%	2.4%	2.4%	-3:1		_	_
DATUM RL 12.00	00										
DESIGN	13.610	13.230	13.230	13.754	13.828	13.903	13.927	13.427	13.427	13.739	
SURVEY	13.610	13.630	13.637	13.739	13.875	13.514	13.612	13.700	13.712	13.739	
OFFSET	-7.320	-6.180	-5.680	-3.180	-0.080	3.020	4.020	5.520	6.020	926.9	

		3:1		-3:1	2.4%	2.4%	-2.4%	2.4%	3:1		3:1	
DATUM RL 9.500)											
DESIGN	11.674	10.760	10.760	11.260	11.236	11.161	11.087	11.063	10.563	10.563	11.214	
SURVEY	11.674	11.699	11.685	11.542	11.357	11.112	11.266	11.257	11.208	11.187	11.214	
OFFSET	-8.761	-6.020	-5.520	-4.020	-3.020	0.080	3.180	4.180	5.680	6.180	8.133	

CH 3980.34

CH 3969.198

CH 3894.15

CH 3900

		3:1	H	-3:1	-3%	-3%	MC01	3%		3%	-3:1	A	3:1	
DATUM RL 14.00	00													
DESIGN	15.746	15.336	15.336	15.836	15.866		15.959		16.052	16.082	15.582	15.582	16.073	
SURVEY	15.746	15.763	15.770	15.791	15.805		15.751		15.812	15.781	15.715	15.958	16.073	
OFFSET	-7.429	-6.200	-5.700	-4.200	-3.200		-0.100		3.000	4.000	5.500	000.9	7.473	

		/	3:1		-3%	50 ≥ 3%		-3:1	+1	
DATUM RL 12.50	0									
DESIGN	14.032	13.752	14.252	14.282	14.375	14.468	14.498	13.998	14.194	
SURVEY	14.032	14.071	14.180	14.223	14.337	14.068	14.135	14.191	14.195	
OFFSET	-7.040	-6.200		-3.200	-0.100	3.000	4.000	5.500	6.589	

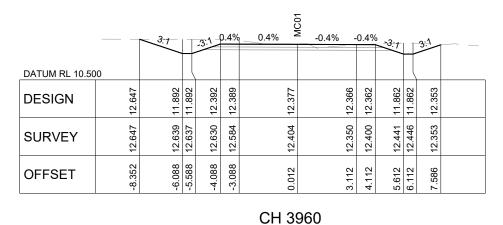
CH 3932.178

CH 3920

		3:1		-3:1	1.3%	1.3%	-1.3%	-1.3%	3:1	H	3:1	
DATUM RL 10.00	00		Ц									
DESIGN	12.265	11.389	11.389	11.889	11.876	11.836	11.796	11.783	11.283	11.283	11.953	
SURVEY	12.265	12.227	12.194	12.075	11.996	11.809	11.881	11.907	11.893	11.872	11.953	
OFFSET	-8.684	-6.057	-5.557	-4.057	-3.057	0.043	3.143	4.143	5.643	6.143	8.155	

		3:1	نا ۱	-3:1	_	-3%	3%		-3:1	F	7	
DATUM RL 15.00	0											
DESIGN	16.755	16.166	16.166	16.666	16.696	16.789	16 882	16.912	16.412	16.412	16.709	
SURVEY	16.755	16.728	16.721	16.700	16.469	16.756	16 649	16.545	16.744	16.731	16.709	
OFFSET	-7.969	-6.200	-5.700	-4.200	-3.200	-0.100	3 000	4.000	5.500	000.9	6.891	

			-3:1		-3%	3%		-3:1		-	
DATUM RL 13.00	0					-					
DESIGN	14.459	4	14.192	14.722	14.815		14.938	14.438	14.438	14.577	
SURVEY	14.459	14.481	14.485	14.518	14.734		14.593	14.600	14.592	14.577	
OFFSET	-6.999	-6.200	-5.700	-3.200	-0.100		3.000	5.500		6.416	



CH 3860

CH 3909.198

2	0	2	4	6	8	10	
							1:200
			METRES				1.200

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	22/09/17
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
Е	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23



SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842

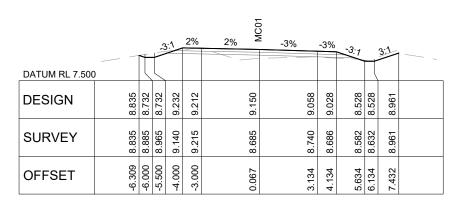


PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5 CROSS SECTION SHEET 8

Designed: AS Drawn: DKH Checked: SB	Scales:	Plan Horiz. Vert. X-Sect.	- - 1:200
	Datum:	A.H	.D.

HU170024-27 File Ref.

REV. HU170024 Ε



				3:1		-2%	-3%					
DATUM DUE 500			Ť	9					-3:1		3:1	
DATUM RL 5.500)	\mapsto	\rightarrow									
DESIGN	7.624	7.413	7.413	7.913	7.933	7.993	7.903	7.873	6.547	6.547	7.376	
SURVEY	7.624	7.676	7.717	7.776	7.813	7.557	099.2	7.657	7.496	7.476	7.376	
OFFSET	-6.633	-6.000	-5.500	-4.000	-3.000	0.000	3.000	4.000	7.977	8.477	10.965	

CH 4020 -3% -3% DATUM RL 8.000 DESIGN 10.213 9.921 SURVEY -6.000 -4.000 4.200 0.100 OFFSET

CH 4000

				CH 40	60					
	— BDY			0%	- -3%					— BDY
		4:1					-3:1			
DATUM RL 4.500)									
DESIGN	7.054	8.462	8.462	8.462	8.372	8.342	6.201	6.201	6.205	
SURVEY	7.054	7.434	7.770	7.915	7.965	7.935	6.038	6.109	6.205	
OFFSET	-9.631	4.000	-3.000	0.000	3.001	4.001	10.422	10.922	11.256	

CH 4040

		3:1		-3:1		2.6%	-2.6%		3:1	H	3:4
JM RL 9.000)									$ \ $	
CION	29	48	48	48	22	14	09	34	34	34	

		3:1		-3:1	,	2.6%	-2.6%		-3:1		3:1	
DATUM RL 9.000	1		Ц									
DESIGN	11.567	10.648	10.648	11.148	11.122	11.041	10.960	10.934	10.434	10.434	11.110	
SURVEY	11.567	11.588	11.608	11.429	11.245	11.008	11.147	11.134	11.075	11.055	11.110	
OFFSET	-8.769	-6.013	-5.513	-4.013	-3.013	0.087	3.187	4.187	5.687	6.187	8.215	

			. 3:	١.		1.5%	-3%						
		П								-3:1	}	1	
DATUM RL 7.000	ı	V	_									_	
DESIGN	8.560	8.514	8.514	9.014	8.999	8.953		8.862	8.832	8.159	8.159	8.258	
SURVEY	8.560	8.574	8.623	8.769	8.866	8.488		8.473	8.453	8.829	8.377	8.258	
OFFSET	-6.140	-6.000	-5.500	-4.000	-3.000	0.050		3.100	4.100	6.119	6.619	6.917	

CH 3982.325 CH 4025.113

REV	AMENDMENT	ISSUED	DATE	1
Α	CONCEPT DESIGN ISSUE	AS	22/09/17	ŀ
В	DETAILED DESIGN	AS	24/08/18	Ì.
С	ISSUED FOR CONSTRUCTION	AS	24/01/19	Н
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19	Ľ
Е	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23	F

		BARKER
1		RYAN
		STEWART
1	TOTAL PROJECT N	ECT SOLUTIONS MANAGEMENT - ENGINEERING - CERTIFICATION

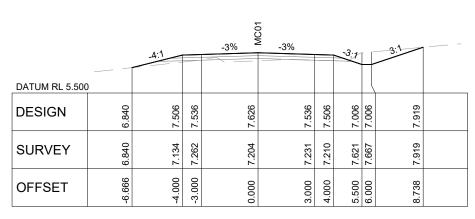
SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842



PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5 CROSS SECTION SHEET 9

Designed: AS Drawn: DKH	Scales:	Plan Horiz. Vert.	-
Checked: SB		X-Sect.	1:200
	Datum:	A.H	D.

HU170024-28 File Ref. REV. HU170024 Ε



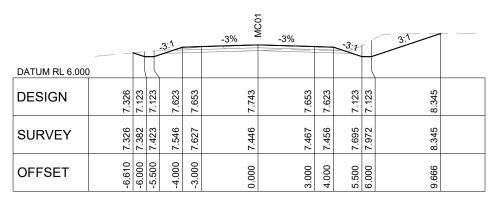
	— BDY			-3%	-3%		-3 :1			
DATUM RL 4.500		<u>A:1</u>					<u> </u>			
DESIGN	6.049	7.305	7.335	7.425	7.335	7.305	6.805	6.805	7.132	
SURVEY	6.049	6.840	6.865	7.081	7.056	7.043	7.056	7.024	7.132	
OFFSET	-9.023	4.000	-3.000	0.000	3.000	4.000	5.500	000.9	6.979	

			-3: <u>1</u>		-3%	-3%		` 3:1		3:1	
DATUM RL 6.000									1		
DESIGN	7.290	7.108	7.608	7.638	7.728	7.638	7.608	7.108	7.108	8.445	
SURVEY	7.290	7.342	7.523	7.605	7.420	7.429	7.418	7.745	8.022	8.445	
OFFSET	-6.547	-6.000	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	10.011	

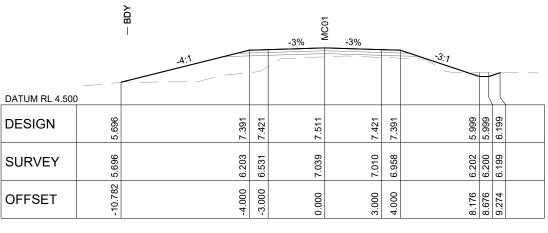
CH 4139.889

		- BD∀		-3%	-3%					
		4:1	,				-3:1			
DATUM RL 4.000)								\setminus	\
DESIGN	5.391	7.334	7.364	7.454	7.364	7.334	6.326	6.326	6.548	
SURVEY	5.391	6.451	6.765	7.017	6.999	6.916	6.643	6.602	6.548	
OFFSET	-11.769	-4.000	-3.000	0.000	3.000	4.000	7.024	7.524	8.191	

CH 4082.325



CH 4130.037



CH 4080 CH 4120

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	22/09/17
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
F	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23

	BARKER RYAN STEWART
TOTAL PROJECT N	ECT SOLUTIONS

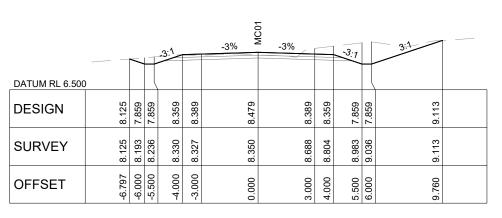
SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842



PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5 CROSS SECTION SHEET 10

Designed: AS	Scales: Plan	-
Drawn: DKH	Horiz. Vert.	-
Checked: SB	X-Sec	t. 1:200
	Datum: A .	H.D.

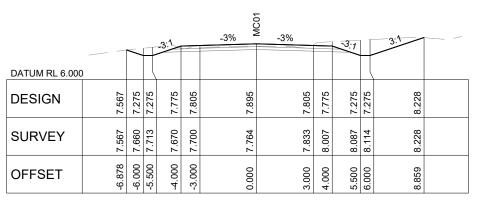
HU170024-29 File Ref. REV. HU170024 Ε



	— BDY	3:1		3:1		-3%	MC01	-3%		-3:1		3:1	
DATUM RL 7.500)		\perp										
DESIGN	9.090	8.632	8.632	9.132	9.162	9.252		9.162	9.132	8.632	8.632	10.062	
SURVEY	060.6	9.223	9.272	9.070	9.105	880.6		9.542	9.651	9.683	9.632	10.062	
OFFSET	-7.372	-6.000	-5.500	-4.000	-3.000	0.000		3.000	4.000	5.500	000.9	10.290	

CH 4220

CH 4200



		3:1	П	-3:1		-3%	-3%		-3:1		3:1	
DATUM RL 7.000)										,	
DESIGN	8.723	8.331	8.331	8.831	8.861	8.951	8.861	8.831	8.331	8.331	9.752	
SURVEY	8.723	8.865	8.924	8.748	8.788	8.763	9.243	9.381	9.422	9.365	9.752	
OFFSET	-7.175	-6.000	-5.500	-4.000	-3.000	0.000	3.000	4.000	5.500	0.0009	10.263	

CH 4212.255

			2	٠1		-3%	MC01	-3%		3:1		-3:1	
DATUM RL 5.500				2	_					9.7	+		
DESIGN	7.016	6.923	6.923	7.423	7.453		7.543	7.453	7.423	6.923	6.923	7.826	
SURVEY	7.016	7.047	7.102	7.228	7.201		7.318	7.224	7.564	7.646	7.674	7.826	
OFFSET	-6.279	-6.000	-5.500	-4.000	-3.000		0.000	3.000	4.000	5.500	000.9	8.708	

						20/	3					
		_3: ₁		-3:1		-3%	-3% -		-3:1		3:1	
		3.7	H							H		
DATUM RL 7.000											\	
DESIGN	8.608	8.241	8.241	8.741	8.771	8.861	8.771	8.741	8.241	8.241	9.662	
SURVEY	8.608	8.741	8.802	8.690	9.698	8.678	9.146	9.286	9.357	9.299	9.662	
OFFSET	-7.101	-6.000	-5.500	-4.000	-3.000	00.00	3.000	4.000	5.500	000.9	10.263	
			•	•								

CH 4160 CH 4210.037

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	22/09/17
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
Е	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23

	BARKFR
7	
8	RYAN
	STEWART
	TOTAL PROJECT SOLUTIONS
	PLANNING - PROJECT MANAGEMENT - ENGINEERING - CERTIFICATION

SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842
barkeryenstewart cons



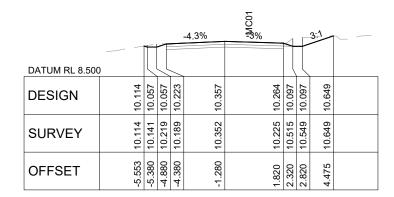
PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5

Designed: AS	Scales: Plan Horiz.	-
Drawn: DKH	Vert.	_
Checked: SB	X-Sect.	1:20

HU170024-30 File Ref. REV. HU170024

Ε

CROSS SECTION SHEET 11 A.H.D.



	— BDY						MC01						
		3:1	7	3:1		-3%		-3%		-3:1	\Box	3:1	
DATUM RL 8.000)		\perp										
DESIGN	9.734	9.261	9.261	9.761	9.791		9.881	9.791	9.761	9.261	9.261	10.683	
SURVEY	9.734	9.951	10.023	9.798	9.838		9.864	10.333	10.437	10.310	10.346	10.683	
OFFSET	-7.419	-6.000	-5.500	-4.000	-3.000		0.000	3.000	4.000	5.500	000.9	10.266	

CH 4240

2	0	2	4	6	8	10	
			_			_	1:200
			METRES				

REV	AMENDMENT	ISSUED	DATE
Α	NOT ISSUED FOR CONCEPT DESIGN		
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
F	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23

		BARKER RYAN STEWART
-	TOTAL PROJECT MA	CT SOLUTIONS ANAGEMENT - ENGINEERING - CERTIFICATION

SYDNEY
P. 02 9859 0005
CENTRAL COAST
P. 02 4325 5256
HUNTER
P. 02 4966 8388
ABN. 26 134 067 842
barkeryanstewart.com.au
mail@barkerryanstewart.com.au

PORT STEPHENS
COUNCIL

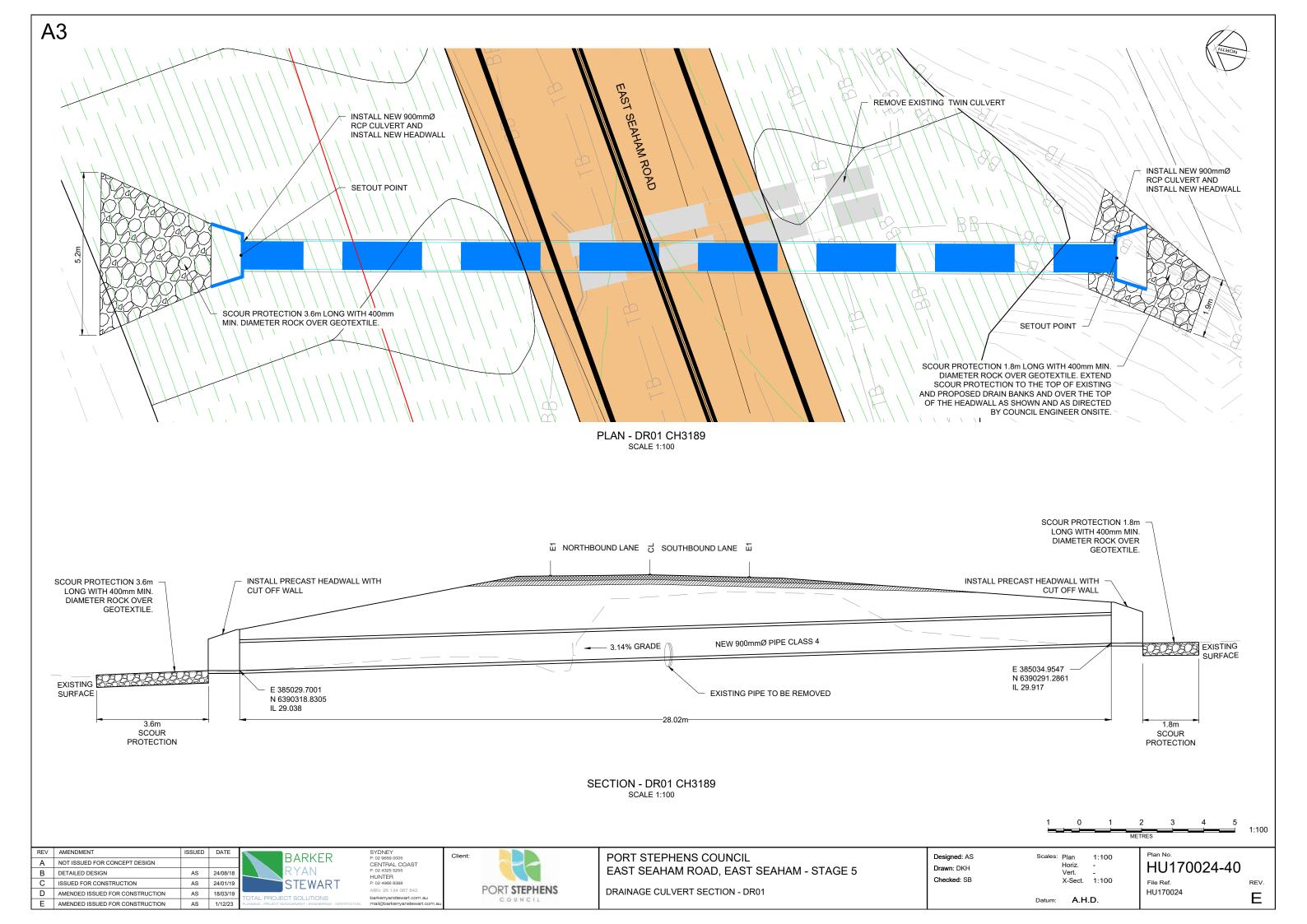
PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5 CROSS SECTION SHEET 12 Designed: AS Sca Drawn: DKH Checked: SB

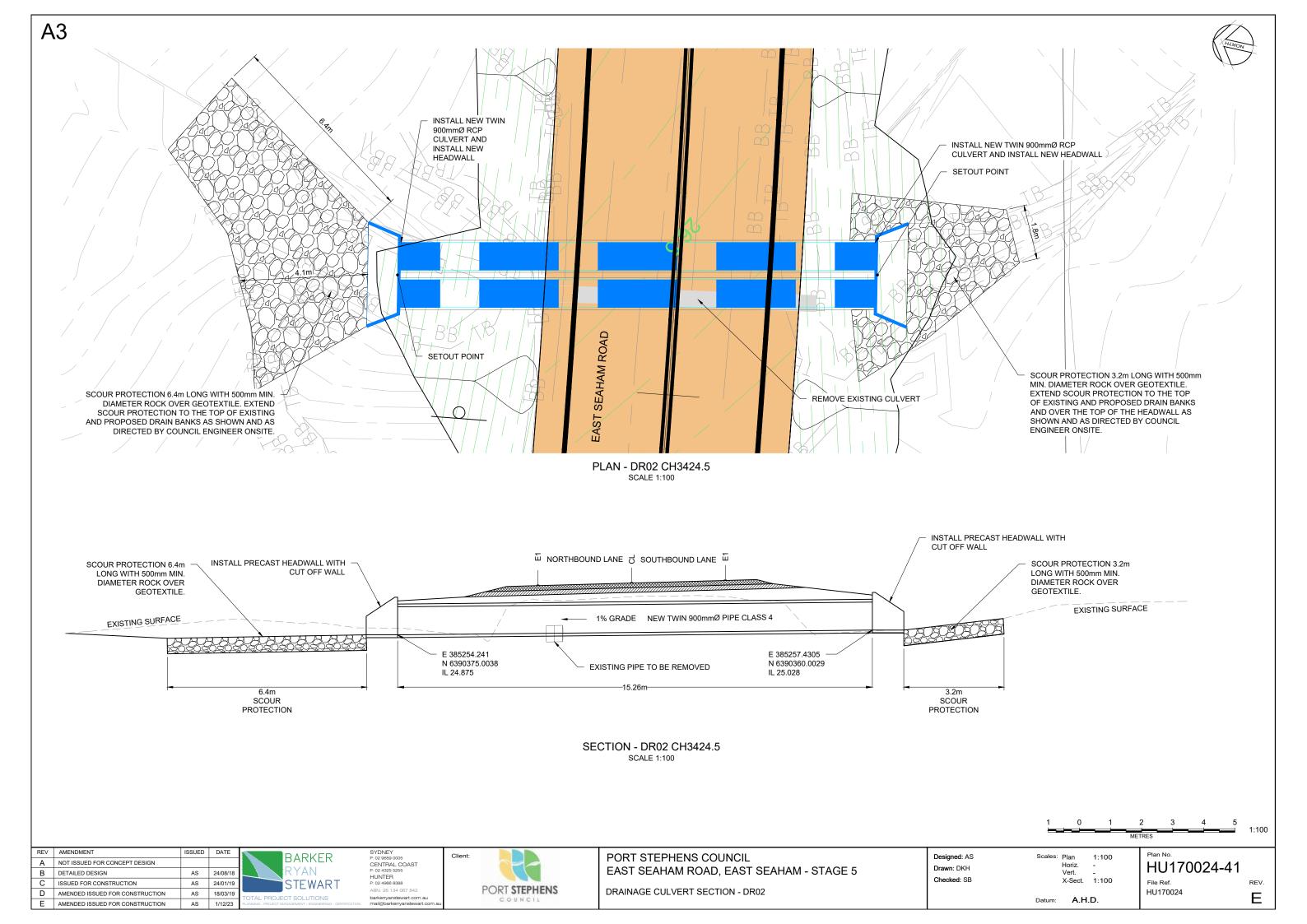
Scales: Plan - Horiz. - Vert. - X-Sect. 1:200

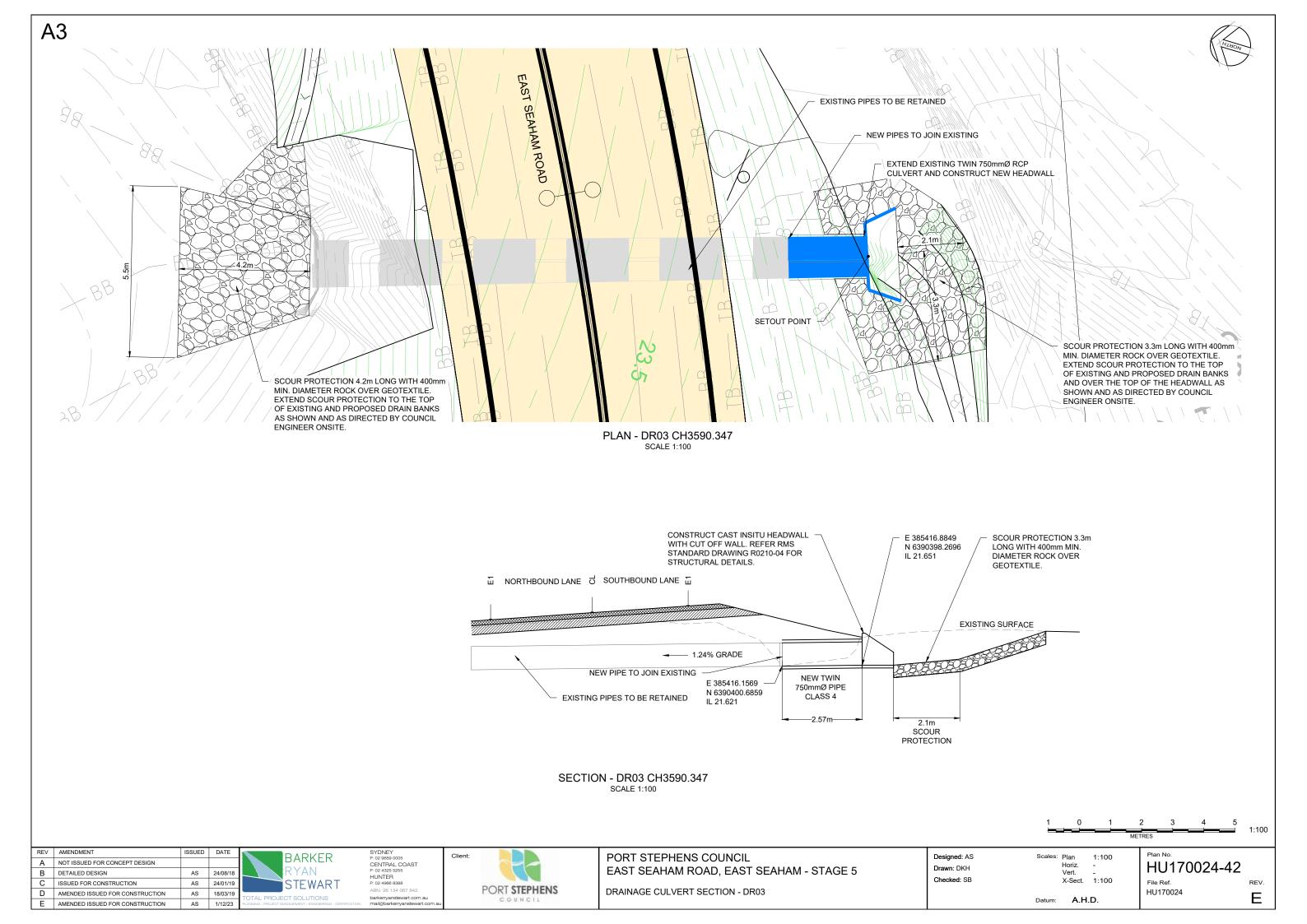
Plan No.
HU170024-31
File Ref.
HU170024

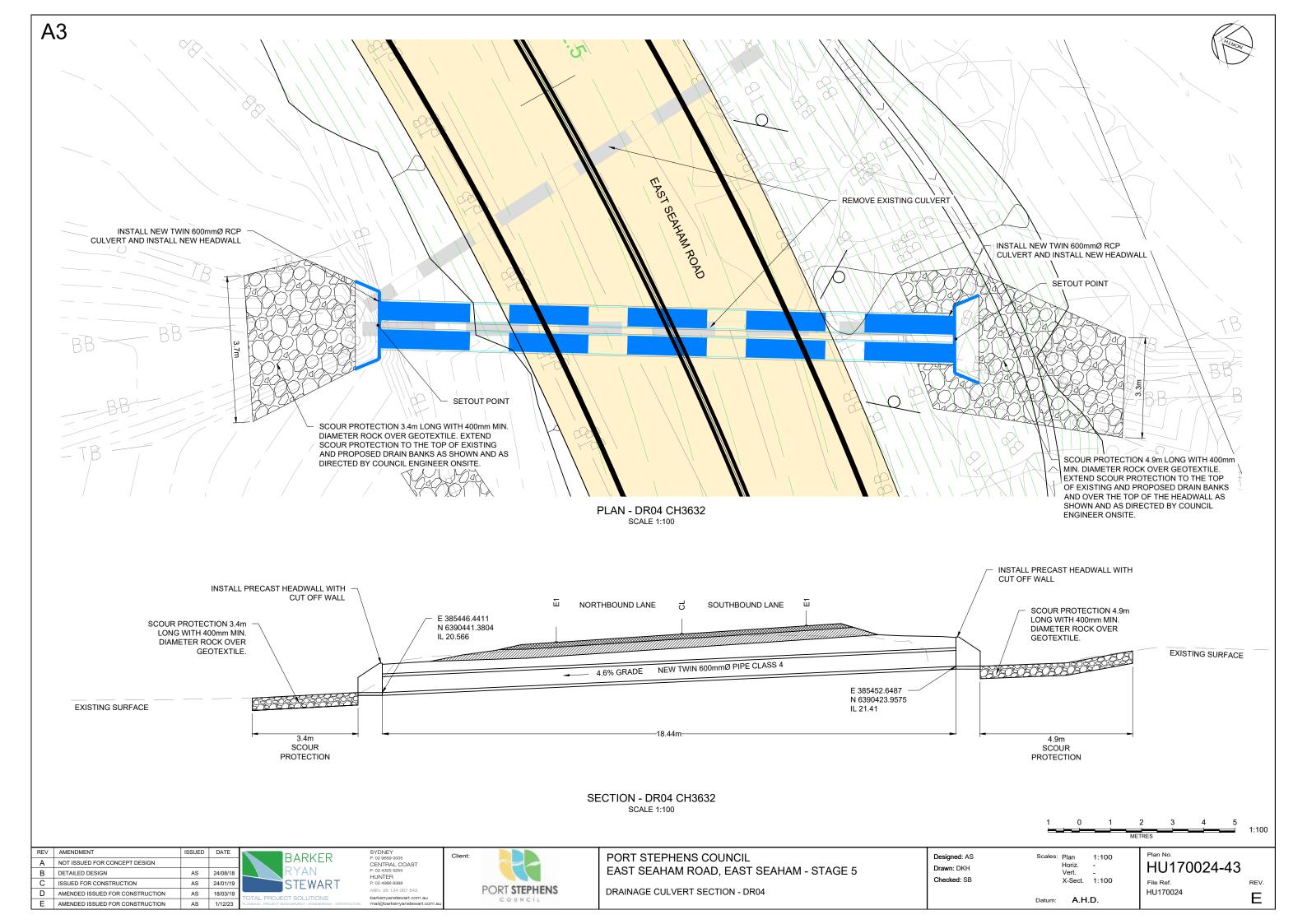
REV.

Ε

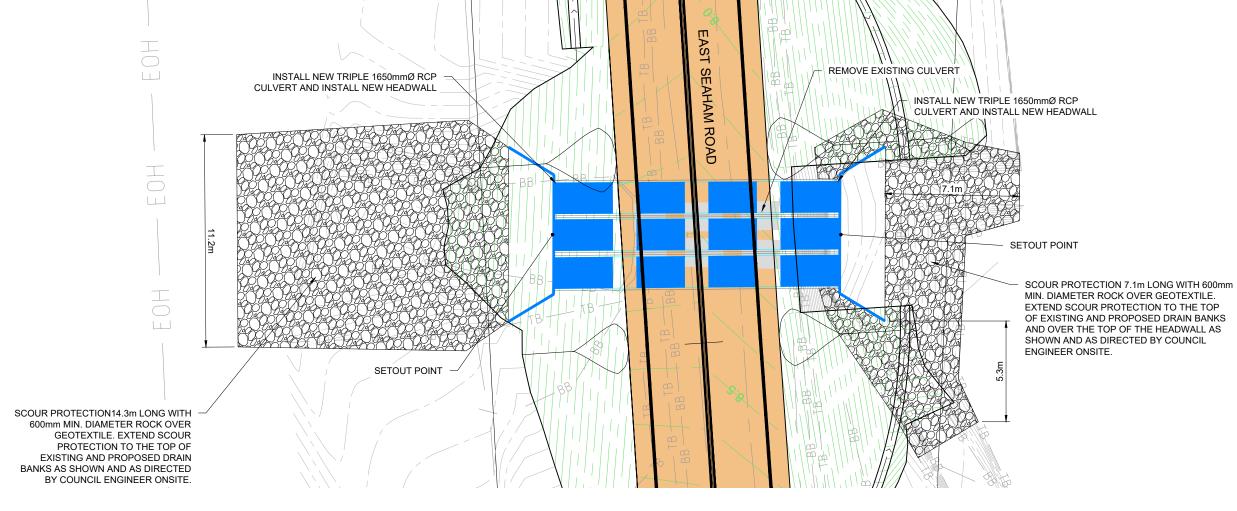




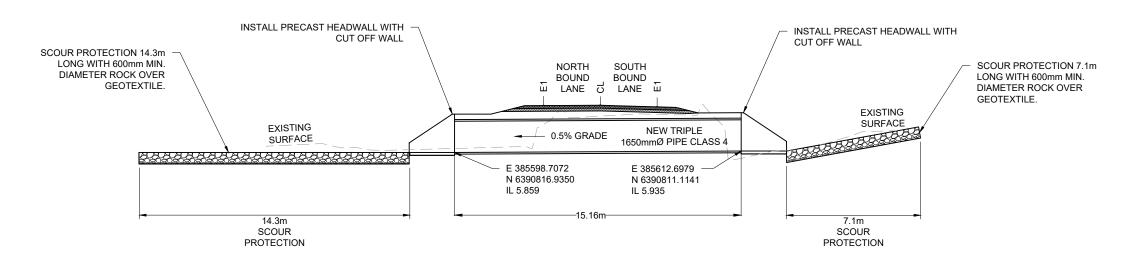








PLAN - DR05 CH4046 SCALE 1:200



SECTION - DR05 CH4046 SCALE 1:200



Α	NOT ISSUED FOR CONCEPT DESIGN		
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
Е	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23

ISSUED DATE

REV AMENDMENT

BARKER
RYAN
STEWART

TOTAL PROJECT SOLUTIONS
PLANNING - PROJECT MANAGEMENT - EMPRESENS - CERTIFICANTIC

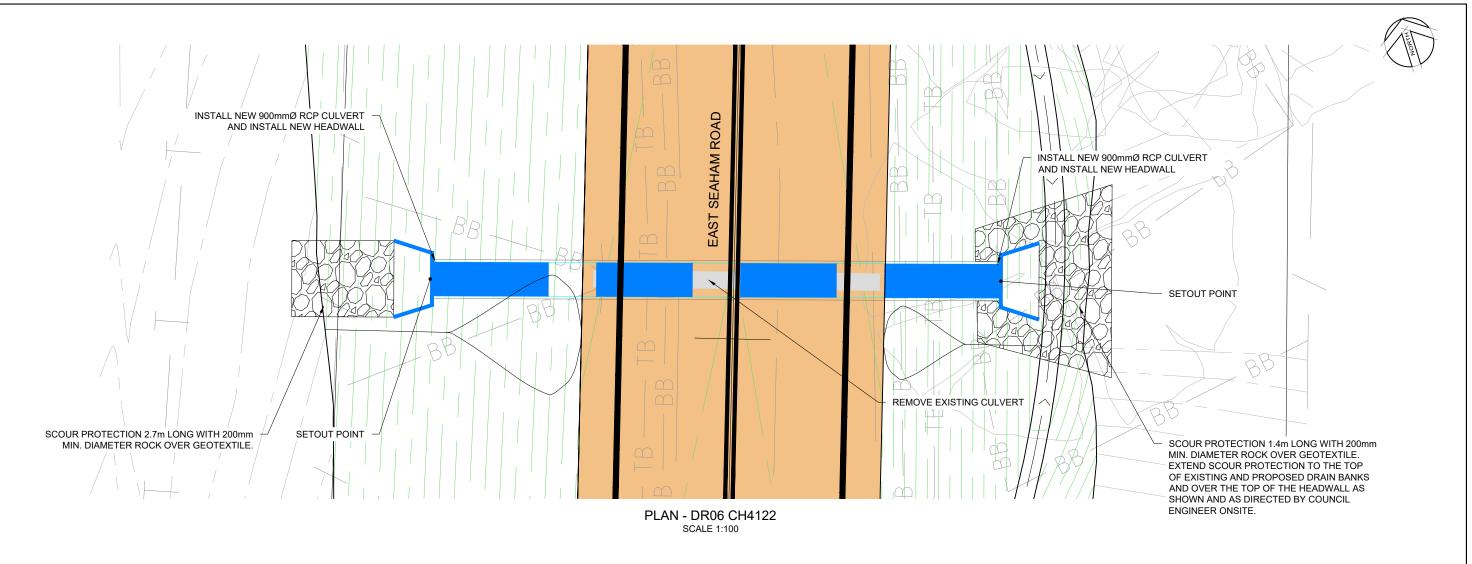
SYDNEY
P. 02 9659 0005
CENTRAL COAST
P. 02 4325 6255
HUNTER
P. 12 4968 8388
ABN 26 134 067 842
barkernyanstewart.com.au
mali@barkernyanstewart.com.au

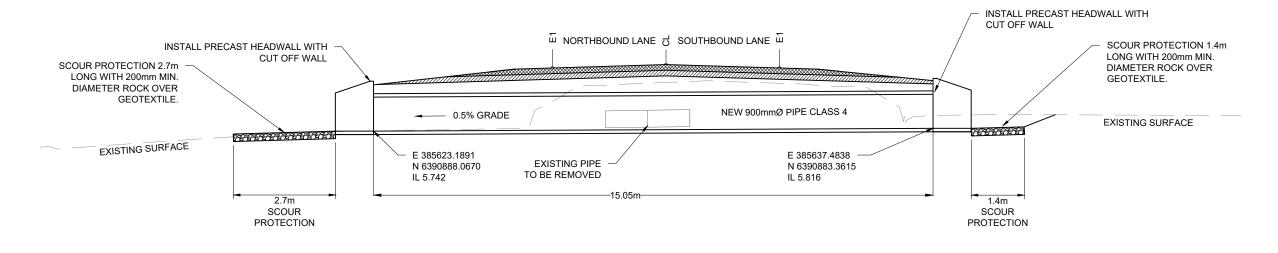
PORT STEPHENS

PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5 DRAINAGE CULVERT SECTION - DR05

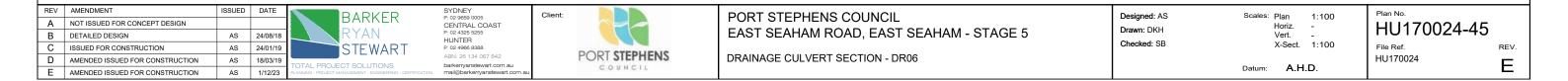
Designed: AS	Scales:	Plan	1:200
Drawn: DKH		Horiz. Vert.	-
Checked: SB		X-Sect.	1:20
	Datum:	A.H	.D.

File Ref. REV. HU170024

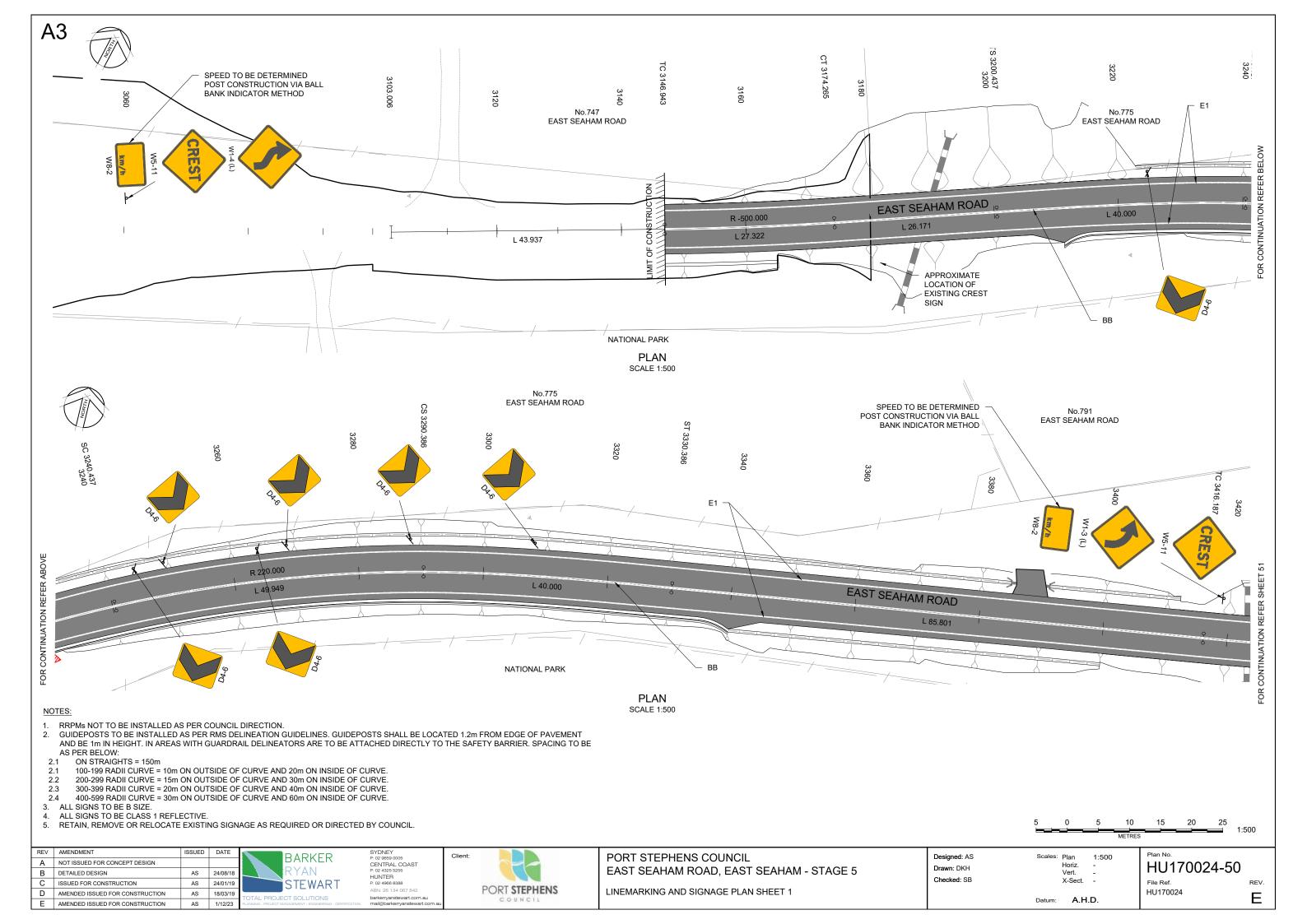


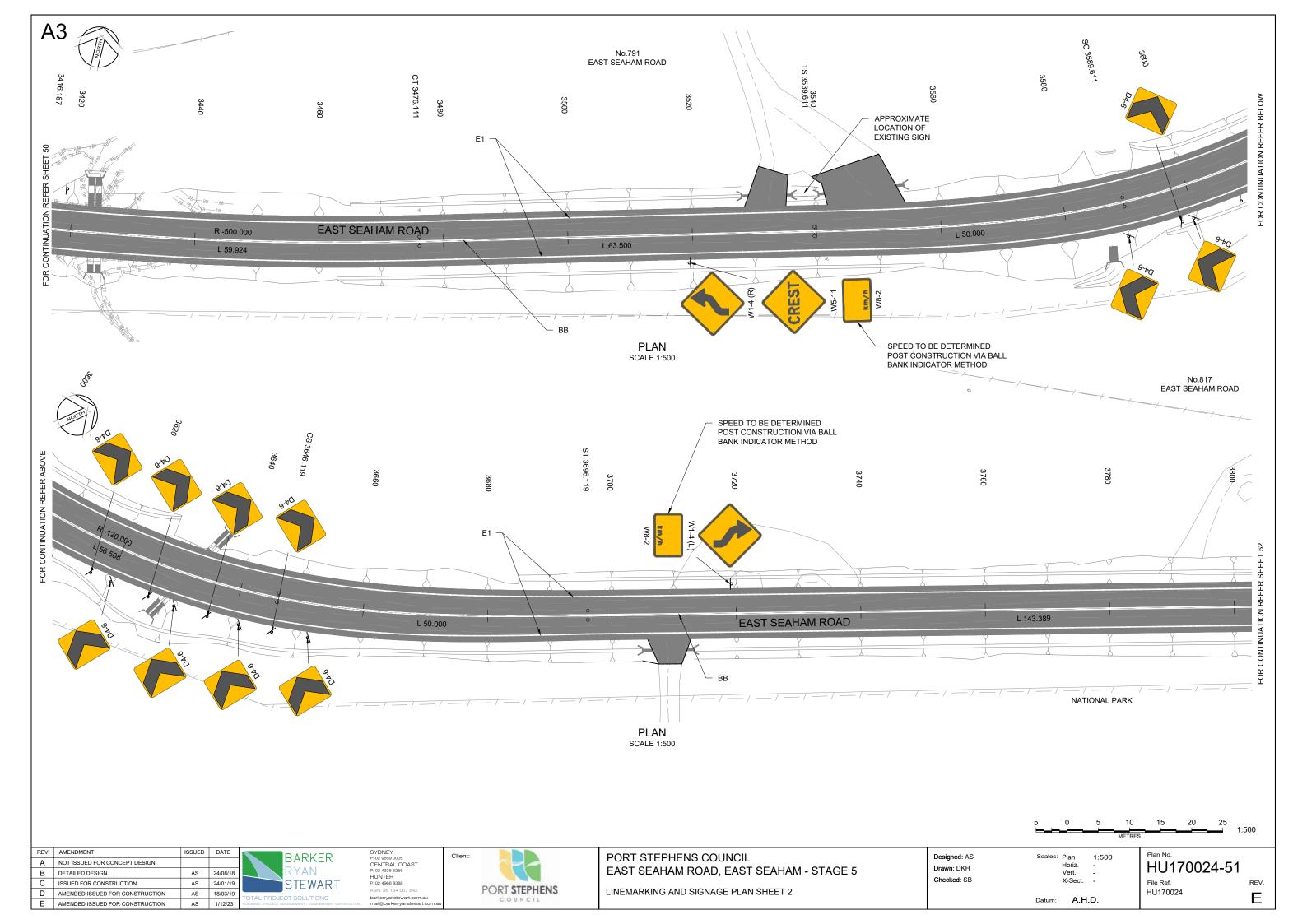


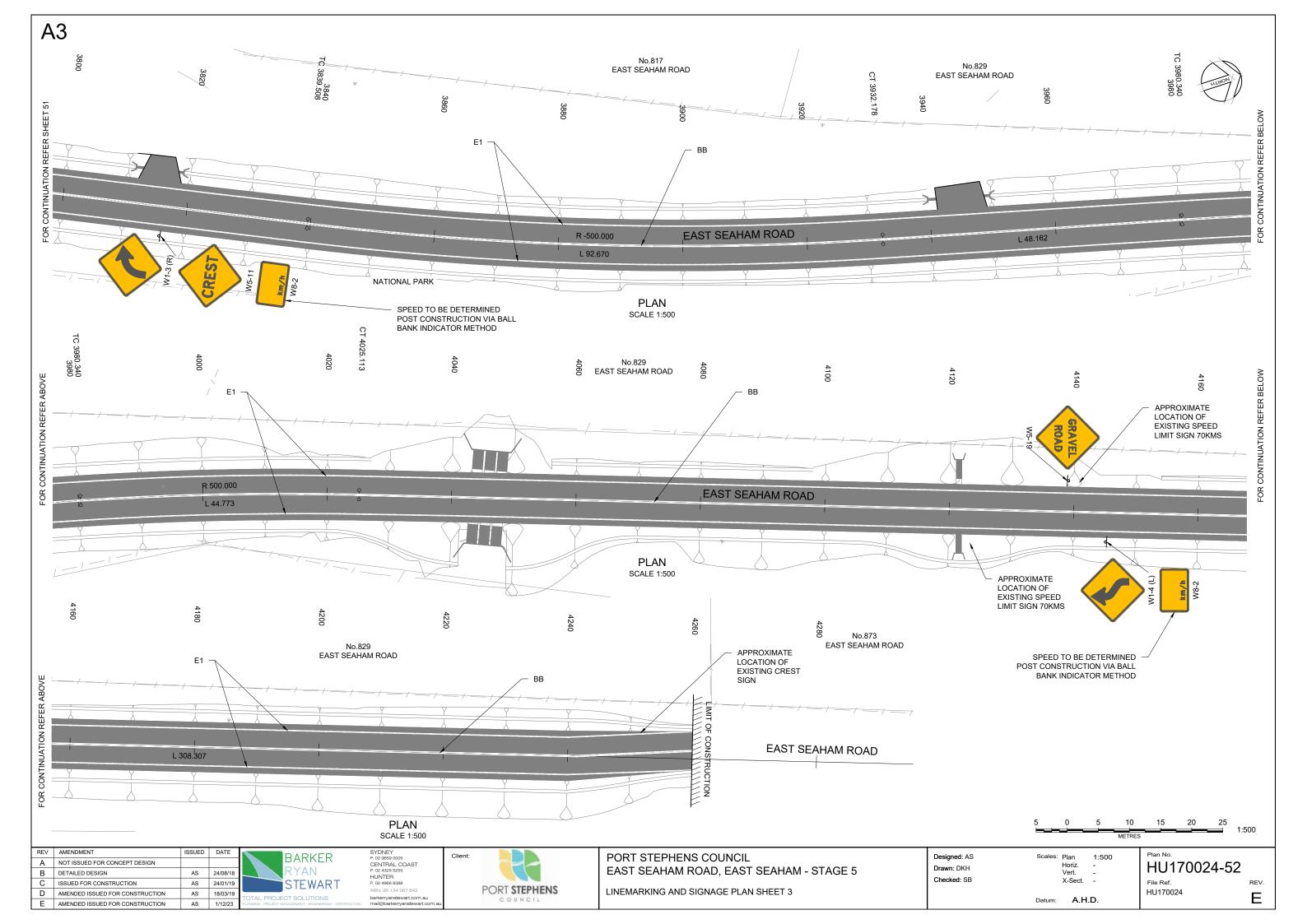
SECTION - DR06 CH4122 SCALE 1:100

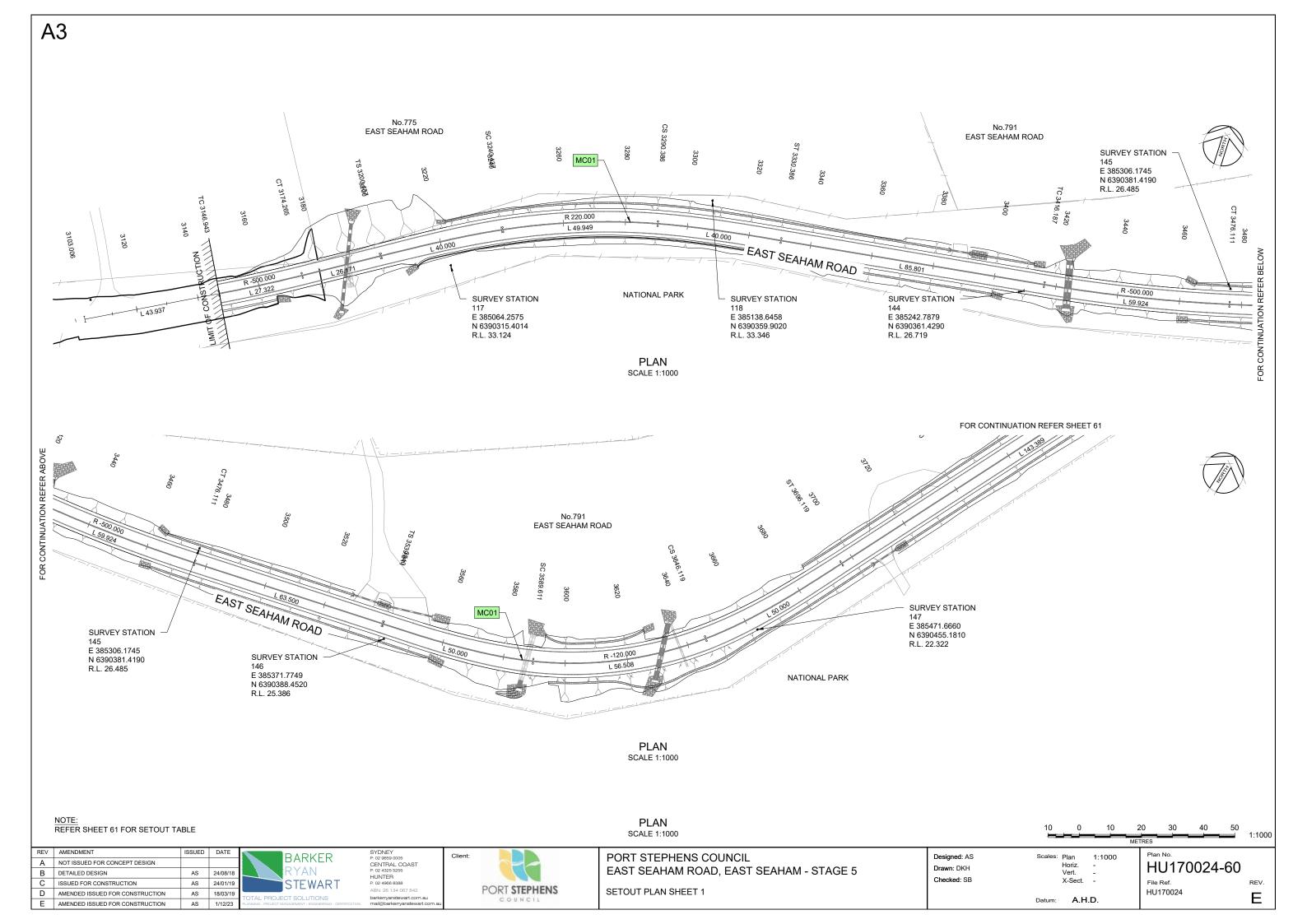


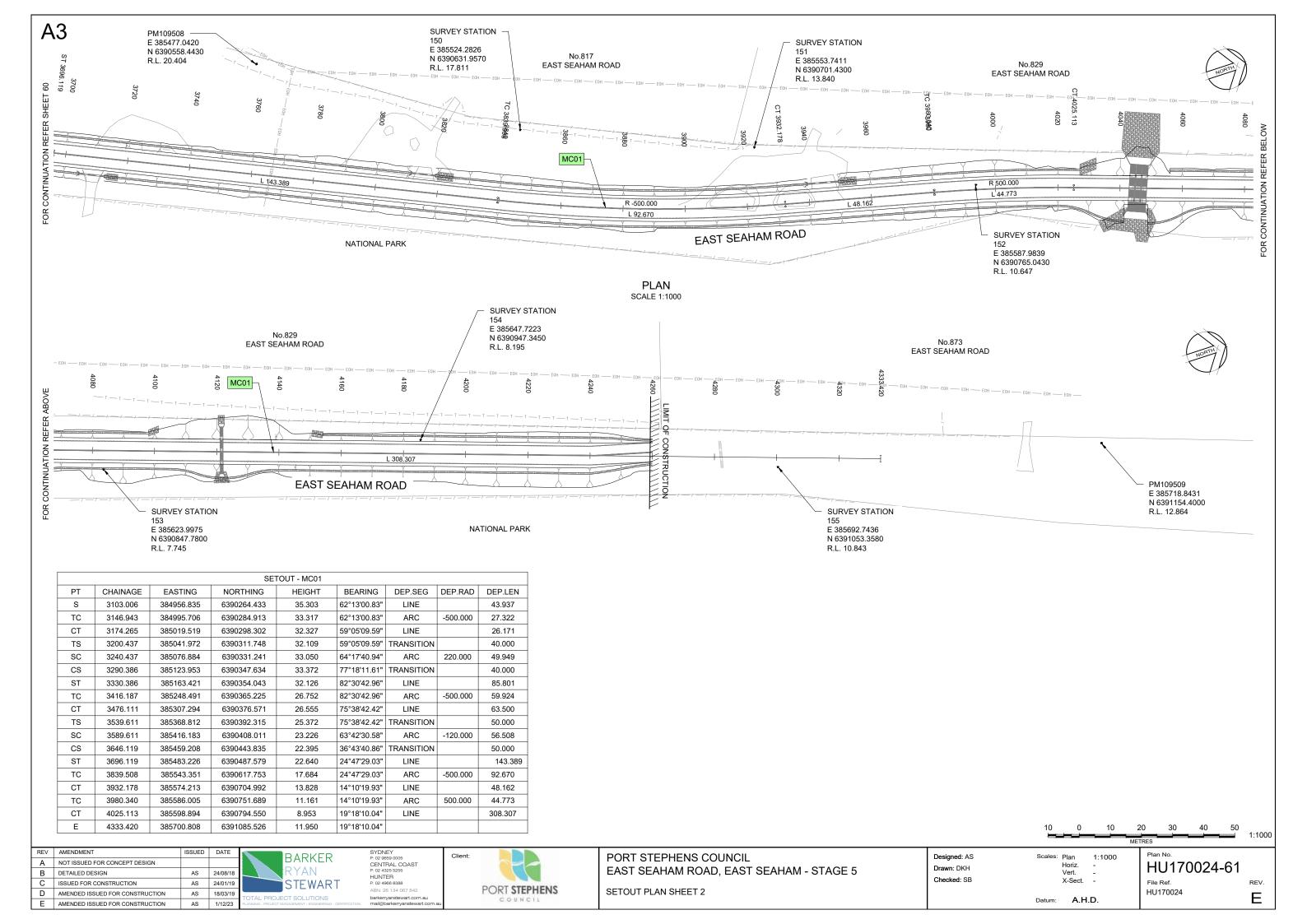
1:100

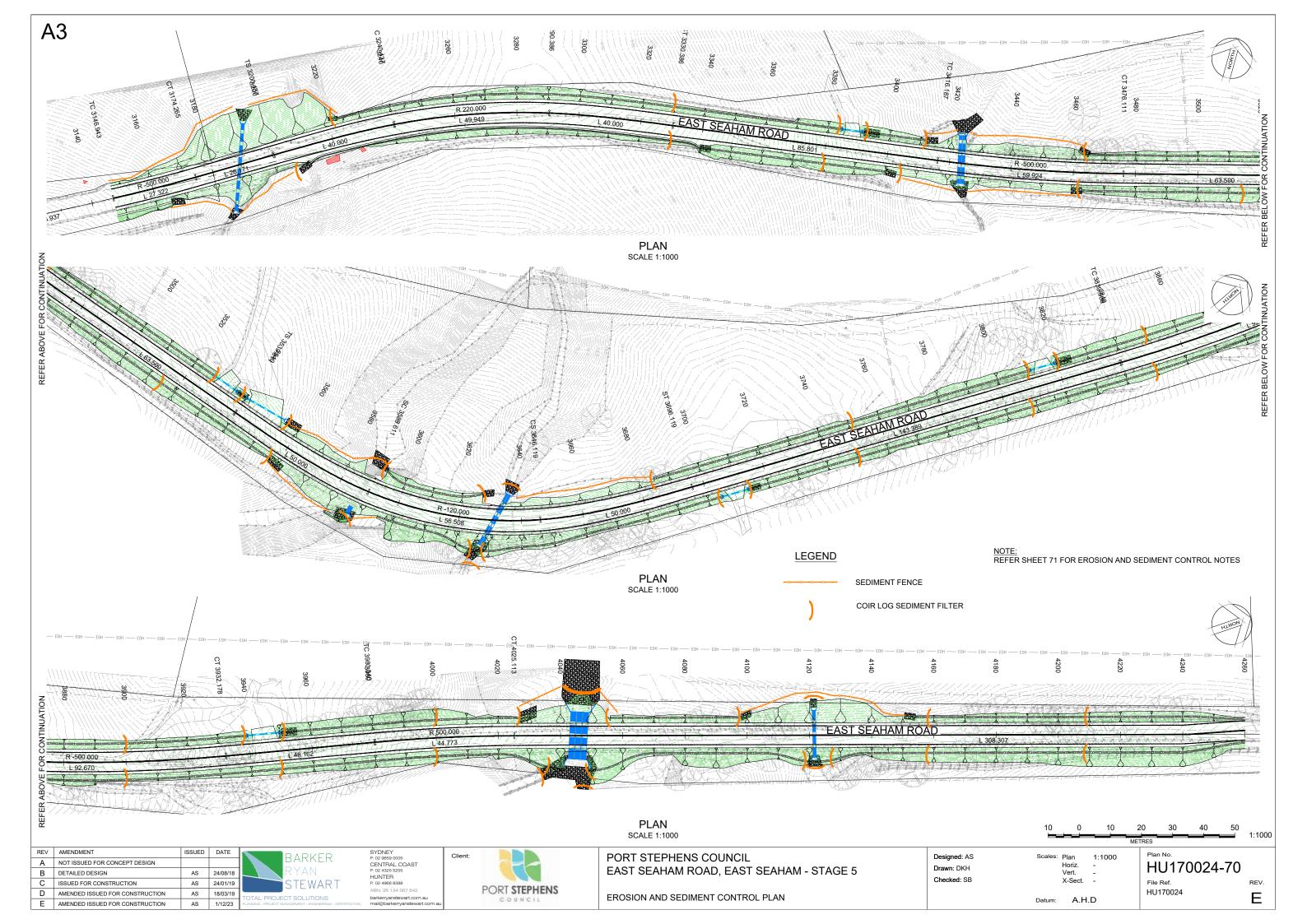


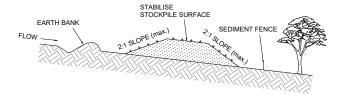










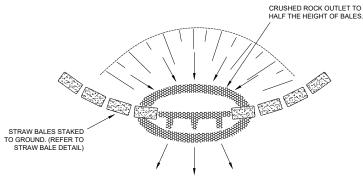


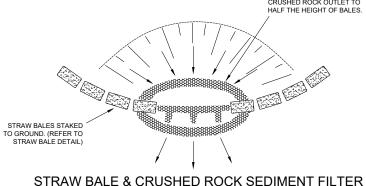
CONSTRUCTION NOTES

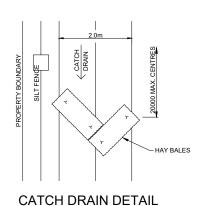
1. WHERE POSSIBLE LOCATE STOCKPILE AT LEAST 5 METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOWS, ROADS, HAZARD AREAS AND MIN. 1.5m AWAY FROM EMBANKMENTS.

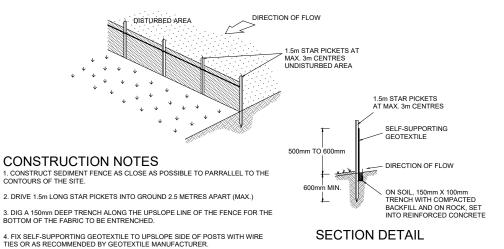
- 2. CONSTRUCT ON THE CONTOUR AS A LOW, FLAT ELONGATED MOUND
- 3. WHERE THERE IS SUFFICIENT AREA TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT
- 4. REHABILITATE IN ACCORDANCE WITH THE SWMP/ESCP
- 5. CONSTRUCT EARTH BANK (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT RUN OFF AROUND THE STOCKPILE AND A SEDIMENT FENCE (STANDARD DRAWING 6-8) 1 TO 2 METRES DOWNSLOPE OF STOCKPILE.

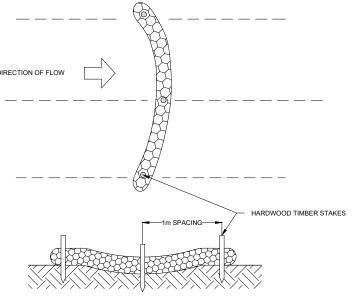
TOPSOIL STOCKPILE











CONSTRUCTION NOTES

COIR LOGS ARE TO BE INSTALLED TO MANUFACTURERS SPECIFICATIONS.

COIR LOG SEDIMENT FILTER

DIRECTION OF FLOW UNDISTURBED AREA 0.1m DEEF

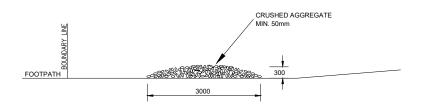
ANGLE FIRST STAKE TOWARDS PREVIOUSLY LAID STRAW BALE

DRAINAGE AREA 0.4 ha MAX. SLOPE GRADIENT 1:2 MAX. SLOPE LENGTH 40m MAX.

STAKES DRIVEN 0.6m INTO

DISTURBED AREA

STRAW BALE SEDIMENT FILTER



VEHICLE DUST SHAKE DOWN DETAIL

EROSION AND SEDIMENTATION CONTROL NOTES

- VEHICLE ACCESS AND ALL SERVICES ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION WORKS SHALL BE MAINTAINED AT ALL TIMES.
- THE LOCATION OF EROSION AND SEDIMENTATION CONTROL DEVICES SHOWN ON THIS PLAN ARE INDICATIVE ONLY AND SHOULD BE ADJUSTED TO SUIT SITE CONDITIONS AND CONSTRUCTION
- WHERE WORKS ARE DELAYED OR IN ABEYANCE AND DISTURBED AREAS ARE LIKELY TO BE EXPOSED FOR A PERIOD OF TWO MONTHS OR MORE, TEMPORARY REHABILITATION WORKS SHALL BE UNDERTAKEN TO PROTECT THE SITE.
- ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED AND MULCHED AS EXPEDIENTLY AS POSSIBLE.
- ALL AREAS WITH SLOPES STEEPER THAN 12% (1 in 8) SHALL BE STRAW MULCHED IN CONJUNCTION WITH SEEDING, OR CONTOUR TURFED AT 2m INTERVALS.
- SILT BARRIERS LOCATED AROUND KERB INLET AND ROAD PITS SHALL BE REINSTATED FOLLOWING ROAD PAVING WORKS IF IT IS LIKELY THAT UNDISTURBED AREAS WILL STILL DRAIN TO THE PIT.
- SANDBAGS SHALL BE PLACED ACROSS THE END OF ROAD CONSTRUCTION AT THE COMPLETION OF EACH DAYS WORK TO PREVENT EROSION OF THE CONSTRUCTED MATERIAL
- THE CONTRACTOR SHALL CONDUCT WEEKLY INSPECTIONS OF THE SITE TO ENSURE THAT ALL DEVICES AND REHABILITATION AREAS HAVE BEEN ADEQUATELY MAINTAINED. THE CONTRACTOR SHALL ALSO KEEP A LOG BOOK DETAILING SUCH INSPECTIONS, AND RECORDING RAINFALL EVENTS AND OTHER RELEVANT EVENTS.
- TOPSOIL SHALL BE STOCKPILED IN THE LOCATIONS SHOWN ON THIS PLAN OR AS DIRECTED BY COUNCIL'S ENGINEER. WHERE IT IS LIKELY THAT STOCKPILES WILL REMAIN IN PLACE FOR A PERIOD EXCEEDING 4 WEEKS, THEN THE STOCKPILE SHALL BE STABILISED BY SEEDING OR EQUIVALENT
- 10. ALL REVEGETATION WORKS ARE TO BE MAINTAINED, INCLUDING WATERING AND MOWING WHERE NECESSARY UNTIL THE COMPLETION OF THE MAINTENANCE PERIOD.
- 11. THE MOVEMENT OF VEHICULAR TRAFFIC ON THE SITE SHALL BE CONFINED TO DESIGNATED AREAS DURING CONSTRUCTION WORKS. VEHICULAR ACCESS SHALL BE DENIED TO AREAS TO BE LEFT UNDISTURBED.
- 12. SITE ACCESS SHALL BE LIMITED TO THE LOCATIONS DETERMINED DURING CONSTRUCTION.
- 13. DURING CONSTRUCTION WORKS, DUST CONTROL MEASURES SHALL BE IMPLEMENTED TO MINIMISE THE AMOUNT OF DUST GENERATED FROM THE SITE. THESE MEASURES TO BE IMPLEMENTED TO COUNCIL'S CONSTRUCTION SPECIFICATIONS FOR DUST CONTROL.
- 14. MAINTENANCE AND CLEANING OF CONSTRUCTION PLANT SHALL BE CARRIED OUT IN AN AREA WHERE RUNOFF CAN BE CONTAINED AND APPROPRIATELY TREATED AND DISPOSED OF.
- 15. ALL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS HAVE ADEQUATELY REGENERATED. THIS STAGE SHALL BE DETERMINED BY THE **CERTIFIER**

Datum:

A.H.D

SEDIMENT FENCE

5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP

6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT

THOROUGHLY OVER THE GEOTEXTILE.

REV	AMENDMENT	ISSUED	DATE
Α	NOT ISSUED FOR CONCEPT DESIGN		,
В	DETAILED DESIGN	AS	24/08/18
С	ISSUED FOR CONSTRUCTION	AS	24/01/19
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19
Е	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23



SYDNEY CENTRAL COAST HUNTER



PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5

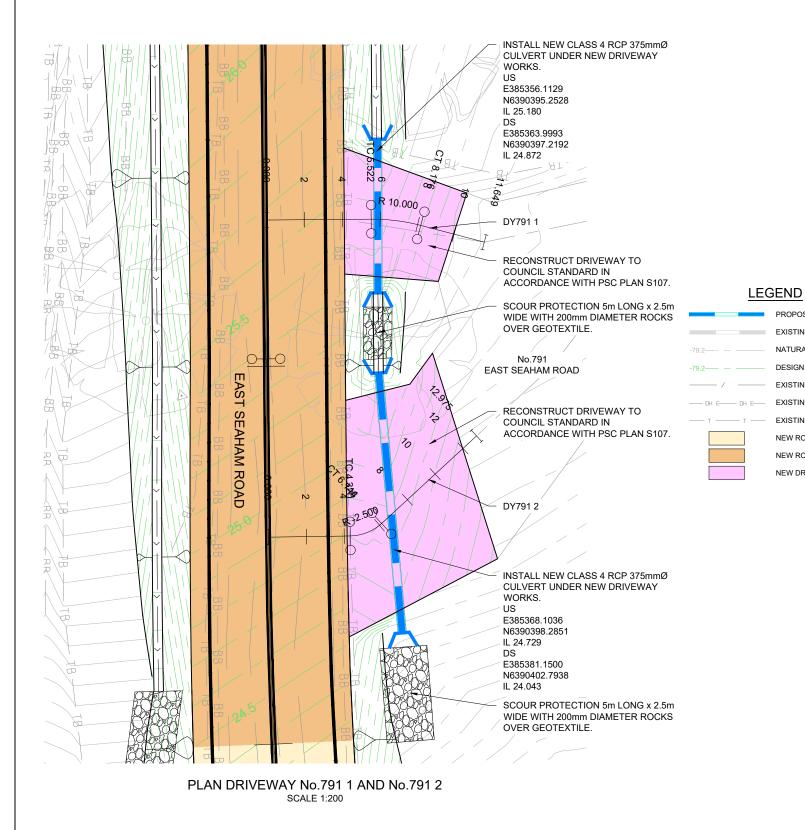
EROSION AND SEDIMENT CONTROL DETAILS

Scales: Plan Designed: AS Vert. Checked: SB

HU170024-71 File Ref.

REV HU170024 Ε





HORIZONTAL CURVES

VERTICAL CURVES

VIENTAL 25.55

VIENTAL 25.5663

DESIGN

CHAINAGE

CHAINAGE

CHAINAGE

CHAINAGE

To the property of the pro

DY791 1 - LONGITUDINAL SECTION HORZ SCALE 1:200 VERT SCALE 1:200

VIP RL 24.911 D DRAINAGE IL 24.36 VIP RL 24.796 VIP RL 24.555 VIP RL 24.556 HORIZONTAL CURVES L4.32 L1.82 L6.83 **VERTICAL CURVES** L0.12 L1.7 L4.14 -6.9% **VERTICAL GRADES** L0.12 L2.7 L5.14 **DATUM RL 18.000 DESIGN SURVEY CHAINAGE**

DY791 2 - LONGITUDINAL SECTION
HORZ SCALE 1:200
VERT SCALE 1:200

2	0	2	4	6	8	10	1:200
			METRES				1.200

REV	AMENDMENT	ISSUED	DATE	
Α	NOT ISSUED FOR CONCEPT DESIGN			
В	NOT ISSUED FOR DETAILED DESIGN			_
С	ISSUED FOR CONSTRUCTION	AS	24/01/19	
D	AMENDED ISSUED FOR CONSTRUCTION	AS	18/03/19	TC
Е	AMENDED ISSUED FOR CONSTRUCTION	AS	1/12/23	PLA

BARKER
RYAN
STEWART
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PORT STEPHENS

PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM - STAGE 5

DRIVEWAY PLAN PROPERTY No. 791

PROPOSED DRAINAGE LINE

EXISTING DRAINAGE LINE

EXISTING FENCE LINE

EXISTING COMMS LINE

NATURAL SURFACE CONTOUR

DESIGN SURFACE CONTOUR

EXISTING OVERHEAD ELECTRICITY

NEW ROAD PAVEMENT TYPE P1

NEW ROAD PAVEMENT TYPE P2
NEW DRIVEWAY PAVEMENT

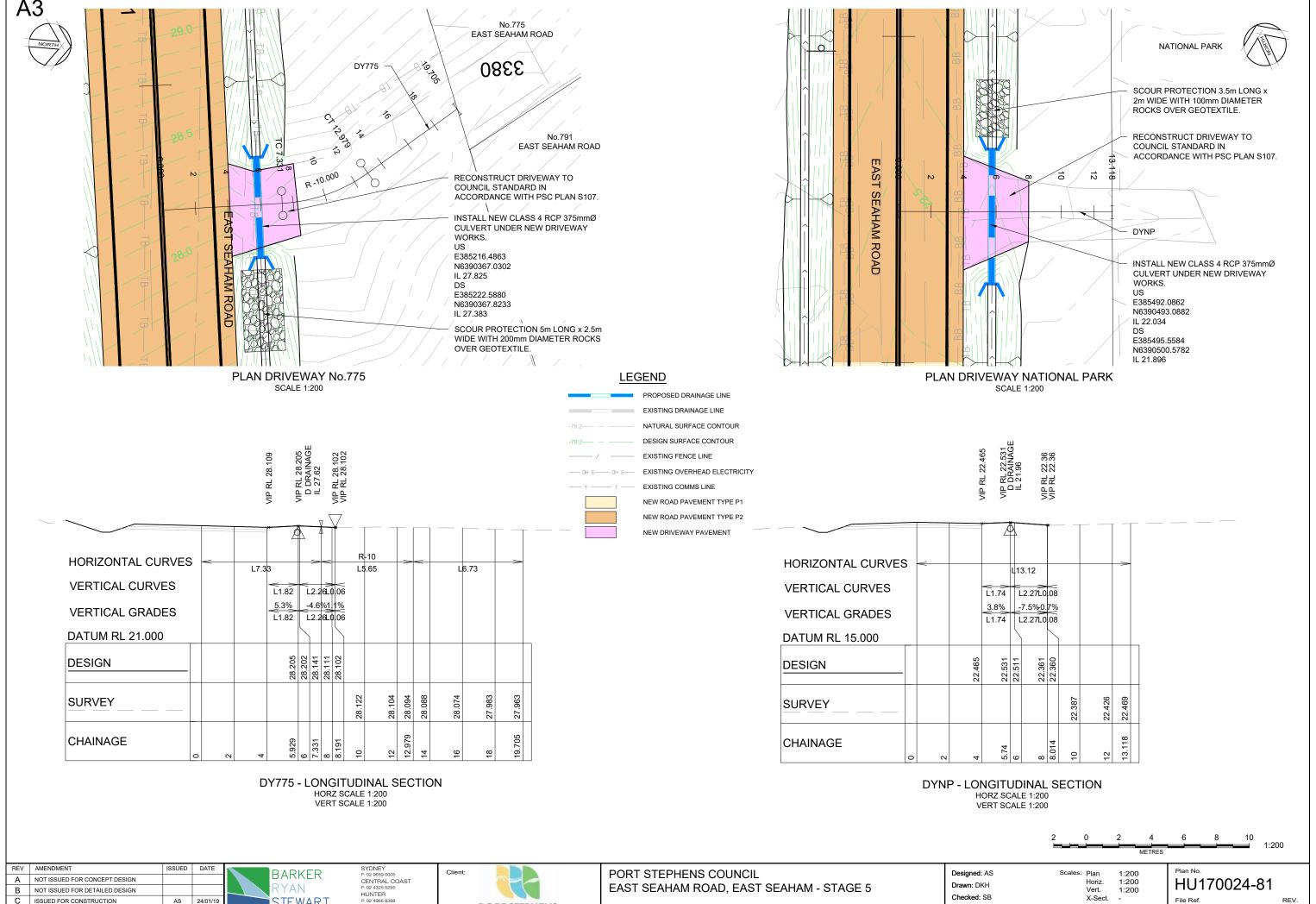
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Checked: SB		X-Sect.	-
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Plan No. HU170024-80 File Ref.

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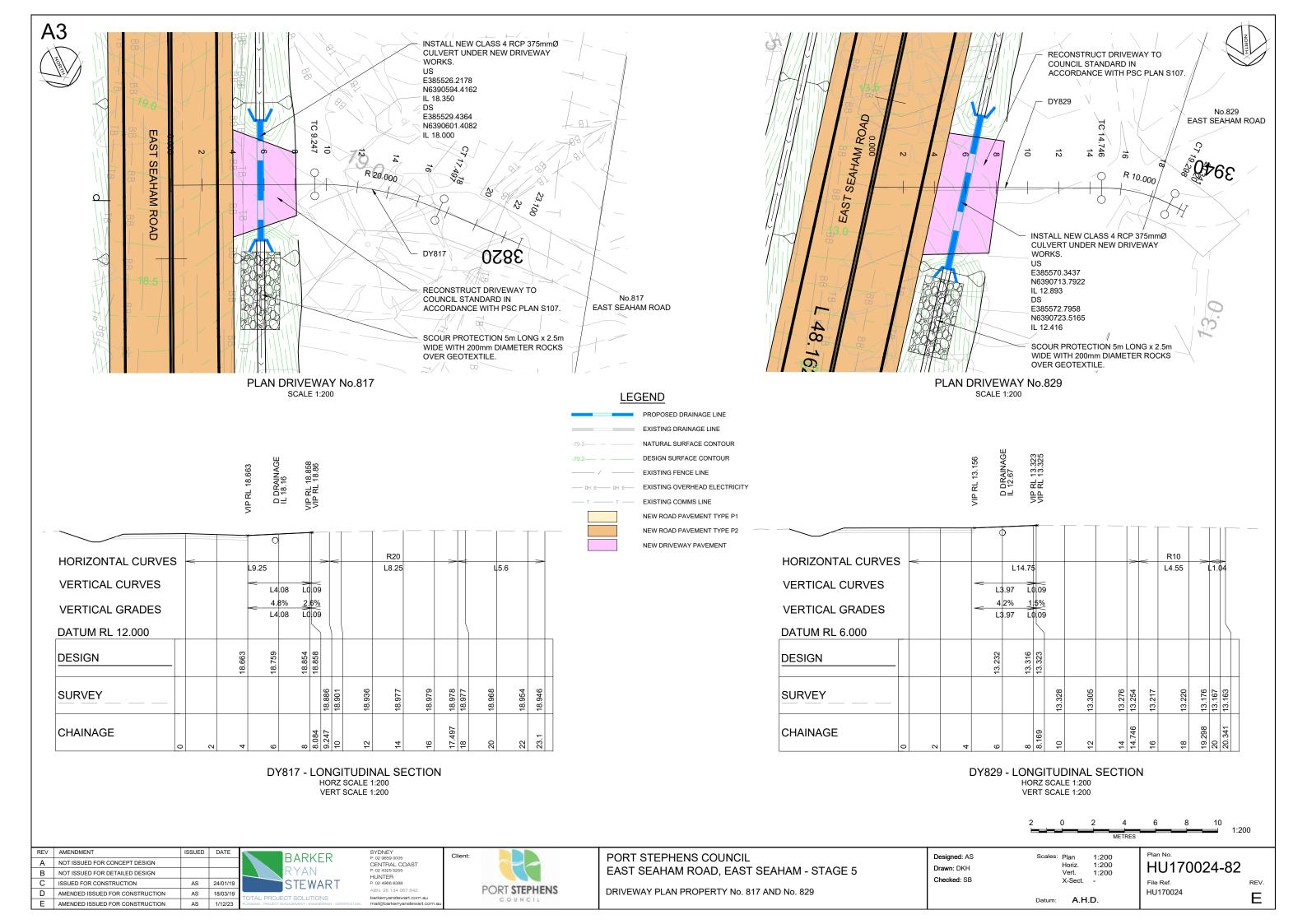
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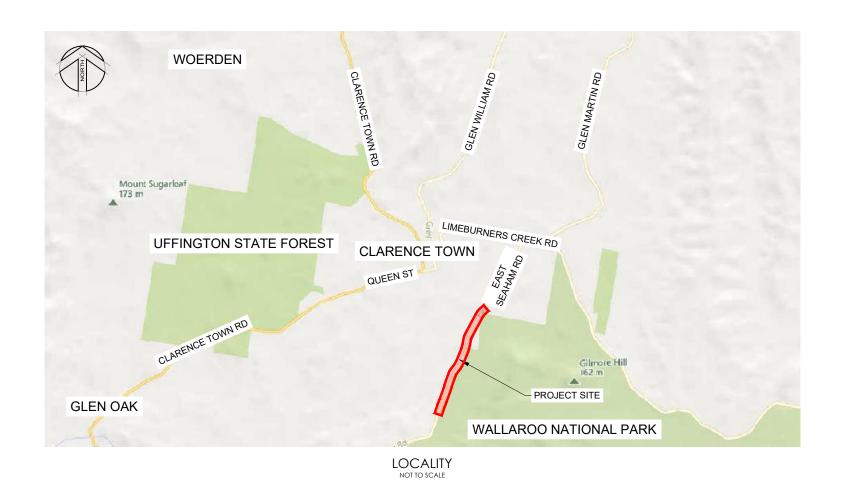
B NOT ISSUED FOR CONSTRUCTION AS 24/01/19
D AMENDED ISSUED FOR CONSTRUCTION AS 1/12/23

E AMENDED ISSUED FOR CONST



PORT STEPHENS COUNCIL EAST SEAHAM ROAD, EAST SEAHAM STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140 ISSUED FOR CONSTRUCTION





Prepared for:



Revision E Date 03/01/2025 Project No. 240458-01



ENGINEERING | PLANNING | PROJECT MANAGEMENT | SURVEYING | CERTIFICATION

A3

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A2300	HEADWALLS REINFORCED CONCRETE FOR 600, 750 AND 900 PIPE CULVERTS
A2301	HEADWALLS PRECAST CONCRETE FOR 600, 750 AND 900 PIPE CULVERTS

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803

811



DRAWING INDEX

EROSION AND SEDIMENT CONTROL PLAN SHEET 3 EROSION AND SEDIMENT CONTROL DETAILS

> EAST SEAHAM ROAD, EAST SEAHAM STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

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240458-01-002 File Ref. REV.

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Datum: A.H.D.

240458

GENERAL NOTES

- UNLESS NOTED OTHERWISE, ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH COUNCIL'S INFRASTRUCTURE SPECIFICATIONS AND DETAILS .
- SURVEY MARKS SHALL BE MAINTAINED AT ALL TIMES. WHERE RETENTION IS NOT POSSIBLE THE ENGINEER SHALL BE NOTIFIED AND CONSENT RECEIVED PRIOR TO THEIR REMOVAL.
- 3. ALL NEW WORK IS TO MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS.
- 4. THE CONTRACTOR IS NOT TO ENTER UPON NOR DO ANY WORK WITHIN OR ON ADJACENT LANDS WITHOUT THE PRIOR APPROVAL OF THE SUPERINTENDENT AND THE WRITTEN PERMISSION OF THE OWNERS.
- THE CONTRACTOR SHALL MAINTAIN DUST CONTROL THROUGHOUT THE DURATION OF THE PROJECT.
- 6. IF, DURING THE COURSE OF ANY WORKS, ANY EVIDENCE OF AN ABORIGINAL ARCHAEOLOGICAL SITE OR RELIC IS FOUND. ALL WORKS ON THE SITE ARE TO CEASE AND THE DEPARTMENT OF ENVIRONMENT AND CLIMATE CHANGE AND THE NSW HERITAGE BRANCH ARE TO BE NOTIFIED IMMEDIATELY.
- 7. IF, DURING THE COURSE OF ANY WORKS, ANY EVIDENCE OF A EUROPEAN ARCHAEOLOGICAL SITE OR RELIC IS FOUND, ALL WORKS ON THE SITE ARE TO CEASE AND THE NSW HERITAGE BRANCH CONTACTED IMMEDIATELY. ALL RELICS ARE TO BE RETAINED IN SITU UNLESS OTHERWISE DIRECTED BY THE NSW HERITAGE BRANCH.
- 8. ANY NEW INFORMATION, WHICH COMES TO LIGHT DURING CONSTRUCTION WORKS, WHICH HAS THE POTENTIAL TO ALTER PREVIOUS CONCLUSIONS ABOUT SITE CONTAMINATION, SHALL BE IMMEDIATELY NOTIFIED TO COUNCIL.
- SEDIMENT MEASURES SHALL BE IMPLEMENTED PRIOR TO SOIL DISTURBANCE IN KEEPING WITH THE 4th EDITION OF LANDCOMS "SOILS AND CONSTRUCTION MANAGING URBAN STORMWATER" MARCH 2004 TO THE SATISFACTION OF COUNCIL'S REPRESENTATIVE AND AS SHOWN IN THESE DRAWINGS.
- 10. THE CONTRACTOR SHALL CLEAR AND DISPOSE OF ONLY THOSE TREES THAT ARE CONDEMNED BY THE PLANS. COUNCIL'S TREE PRESERVATION ORDER SHALL BE OBSERVED AND NO TREE SHALL BE FELLED, LOPPED OR REMOVED WITHOUT PRIOR

EARTHWORKS NOTES

- 1 CARE IS TO BE TAKEN DURING THE CONSTRUCTION OF THE PROPOSED WORKS TO CARE IS TO BE TARREN DURING THE CONSTRUCTION OF THE PROPUSED WORKS TO ENSURE NATURAL VEGETATION AND TOPOGRAPHY ON THE SUBJECT SITE IS NOT UNNECESSARILY DISTURBED. ANY EXCAVATION MATERIAL NOT USED IN THE CONSTRUCTION OF THE SUBJECT WORKS IS TO BE REMOVED FROM THE SITE AND UNDER NO CIRCUMSTANCES IS TO BE DEPOSITED IN BUSHLAND AREAS.
- 2. ALL SITE REGRADING AREAS SHALL BE GRADED TO THE SATISFACTION OF COUNCIL'S REPRESENTATIVE. THE CONTRACTOR SHALL TAKE LEVELS ON THE EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING ANY FILL OPERATIONS.
- 3. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED OR DISPOSED OF IN ACCORDANCE
- ALL SITE FILLING SHALL BE PLACED IN LAYERS NOT EXCEEDING COUNCILS AND GEOTECH REQUIREMENTS. FILL IS TO BE COMPACTED IN ACCORDANCE WITH GEOTECH SPECIFICATIONS AND BE TESTED AT THE REQUIRED INTERVALS BY AN APPROVED N.A.T.A. GEOTECHNICAL LABORATORY.
- 5 THE DISPOSAL / LANDELLI OF SLIRPLUS EXCAVATED MATERIAL OTHER THAN TO A THE DISPOSAL / LANDFILL OF SURPLUS EXCAVATED MATERIAL, OTHER THAN TO A DECC LICENSED FACILITY, IS NOT PERMITTED WITHOUT FORMAL APPROVAL FROM COUNCIL PRIOR TO THE COMMENCEMENT OF WORKS. ANY UNAUTHORIZED DISPOSAL OF WASTE, WHICH INCLUDES EXCAVATED MATERIAL, IS A BREACH OF THE PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997 AND SUBJECT TO SUBSTANTIAL PENALTIES. UNLESS COUNCIL APPROVES AN ALTERNATIVE SITE, THEN ALL SURPLUS MATERIAL MUST BE DISPOSED OF AT A LICENSED WASTE FACILITY. COPIES OF ACTUAL WEIGHBRIDGE DECENTAL VEDICINION DECOVALING, DISPOSAL MIST BE KEDT AND WEIGHBRIDGE RECEIPTS VERIFYING RECYCLING / DISPOSAL MUST BE KEPT AND PRESENTED TO COUNCIL WHEN REQUIRED.

SERVICE NOTES

- BARKER RYAN STEWART DOES NOT ACCEPT ANY LIABILITY FOR INACCURACIES IN THE
- 2. THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO THE ADJOINING PROPERTIES.
- CARE SHALL BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES, NO MECHANICAL EXCAVATION SHALL BE MADE OVER TELSTRA OR ELECTRICAL SERVICES, EXCAVATE BY HAND ONLY IN THESE AREAS.

DRAINAGE NOTES

- 1. TRENCH WIDTHS ARE TO BE KEPT TO A MINIMUM, CONSISTENT WITH LAYING AND TRENCH WIDTHS ARE TO BE KEPT TO A MINIMUM, CONSISTENT WITH LAYING AND BEDDING OF THE RELEVANT SERVICE AND CONSTRUCTION PERSONNEL ACCESS WAYS AND PITS. REFER TO AUTHORITIES STANDARDS FOR MINIMUM TRENCH WIDTHS. STANDARD TRENCH WIDTHS AND THE DIMENSIONS OF UNSUPPORTED TRENCHES. SUPPORT EXCAVATIONS TO THE REQUIREMENTS OF THE CONSTRUCTION SAFETY REGULATIONS 1950, UNDER THE CONSTRUCTION SAFETY ACT 1912 (AS AMENDED)
- 2. BACKFILL TRENCHES IN ACCORDANCE WITH COUNCIL REQUIREMENTS WITHOUT DELAY FOR THE SECTION OF PIPE THAT HAS BEEN COMPLETED AND APPROVED, IF POSSIBLE ON THE SAME WORKING DAY.
- 3. ROCK SCOUR PROTECTION TO AS2758.4.

STRUCTURAL NOTES

- 1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600.
- 2. CONCRETE QUALITY SHALL BE AS SPECIFIED AND SHALL BE VERIFIED BY TESTS.
- ALL CONCRETE UNLESS OTHERWISE NOTED SHALL HAVE A SLUMP OF 80mm AT POINT OF PLACEMENT, A MAXIMUM AGGREGATE SIZE OF 20mm AND STRENGTH AS SPECIFIED. NO WATER SHALL BE ADDED TO THE MIX PRIOR TO OR DURING THE PLACEMENT.
- 4. ALL REINFORCEMENT SPECIFIED IS GRADE D500 UNLESS NOTED OTHERWISE
- 5. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY, IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION
- TOP REINFORCEMENT IS TO BE CONTINUOUS ON SUPPORTS. BOTTOM REINFORCEMENT TO BE LAPPED AT SUPPORTS.
- WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON STRUCTURAL DRAWINGS.
- 8. PIPES OR CONDUITS SHALL NOT BE PLACED WITHIN THE ZONE OF CONCRETE COVER TO THE REINFORCEMENT WITHOUT THE APPROVAL OF THE ENGINEER
- 9. ALL REINFORCING BARS AND FABRIC SHALL COMPLY WITH AS4671

- REINFORCEMENT SYMBOLS:
 10.1. N GRADE 500N DEFORMED BAR (D500) NORMAL DUCTILITY
 10.2. R GRADE 250N PLAIN ROUND BAR (R250) NORMAL DUCTILITY
 10.3. SL GRADE 500L WELDED DEFORMED RIBBED MESH (D500) RECTANGULAR LOW

THE NUMBER IMMEDIATELY FOLLOWING THESE SYMBOLS IS THE NUMBER OF MILLIMETERS IN THE BAR DIAMETER.

8 N12-250, DENOTES 8, GRADE 500N DEFORMED BARS, 12mm DIAMETER AT 250

- 11. FABRIC REINFORCEMENT TO BE LAPPED 1 COMPLETE SQUARE + 25mm UNLESS NOTED
- 12. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON BAR CHAIRS SPACED AT A MAXIMUM OF 750mm CENTRES BOTH WAYS UNDER THE ROD AND FABRIC REINFORCEMENT. REINFORCEMENT SHALL BE TIED AT ALTERNATIVE INTERSECTIONS.

	LEGEND	
DESCRIPTION	EXISTING	PROPOSED
DRAINAGE LINE		
CONTOUR		
SUBSOIL	ss >>>	ss
150mm KERB & GUTTER		K&G
DISH DRAIN		DD
ROAD PAVEMENT		
TREE TO BE RETAINED		
TREE TO BE REMOVED		
BATTERS	Lilianialia	7 7 7
LIMIT OF WORKS		LIMIT OF CONSTRUCTION
OVERHEAD ELECTRICAL	ЕОН —— ЕОН ——	
COMMUNICATIONS	СОМ-В	
COMMUNICATIONS - DBYD	COM-D	
FENCE	//	
SAFETY GUARDRAIL	1	-000

REV	AMENDMENT	ISSUED	DATE
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Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25



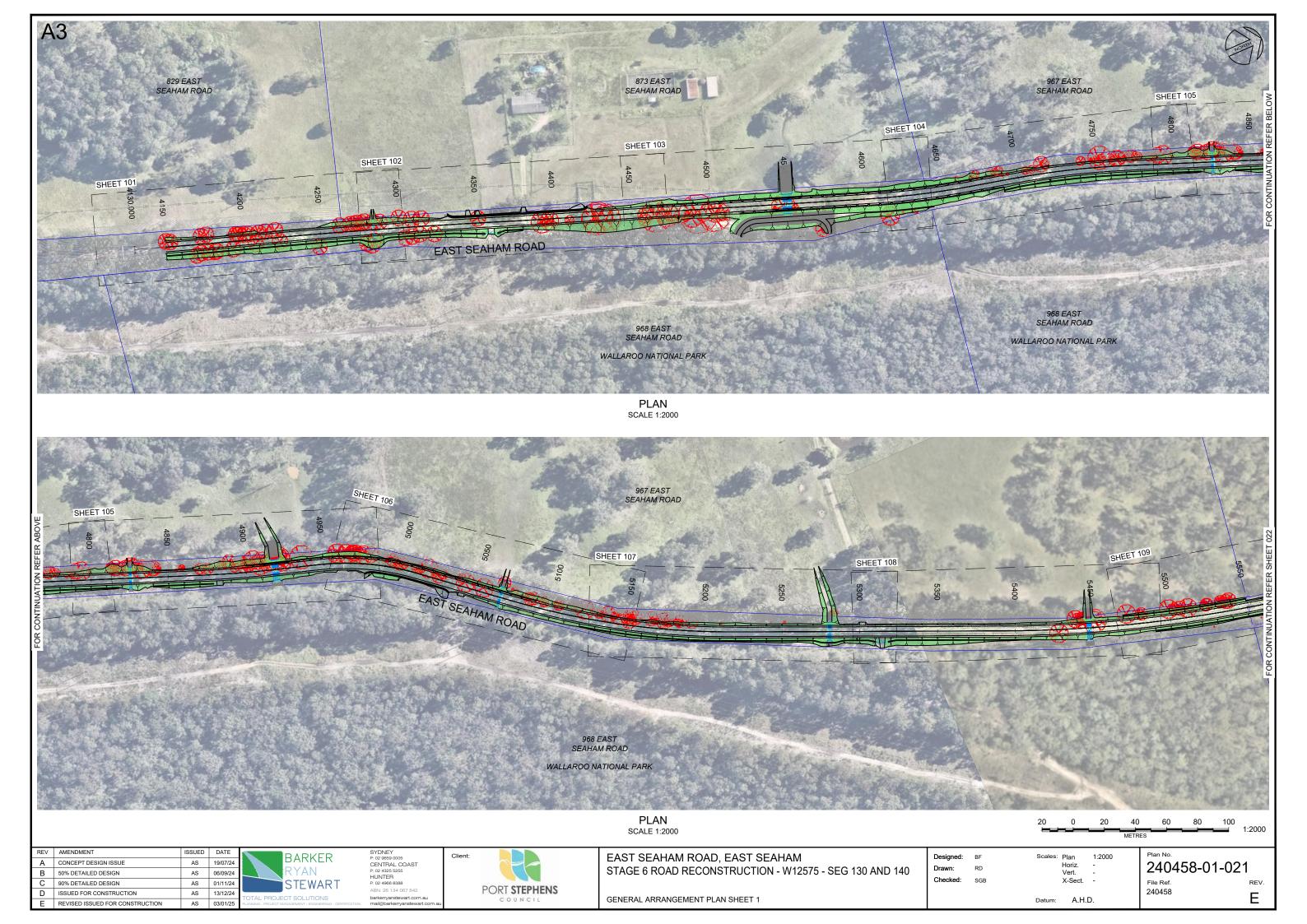
SYDNEY CENTRAL COAST HUNTER P: 02 4966 8388 barkerryanstewart.com.au mail@barkerryanstewart.co

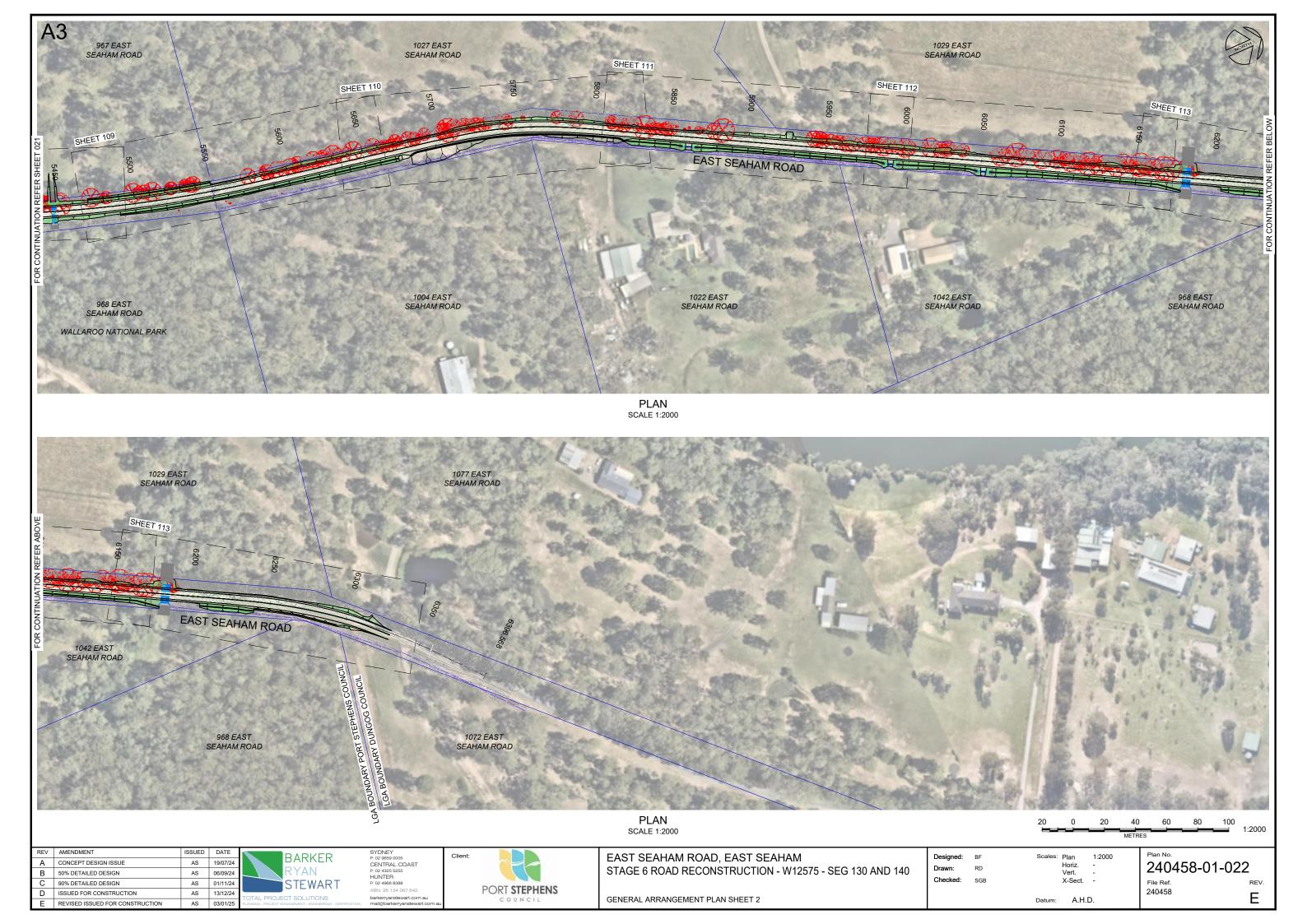


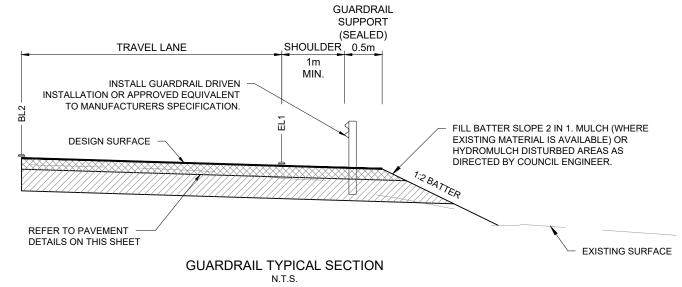
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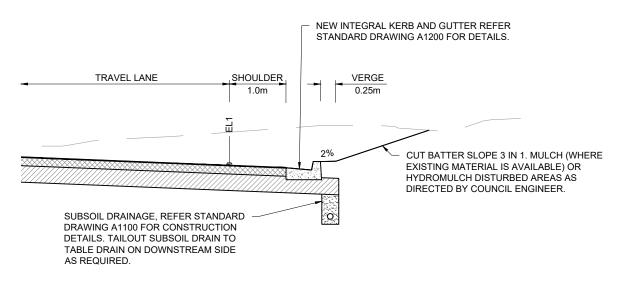
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KERB AND GUTTER - TYPICAL SECTION

TYPICAL SECTION AND DETAILS SHEET 1

OTES.

- REFER TO HUNTER CIVILAB "REPORT ON PAVEMENT INVESTIGATION & DESIGN EAST SEAHAM ROAD, STAGE 6 EAST SEAHAM". HUNTER CIVILAB REF No: G0558-PID-001-REV0 DATED JUNE 2024.
- 2. IF UNSUITABLE SUBGRADE IS ENCOUNTERED REMOVE AND REPLACE WITH SELECT MATERIAL AS
- SPECIFIED IN THE ABOVE GEOTECHNICAL REPORT.

 3. REFER TO SHEET 032 FOR PAVEMENT DETAILS.

 REV
 AMENDMENT
 ISSUED
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 A
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 AS
 19/07/24

 B
 50% DETAILED DESIGN
 AS
 06/09/24

 C
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 E
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EAST SEAHAM ROAD, EAST SEAHAM STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140
 Designed:
 BF
 Scale

 Drawn:
 RD

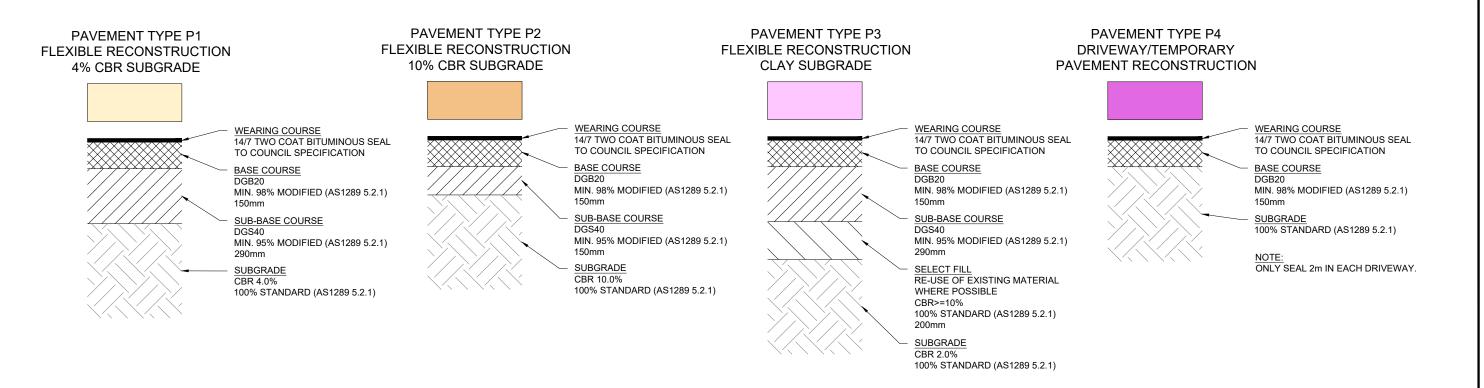
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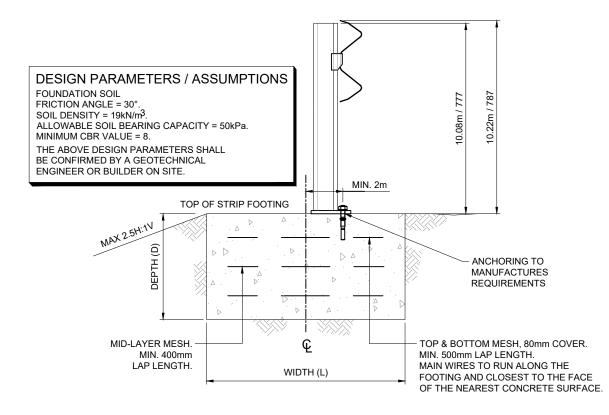
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Plan No. 240458-01-031 File Ref. REV. 240458





OPTION 1 - STRIP FOOTING SPECIFICATIONS						
D MIN. DEPTH	L MINI WIDTH	L MIN. WIDTH	B MIN. LENGTH OF FOOTING	REINFORCEMENT		
(mm)			(TOP & BOTTOM)	(MID-LAYER)		
250	950	19000	RL918 MESH [MIN. (8) LONGITUDINAL WIRES PER LAYER]	-		
350	800	19000	RL1118 MESH [MIN. (7) LONGITUDINAL WIRES PER LAYER]	SL82 MESH [MIN. (4) LONGITUDINAL WIRES]		
400	750	19000	RL1118 MESH [MIN. (6) LONGITUDINAL WIRES PER LAYER]	SL92 MESH [MIN. (3) LONGITUDINAL WIRES]		
350	1100	11000	RL1118 MESH [MIN. (10) LONGITUDINAL WIRES PER LAYER]	SL82 MESH [MIN. (5) LONGITUDINAL WIRES]		
250	1250	11000	RL918 MESH [MIN. (11) LONGITUDINAL WIRES PER LAYER]	-		

SAFETY BARRIER STRIP FOOTING DETAIL
NTS

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EAST SEAHAM ROAD, EAST SEAHAM
STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND

BF
RD
SGE

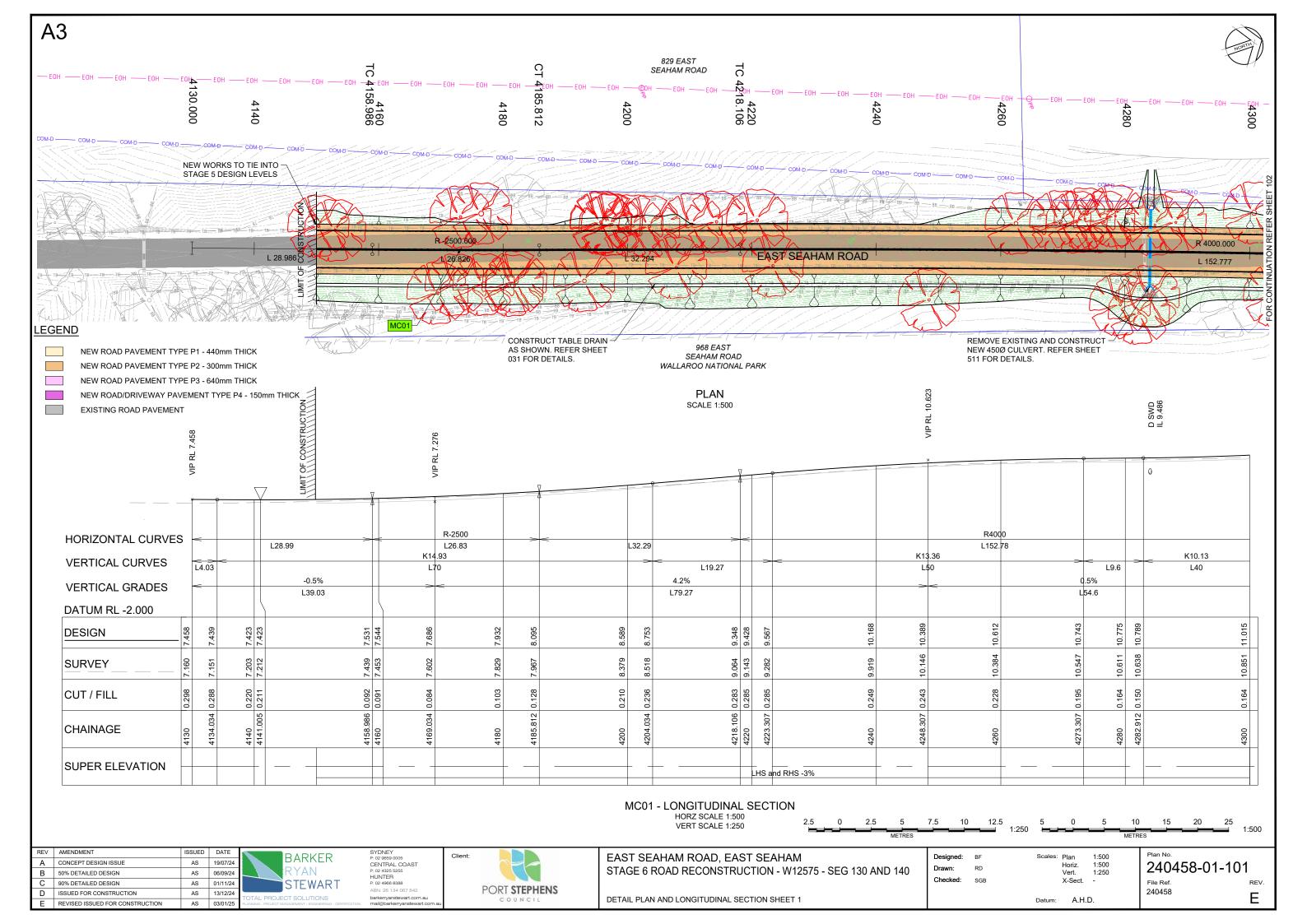
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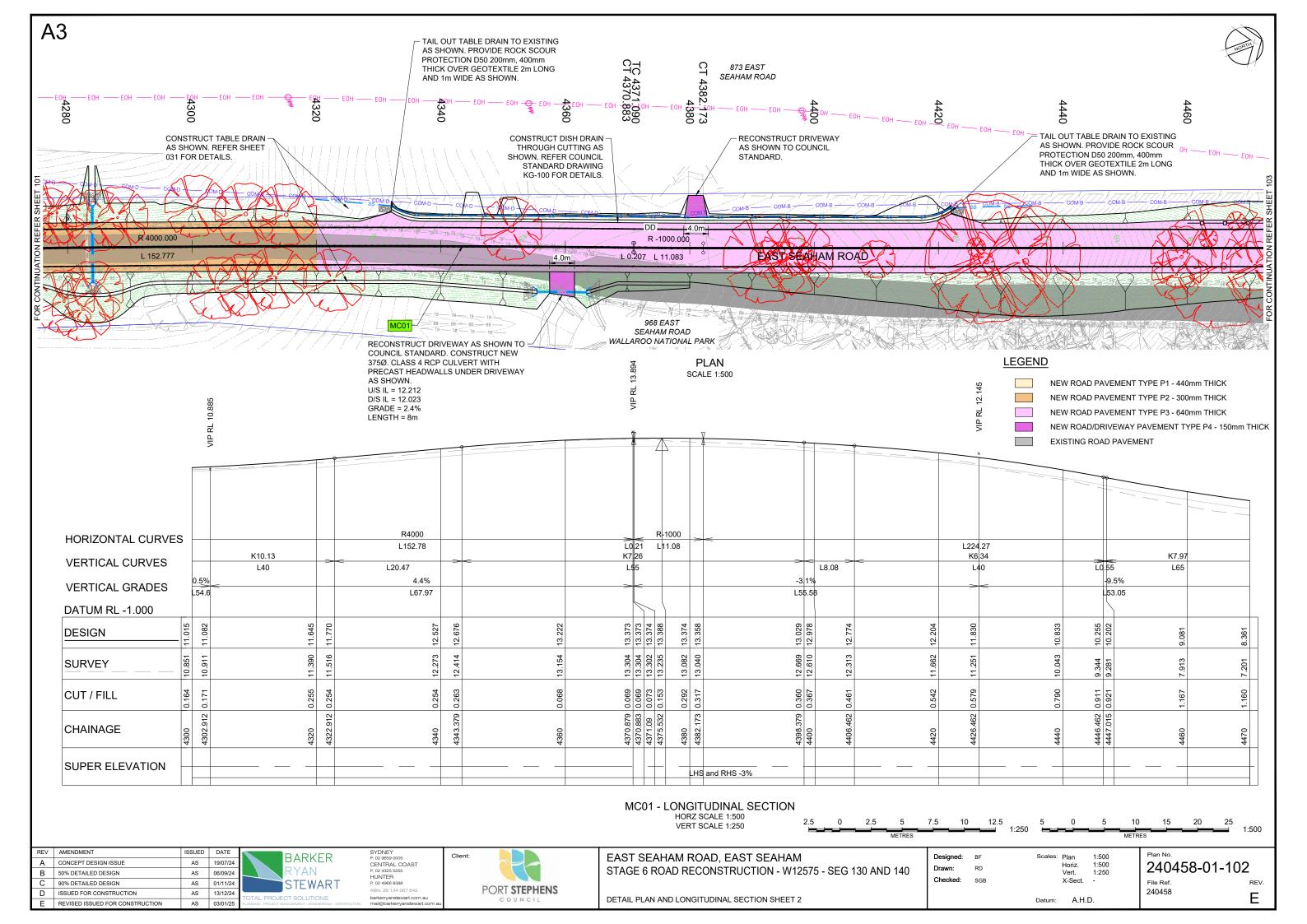
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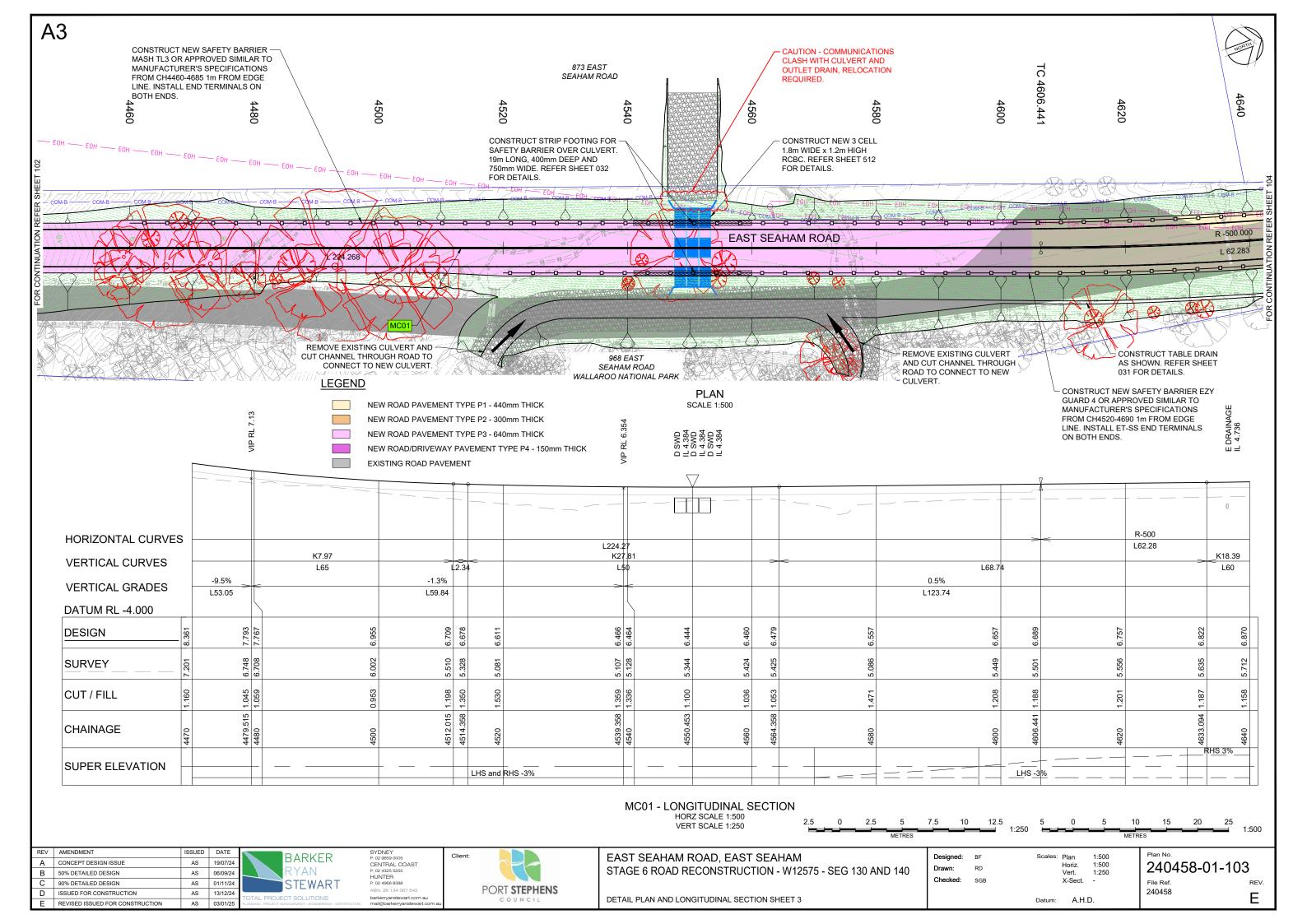
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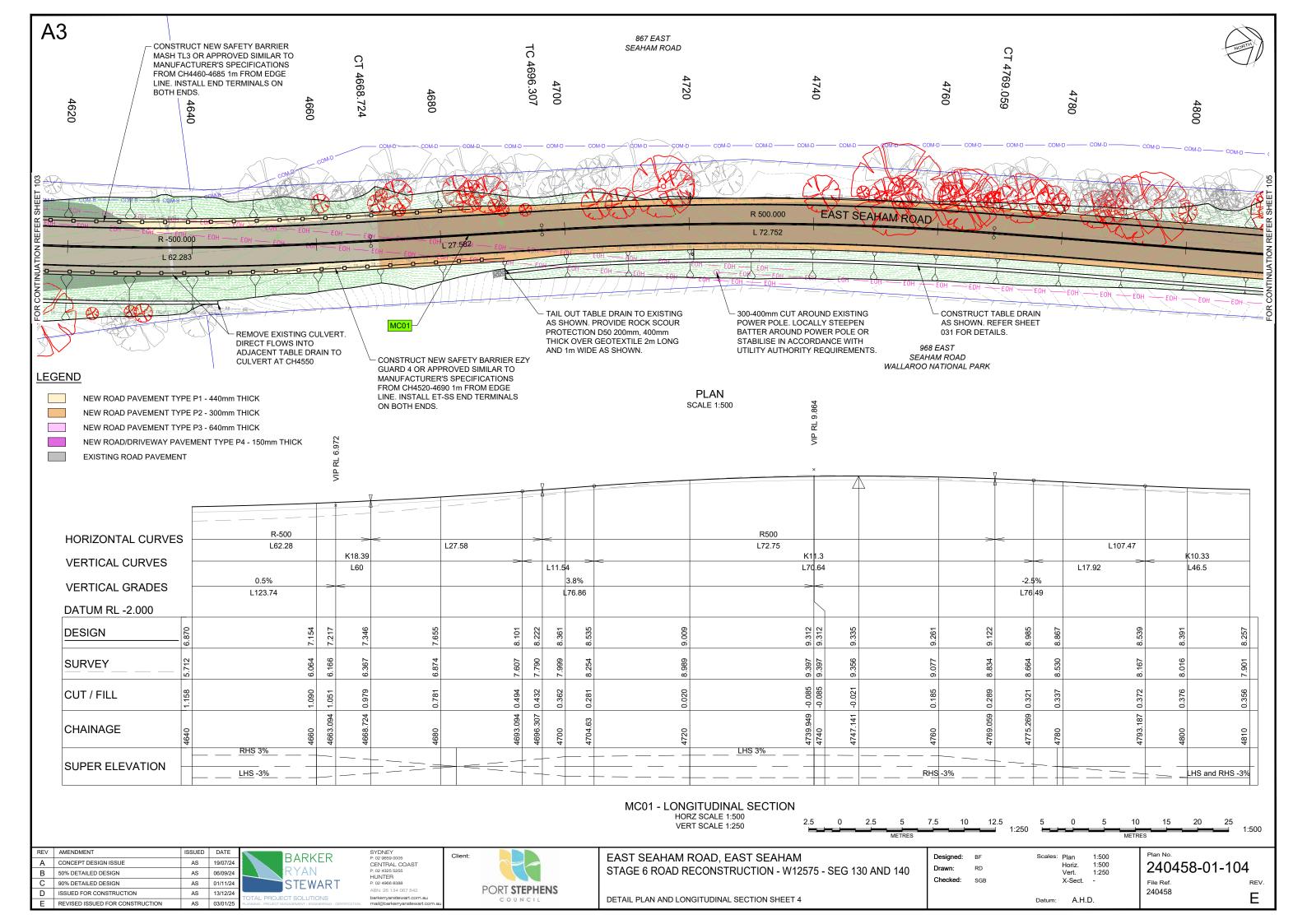
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File Ref. REV. 240458

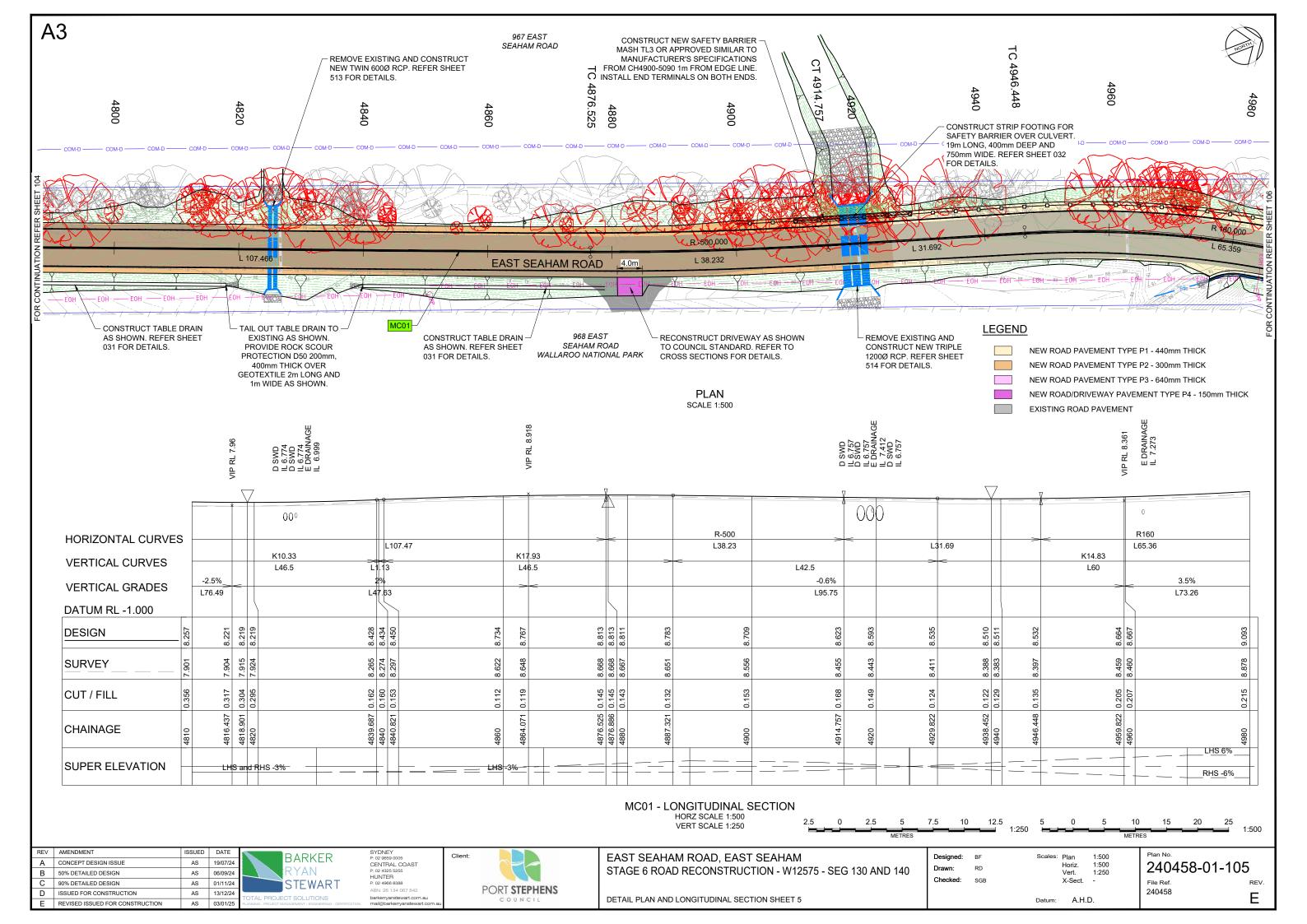
TYPICAL SECTION AND DETAILS SHEET 2	
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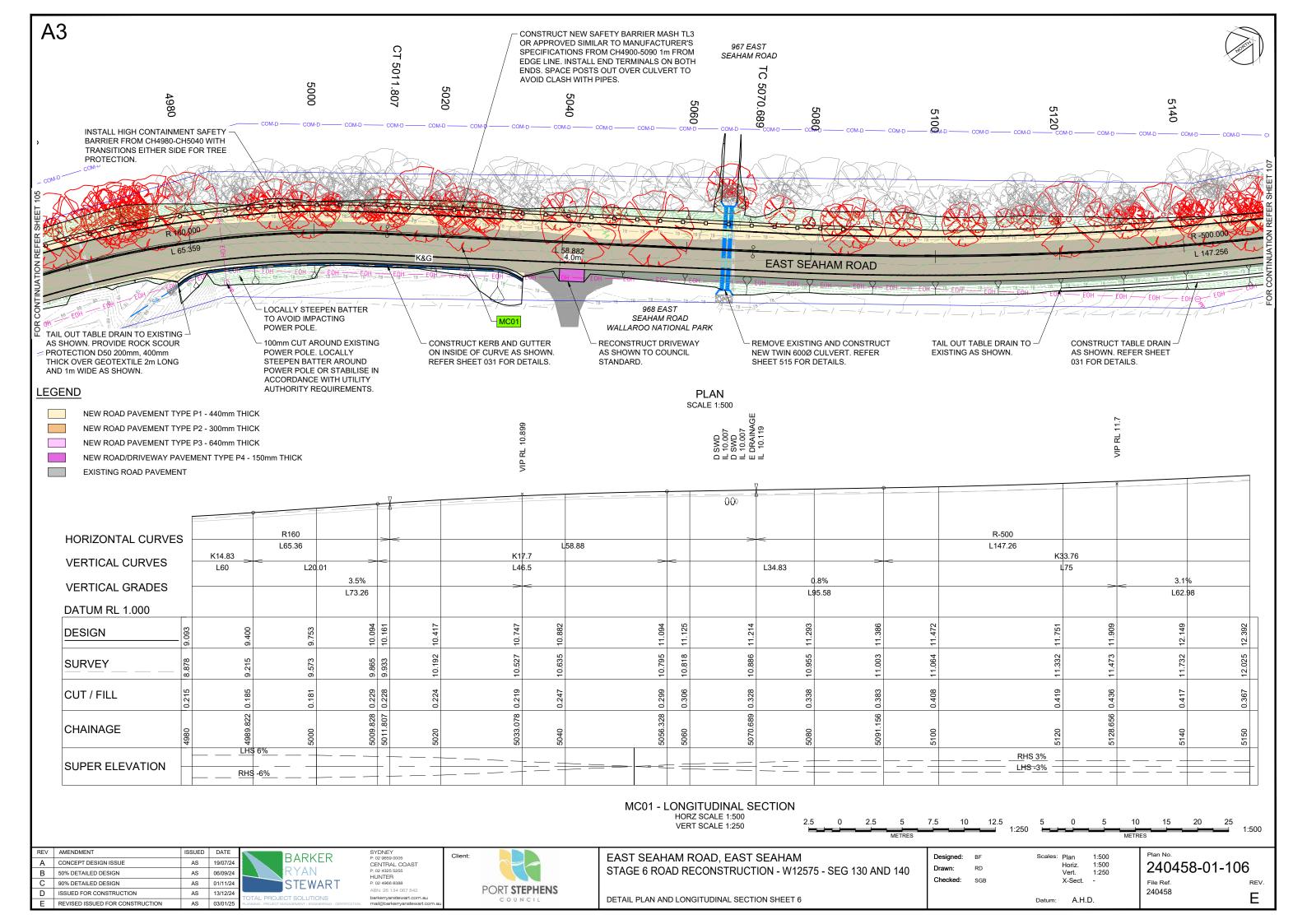


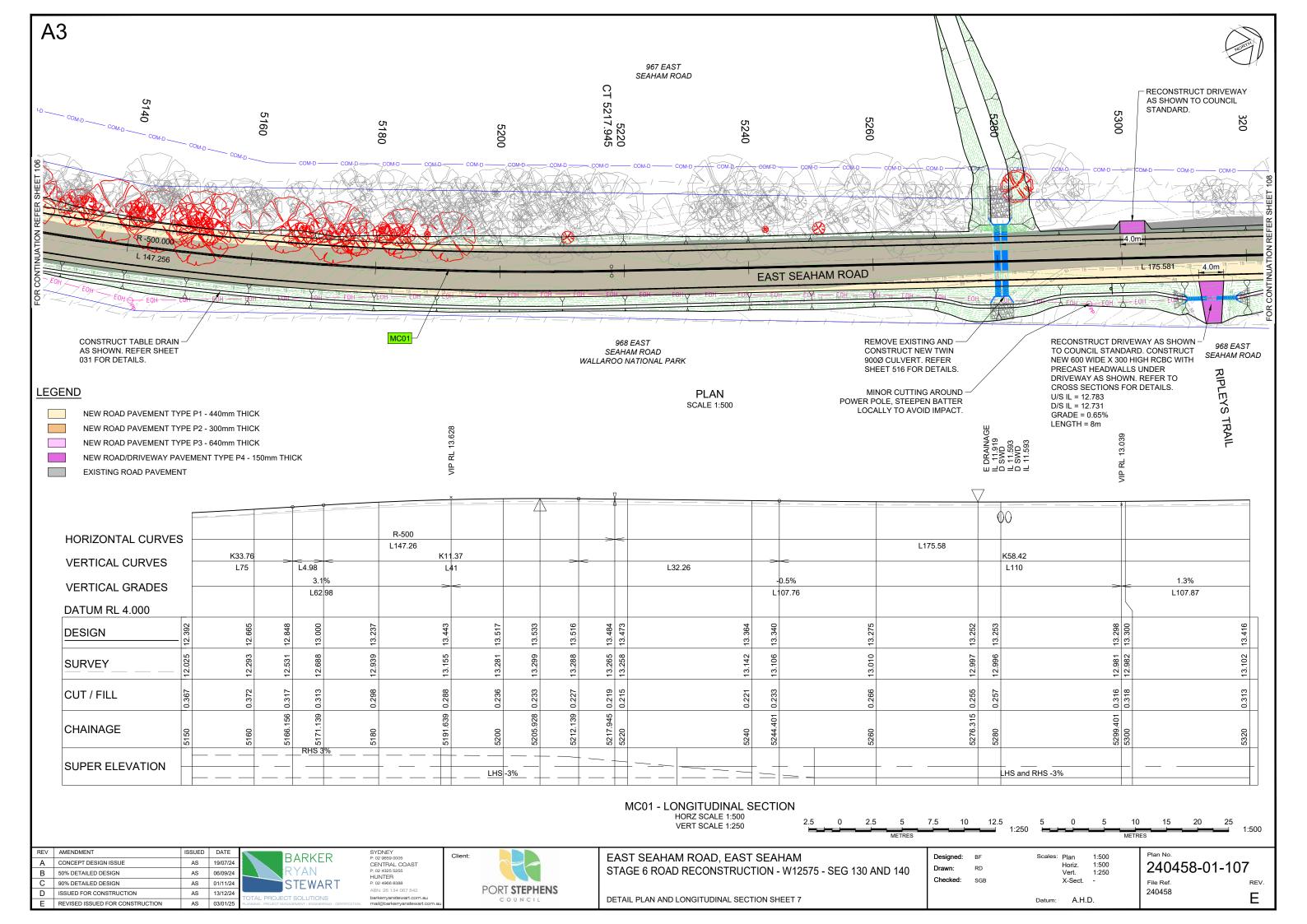


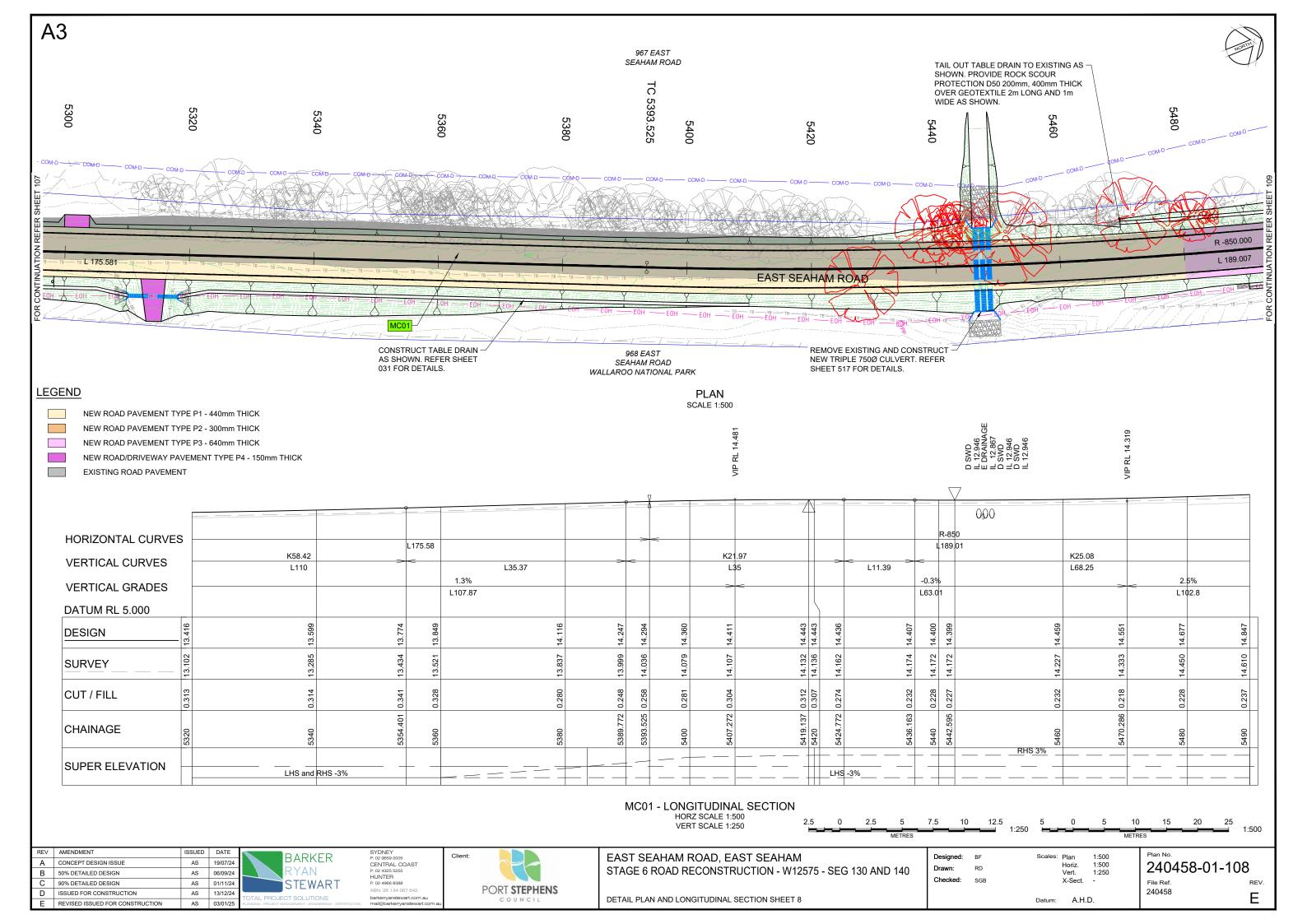


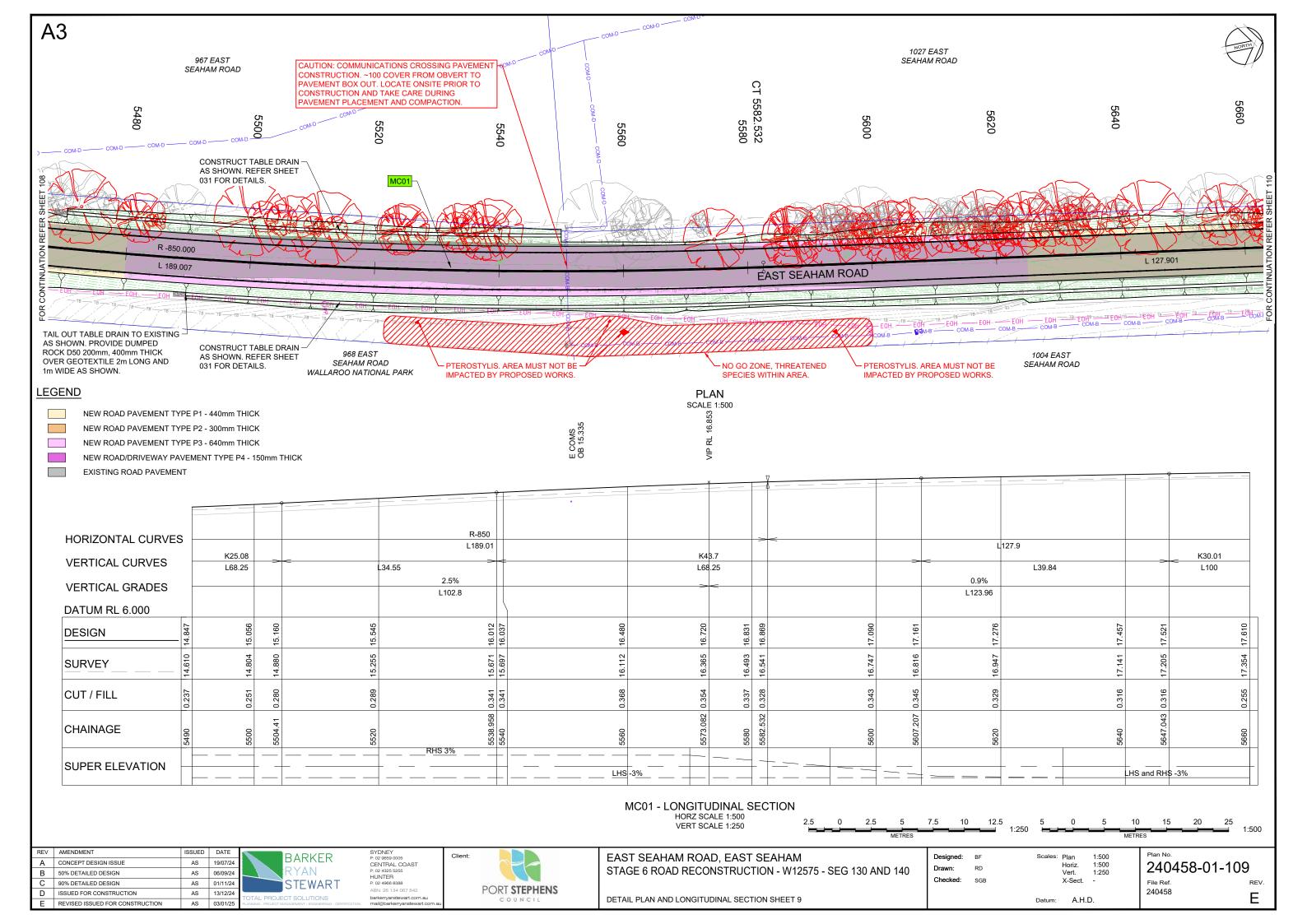


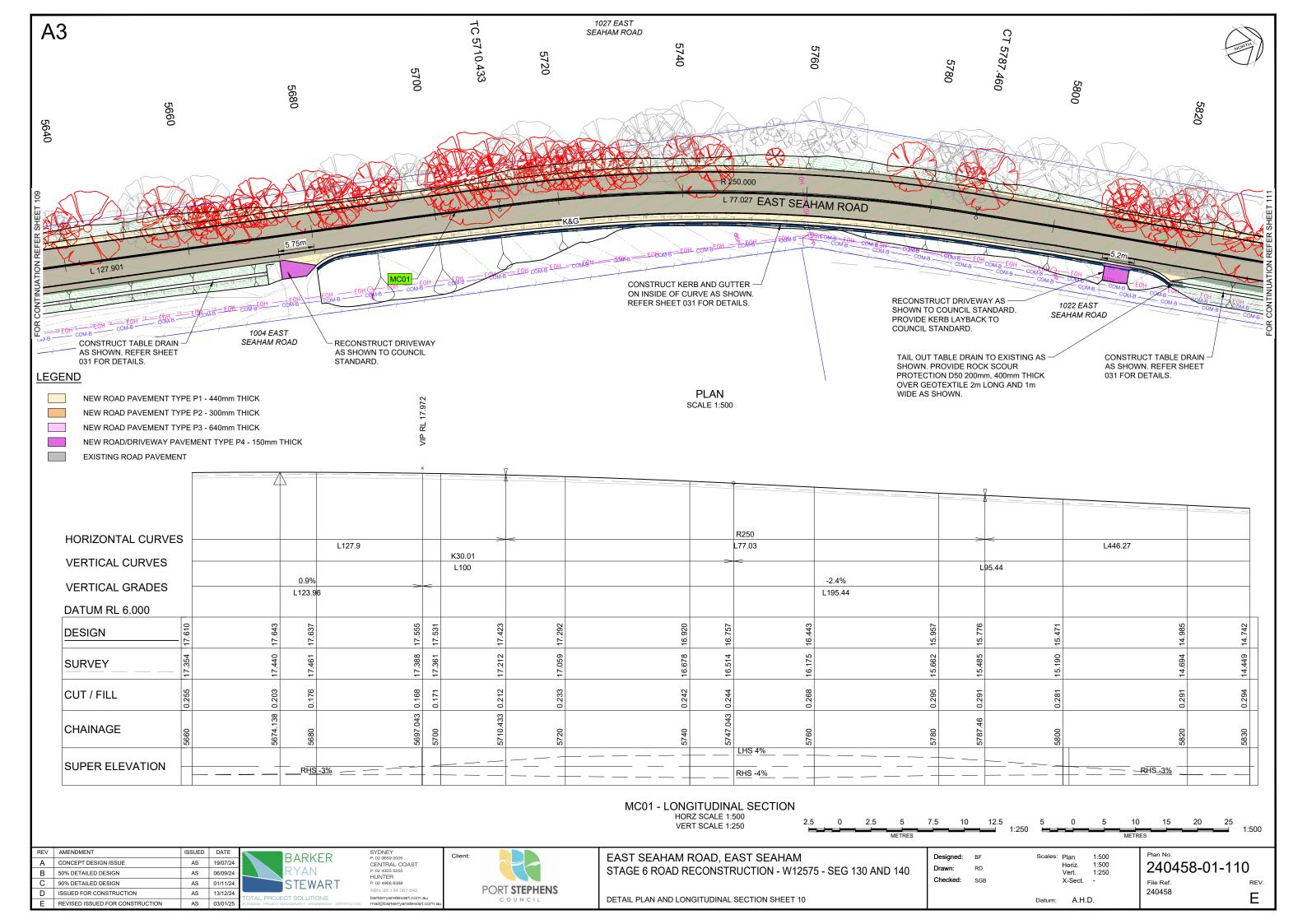


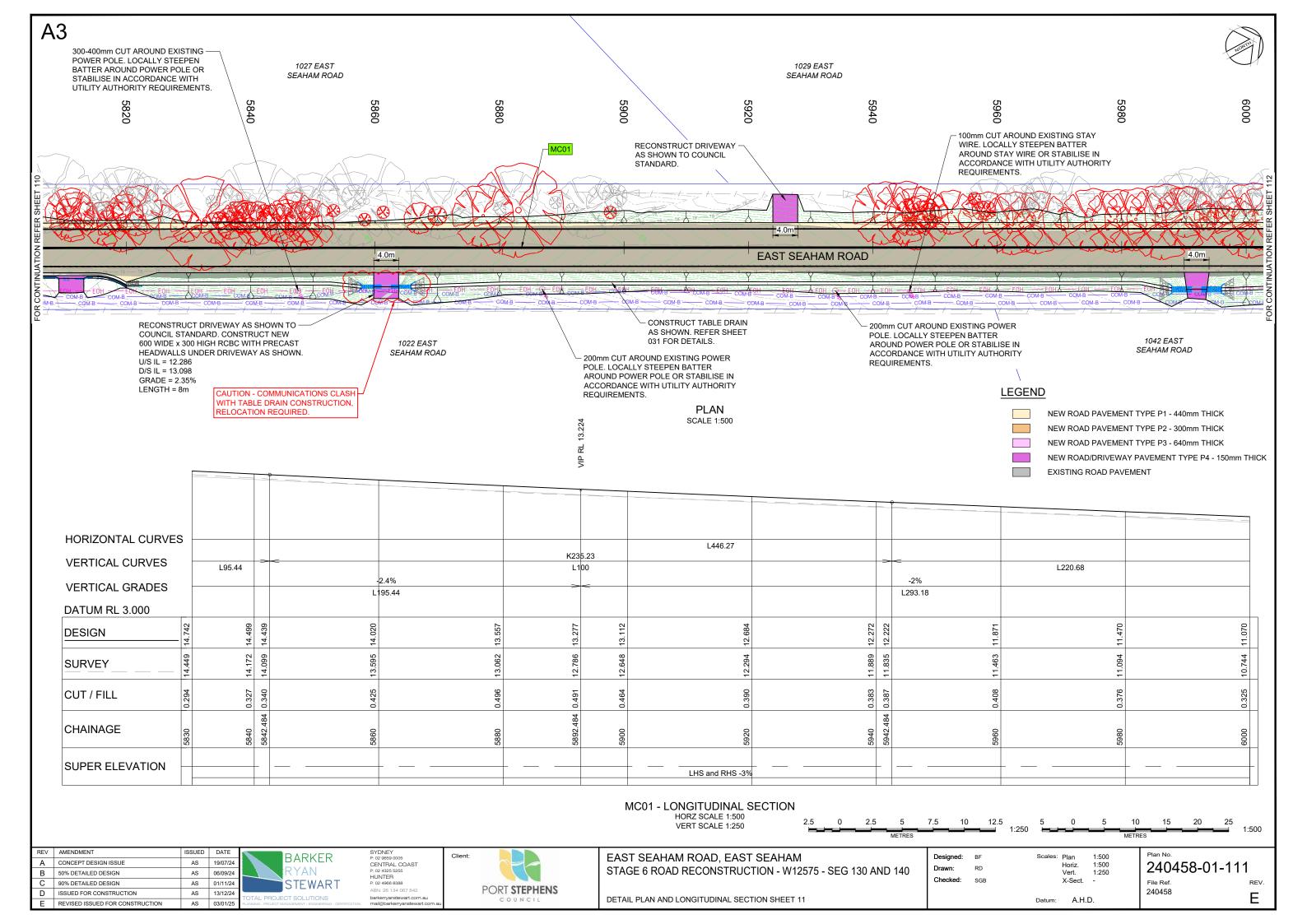


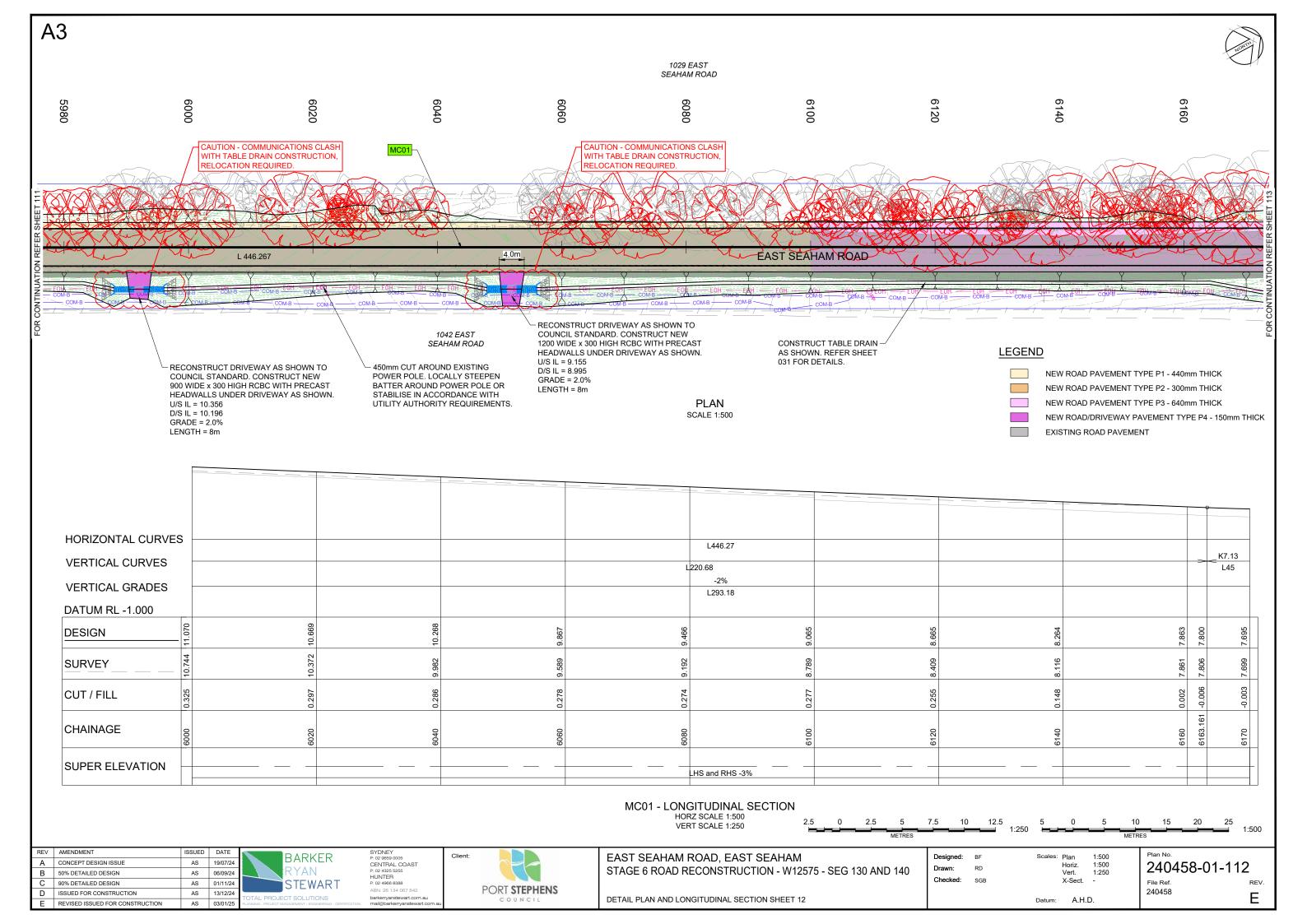


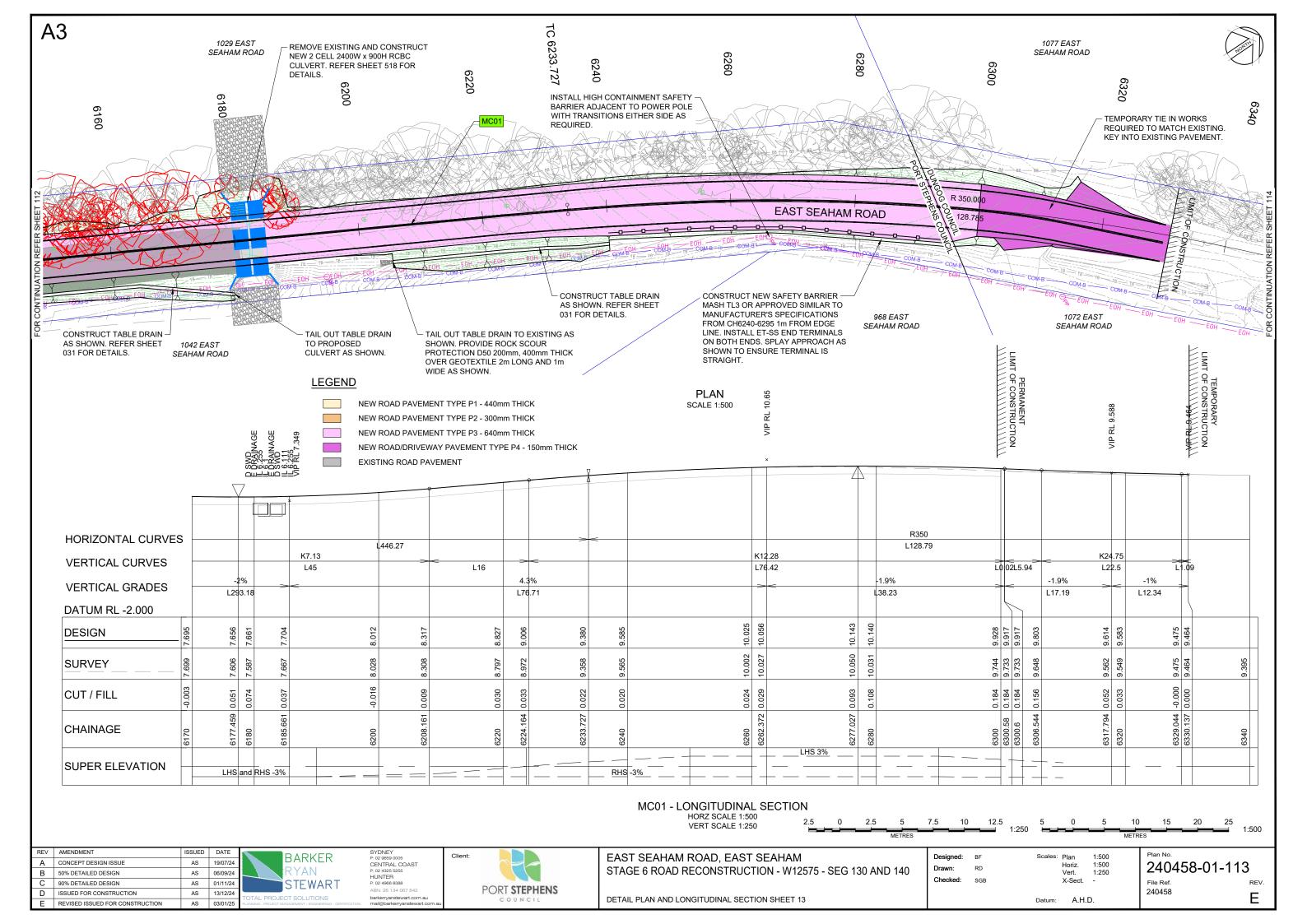


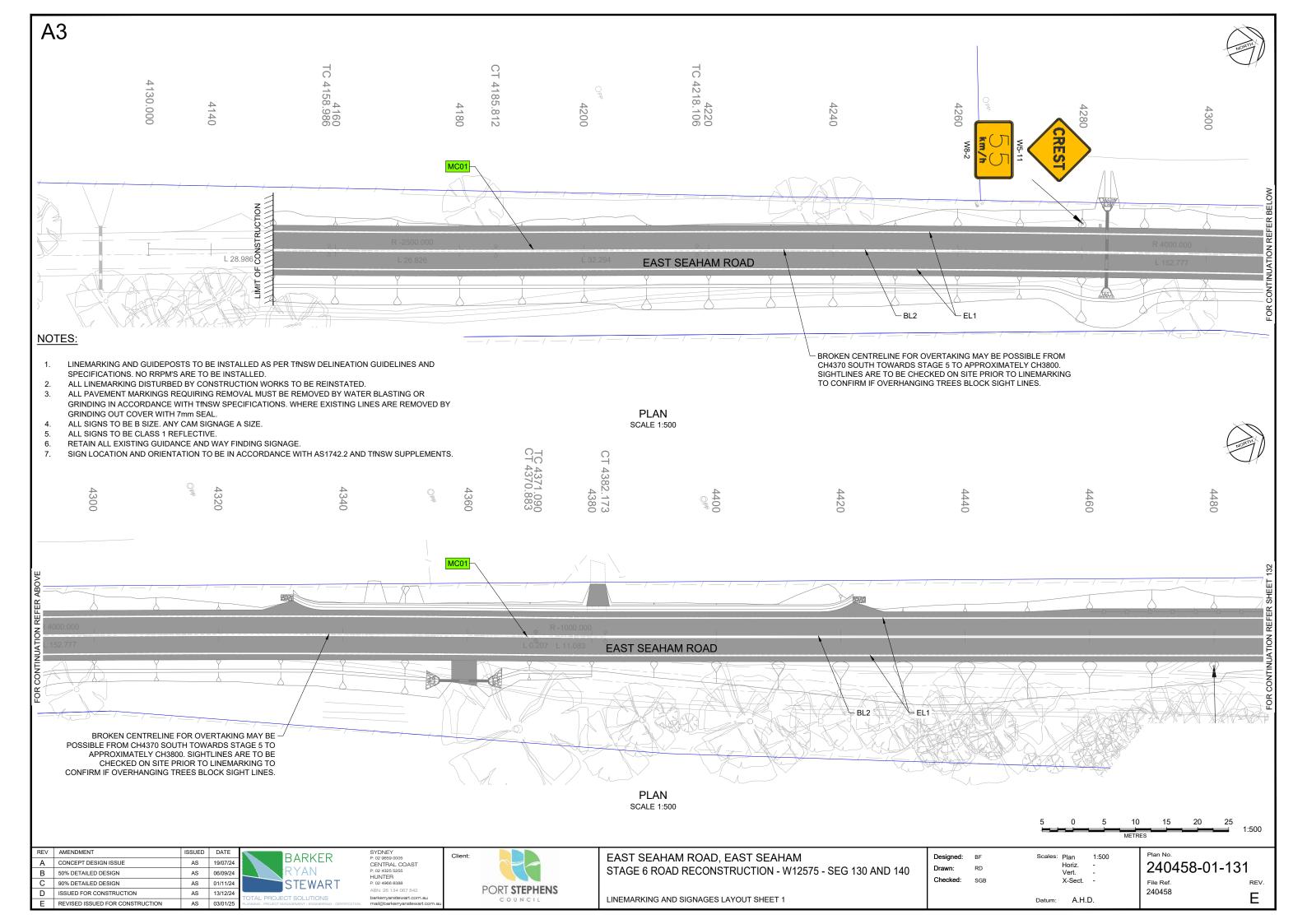


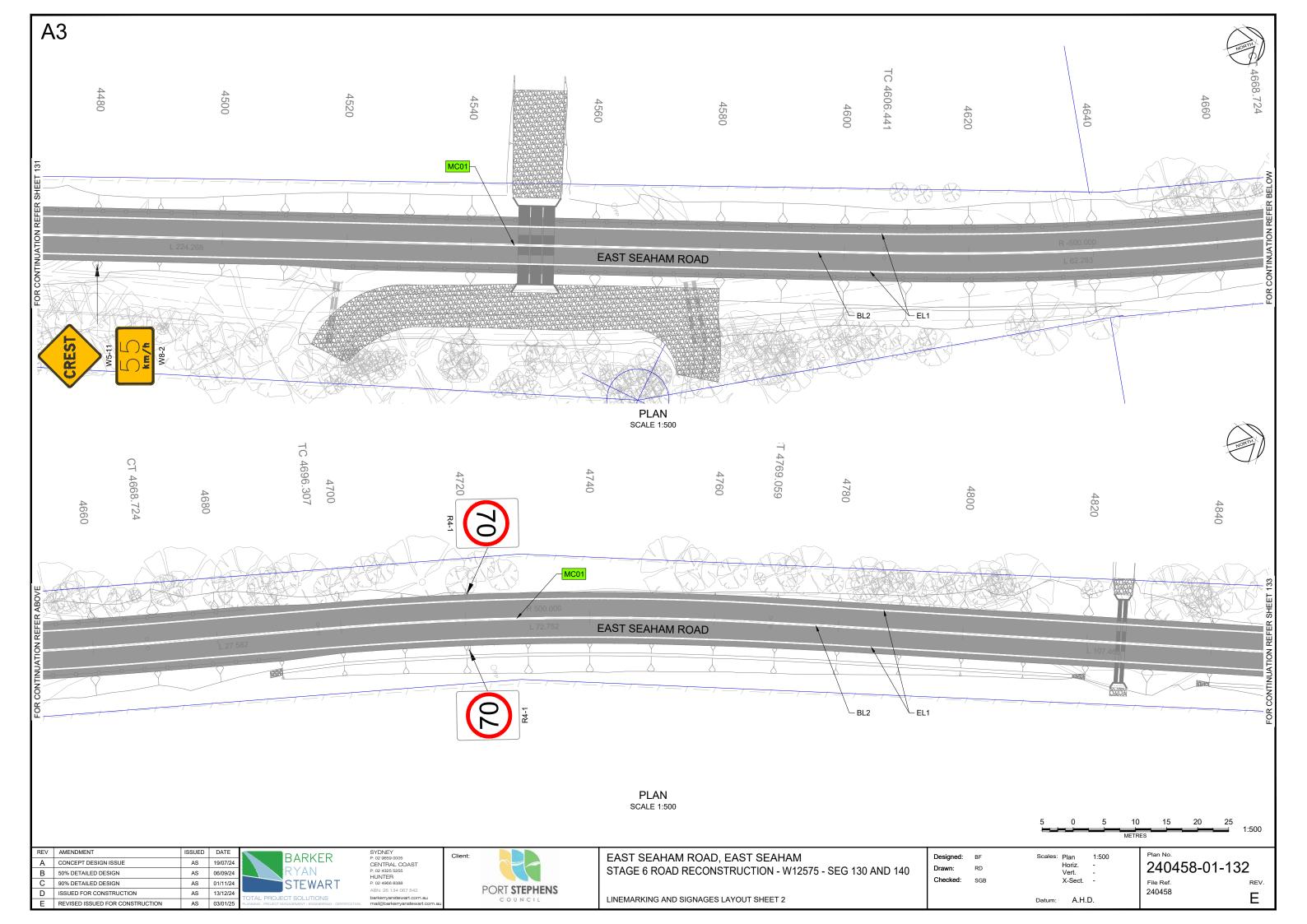


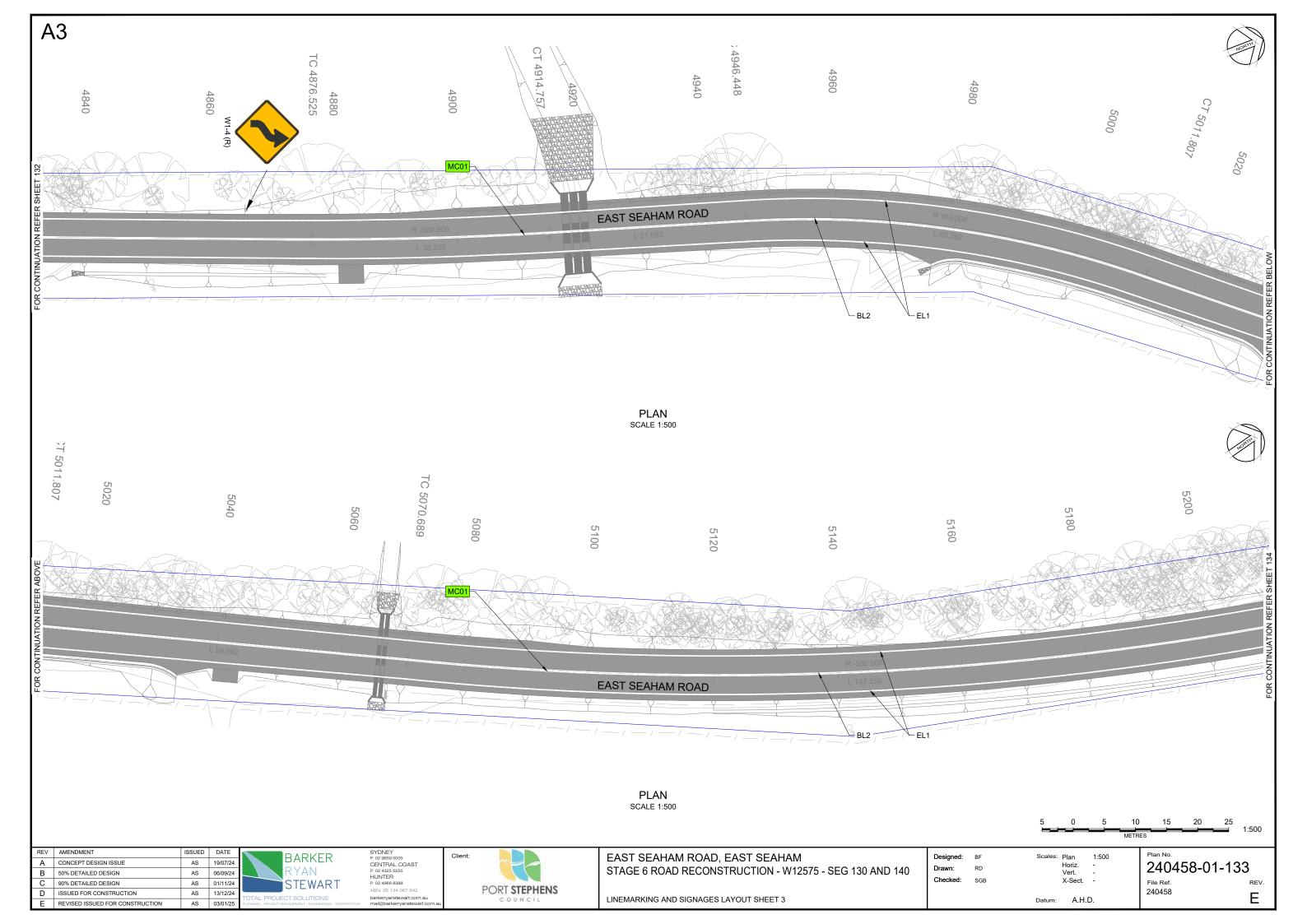


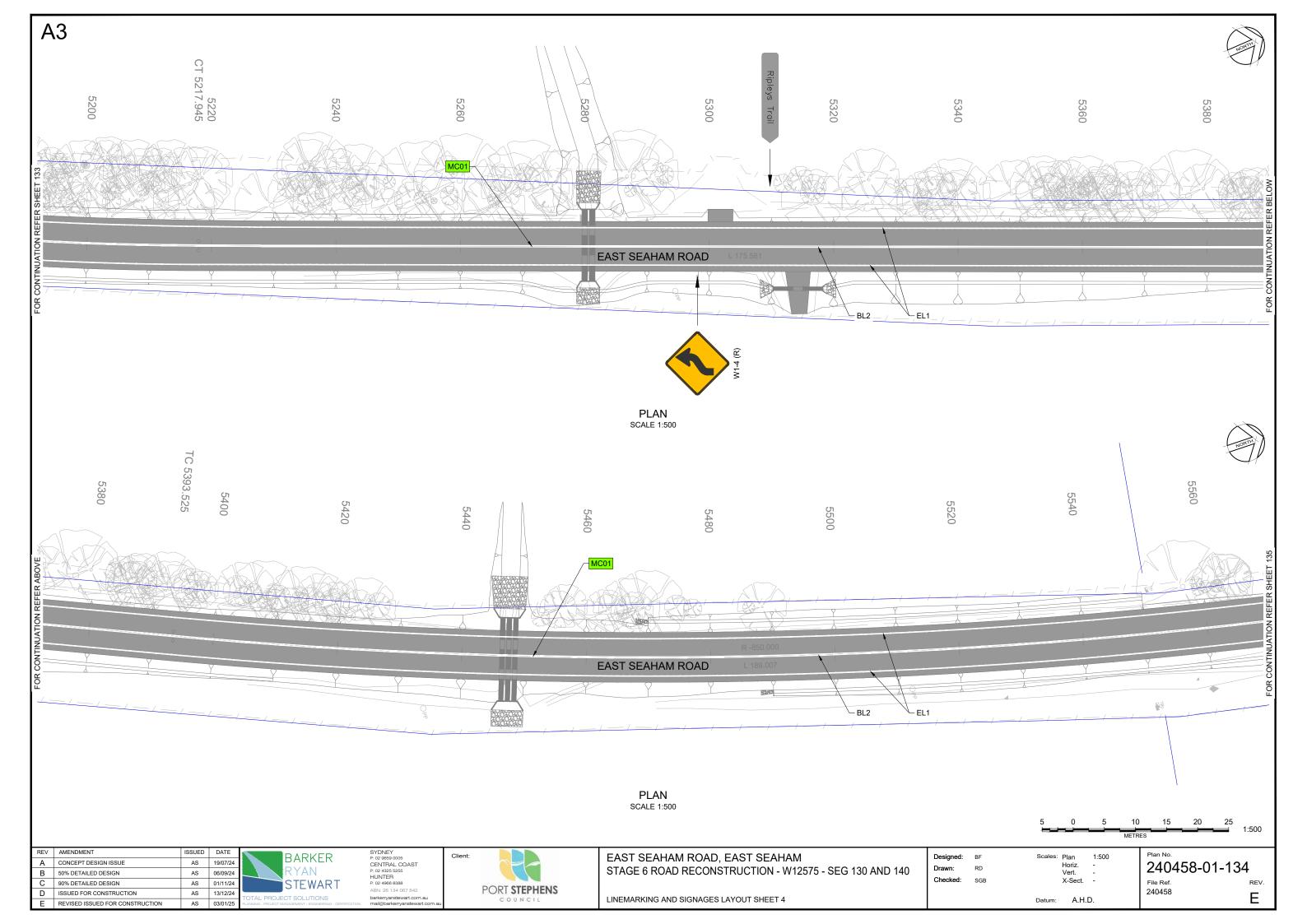


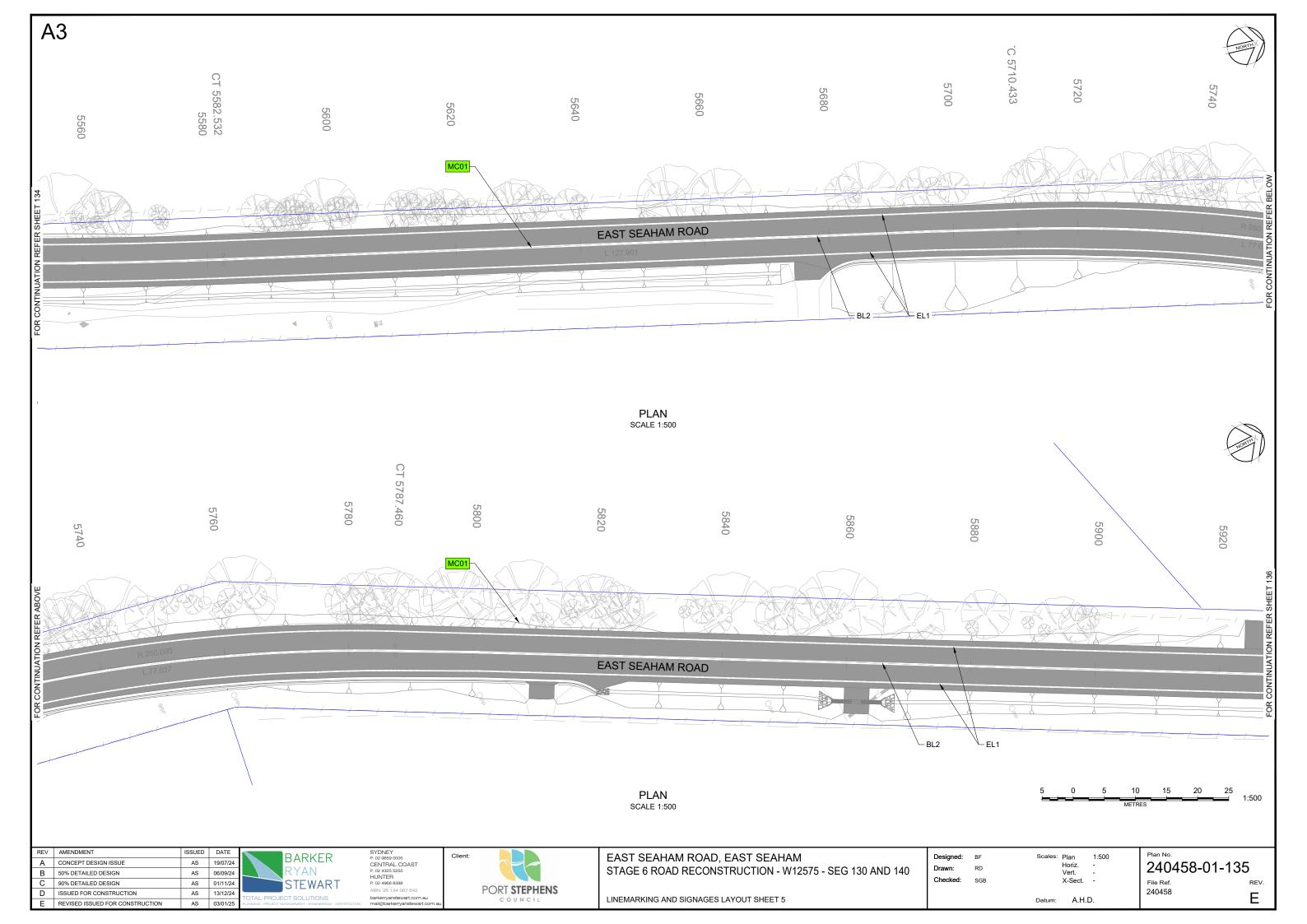


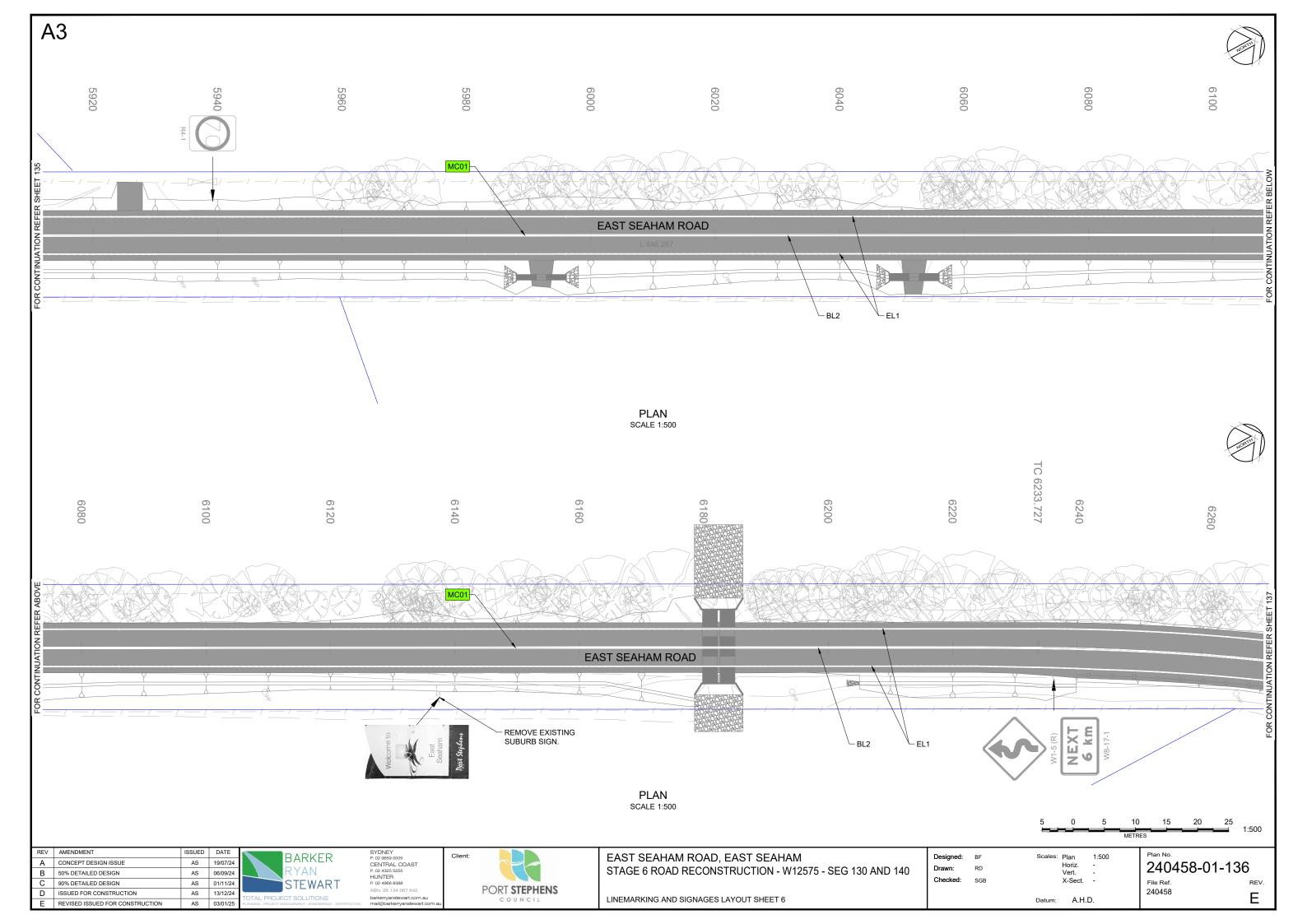


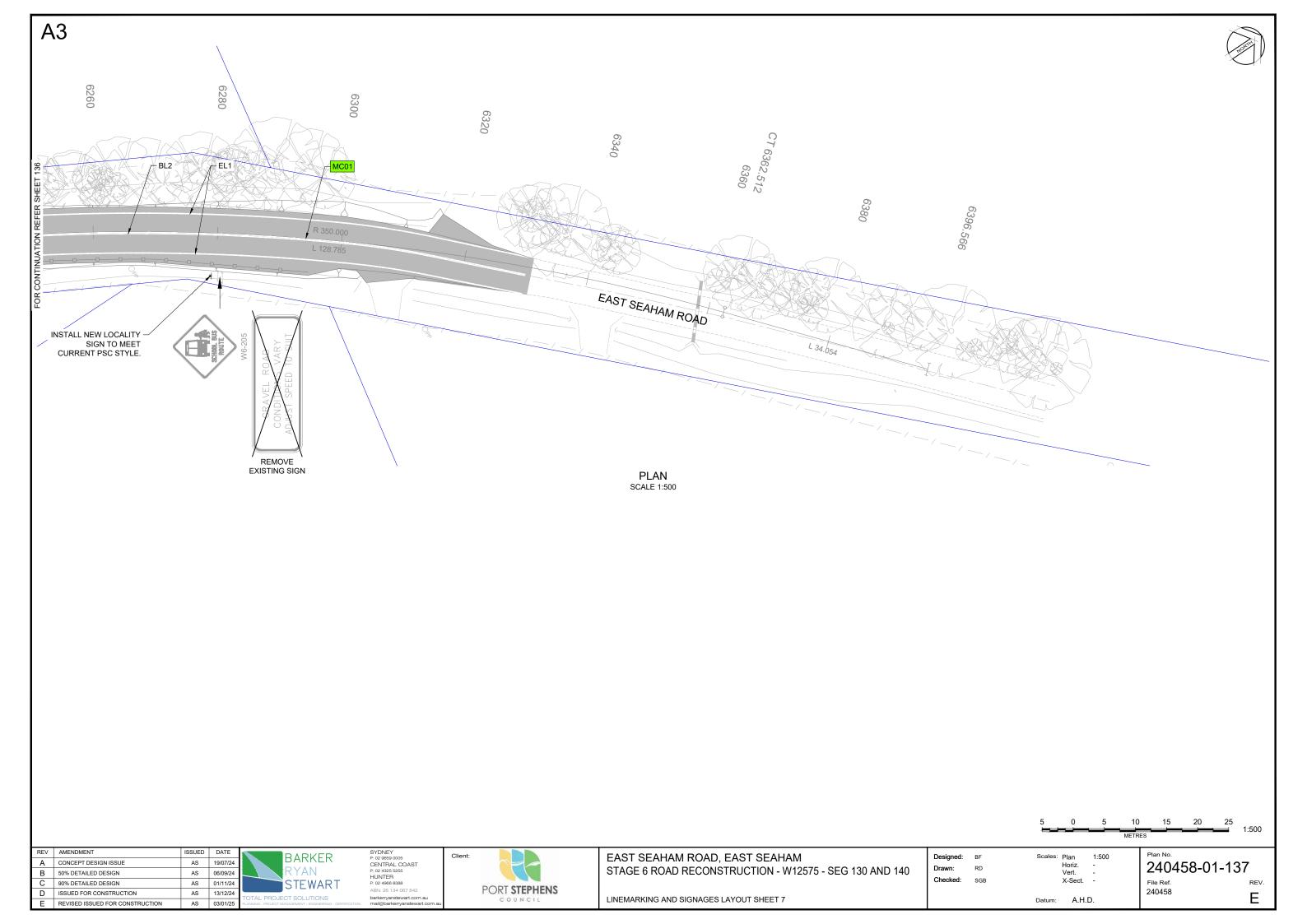


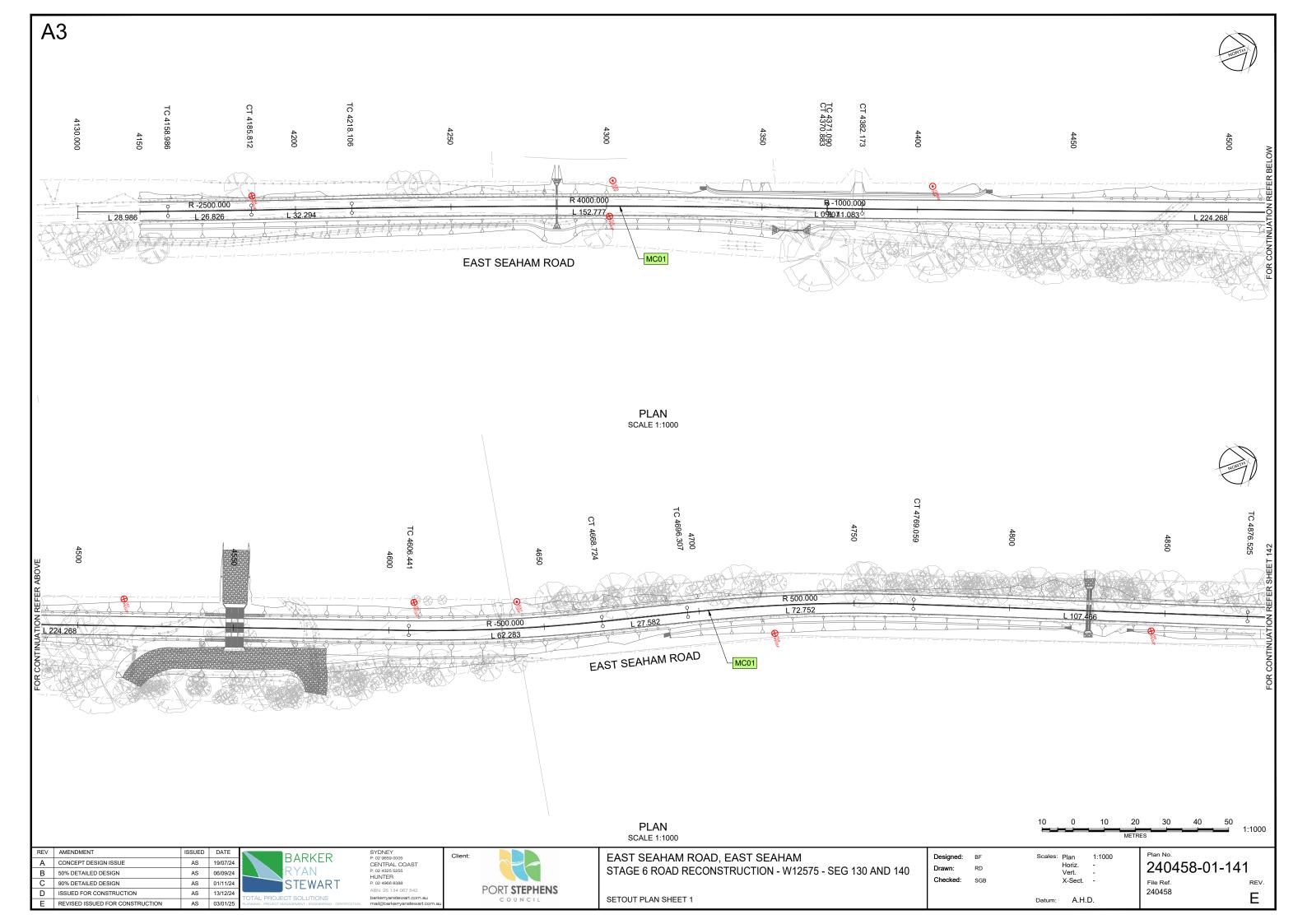


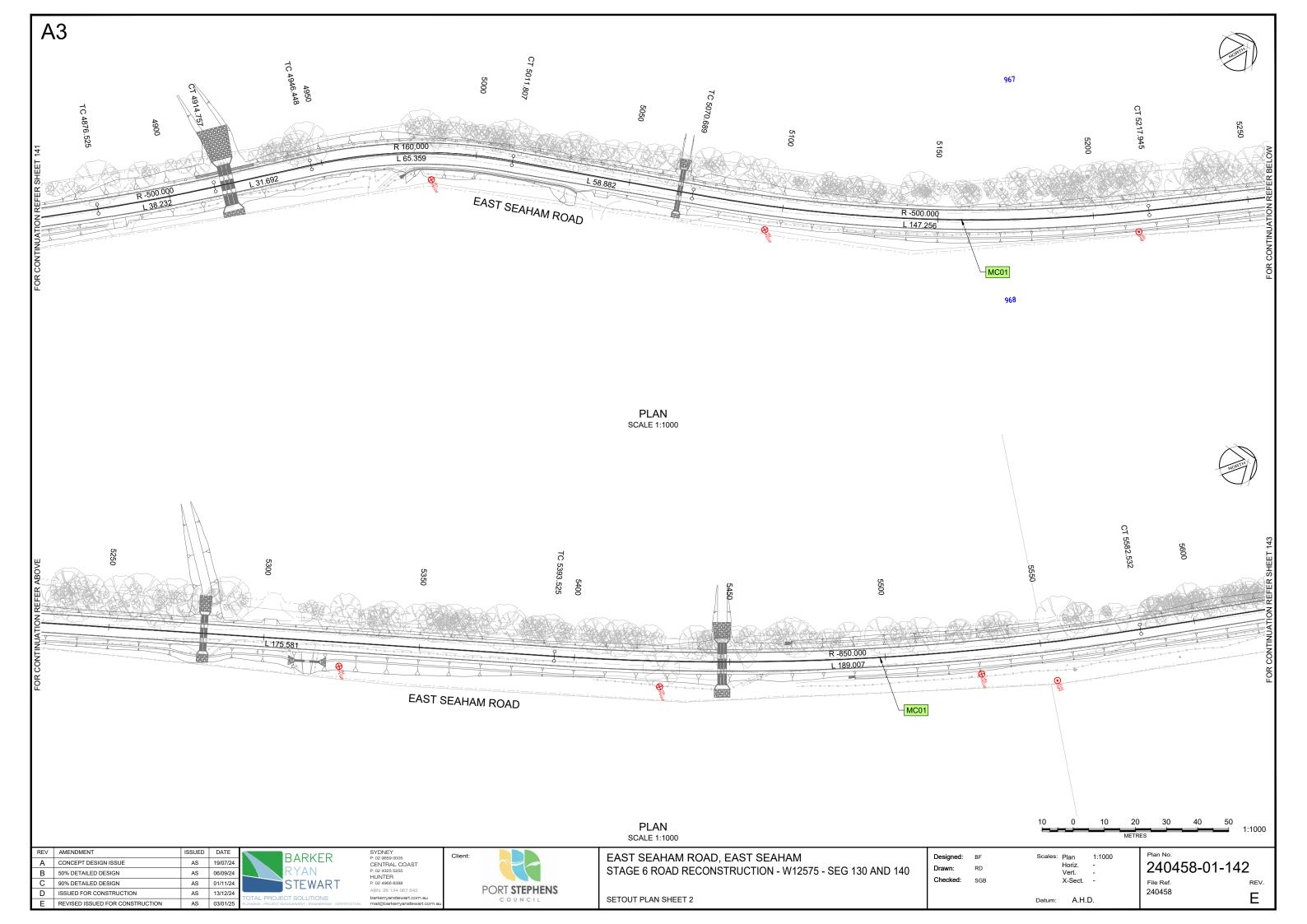


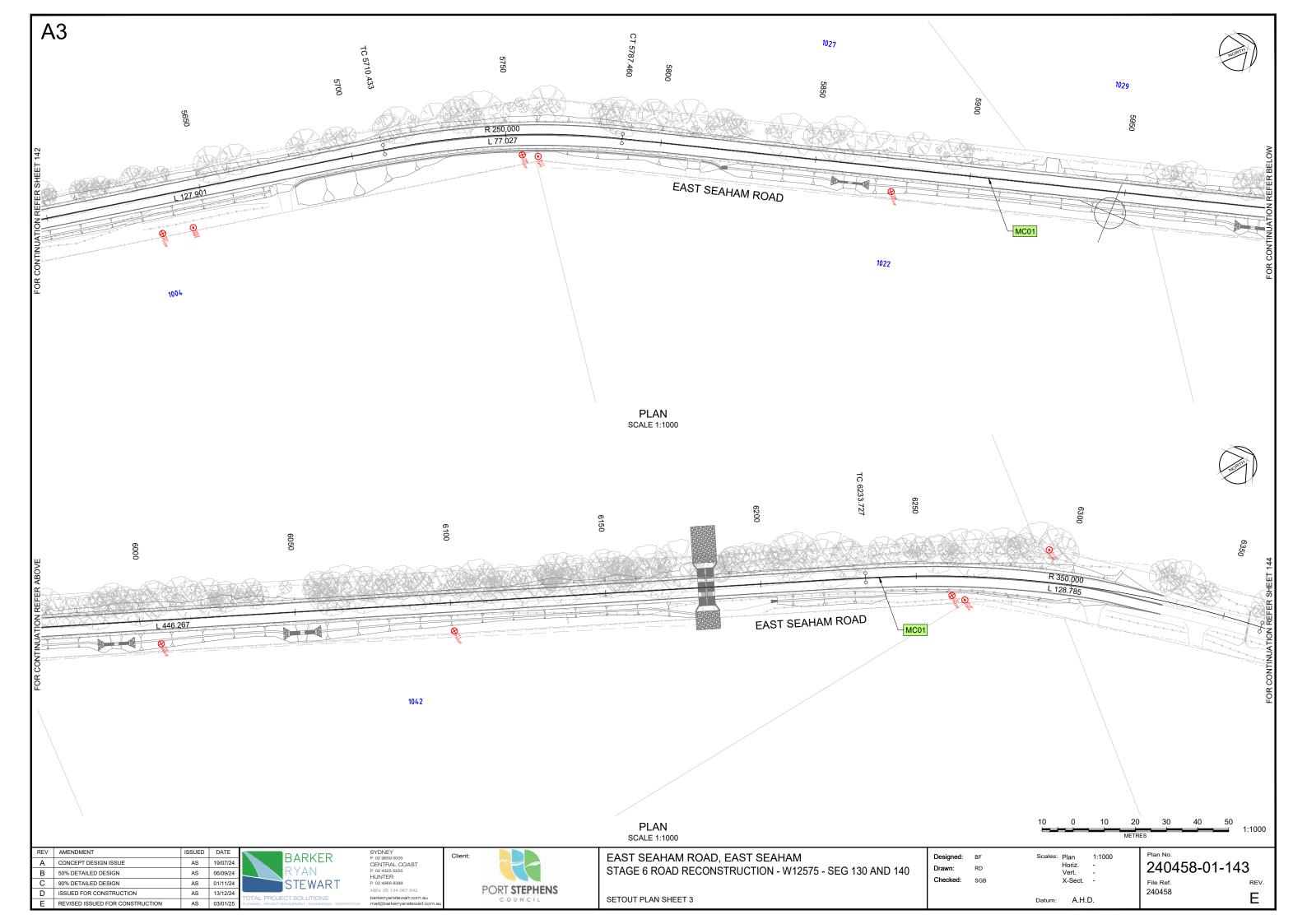






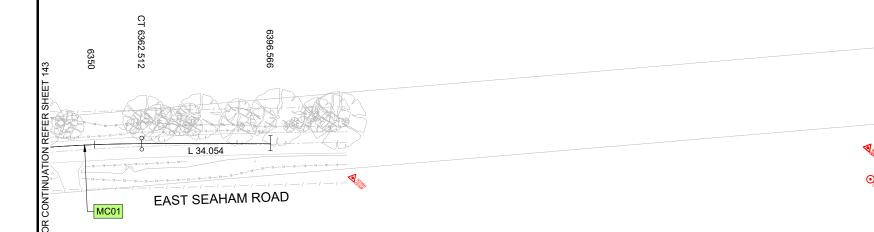












	SURVEY CONTROL TABLE											
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2002	386199.413	6392289.773	17.481	PMF								
109509	385718.502	6391154.274	12.807	PMF								
154	385647.416	6390947.276	8.149	PEG3F								
155	385692.424	6391053.259	10.790	PEG3F								
157	385755.430	6391257.852	5.022	PEG3F								
158	385787.311	6391345.467	5.517	PEG3F								
159	385835.021	6391451.621	9.405	PEG3F								
160	385874.338	6391566.037	8.484	PEG3F								
161	385925.649	6391694.430	10.266	PEG3F								
162	385993.077	6391779.214	11.128	PEG3F								
164	386099.153	6391983.987	13.885	PEG3F								
165	386140.383	6392078.698	14.018	PEG3F								
166	386171.708	6392177.478	15.927	PEG3F								
167	386197.428	6392279.969	17.585	PEG3F								
168	386218.014	6392396.493	16.658	PEG3F								
169	386274.048	6392501.636	13.729	PEG3F								
170	386336.583	6392617.033	10.808	PEG3F								
171	386382.925	6392699.186	8.882	PEG3F								
172	386457.837	6392840.947	9.947	PEG3F								
5001	385798.000	6391376.700	0.000	GIPF								
5025	385682.000	6391058.100	0.000	GIPF								
5102	386181.900	6392199.700	0.000	GIPF								
5111	386220.400	6392401.000	0.000	GIPF								
5127	386461.300	6392843.700	0.000	GIPF								
5137	386462.000	6392875.200	0.000	GIPF								

PLAN SCALE 1:1000

SETOUT PLAN SHEET 4

	D CONTROL/MASTER->MC01 HORIZONTAL SEGMENTS												
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	DEP.SEG	DEP.RAD	DEP.LEN					
S	4130.000	385633.324	6390892.850	7.458	19°18'10.04"	LINE		28.986					
TC	4158.986	385642.905	6390920.206	7.531	19°18'10.04"	ARC	-2500.000	26.826					
CT	4185.812	385651.637	6390945.571	8.095	18°41'16.74"	LINE		32.294					
TC	4218.106	385661.984	6390976.163	9.348	18°41'16.74"	ARC	4000.000	152.777					
CT	4370.883	385713.688	6391119.916	13.373	20°52'34.89"	LINE		0.207					
TC	4371.090	385713.762	6391120.109	13.374	20°52'34.89"	ARC	-1000.000	11.083					
CT	4382.173	385717.654	6391130.486	13.358	20°14'28.79"	LINE		224.268					
TC	4606.441	385795.245	6391340.904	6.689	20°14'28.79"	ARC	-500.000	62.283					
CT	4668.724	385813.103	6391400.530	7.346	13°06'15.03"	LINE		27.582					
TC	4696.307	385819.356	6391427.394	8.222	13°06'15.03"	ARC	500.000	72.752					
CT	4769.059	385840.939	6391496.804	9.122	21°26'27.38"	LINE		107.466					
TC	4876.525	385880.222	6391596.833	8.813	21°26'27.38"	ARC	-500.000	38.232					
CT	4914.757	385892.824	6391632.918	8.623	17°03'35.68"	LINE		31.692					
TC	4946.448	385902.121	6391663.216	8.532	17°03'35.68"	ARC	160.000	65.359					
CT	5011.807	385933.352	6391720.113	10.161	40°27'53.60"	LINE		58.882					
TC	5070.689	385971.565	6391764.911	11.214	40°27'53.60"	ARC	-500.000	147.256					
CT	5217.945	386049.378	6391889.302	13.484	23°35'26.32"	LINE		175.581					
TC	5393.525	386119.645	6392050.209	14.294	23°35'26.32"	ARC	-850.000	189.007					
CT	5582.532	386175.485	6392230.372	16.869	10°51'01.08"	LINE		127.901					
TC	5710.433	386199.562	6392355.986	17.423	10°51'01.08"	ARC	250.000	77.027					
CT	5787.460	386225.395	6392428.228	15.776	28°30'13.04"	LINE		446.267					
TC	6233.727	386438.360	6392820.402	9.380	28°30'13.04"	ARC	350.000	128.785					
CT	6362.512	386519.029	6392919.860		49°35'09.70"	LINE		34.054					
Е	6396.566	386544.957	6392941.937		49°35'09.70"		·						

10	0	10	20	30	40	50	1:1000
			METRES				

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
С	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
F	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

BARKER
RYAN
STEWART
TOTAL PROJECT SOLUTIONS

SYDNEY
P. 02 9859 0005
CENTRAL COAST
P. 02 4325 5255
HUNTER
P. 02 4908 0838
ABN. 26 134 067 842
barkernyanstewart.com.au
mail@barkernyanstewart.com.au



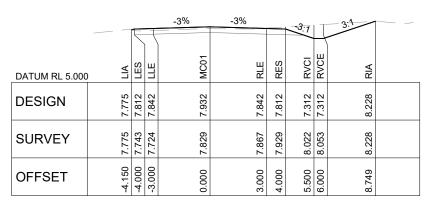
EAST SEAHAM ROAD, EAST SEAHAM
STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

Designed:	BF	Scales:	Plan	1:1000
Drawn:	RD		Horiz. Vert.	-
Checked:	SGB		X-Sect.	
		Datum:	A.H.I	D .

Plan No.

240458-01-144

File Ref. REV.
240458



	_	-3%	1	-3%	-3%		-3:1	ı	3:1	
DATUM RL 7.000	ΓΙΑ	LES	ILE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	10.019	10.048	10.078	10.168	10.078	10.048	9.548	9.548	10.567	
SURVEY	10.019	9.990	9.626	9.919	9.964	10.184	10.381	10.267	10.567	
OFFSET	-4.114	4.000	-3.000	0.000	3.000	4.000	5.500	000.9	9.058	

		-4:1	-3%	-3%	-3%	-3%	-3:1	,	3:1	
		4.1	Н				5.7	+	3.	
DATUM RL 7.500) A	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	10.252	10.895	10.925	11.015	10.925	10.895	10.395	10.395	10.885	
SURVEY	10.252	10.416	10.699	10.851	10.783	10.799	10.836	10.849	10.885	
OFFSET	-6.572	-4.000	-3.000	0.000	3.000	4.000	5.500	00009	7.472	

CH 4300

		-A:1	-3%	-3%	-3%		-3:1	[[3:1	
DATUM RL 4.500) I	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	7.089	7.424	7.454	7.544	7.454	7.424	6.924	6.924	7.791	
SURVEY	7.089	7.231	7.282	7.453	7.424	7.469	7.567	7.603	7.791	
OFFSET	-5.341	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	8.601	

			-	-3%	-3%	-3%	3:1		3:4	
DATUM RL 6.500	LIA	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	9.269	9.308	9.338	9.428	9.338	9.308	8.808	8.808	9.945	
SURVEY	9.269	9.234	9.046	9.143	9.175	9.396	9.724	9.668	9.945	
OFFSET	4.154	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	9.413	

		<u>-4:1</u>	-3%	-3%	-3%	-3%	;3:1	H	3:1	
DATUM RL 7.000	LIA	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	9.942	10.655	10.685	10.775	10.685	10.655	9.638	9.638	10.873	
SURVEY	9.942	10.407	10.496	10.611	10.548	10.313	10.611	10.638	10.873	
OFFSET	-6.849	-4.000	-3.000	0.000	3.000	4.000	7.050	7.550	11.256	

CH	4160
•	

CH 4220

CH 4280

		-4:1		-3%	-3%	-3%	-3:1	<u> </u>	
		-4.1					0.7		
DATUM RL 4.000	LIA	LES	LLE	MC01	RLE	RES	RVCI	RVCE	
DESIGN	6.786	7.330	7.360	7.450	7.360	7.330	6.830	6.830	
SURVEY	6.786	6.924	7.129	7.296	7.290	7.316	7.412	7.444	
OFFSET	-6.175	-4.000	-3.000	0.000	3.000	4.000	5.500	6.000	

		- 4 :1		-3%	-3%		-3:1		3:1	
DATUM RL 5.500	LIA	\ SES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	8.173	8.469	8.499	8.589	8.499	8.469	7.969	7.969	8.751	
SURVEY	8.173	8.232	8.279	8.379	8.440	8.607	8.859	8.943	8.751	
OFFSET	-5.181	-4.000	-3.000	0.000	3.000	4.000	5.500	000'9	8.347	

		-A:1		-3%	-3%	-3%	-3:1	Γ 1	3:1	
DATUM RL 7.500	CIA	LES	LLE	MC01	RLE	RES	RVCI /	RVCE	RIA	
DESIGN	9.806	10.492	10.522	10.612	10.522	10.492	9.992	9.992	10.743	
SURVEY	9.806	10.196	10.217	10.384	10.319	10.488	10.476	10.474	10.743	
OFFSET	-6.747	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	8.252	

CH 4150

CH 4200

MC01 CROSS SECTION SHEET 1

CH 4260

0 2 4 6 8 10 METRES 1:200

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
C	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

BARKER RYAN STEWART
ECT SOLUTIONS

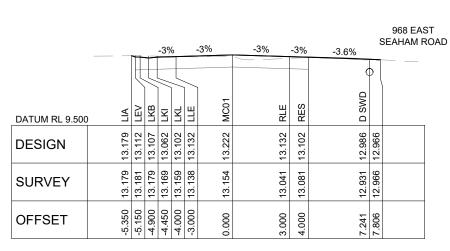
SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4969 6388
ABN: 26 134 067 842
barkeryanstewart.com.au
mail@barkerryanstewart.com.au



EAST SEAHAM ROAD, EAST SEAHAM
STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

Designed:	BF	:	Scales:	Plan	-
Drawn:	RD			Horiz. Vert.	-
Checked:	SGB			X-Sect.	1:200
		[Datum:	A.H.I	D.

Plan No.	
240458-01-301	
File Ref.	REV.
240458	_



	:	IL 11.49						00/	00/			
		1	%			-3%	6	-3%	-3%	-3%	4:1	
DATUM RL 8.000	COMMS	LIA	LEV	LKB	LKI	/ LKL	LLE	MC01	RLE	RES	RIA	
DESIGN		12.089	12.079	12.074	12.029	12.069	12.114	12.204	12.114	12.084	10.657	
SURVEY	12.097	12.089	12.063	12.057	12.046	12.035	11.982	11.662	11.290	11.127	10.657	
OFFSET	-7.046	-6.746	-5.660	-5.410	-4.960	-4.510	-3.000	0.000	3.000	4.000	9.709	

	u 0		2:1		3%	-3%	-3%	-3%	-4:1
DATUM RL 3.500	COMMS	LIA	LES	LBWB	LLE	MC01	RLE	RES	RIA
DESIGN		6.585	7.632	7.647	7.677	7.767	7.677	7.647	6.808
SURVEY	6.557	6.585	6.658	6.674	6.708	6.708	6.975	6.878	6.808
OFFSET	-7.399	-6.593	-4.500	-4.000	-3.000	0.000	3.000	4.000	7.356

\sim 1 I	4400
(H	4480
OI I	TTU

CH 4360

					-3	3%	-3%		-3%	_		3:1	
			\sim					_		·3:1	_	3.:-	
DATUM RL 9.500	LF LF	LKB	LK I	LK	LLE	MC01	ι	RLF H	RES	RVCI	RVCE	RIA	
DESIGN	12.425	12.417	12.367	12.407	12.437	12.527	0	12.43/	12.407	11.794	11.794	12.583	
SURVEY	12.425	12.426	12.440	12.446	12.390	12.273	0	12.218	12.175	12.537	12.545	12.583	
OFFSET		-5.150	-4.450	4.000	-3.000	0.000	0	3.000	4.000	5.838	6.338	8.704	

	11 12 32										
				-	-3%	6	_	3%	-3%	-3%	4:1
DATUM RL 9.500	COMMS	ΓΙΑ	LEV	LKB	//	LKL /		MC01	RLE	RES	RIA
DESIGN		12.925 L	12.868 L		12.818 L		12.888 L	12.978 N	12.888		11.991
SURVEY	13.024	12.925	12.914	12.899	12.873	12.850	12.798	12.610	12.337	12.208	11.991
OFFSET	-6.895	-5.323	-5.150	-4.900	-4.450	-4.000	-3.000	0.000	3.000	4.000	7.465

	1 80	IL 7.09	-4:1	B		-3%	-3%		-3%	
			-4.1					-		4:1
DATUM RL 5.000	COMMS	FIA	LES	LBWB	TLE	MC01	ı ī	RLE	RES	RIA
DESIGN		8.385	8.946	8.961	8.991	9.081		8.991	8.961	7.703
SURVEY	8.457	8.385	8.157	8.125	8.072	7.913	1	9/8./	7.923	7.703
OFFSET	-7.419	-6.743	-4.500	-4.000	-3.000	0.000		3.000	4.000	9.031

CH 4460

CH 4340

		-4:1	_	-3%	-3%	_	-3:1	╙	3:1	
DATUM RL 8.500	ПА	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	11.241	11.525	11.555	11.645	11.555	11.525	11.025	11.025	11.528	
SURVEY	11.241	11.311	11.296	11.390	11.282	11.419	11.464	11.479	11.528	
OFFSET	-5.138	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.509	

	EAST M <u>RO</u> AD	- - - 7%	- - - - - - - - - - - - - - - - - - -				-3%	-3%		4:1	
DATUM RL 10.00	00	COMMS	LKB	LK	LKL	LLE	MC01	RLE	RES	RIA	
DESIGN	13.482	13.303	13.259	13.214	13.254	13.284	13.374	13.284	13.254	12.887	
SURVEY	13.484	13.368	13.339	13.319	က	13.237	13.082	12.854	12.868	12.887	
OFFSET	-8.107	-5.534	-4.900	-4.450	-4.000	-3.000	0.000	3.000	4.000	5.468	

CH 4400

_4:1<u>-3</u>% -3% -3% -3% DATUM RL 6.500 10.713 DESIGN 10.310 10.410 SURVEY -3.000 -5.212 OFFSET

CH 4320

CH 4380

SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842 barkerryanstewart.com.au mail@barkerryanstewart.co

PORT STEPHENS

EAST SEAHAM ROAD, EAST SEAHAM
STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

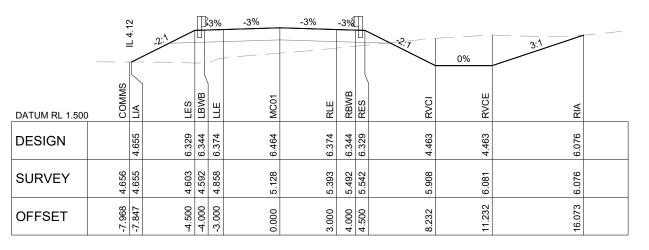
Designed:	BF	Scales:	Plan	-	
Drawn:	RD		Horiz. Vert.	-	
Checked:	SGB		X-Sect.	1:200	
		Datum:	A.H.I	D	

CH 4440

240458-01-302 File Ref. REV. 240458 Ε

REV	AMENDMENT	ISSUED	DATE	BARKER
Α	CONCEPT DESIGN ISSUE	AS	19/07/24	DARKER
В	50% DETAILED DESIGN	AS	06/09/24	RYAN
С	90% DETAILED DESIGN	AS	01/11/24	STEWART
D	ISSUED FOR CONSTRUCTION	AS	13/12/24	TOTAL PROJECT SOLUTIONS
Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25	PLANNING - PROJECT MANAGEMENT - ENGINEERING - CERT

MC01 CROSS SECTION SHEET 2



		91) } \	P	;	-3%	0.5%	0.59		_			
		_	17:1							·2·1	Ц	3:1	
DATUM RL 2.000) <u></u>	COMMS	LES	LBWB	LLE	MC01	ш	RBWB	RES	RVCI	RVCE	RIA	
DESIGN	5.069	5.478	6.521	6.536	6.566	6.657	6 673	6.678	6.681	4.735	4.735	5.672	
SURVEY	5.069	5.130	5.278	5.315	5.365	5.449	7. 614	5.668	5.695	5.741	5.736	5.672	
OFFSET	-7.441	-6.623	-4.536	-4.036	-3.036	-0.018	000 &	4.000	4.500	8.392	8.892	11.703	

CH 4600

		IL 4.25	2:1		3%	-3%	-3%	-3%			
DATUM RL 2.000		COMMS		LBWB	THE THE	MC01	RE .	RBWB	RES	0.4% SS BB	-
DESIGN	4.790	4.839			6.521	6.611	6.521		6.476		
SURVEY	4.790	4.788	4.911	4.940	4.999	5.081	4.766	4.710	4.682	6.113 6.113 4.692 4.570	
OFFSET	-7.871	-7.774	-4.500	-4.000	-3.000	0.000	3.000	4.000	4.500	12.460	

		2:1	90.	3%	-3%	-2.5%	-2.5	4	3:1	0%	3:1	
DATUM RL 1.500	CIA	COMMS	LES	LBWB	MC01	RLE	RBWB	RES	RVCI	RVCE	RIA	
DESIGN	4.814	6.149	6.422	6.437	6.557	6.483	6.458	6.446	4.605	4.605	5.545	
SURVEY	4.814	4.846	4.877	4.908	5.086	5.185	5.272	5.476	5.846	5.859	5.545	
OFFSET	-7.716	-5.046	-4.500	-3.000	0.000	3.000	4.000	4.500	8.181	11.181	14.000	

CH 4520

CH 4580

	=	IL 5.09	.2:^		3%	-3%	-3%	-3%	-4:1	_
DATUM RL 2.500	COMMS	LIA	LES	LBWB	LLE	MC01	щ	RES	RIA	
DESIGN		5.673	6.820	6.835	6.865	6.955	6 865	6.835	6.347	
SURVEY	5.634	5.673	5.785	5.808	5.856	6.002	6 147	6.195	6.347	
OFFSET	-7.618	-6.793	-4.500	-4.000	-3.000	0.000	3 000	4.000	5.951	

		2:1	4.00		3%	-3%	-3%	-3%		2:1		3:1	
)	COMMS	LES	LBWB	LLE	MC01	RLE	BWB	RES	RVCI	RVCE	RIA	
DATUM RL 2.000) =	ပ	ت		긔	Σ	₾	22	2	ĬĽ.	ĬZ.	Δ.	
DESIGN	5.087	5.920	6.325	6.340	6.370	6.460	6.370	6.340	6.325	4.476	4.476	5.982	
SURVEY	5.087	5.117	5.145	5.207	5.330	5.424	5.561	5.710	5.764	5.937	6.041	5.982	
OFFSET	-6.977	-5.310	-4.500	-4.000	-3.000	0.000	3.000	4.000	4.500	8.200	11.200	15.719	

CH 4500

CH 4560

2	0	2	4	6	8	10	1:200
			METRES			_	1.200

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
С	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

	BARKER
24	
24	RYAN
24	STEWART
24	TOTAL PROJECT SOLUTIONS
25	PLANNING - PROJECT MANAGEMENT - ENGINEERING - CERTIFICATION

SYDNEY
P. 02 9659 0005
CENTRAL COAST
P. 02 4325 5255
HUNTER
P. 02 4866 8388
ABN: 26 134 067 842
barkeryanstewart.com.au
maii@barkerryanstewart.com.au

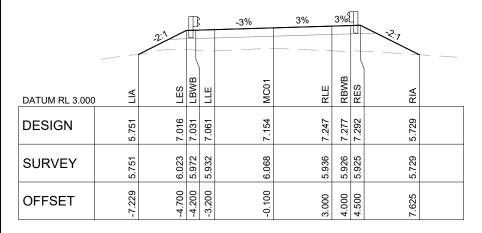


EAST SEAHAM ROAD, EAST SEAHAM	
STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140	

MC01 CROSS SECTION SHEET 3

Designed: Drawn: Checked:	BF RD SGB	Scales:	Plan Horiz. Vert. X-Sect.	- - 1:200
		Datum:	A.H.	D.

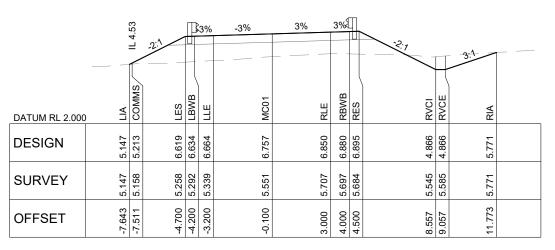
Plan No. 240458-01-303 File Ref. REV. 240458



CH 4660

	—	IL 4.16	2:1		3%	-3%	3%		3%		22.7		1	<u> </u>
DATUM RL 1.500	LIA	COMMS	LES	LBWB	LE	MC01		RLE	RBWB	RES	RVCI	RVCE	RIA	
DESIGN	4.936	5.153	6.732	6.747	6.777	6.870		6.963	6.993	7.008	4.998	4.998	5.266	
SURVEY	4.936	4.981	5.338	5.436	5.528	5.707		5.673	5.635	5.614	5.025	5.076	5.266	
OFFSET	-8.292	-7.859	-4.700	-4.200	-3.200	-0.100		3.000	4.000	4.500	8.519	9.019	9.822	

CH 4640



DATUM RL 6.000 DESIGN **SURVEY** -4.284 -4.000 -3.000 3.200 OFFSET

\square	4	4720	
_		7120	

		<u>-4:1</u>		2.6%	-2.6% -	2.6%	3:1	L,	3:1	
DATUM RL 5.500	LIA	LES	ILE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	8.116	8.468	8.442	8.361	8.279	8.253	7.753	7.753	8.296	
SURVEY	8.116	8.189	8.048	7.996	7.908	8.167	8.241	8.254	8.296	
OFFSET	-5.422	-4.013	-3.013	0.087	3.187	4.187	5.687	6.187	7.817	

CH 4700

		4:1	P	, _	-0.4%	0.4%		- 1		-4:1	
DATUM RL 4.500	LIA	LES	LBWB	LLE	MC01		RLE	RBWB	RES	RIA	
DESIGN	6.971	7.638	7.640	7.643	7.655		7.667	7.670	7.672	7.031	
SURVEY	6.971	7.099	7.119	6.754	6.875		6.795	6.973	7.000	7.031	
OFFSET	-7.278	-4.613	-4.113	-3.113	-0.013		3.087	4.087	4.587	7.152	

CH 4680

		-4:1		-0.1%	-3%		-3:1		3:1_	
)					\vdash		
DATUM RL 6.000	. ĕ	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	8.541	8.861	8.863	8.867	7778	8.747	8.247	8.247	8.820	
SURVEY	8.541	8.451	8.390	8.530	8.443	8.499	8.633	8.685	8.820	
OFFSET	-5.281	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.719	

CH 4780

		T		2.9%	-3%	_	-3%	3 :1	_	3:1	
DATUM RL 6.000	ПА	LES	LLE	MC01		RLE	RES	RVCI	RVCE	RIA	
DESIGN	9.277	9.379	9.350	9.261		9.169	9.139	8.639	8.639	9.358	
SURVEY	9.277		8.926	9.082		9.094	9.304	9.338	9.350	9.358	
OFFSET	4.404	-4.000	-3.000	0.095		3.191	4.191	5.691	6.191	8.350	

CH 4760

		3%	6	3%	3%	-3%	-3:1		3:1	
DATUM RL 6.000) Y	LES	ILE	MC01	E E	RES	RVCI //6	RVCE	RIA	
DESIGN	9.406	9.435	9.405	9.312	9.219	9.189	8.689	8.689	9.557	
SURVEY	9.406	9.376	9.247	9.402	6,399	9.561	9.550	9.546	9.557	
OFFSET	-4.116	-4.000	-3.000	0.100	3.200	4.200	5.700	6.200	8.803	

CH 4620

(CH 47	7 40					
2	0	2	4	6	8	10	1.200
			METRES			_	1.200

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
С	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

	BARKER
	RYAN ISTEWART
TOTAL PROJE	ECT SOLUTIONS

SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4935 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842



EAST SEAHAM ROAD, EAST SEAHAM 140

STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 1-
MC01 CROSS SECTION SHEET 4

Designed:	BF	Scales:		-
Drawn:	RD		Horiz. Vert.	-
Checked:	SGB		X-Sect.	1:200
		Datum:	A.H.[) .

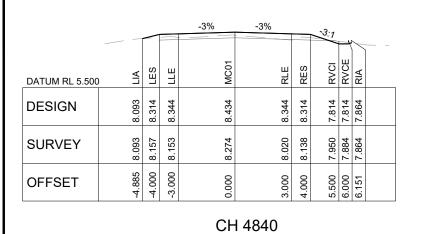
240458-01-304 File Ref. 240458

DATUM RL 4.500

DESIGN

SURVEY

OFFSET



				-3%	2.5%	2.	5%	968 EAST SEAHAM ROAD -7.8%
		<u>-4:1</u>						
DATUM RL 5.000	LIA	LES	LLE	MC01		RLE	RES	
DESIGN	7.678	8.680	8.710	8.803		8.879	8.904	8.670
SURVEY	7.678	8.322	8.474	8.658		8.604	8.576	8.670
OFFSET	-8.172	-4.165	-3.165	-0.082		3.000	4.000	6.998

CH 4883

		2:1		_	2.2%	-2.2%	-2.2%	6 -4:1	
		o o	LBWB		.01	ш	S		
DATUM RL 5.000		LES	LB	LLE	MC01	RLE	RES	RIA	
DESIGN	7.997	8.616	8.605	8.583	8.511	8.439	8.417	7.919	
SURVEY	7.997	8.055	8.082	8.253	8.390	8.251	8.163	7.919	
OFFSET	-5.822	-4.584	-4.084	-3.084	0.189	3.462	4.462	6.454	

CH 4940

	. 1		-3%	-3%		-4:1	
	<u>A:1</u>					7.7	
LIA	LES	LLE	MC01	RLE	RES	RIA	
7.243	8.099	8.129	8.219	8.129	8.099	7.543	
43	33	13	24	95	93	43	

		-A:1	-3%	-3%	2%	2%	
DATUM RL 5.000	LIA	LES	TLE	MC01	RLE	RES	
DESIGN	7.828	8.689	8.719	8.811	8.873	8.893	
SURVEY	7.828	8.391	8.524	8.662	8.622	8.593	
OFFSET	-7.575	-4.135	-3.135	-0.067	3.000	4.000	

		8.6-	% -0.8%	0.8%		
						4:1
DATUM RL 4.000	LES	LBWB	MC01	RLE	RES	RIA
DESIGN	8.555	8.559	8.593	8.618	8.626	7.602
SURVEY	7.586	7.569	8.444	8.329	7.758	7.602
OFFSET	-4.651	-4.151	0.022	3.196	4.196	8.293

CH 4820

3.000

CH 4880

CH 4920

		-A:1		-3%	-3%		-3:1	<u>.</u>	_	
DATUM RL 5.000	LIA	LES	LLE	MC01	ц П	RES	RVCI	RVCE	RIA	
DESIGN	7.586	8.271	8.301	8.391	0.00 100	8.271	7.771	7.771	8.035	
SURVEY	7.586	7.828	7.905	8.016	7 862	7.889	7.964	7.992	8.035	
OFFSET	-6.742	-4.000	-3.000	0.000	000	4.000	5.500	000.9	6.789	

				-3%	-1%		-3:1		3:1	
	- A	LES	LLE	MC01	RLE	RES	RVCI	RVCE		
DATUM RL 5.500		=	コ	Σ	22	2	ĬZ.	ĸ	22	
DESIGN	8.459	8.614	8.644	8.734	8.704	8.695	8.195	8.195	8.773	
SURVEY	8.459	8.502	8.572	8.622	8.641	8.625	8.740	8.754	8.773	
OFFSET	-4.619	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.736	

		<u>A:1</u>	B	-3%	3%		-4:1	
DATUM RL 5.000	<u>A</u>	LES	LBWB	MC01	RLE	RES	RIA	
DESIGN	7.665	8.571	8.586	8.709	8.802	8.832	8.210	
SURVEY	7.665	8.231	8.307	8.549	8.487	8.390	8.210	
OFFSET	-8.323	-4.700	4.200	-3.200	3.000	4.000	6.488	

CH 4800

CH 4860

MC01 CROSS SECTION SHEET 5

CH 4900

 Scales:
 Plan

 Horiz.

 Vert.

 X-Sect.
 1:200

A.H.D.

Datum:

0 2 4 6 8 10 METRES 1:200

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
С	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

	BARKER RYAN STEWART
TOTAL DDO IS	
	CT SOLUTIONS

SYDNEY
P. 02 859 0005
CENTRAL COAST
P. 02 4325 5255
HUNTER
P. 02 4966 8388
ABN: 26 134 067 842
barkeryanstewart.com.au
mal@barkeryanstewart.com.au



EAST SEAHAM ROAD, EAST SEAHAM STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

- SEG 130 AND 140	Drawn:	RD	
323 1007 1113 1110	Checked:	SGB	

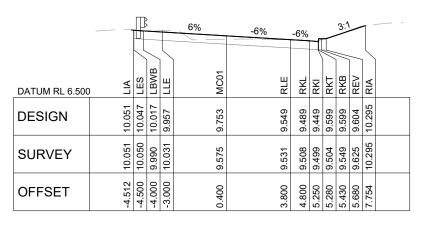
Plan No. 240458-01-305 File Ref. 240458

DATUM RL 6.000

DESIGN

SURVEY

OFFSET



		2:1	<u> </u>	3%	-1.3%	1.3%		-4:1	
DATUM RL 8.000	LIA	LES	LBWB	LLE	MC01	RLE	RES	RIA	
DESIGN	10.403	~	-	11.083	11.125	11.167	11.181	10.773	
SURVEY	10.403	10.573	10.629	10.713	10.818	10.847	10.823	10.773	
OFFSET	-5.982	-4.663	-4.163	-3.163	-0.008	3.147	4.147	5.776	

		-4:1	-3%	-3%	3%	3%	-3:1		
DATUM DI O 500	ПА	LES	LLE	MC01	RLE	RES	RVCI	RVCE	Y Y
DATUM RL 8.500					ir.	I.	LE.	וצו	r
DESIGN	11.185	11.628	11.658	11.751	11.844	11.874	11.374	Ψ.	11.393
SURVEY	11.185	11.262	11.303	11.324	11.345	11.321	11.380	~	11.393
OFFSET	-5.970	-4.200	-3.200	-0.100	3.000	4.000	5.500	6.000	6.057

CH 5120

CH	5000
OI I	5000

-6%

			Π.	,					SEAHA	EAST M ROAD
		$\overline{}$	⊅.	7%	1.7%	-1.7%	_	1.7%	• - 5.9%	
			4	-			_			
DATUM RL 8.000) H	LES	LBWB	LLE	MC01		RLE	RES		
DESIGN	10.538	0	10.953	10.936	10.882		10.828	10.811	10.694	
SURVEY	10.538	10.534	10.531	10.640	10.642		10.705	10.700	10.694	

-5.442 -4.596 -4.096 -3.096

OFFSET

		-A:1	-3%	-3%	3%	3%	-4:1	
								-
DATUM RL 8.000) PI	SET	ררפ	MC01	RLE	RES	RIA	
DESIGN	10.786	11.349	11.379	11.472	11.565	11.595	11.064	
SURVEY	10.786	10.918	10.967	11.057	11.069	11.004	11.064	
OFFSET	-6.452	-4.200	-3.200	-0.100	3.000	4.000	6.121	·

CH 4980

CH 5040

CH 5060

$C\Pi$	5100	
CII	3100	

	2:1		.2%	5.2%	-5.2%	-5.2%	6
7	<u> </u>	1	_				
LIA	LES	LBWB	LE	MC01	<u>.</u>	RES	RIA
7.730	8.920	8.894	8.842	8.667	0 7 7	8.439	8.415
7.730	7.848	7.977	8.283	8.475	700	8.411	8.415
-6.898	-4.518	-4.018	-3.018	0.356	002 6	4.729	4.827
	7.730 7.730	7.730 7.730 7.848 8.920	7.730 7.730 LIA 7.848 8.920 LES 7.977 8.894 LBWB	7.730 7.730 LIA 7.848 8.920 LES 7.977 8.894 LBWB 8.283 8.842 LLE	7.730 7.730 LIA 7.848 8.920 LES 7.977 8.894 LBWB 8.283 8.842 LLE 8.475 8.667 MC01	7.730 7.730 LIA 7.848 8.920 LES 7.977 8.894 LBWB 8.283 8.842 LLE 8.475 8.667 MC01	7.730 7.730 LIA 7.848 8.920 LES 7.977 8.894 LBWB 8.283 8.842 LLE 8.304 8.491 RLE 8.304 8.491 RLE

9.387 9.357 9.297

-4.500 -4.000 -3.000

_		.7%	4.7%	-4.7%	=	4.7%	í			_	_	
LES	RWB	LLE	MC01		RLE	RKL	RKI	RKT	RKB /	REV /	RIA	
10.643	10.620	10.573	10.417		10.260	10.214	10.174	10.324	10.324	10.329	10.333	
10.248	10.272	10.330	10.202		10.202	10.182	10.191	10.195	10.213	10.252	10.333	
-4.530	-4.030	-3.030	0.326		3.681	4.681	5.131	5.161	5.311	5.561	5.986	
	10.248 10.643	10.248 10.643 LES 10.272 10.620 LBWB	10.248 10.643 LES 10.272 10.620 LBWB E 10.330 10.573 LLE	1.530 10.248 10.643 LES 1.030 10.272 10.620 LBWB 3.030 10.330 10.573 LLE 3.030 10.202 10.417 MC01	1.530 10.248 10.643 LES 1.030 10.272 10.620 LBWB 1.030 10.330 10.573 LLE 3.030 10.202 10.417 MC01	1.530 10.248 10.643 LES 1.030 10.272 10.620 LBWB 1.030 10.330 10.573 LLE 1.020 10.202 10.417 MC01	10.202 10.203 LES 10.222 10.620 LBWB 10.330 10.573 LLE 10.202 10.417 MC01 10.202 10.260 RLE 10.182 10.214 RKL	10.202 10.204 ILES 10.202 10.417 MC01 10.202 10.217 MC01 10.202 10.217 MC01 10.182 10.214 RKL	10.202 10.417 MC01 10.202 10.204 RKL 10.195 10.324 RKT	10.202 10.417 MC01 10.202 10.417 MC01 10.202 10.214 RKL 10.195 10.324 RKT 10.213 10.324 RKB	10.202 10.417 MC01 10.202 10.417 MC01 10.202 10.417 MC01 10.202 10.214 RKL 10.195 10.324 RKT 10.202 10.329 REV	10.202 10.417 MC01 10.202 10.417 MC01 10.202 10.417 MC01 10.202 10.214 RKL 10.195 10.324 RKT 10.213 10.329 REV 10.252 10.333 RIA

		-4:1	-	-3%	370	070	-4:1	
DATUM RL 8.000			LBWB	MC01	RLE	RES	RIA	
DESIGN	10.534	11.155	11.170	- -	11.386	11.416	10.882	
SURVEY	10.534	10.691	10.730	10.949	10.923	10.901	10.882	
OFFSET	-7.182	-4.700	-4.200	-0.100	3.000	4.000	6.134	

CH 4960

CH 5020

MC01 CROSS SECTION SHEET 6

CH 5080

0 2 4 6 8 10 METRES 1:2

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
С	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

	BARKER RYAN STEWART
-	TOTAL PROJECT SOLUTIONS PLANNING - PROJECT MANAGEMENT - ENGINEERING - CERTIFICATION

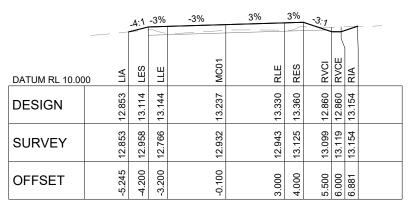
SYDNEY
P. 02 9659 0005
CENTRAL COAST
P. 02 4325 5255
HUNTER
P. 02 4968 8388
ABN 26 134 067 842
barkeryanstewart.com.au
mail@barkeryanstewart.com.au



EAST SEAHAM ROAD, EAST SEAHAM
STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

Designed:	BF	Scales:		-
Drawn:	RD		Horiz. Vert.	-
Checked:	SGB		X-Sect.	
		Datum:	A.H.I	D.

Plan No. 240458-01-306 File Ref. REV. 240458



		-A:1	-3%	-3%	-1.8%	-1.8%	-3:1	<u>ب</u>		_
DATUM RL 10.50	00 E	LES	LE	MC01	RLE	RES	RVCI	RVCE	AIA A	
DESIGN	12.985	13.244	13.274	13.364	13.309	13.291	12.791	12.791	13.059	
SURVEY	12.985	12.973	13.022	13.142	13.031	12.981	12.997	13.038	13.059	
OFFSET	-5.036	-4.000	-3.000	0.000	3.000	4.000	5.500	6.000	6.803	

	967 E SEAHAI	M ROAD	-3%	-3%	-3%	-3%	3:1		3:1	
		0		.01		S		H		
DATUM RL 10.00	0	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	12.963	13.180	13.210	13.300	13.210	13.180	12.680	12.680	13.299	
SURVEY	12.963	13.026	13.075	12.982	13.168	13.221	13.257	13.266	13.299	
OFFSET	-6.000	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.855	

CH 5240

			-3%	3%	3%	-3:1		3:1	
DATUM RL 9.500	LIA	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	12.441	572	12.665	12.758	12.788 F	12.288 F	12.288 F	12.741 F	
SURVEY	12.441	12.489	12.285	12.314	12.297	12.648	12.658	12.741	
OFFSET	-4.604	-3.200	-0.100	3.000	4.000	5.500	000.9	7.357	

		-A:1_		-3%	1.2%	1.2%	3:1		
DATUM RL 10.50	00 N	LES	LLE	MC01	RLE	RES	RVCI	RVCE	
DESIGN	12.894	13.352	13.382	13.473	13.509	13.521 F		13.021 F	3
SURVEY	12.894	13.047	13.100	13.259	13.155	13.132	∣ က ∣	13.150	5
OFFSET	-5.908	-4.079	-3.079	-0.040	3.000	4.000	5.500	6.000	

			-3%	-3%	-3%	-3%				
							-3:1	H	3:1	~
DATUM RL 9.000	LIA	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	12.926	13.133	13.163	13.253	13.163	13.133	12.150	12.150	12.813	
SURVEY	12.926	12.974	13.010	12.996	12.297	12.360	12.470	12.559	12.813	
OFFSET	4.829	-4.000	-3.000	0.000	3.000	4.000	6.950	7.450	9.439	
SURVEY	12.926	12.974	13.010	12.996	12.297	12.360	12.470	.450 12.559 12	12.813	

CH 5160

CH 5220

CH 5280

			-3%	3%	3%	-3:1		
DATUM RL 9.000	LIA	LES	MC01	RLE	RES	RVCI	RIA	
DESIGN	11.909	12.026	12.149	12.242	12.272	11.772	12.102	
SURVEY	- -	11.930	11.723	11.753	11.736	12.007	12.102	
OFFSET	-4.666	-3.200	-0.100	3.000	4.000	5.500	6.992	

		- 4 :1	-3%	-3%	3%		-3:1		_
								7	
DATUM RL 10.50	00 E	SET	LLE	MC01	RLE	RES	RVCI	RVCE	
DESIGN	12.996	13.394	13.424	13.517	13.610	13.640	13.140	13.140	
SURVEY	12.996	13.061	13.100	13.283	13.272	13.258	13.222	13.252	
OFFSET	-5.794	-4.200	-3.200	-0.100	3.000	4.000	5.500	6.000	

		-4:1	-3%	-3%	-3%	-3%	-3:1			
						/	3.1	H		
DATUM RL 10.00	00 EI	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	12.854	13.155	13.185	13.275	13.185	13.155	12.655	12.655	12.918	
SURVEY	12.854	12.888	12.935	13.010	12.953	12.797	12.965	12.947	12.918	
OFFSET	-5.205	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	6.791	

CH 5140

CH 5200

CH 5260

2	0	2	4	6	8	10	1:200
			METRES			_	1.200

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
С	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

4	BARKER
4	RYAN
4	STEWART
4	TOTAL PROJECT SOLUTIONS
5	PLANNING - PROJECT MANAGEMENT - ENGINEERING - CERTIFICATION

SYDNEY
P. 02 9659 0005
CENTRAL COAST
P. 02 4025 5255
HUNTER
P. 02 4966 8388
ABN: 26 134 067 842
barkerryanstewart.com.au
mali@barkerryanstewart.com.au



EAST SEAHAM ROAD, EAST SEAHAM STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

MC01 CROSS SECTION SHEET 7

Designed:	BF
Drawn:	RD
Checked:	SGB

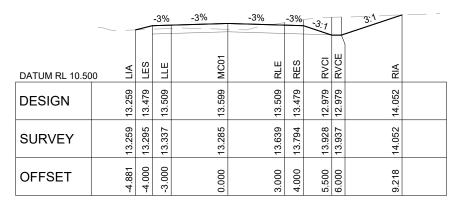
Scales: Plan Horiz. Vert. X-Sect. 1:200

Datum: A.H.D.

Plan No.

240458-01-307

File Ref. REV.
240458



			-3%	-3%	2.5%	2.5%	-3:1			
DATUM RL 11.50	O PI	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	14.022	14.240	14.270	14.360	14.434	14.459	13.959	13.959	14.046	
SURVEY	14.022	14.050	14.082	14.079	14.043	14.032	14.024	14.041	14.046	
OFFSET	-4.870	-4.000	-3.000	0.000	3.000	4.000	5.500		6.261	

		-4:1	-3%	-3%	3%	3%	-4:1	
		LES	E E	MC01	RLE	RES	RIA	
DATUM RL 11.50	00 🛓	۳	긥	Ž	굾	22	굔	
DESIGN	13.834	14.339	14.369	14.459	14.549	14.579	14.101	
SURVEY	13.834	13.985	14.074	14.227	14.121	14.104	14.101	
OFFSET	-6.022	-4.000	-3.000	0.000	3.000	4.000	5.911	

CH 5400

CH 5460

		_	-3%	-3%	-3%	-3%	⁻⁴ .3:1	Г	3:1
								_	
DATUM RL 10.50	0 4	LES	H	MC01	RLE	RES	RVCI	RVCE	RIA
DESIGN	13.105	13.296	13.326	13.416	13.326	13.296	12.796	12.796	13.770
SURVEY	13.105	13.132	13.174	13.102	13.341	13.406	13.547	13.580	13.770
OFFSET	-4.763	-4.000	-3.000	0.000	3.000	4.000	6.156	6.656	9.578

	~ -		-3%	-3%	-0.5%	-0.5%	6 -3:1		3: <u>1</u>	
DATUM RL 11.00	DIA 00	LES	LLE	MC01	ш	RES	RVCI	RVCE	RIA	
DESIGN	13.832	13.996	14.026	14.116	14 101	14.095	13.595	13.595	13.955	
SURVEY	13.832	13.850	13.878	13.837	13 903	13.872	13.880	13.904	13.955	
OFFSET	-4.657	-4.000	-3.000	0.000	3 000	4.000	5.500	0.0009	7.081	

	1	-4:1		-3%	3%		4:1
DATUM RL 11.00	IIA 00	LES	LLE	MC01	RLE	RES	RIA
DESIGN	13.705	14.280	14.310	14.400	14.490	14.520	13.731
SURVEY	13.705	14.026	14.078	14.172	13.949	13.779	13.731
OFFSET	-6.300	-4.000	-3.000	0.000	3.000	4.000	7.154

CH 5320

CH 5380

CH 5440

			-3%	-3%	-3%		-3%		968 EAST AHAM RC 5.1%	
DATUM RL 10.00	0 K	LES	LLE	MC01		RLE	RES	D SWD		
DESIGN	13.078	13.248	13.278	13.368		13.278	13.248	13.402	13.291	
SURVEY	13.078	13.101	13.137	13.041		13.095	13.102	13.123	13.156	
OFFSET	4.680	-4.000	-3.000	0.000		3.000	4.000	6.750	8.860	

	~ -	_	-3%	-3%	-3%	-3%	-3:1	Ц	3:1	
DATUM RL 11.00	00 Y	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	13.512	13.729	13.759	13.849	13.759	13.729	13.229	13.229	14.084	
SURVEY	13.512	13.542	13.577	13.521	13.731	13.782	13.852	13.886	14.084	
OFFSET	4.868	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	8.566	

		<u>-4:1</u>		-3%	3%		-4:1	
DATUM RL 11.50	00 FI	LES	LLE	MC01	RLE	RES	RIA	
DESIGN	14.057	14.323	14.353	14.443	14.533	14.563	13.988	
SURVEY	14.057	14.100	14.140	14.136	14.015	13.983	13.988	
OFFSET	-5.066	-4.000	-3.000	0.000	3.000	4.000	6.301	·

CH 5313

CH 5360

MC01 CROSS SECTION SHEET 8

CH 5420

2 0 2 4 6 8 10 METRES 1:20

1:200

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
С	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

	BARKER
_	STEWART
	TOTAL PROJECT SOLUTIONS

SYDNEY
P. 02 9559 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 5388
ABN: 26 134 067 842
barkenyanstewart.com.au
mail@barkenyanstewart.com.au



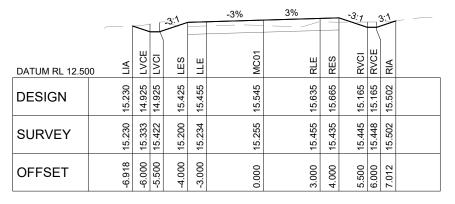
EAST SEAHAM ROAD, EAST SEAHAM
STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

	Designed:	BF	Scales:	Plan	-
ND 140	Drawn:	RD		Horiz. Vert.	-
	Checked:	SGB		X-Sect.	1:
			Datum:	A.H.I	D.

Plan No.

240458-01-308

File Ref.
240458



		_4:1 _		-3%	1.9%	1.9	%	:3:1			
DATUM DI 42 50	00 PI	LES		MC01		RLE	KES	RVCI	RVCE	RIA	
DECICAL		1	_							6.532 F	
DESIGN	16.457	16.71	16.74	16.831		16.887	16.906	16.406	16.406	16.5	
SURVEY	16.457	16.550	16.416	16.493		16.457	16.480	16.513	16.524	16.532	
OFFSET	-5.016	-4.000	-3.000	0.000		3.000	4.000	5.500	000.9	6.378	

		-4:1		-3%	-3%		-3:1	3:1	
DATUM RL 14.50	IIA 00	LES	LLE	MC01	RLE	RES	RVCI	RVCE	YIA V
DESIGN	16.880	17.337	17.367	17.457	17.367	17.337	16.837	16.837	17.249
SURVEY	16.880	17.058	17.005	17.141	17.133	17.115	17.290		17.748
OFFSET	-5.830	-4.000	-3.000	0.000	3.000	4.000	5.500	6.000	057.7

CH 5520 CH 5580 CH 5640

		3:1	H	-3:1	-3%	-3%	3%	3%	-3:1	H	7	
DATUM RL 12.00	00 ¥	LVCE	LVCI	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	14.850	14.436	14.436	14.936	14.966	15.056	15.146	15.176	14.676	14.676	14.878	
SURVEY	14.850	14.925	14.906	14.663	14.712	14.804	14.841	14.865	14.873	4.87	14.878	
OFFSET	-7.243	-6.000	-5.500	-4.000	-3.000	0.000	3.000	4.000	5.500	0.000	609.9	

				-3%	3%		-3:1		
	~		_					H	\
DATUM RL 13.50	00 Y	LES	LLE	MC01	RLE	RES	RVCI	RVCE	A A
DESIGN	16.203	16.360	16.390	16.480	16.570	16.600	16.100	16.100	16.300
SURVEY	16.203	16.062	16.079	16.112	16.229	16.408	16.424	16.368	16.300
OFFSET	4.628	-4.000	-3.000	0.000	3.000	4.000	5.500	0.0009	6.602

		-4:1 	,	-3%	-3%		-3:1		3:1	
DATUM RL 14.00	N N	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	16.714	17.156	17.186	17.276	17.186	17.156	16.656	16.656	17.049	
SURVEY	16.714	16.922	16.835	16.947	16.934	16.922	 	17.192	17.049	
OFFSET	-5.771	-4.000	-3.000	0.000	3.000	4.000	5.500	0.000	7.178	
						-				

CH 5500 CH 5560 CH 5620

				-3:1	-3%	-3%	3%		-4:1	
			7	-3	_					
DATUM RL 11.50	00 Y	LVCE	LVCI	LES	LLE	MC01	RLE	RES	RIA	
DESIGN	14.343	14.057	14.057	14.557	14.587	14.677	14.767	14.797	14.336	
SURVEY	14.343	14.369	14.380	14.296	14.315	14.450	14.399	14.385	14.336	
OFFSET	-6.858	-6.000	-5.500	-4.000	-3.000	0.000	3.000	4.000	5.847	

				3:1_		-3%	3%	3%	-3:1			
		$\overline{}$	7	3.						T	7	
DATUM RL 13.00	LI 0	LVCE	LVCI	LES	LLE	MC01	<u>п</u>	RES	RVCI	RVCE	RIA	
DESIGN	15.721	5.41	15.417	15.917	15.947	16.037	16 107	16.157	15.657	15.657	15.806	
SURVEY	15.721	5	15.884	15.677	15.693	15.697	15 806	15.876	15.815	15.795	15.806	
OFFSET	-6.909		-5.500	-4.000	-3.000	0.000	900	4.000	5.500	000.9	6.447	

		-A:1_		-3%	-1.1%		-3:1		
			_			_	3.7	+	
DATUM RL 14.00	N P	LES	LLE	MC01	RLE	RES	RVCI	RVCE	
DESIGN	16.570	16.970	17.000	17.090	17.056	17.045	16.545	16.545	i
SURVEY	16.570	16.773	16.624	16.747	16.735	16.747	16.872	16.910	
OFFSET	-5.599	-4.000	-3.000	0.000	3.000	4.000	5.500	6.000	

CH 5480 CH 5540 CH 5600

MC01 CROSS SECTION SHEET 9

2	0	2	4	6	8	10	1:200
			METRES				1.200

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
С	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
F	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

	BARKER RYAN STEWART
	CT SOLUTIONS

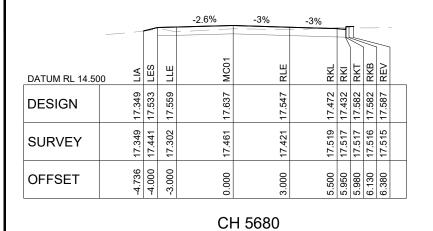
SYDNEY
P. 02 9559 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 5388
ABN: 26 134 067 842
barkenyanstewart.com.au
mail@barkenyanstewart.com.au



EAST SEAHAM ROAD, EAST SEAHAM
STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

Designed: Drawn:	BF RD	Scales:	Plan Horiz. Vert.	-
Checked:	SGB		X-Sect.	1:200
		Datum:	A.H.	D.

240458-01-30	9
File Ref.	REV
240458	F



		-4:1		4%	-4%							
							7		~	~	_	
DATUM RL 14.00	O A	LES	LLE	MC01	RLE	R K	꿆	RX-	RKB	REV	RIA	
DESIGN	16.795	17.092	17.052	16.920	16.788	16.748	16.708	16.858	16.858	16.863	16.896	
SURVEY	16.795	16.862	16.600	16.668	16.580	16.861	16.877	16.878	16.883	16.892	16.896	
OFFSET	-5.191	-4.000	-3.000	0.300	3.600	4.600	5.050	5.080	5.230	5.480	5.578	

												IL 15.05	IL 15.24	
		- 4 :1		0.1%	-3%		_		1%	·	_	_	-1	
			_				T		_			1	1	
DATUM RL 12.50	00 Y	LES	LLE	MC01	I i	7 K	RKI	RKT	RKB	REV	RIA	COMMS	COMMS	
DESIGN	15.147	15.477	15.475	15.471		15.381	15.311	15.461	15.461	15.466	15.488			
SURVEY	15.147	15.199	15.101	15.191		15.172	15.296	15.297	15.307	15.324	15.488	15.578	15.694	
OFFSET	-5.318	-4.000	-3.000	0.011	(3.022	4.472	4.502	4.652	4.902	7.113	7.828	8.753	

				-3%	-3%	-3%	1004 EAS SEAHAM RC -1.4%	
DATUM RL 14.500	LIA	LES		MC01	ı,	RES		
DESIGN	17.342	17.522	17.552	17.642		17.513	17.476	
SURVEY	17.342	17.424	17.305	17.451	:	17.411	17.474	
OFFSET	-4.720	-4.000	-3.000	0.000		3.000	6.974	

		- <u>4:1</u>		3.5%	-3.5%	-3.5%	6 Н П		19	%	T —
DATUM RL 14.00	00 F	LES	LLE	MC01	RLE	RKL	RKI	RKT	RKB	RIA	
DESIGN	17.073	17.444	17.408	17.292	17.177	17.141	17.101	17.251	17.251	17.286	
SURVEY	17.073	17.195	16.975	17.054	17.035	17.215	17.222	17.223	17.225	17.286	
OFFSET	-5.484	-4.000	-3.000	0.266	3.532	4.532	4.982	5.012	5.162	8.378	

										IL 15.49	IL 15.74		
		-4:1		3.2%	-3.2%	-3.2%	6	1	%	_	- [_	
DATUM RL 13.00	IIA 00	LES	ILE	MC01	RLE	RKL	RKI	RKT	REV	RIA	COMMS/	COMMS	
DESIGN	15.674	16.094	16.061	15.957	15.852	15.820	15.780	15.930	15.935	15.952			
SURVEY	15.674	15.694	15.561	15.660	15.619	15.769	15.796	15.798	15.821	15.952	15.999	16.107	
OFFSET	-5.677	-4.000	-3.000	0.242	3.484	4.484	4.934	4.964	5.364	7.089	7.484	8.406	

CH 5800

CH 5780

		-A:1		-3%	-3%		-3:1		3:1	
DATUM RL 14.50	NO OI	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	
DESIGN	17.055	17.490	17.520	17.610	17.520	17.490	16.990	16.990	17.412	
SURVEY	17.055	17.264	17.238	17.354	17.334	17.321	17.403	17.434	17.412	
OFFSET	-5.739	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.269	

CH 5676

					0.5%	-3%						1%	17 19		
DATUM RL 14.50	0	LIA	LES	LLE	MC01	 !	Z Z	X	RKT	RKB //	REV		COMMS	RIA	
DESIGN		17.492	_	17.546	17.531		17.440	1	17.520	17.520	17.525		17.590	17.605	
SURVEY		17.492		17.240	17.360	1	17.335	17.397	17.398	17.403	17.410		17.545	17.605	
OFFSET		-4.235	-4.000	-3.000	0.035	!	3.071	4.521	4.551	4.701	4.951		11.382	12.908	

CH 5720

DATUM RL 13.500 PA SI	COMMS
SS	MMS
	8 8
NDISSIQ 16.147 16.271 16.311 16.381 16.381 16.381 16.381 16.381 16.381 16.381 16.381 16.381 16.381 16.381	
ANNO NET TO THE	16.603
OEFSET 1.5.872 1.5.272	7.191

CH 5660

CH 5700

MC01 CROSS SECTION SHEET 10

CH 5760

2 0 2 4 6 8 10 METRES 1:20

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
C	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

	BARKER RYAN
	STEWART
TOTAL PROJE	CT SOLUTIONS ANAGEMENT - ENGINEERING - CERTIFICATION

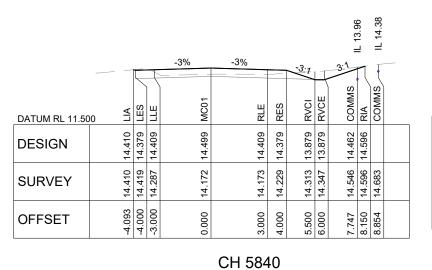
SYDNEY
P. 02 9859 0005
CENTRAL COAST
P. 02 4325 5255
HUNTER
P. 02 4966 6388
ABN: 25 134 067 842
barkeryanstewart.com.au
mali@barkeryanstewart.com.au



EAST SEAHAM ROAD, EAST SEAHAM
STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

Designed: Drawn: Checked:	BF RD SGB	Scales:	Plan Horiz. Vert. X-Sect.	- - 1:200
		Datum:	A.H.	D.

Plan No. 240458-01-310 File Ref. REV. 240458



				-3%	-3%				10.38		12 41	16.4
		-4:1		-370	-0 70		-3:1		3:1	_	- 7	
DATUM RL 10.00	l N	LES	LLE	MC01	RLE	RES	RVCI	RVCE	COMMS	RIA	COMMS	,
DESIGN	12.503	12.992	13.022	13.112	13.022	12.992	12.492	12.492	12.850	12.860		
SURVEY	12.503	12.547	12.527	12.648	12.598	12.663	12.729	12.764	12.857	12.860	13.030	
OFFSET	-5.954	-4.000	-3.000	0.000	3.000	4.000	5.500	0.000	7.074	7.105	8.724	

CH 5880

										IL 11.67		ار - -
		-4:1		-3%	-3%		-3:1	. —	3:1_			_
DATUM RL 9.000	n I	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	COMMS	COMMS	
DESIGN	11.718	12.152	12.182	12.272	12.182	12.152	11.652	11.652	12.099			
SURVEY	11.718	11.886	11.807	11.889	11.860	11.874	11.992	12.033	12.099	12.113	12.149	
OFFSET	-5.735	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.339	7.887	8.997	

					011001	•				
									14 64	<u>-</u>
				-2.9%	-3%	-3%		_		
DATUM RL 12.00	00 PI	LES) I	MC01	RLE	REGI	RVCE	RIA	COMMS	
DESIGN	14.757	14.868	14.897	14.985	14.895	14.820	14.820	14.956		
SURVEY	14.757	14.804	14.638	14.694	14.682	14.881	14.922	14.956	15.076	
OFFSET	-4.443	-4.000	-3.000	0.000	3.000	5.500	6.000	6.408	7.876	

										IL 13.01	IL 13.11	
				-3%	-3%		-3:1		3:1	n -	\neg	. –
DATUM RL 10.50	00 E	LES	ררב	MC01	ш	RES	RVCI	RVCE	COMMS	RIA	COMMS	
DESIGN	13.197	13.437	13.467	13.557	13 467	13.437	12.929	12.929	13.412	13.493		
SURVEY	13.197	13.238	12.942	13.062	13 066	13.148	13.276	13.329	13.473	13.493	13.596	
OFFSET	-4.962	-4.000	-3.000	0.000	3 000	4.000	5.526	6.026	7.474	7.719	8.719	

		1029 EAST SEAHAM ROAD -7.6:1		-3%	-3%			~3:1			11 87	
DATUM RL 9.500)	LES	LLE	MC01		RLE	RES	RVCI	RVCE	RIA	COMMS	
DESIGN	11.839	12.438	12.468	12.558		12.468	12.438	11.938	11.938	12.265		
SURVEY	11.838	12.093	12.128	12.187		12.118	12.140	12.209	12.228	12.265	12.337	
OFFSET	-8.554	-4.000	-3.000	0.000		3.000	4.000	5.500	0.0009	6.981	7.749	
OFFSET	-8.554	4.000	-3.000	0.000		3.000	4.000	5.500	000.9	6.981	7.749	

CH 5926

CH 5940

		CH 5820										
								S	22 EAS EAHAM ROAD		14.73	1F 14.90
		_		-1.4%	-3%		_		1%		_	_
DATUM RL 12.00	00 FI	LES	3TT	MC01	L C	RKL RKL	RKI	RKB	RIA	COMMS	COMMS	
DESIGN	15.046	15.172	15.186	15.228	7 7 0 0	15.108	15.068	15.158	15.181			
SURVEY	15.046	15.098	14.850	14.946	9	14.958	14.995	15.022	15.181	15.238	15.323	
OFFSET	-4.504	-4.000	-3.000	0.000	0	4.000	4.450	4.900	7.219	7.882	8.863	

CH 5810

							1022 EAS SEAHAN ROAD	1 3	IL 13.5		IL 13.66	
		_		-3%	-3%		-0.8%	_	7%	_	Т	_
DATUM RL 10.50	n P	LES	LLE	MC01	ш	RES	D SWD		COMMS		COMMS	
DESIGN	13.817	13.900	13.930	14.020	13.930	13.900	13.882	13.882	13.936	14.015		
SURVEY	13.817	13.819	13.470	13.595	13.578	13.636	13.865	13.866	13.934	14.015	14.060	
OFFSET	4.330	-4.000	-3.000	0.000	3.000	4.000	6.250	6.267	7.040	8.166	8.786	
					CH 586	30						

						-					
				20/	20/					IL 12.08	IL 12.18
		-A:1		-3%	-3%		-3:1				_
DATUM RL 9.500) IIA	LES	TITE	MC01	RLE	RES	RVCI	RVCE	RIA	COMMS	COMMS
DESIGN	12.039	12.564	12.594	12.684	12.594	12.564	12.064	12.064	12.370		
SURVEY	12.039	12.194	12.228	12.294	12.228	12.256	12.316	12.335	12.370	12.403	12.512
OFFSET	-6.100	4.000	-3.000	0.000	3.000	4.000	5.500	6.000	6.919	7.477	8.907

CH 5920

 REV
 AMENDMENT
 ISSUED
 DATE

 A
 CONCEPT DESIGN ISSUE
 AS
 19/07/24

 B
 50% DETAILED DESIGN
 AS
 06/09/24

 C
 90% DETAILED DESIGN
 AS
 01/11/24

D ISSUED FOR CONSTRUCTION

E REVISED ISSUED FOR CONSTRUCTION

AS 19/07/24
AS 06/09/24
AS 01/11/24
AS 13/12/24
AS 03/01/25

PLANNIS - PROJECT MANAGEMENT - ENGINEERING - CERTIFICATION

SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 8388
ABN: 26 134 067 842
barkeryanstewart.com.au
maii@barkeryyanstewart.com.au

PORT STEPHENS

EAST SEAHAM ROAD, EAST SEAHAM
STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

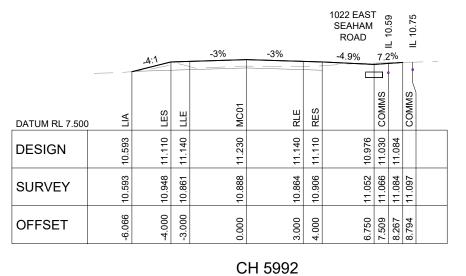
MC01 CROSS SECTION SHEET 11

Designed:	BF	Scales: Plan -
Drawn:	RD	Horiz
Checked:	SGB	Vert X-Sect. 1:200
		Datum: A H D

Plan No.

240458-01-311

File Ref. REV.
240458



										IL 9.38	IL 9.69	
		-4:1		-3%	-3%		-3:1		3:1_	_		
DATUM RL 7.000	LIA	LES	LLE	MC01	RLE	RES	/ RVCI	RVCE	RIA	COMMS	COMMS	
DESIGN	9.731	10.148	10.178	10.268	10.178	10.148	9.648	9.648	10.045			
SURVEY	9.731	9.861	9.936	9.982	9.985	10.073	10.084	10.073	10.045	10.035	10.063	
OFFSET	-5.669	-4.000	-3.000	0.000	3.000	4.000	5.500	6.000	7.191	7.624	8.966	
												_

			20/	20/				0 =	IL 0.32	IL 8.96	
			-3%	-3%		-3:1	H	3:1		Ţ	
DATUM RL 6.000	LIA	LES	MC01	RLE	RES	RVCI	RVCE	COMMS	RIA	COMMS	
DESIGN	9.317	9.346	9.466	9.376	9.346	8.780	8.780	9.259	698.6		
SURVEY	9.317	9.308	9.192	9.202	9.289	9.337	9.351	9.370	698'6	9.367	
OFFSET	-4.116	-3.000	0.000	3.000	4.000	5.699	6.199	7.636	996.7	8.970	

CH 6040

CH	6080

				-3%	-3%					IL 10.84	10 00	
		-4:1	^	-070			-3:1	ιć	3:1	i	_ ,	-
DATUM RL 8.500	LIA	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	COMMS	COMMS	
DESIGN	11.007	11.350	11.380	11.470	11.380	11.350	10.850	10.850	11.230			
SURVEY	11.007	11.173	11.075	11.094	11.104	11.173	11.218	11.219	11.230	11.241	11.285	
OFFSET	-5.372	-4.000	-3.000	0.000	3.000	4.000	5.500	6.000	7.139	7.577	8.835	

-3% -3% 3:1 3:1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
$ \underline{\alpha} $ $ \underline{\alpha} $	-
DESIGN 10.549 10.579 10.579 10.579 10.579 10.579 10.579 10.579 10.579 10.579 10.579 10.579 10.579 10.579 10.579 10.579 10.57	
ANANS (10.549) (10.54	
OFFSET -5.762 -3.000 0.0	

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				-3%	-3%							-	
			-					-3:1		_	3:1		
DATUM RL 6.500) I	/ S∃1	TILE	MC01		RLE	RES	RVCI	RVCE	COMMS	COMMS	/ VIN	
DESIGN	9.762	9.747	9.777	9.867		9.777	9.747	8.959	8.959	9.247	9.720	9.811	
SURVEY	9.762	9.762	869.6	9.589		9.621	9.758	9.816	9.828	9.840	9.816	9.811	
OFFSET	-4.044	-4.000	-3.000	0.000		3.000	4.000	6.365	6.865	7.730	9.149	9.421	
OFFSET	-4.044	-4.000	-3.000	0.000		3.000	4.000	6.365	6.865	7.730	9.149	9.421	

CH	5980
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CH 6020

CH 6060

				00/	207					11 28	11 = 11 35	- - - - -
		<u>4:1</u>		-3%	-3%		-3:1	H	3:1		- 7	-
DATUM RL 8.500	ΓIA	LES	LLE	MC01	RLE	RES	RVCI	RVCE	RIA	COMMS	COMMS	
DESIGN	11.338	11.751	11.781	11.871	11.781	11.751	11.251	11.251	11.603			
SURVEY	11.338	11.544	11.326	11.463	11.474	11.527	11.580	11.583	11.603	11.671	11.788	
OFFSET	-5.651	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.055	7.744	8.943	

				-3%	-3%				IL 10.52	10 65		
		-4:1	_			_	-3:1	1 [13	5:1		_
DATUM RL 7.500	LIA	LES	LLE	MC01	RLE	RES	_	RVCE	COMMS	COMMS	RIA	
DESIGN	10.430	10.950	10.980	11.070	10.980	10.950	10.160	10.160	10.316	10.824	10.979	
SURVEY	10.430	10.777	10.649	10.744	10.714	10.783	10.896	10.927	10.956	10.970	10.979	
OFFSET	-6.080	-4.000	-3.000	0.000	3.000	4.000	6.368	6.868	7.337	8.860	9.324	

								1022 EAS SEAHAI ROAD	M c	1 9.2	IL 9.44	
		_		-3%	-3%			-5%		1.3%	_	_
							_					
DATUM RL 6.000) II	LES		MC01		RLE	RES		COMMS	SMMOO	\	
DESIGN	9.826	9.907	9.907	10.027		9.937	9.907	9.770	9.811	9.864	9.887	
SURVEY	9.826	9.835	9.033	9.754		069.6	9.778	9.827	9.858	288.6	9.893	
OFFSET	-4.326	-4.000	-3.000	0.000		3.000	4.000	6.742	7.694	8.953	9.473	

CH 6000

MC01 CROSS SECTION SHEET 12

 REV
 AMENDMENT
 ISSUED
 DATE

 A
 CONCEPT DESIGN ISSUE
 AS
 19/07/24

 B
 50% DETAILED DESIGN
 AS
 06/09/24

 C
 90% DETAILED DESIGN
 AS
 01/11/24

 D
 ISSUED FOR CONSTRUCTION
 AS
 13/12/24

E REVISED ISSUED FOR CONSTRUCTION



SYDNEY
P. 02 9659 0005
CENTRAL COAST
P. 02 4325 5255
HUNTER
P. 02 4966 8388
ABN. 26 134 067 842
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mal@barkeryyanstewart.com.au



EAST SEAHAM ROAD, EAST SEAHAM STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

Designed: Drawn: Checked:	BF RD SGB	Scales:	Plan Horiz. Vert. X-Sect.	- - 1:200
		Datum:	A.H.[D.

CH 6052

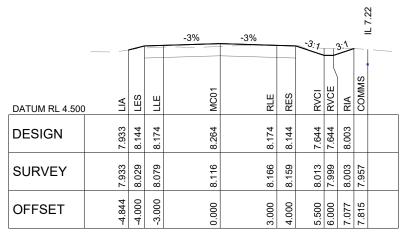
Plan No. 240458-01-312 File Ref. REV. 240458

DATUM RL 5.000

DESIGN

SURVEY

OFFSET



	_		-3%	_3%			
	Į					K	_
) I	LES	TLE	MC01	ū	RES	RIA	
8.024	7.892	7.922	8.012	2 000	7.892	7.846	
8.024	8.018	8.002	8.028	7 013	7.853	7.846	
4.393	-4.000	-3.000	0.000	000	4.000	4.187	
	8.024 8.024	8.024 8.024 8.018 7.892	8.024 8.024 8.018 7.892 8.002 7.922	8.024 8.024 LLA 8.018 7.892 LES 8.002 7.922 LLE	8.024 8.024 LIA 8.018 7.892 LES 8.002 7.922 LLE 8.028 8.012 MC01	8.024 8.024 LIA 8.018 7.892 LES 8.002 7.922 LLE 8.028 8.012 MC01 7.913 7.922 RLE 7.853 7.892 RES	8.024 8.024 LIA 8.002 7.922 LLE 8.002 7.922 LLE 8.028 8.012 MC01 7.913 7.922 RLE 7.853 7.892 RES 7.846 7.846 RIA

		_	_	 3%		-3%		{	П		
		F			-				片	1	
DATUM RL 7.000	ΓΙ	SET	LLE		MC01		RLE	RBWB	RES	RIA	
DESIGN	10.061	10.151	10.121		10.025		9.929	9.899	9.884	9.735	
SURVEY	10.061	10.094	10.086		9.990		9.793	9.733	9.708	9.735	
OFFSET	-4.360	-4.000	-3.000		0.200		3.400	4.400	4.900	5.496	
	4	-4	-3		0.2		3.4	4.	4.9	5.4	

CH 6260

CH 6	3140
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	IF 7.01	
COMMS		DATU
		DES
8.183		SUR
069 8.1		OFF
0.		

				-3%	-3%			
		<u>-4:1</u>						
DATUM RL 4.000	4	LES	LLE	MC01	RLE	RES	RIA	
DESIGN	6.377	7.541	7.571	7.661	7.571	7.541	7.534	
SURVEY	6.377	7.287	7.423	7.587	7.563	7.535	7.534	
OFFSET	-8.655	-4.000	-3.000	0.000	3.000	4.000	4.029	

CH 6200

		2	.4%	2.4%	-3%		1	\Box		
			ì					Ц	7	
DATUM RL 6.500	- FI	LES	LLE	MC01		RLE	RBWB	RES	RIA	
DESIGN	9.559	9.687	9.662	9.585		9.490	9.460	9.445	9.277	
SURVEY	9.559	9.561	9.579	9.563		9.393	9.346	9.326	9.277	
OFFSET	-4.511	-4.000	-3.000	0.163		3.325	4.325	4.825	5.498	

CH 6120

				201	201						IL 8.3	
		_	1	-3%	-3%			-3:1	ΙT	3:1	1	_
DATUM RL 6.000) VI	LES	LLE	MC01		RLE	RES	RVCI	RVCE	RIA	COMMS	
DESIGN	8.910	8.945	8.975	9.065		8.975	8.945	8.445	8.445	8.897		
SURVEY	8.910	8.908	8.809	8.789		8.792	8.809	8.869	8.870	8.897	8.893	
OFFSET	-4.143	-4.000	-3.000	0.000		3.000	4.000	5.500	000.9	7.354	7.791	

									92 9 11	5
		_		-3%	-3%		-3:1		3:1	=
			/				3.7	H	-3	
								\	ì	
DATUM RL 4.000	, Y	LES	TLE	MC01	RLE	RES	RVC	RVCE	RIA	
DESIGN	7.529	7.743	7.773	7.863	7.773	7.743	7.243	7.243	7.717	
SURVEY	7.529	7.614	7.527	7.861	7.864	7.854	7.765	7.714	7.717	
OFFSET	4.855	-4.000	-3.000	0.000	3.000	4.000	5.500	000.9	7.422	
										,

								IL 8.3	
		-0.6%	-3%		-3.1		3:1	- -1	
						H		Įŧ	
LIA	LES	MC01	RLE	RES	RVCI	RVCE	RIA	COMMS	
8.763	8.804	8.827	8.737	8.707	8.207	8.207	8.895		
8.763	8.763	8.797	8.695	9:938	8.546	8.525	8.895	8.925	
-4.164	4.000	00.00	3.000	4.000	5.500	000.9	8.067	8.391	
	8.763 8.763	8.763 8.763 8.763 8.804	8.763 8.763 LIA 8.763 8.804 LES 8.775 8.810 LLE	8.763 8.763 LIA 8.763 8.804 LES 8.775 8.810 LLE 8.797 8.827 MC01 8.695 8.737 RLE	8.763 8.763 LIA 8.775 8.810 LLE 8.797 8.827 MC01 8.695 8.737 RLE 8.636 8.737 RES	8.763 8.763 LIA 8.775 8.810 LLE 8.797 8.827 MC01 8.696 8.737 RLE 8.636 8.737 RLE 8.636 8.207 RVCI	8.763 8.763 LIA 8.775 8.810 LLE 8.797 8.827 MC01 8.695 8.737 RLE 8.636 8.737 RLE 8.636 8.207 RVCI 8.546 8.207 RVCE	8.763 8.763 LIA 8.763 8.804 LES 8.775 8.810 LLE 8.797 8.827 MC01 8.695 8.737 RLE 8.636 8.707 RES 8.546 8.207 RVCI 8.525 8.207 RVCI 8.525 8.207 RVCI	8.763 8.763 LIA 8.763 8.804 LES 8.8775 8.810 LLE 8.695 8.737 RLE 8.695 8.737 RLE 8.636 8.707 RES 8.546 8.207 RVCI 8.525 8.207 RVCE 8.895 RIA IL

CH 6240

CH 6100

CH 6160

CH 6180

CH 6220

2 0 2 4 6 8 10 METRES 1:20

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
С	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
F	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

	BARKER
	RYAN
_	STEWART
_	OT SOLUTIONS

SYDNEY
P. 02 9659 0005
CENTRAL COAST
P. 02 4325 5255
HUNTER
P. 02 4966 8388
ABN: 26 134 067 842
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mail@barkeryanstewart.com.au



EAST SEAHAM ROAD, EAST SEAHAM STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

Designed:	BF	Scales:		-
Drawn:	RD		Horiz. Vert.	-
Checked:	SGB		X-Sect.	1:2

A.H.D.

Datum:

Plan No. 240458-01-313 File Ref. REV. 240458

MC01 CROSS SECTION SHEET 13

		-8:1		-0.8%	-3.5%			
							\setminus	- — I
DATUM RL 7.000) ⊴	LES	LE	MC01	RLE	RES	RIA	
DESIGN	9.379	9.566	9.569	9.594	9.484	9.472	9.444	
SURVEY	9.379	9.496	9.506	9.569	9.458	9.447	9.444	
OFFSET	-3.859	-2.363	-2.030	0.970	4.070	4.403	4.518	

CH 6320

		-A:1	3%	3%	-3%	-3%	-4:1	
								_
DATUM RL 7.000	LIA	LES	LLE	MC01	RLE	RES	RIA	
DESIGN	9.459	10.054	10.024	9.928	9.832	9.802	9.451	
SURVEY	9.459	9.736	9.762	9.742	9.574	9.557	9.451	
OFFSET	-6.383	-4.000	-3.000	0.200	3.400	4.400	5.805	

CH 6300

		-4:1	3%	3%	-3%	-3% {	П	_
							4	\
DATUM RL 7.000	LIA	LES	ררב	MC01	RLE	RBWB	RES	A A
DESIGN	9.981	10.266	10.236	10.140	10.044	9.995	9.980	9.835
SURVEY	9.981	10.075	10.083	10.018	9.799	9.702	9.698	9.835
OFFSET	-5.136	-4.000	-3.000	0.200	3.400	5.012	5.512	0.094

			-2	.6%	-3.8%		
		1					
DATUM RL 7.000	, <u>4</u>	LES	LE	MC01	RLE	RES	
DESIGN	9.422	9.428	9.428	9.504	9.388	9.386	
SURVEY	9.422	9.425	9.426	9.504	9.388	9.387	
OFFSET	-1.686	-1.641	-1.609	1.300	4.355	4.387	

CH 6329.044

REV	AMENDMENT	ISSUED	DATE
Α	CONCEPT DESIGN ISSUE	AS	19/07/24
В	50% DETAILED DESIGN	AS	06/09/24
С	90% DETAILED DESIGN	AS	01/11/24
D	ISSUED FOR CONSTRUCTION	AS	13/12/24
Е	REVISED ISSUED FOR CONSTRUCTION	AS	03/01/25

	BARKER
1	
1	RYAN
1	STEWART
1	TOTAL PROJECT SOLUTIONS
5	DI ANNING - DECITION MANAGEMENT - ENGINEEDING - CERTIFICATION

SYDNEY
P. 02 9659 0005
CENTRAL COAST
P. 02 4362 555
HUNTER
P. 02 4968 8388
ABN 26 134 067 842
barkerryanstewart.com.au
mail@barkerryanstewart.com.au



EAST SEAHAM ROAD, EAST SEAHAM STAGE 6 ROAD RECONSTRUCTION - W12575 - SEG 130 AND 140

MC01 CROSS SECTION SHEET 14

	Designed:	BF
G 130 AND 140	Drawn:	RD
	Checked:	SGE

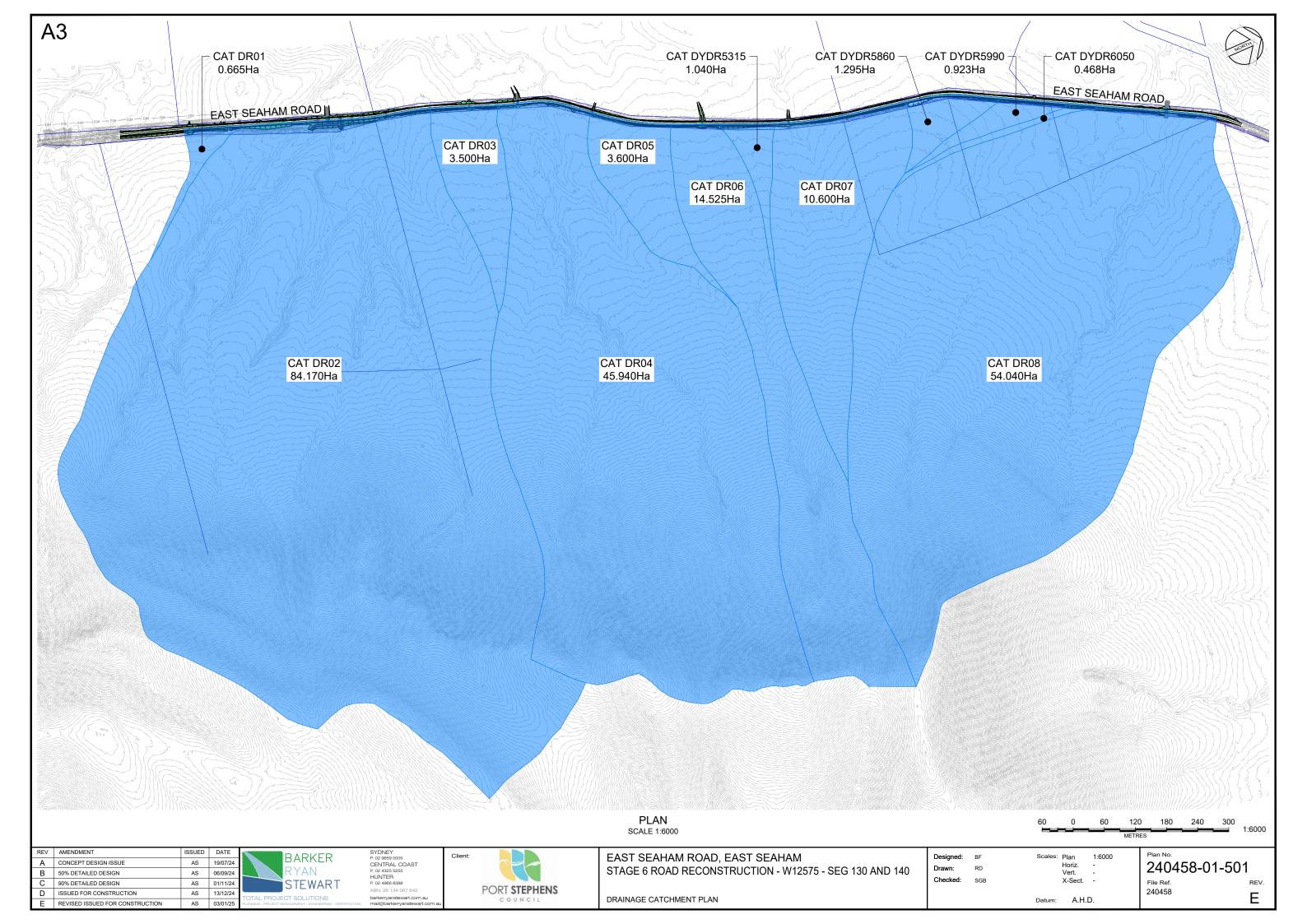
Scales: Plan Horiz. Vert. X-Sect. 1:200

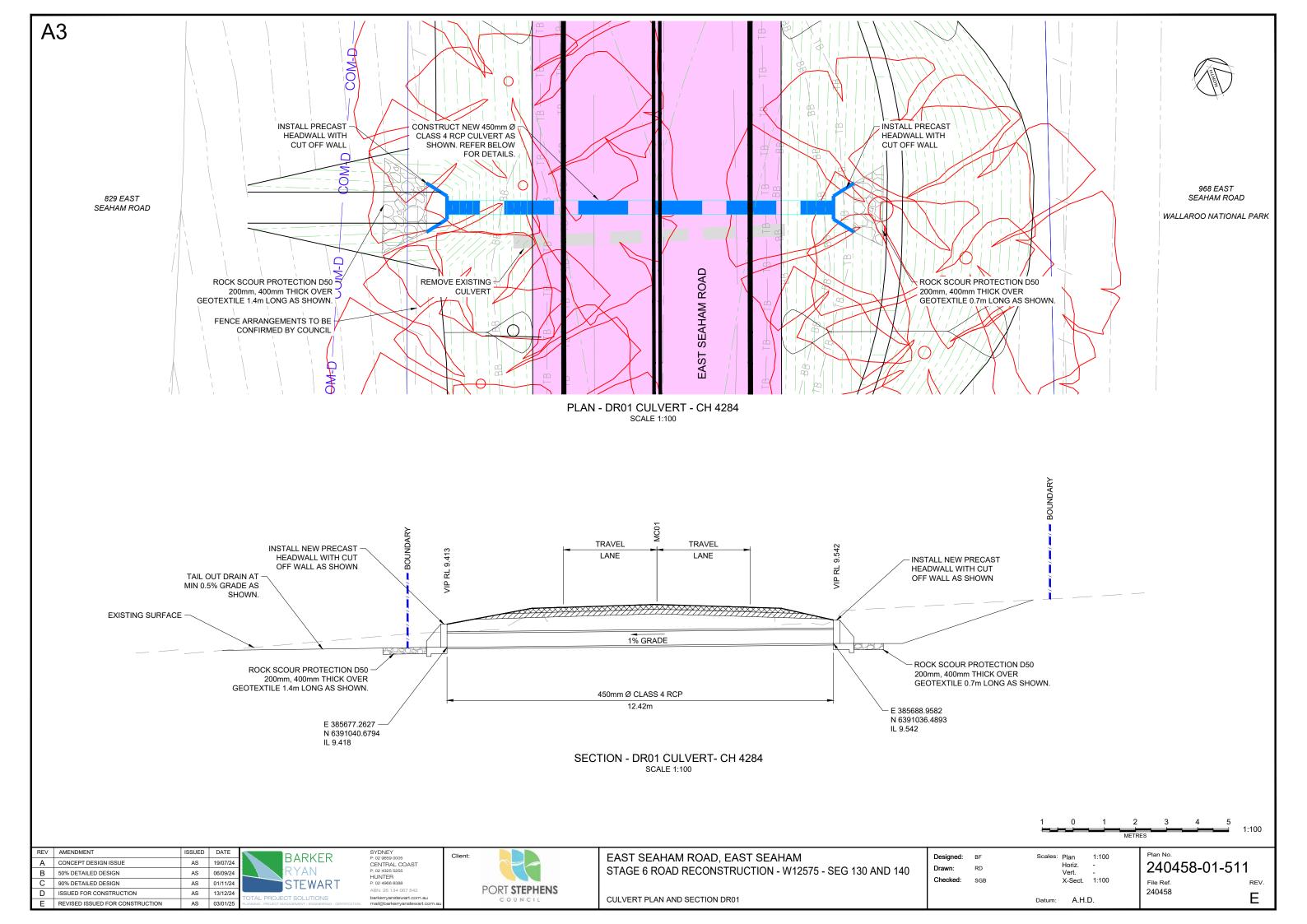
Datum: A.H.D.

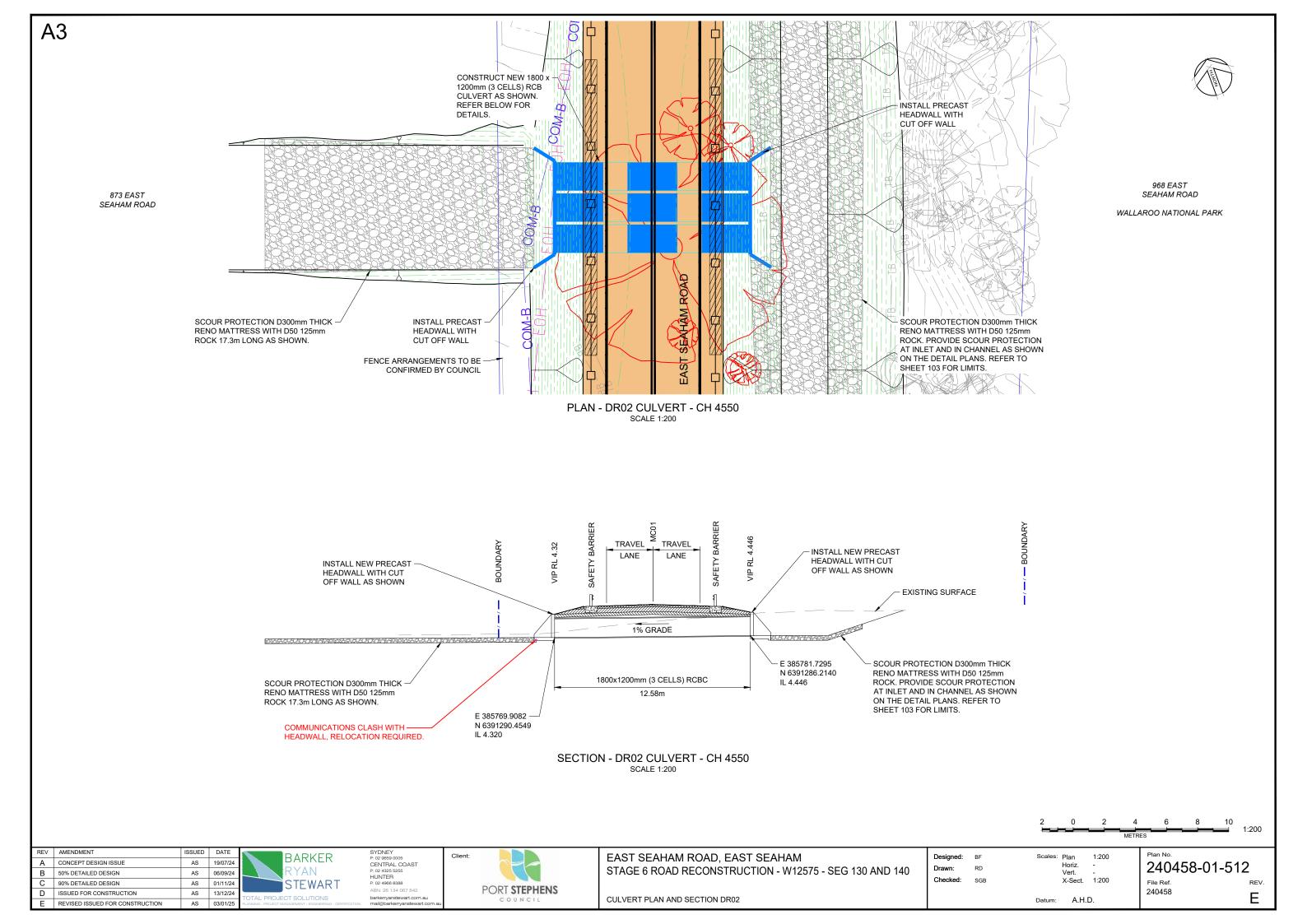
Plan No.

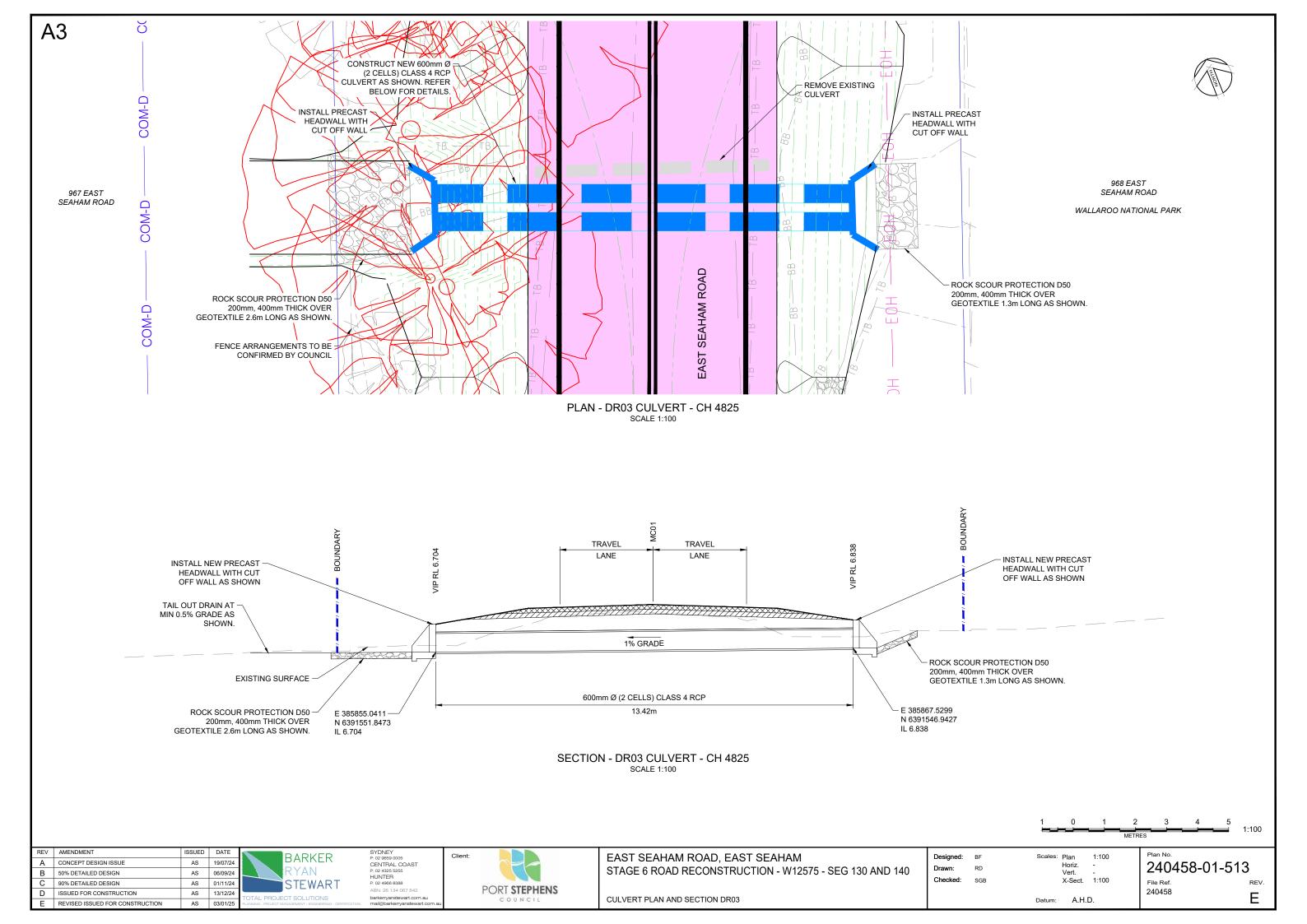
240458-01-314

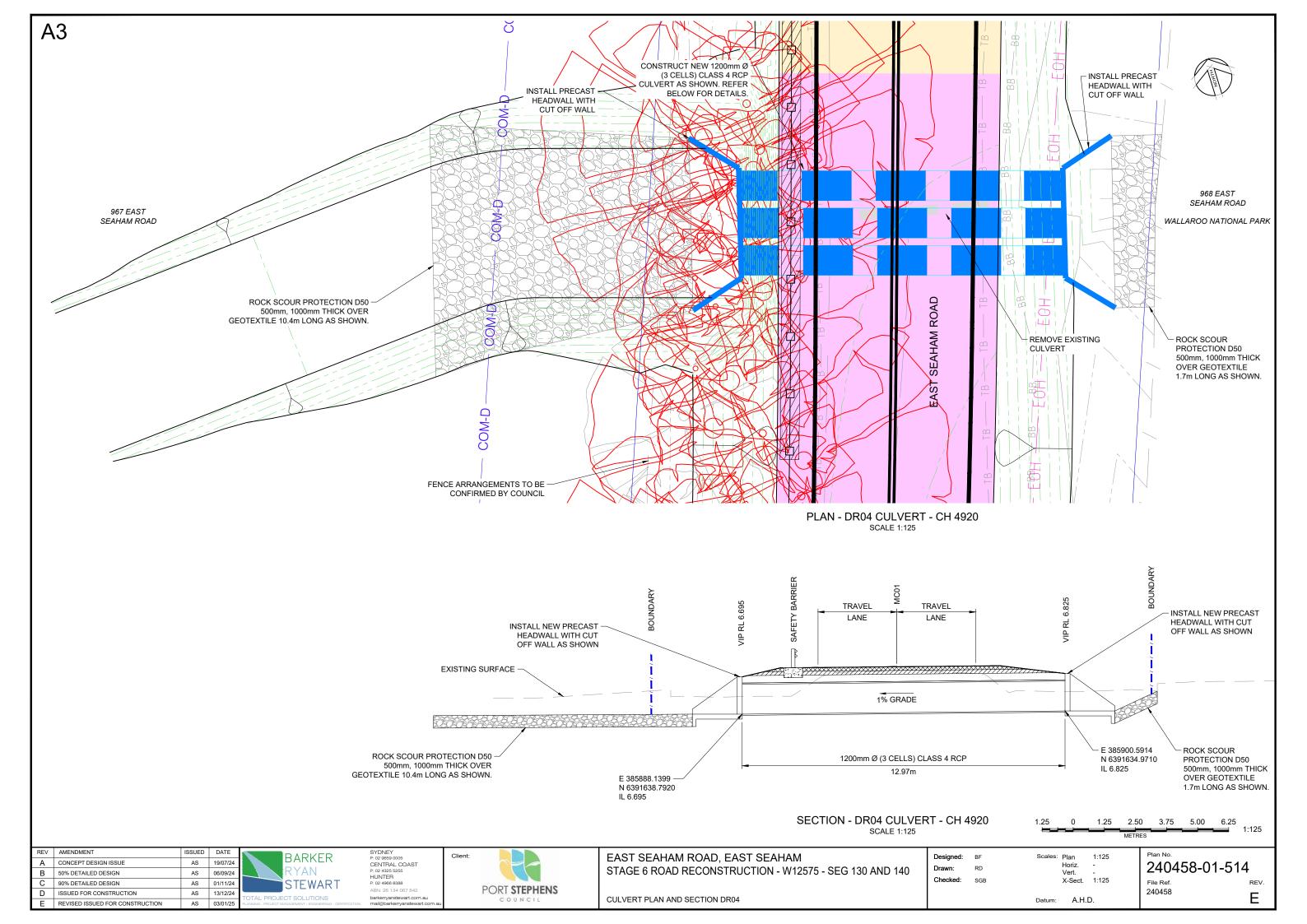
File Ref. REV.
240458

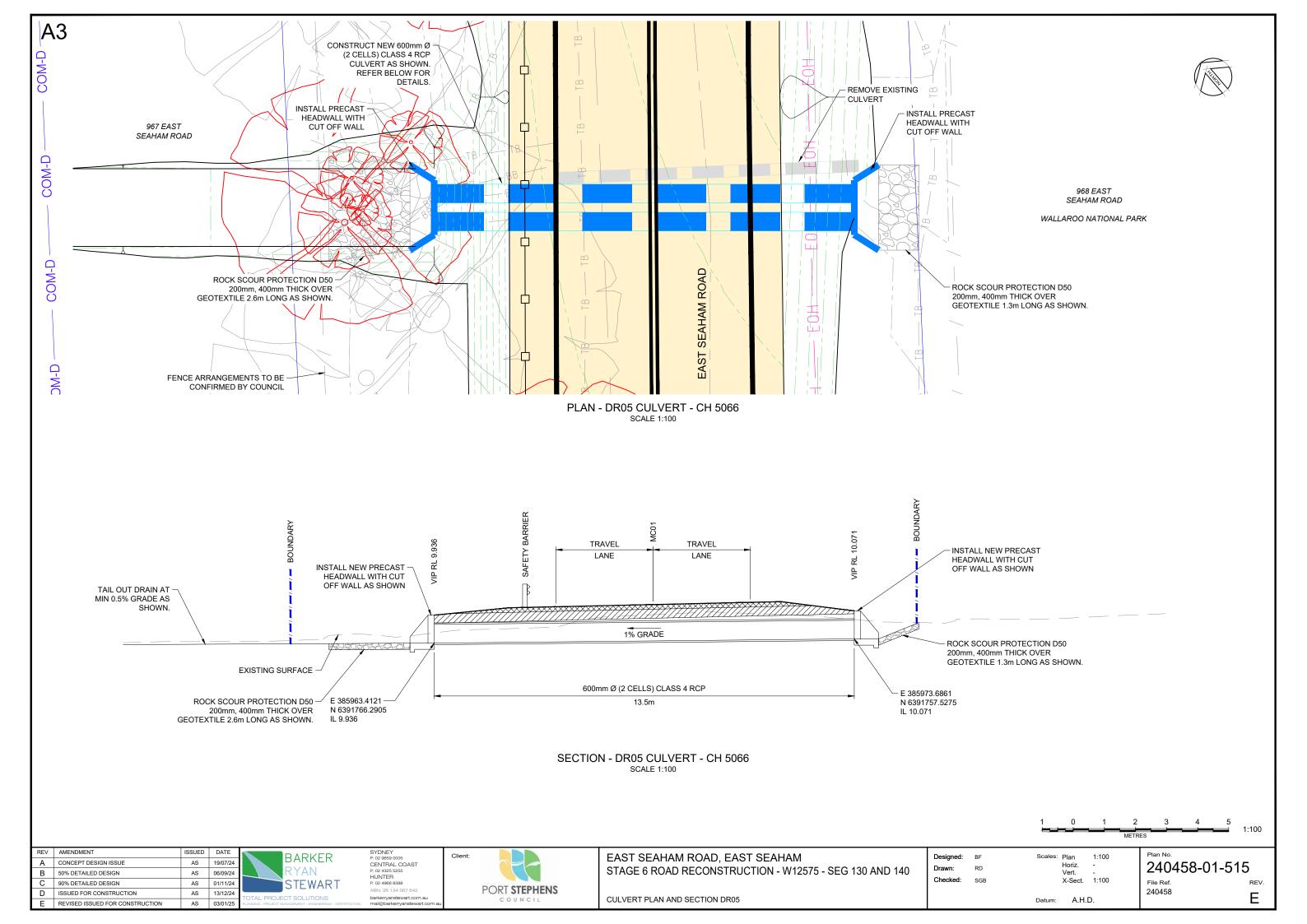


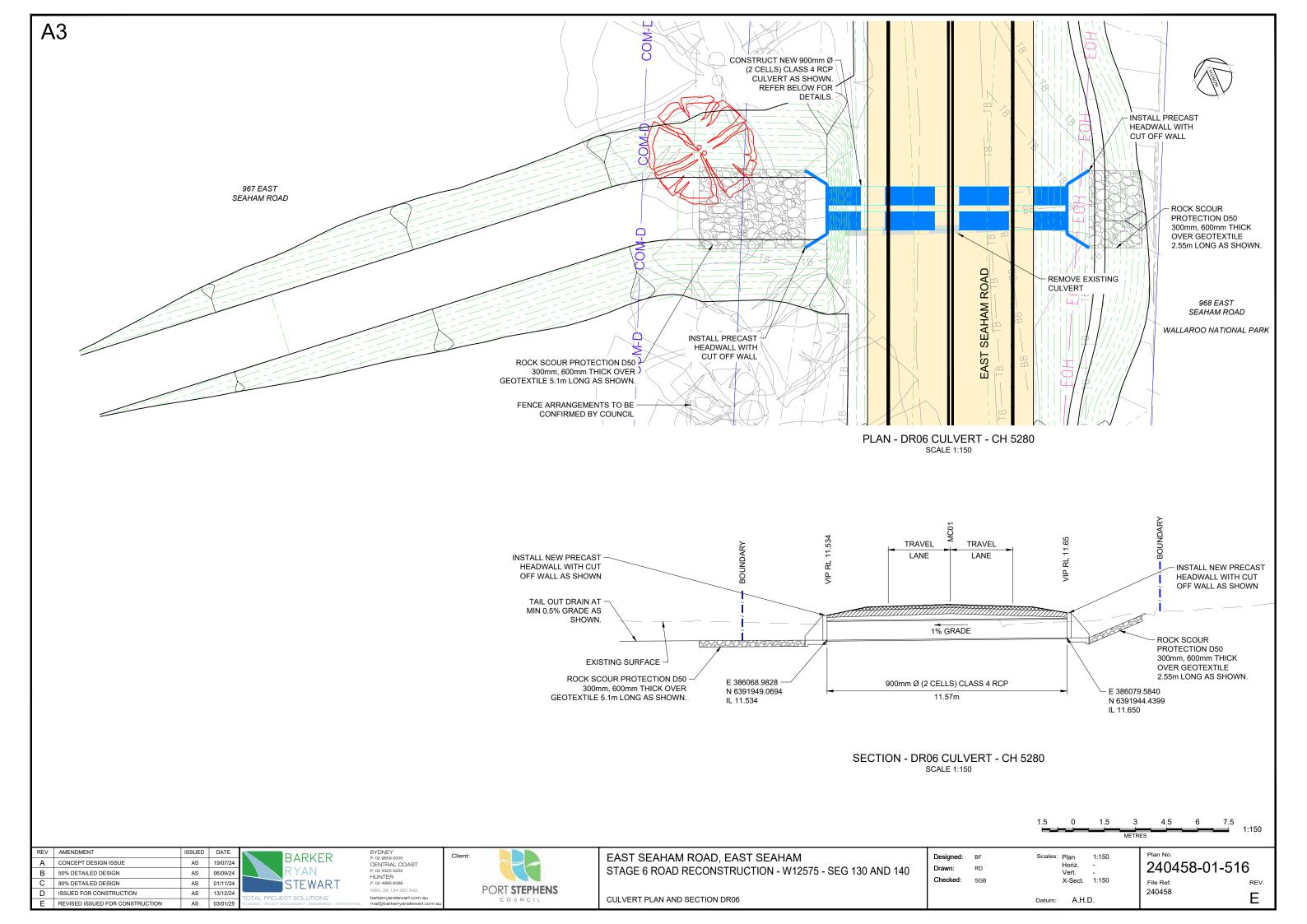


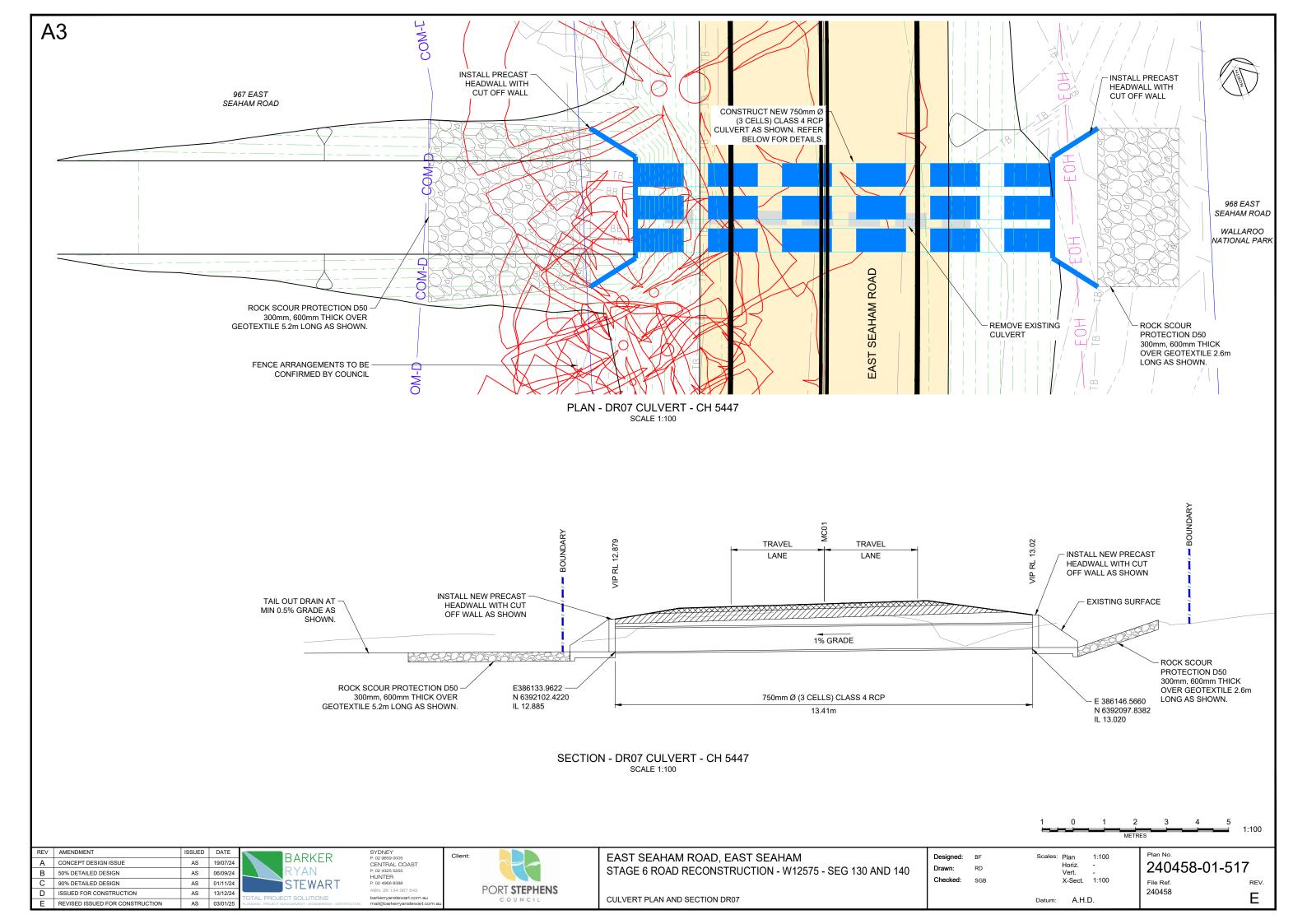


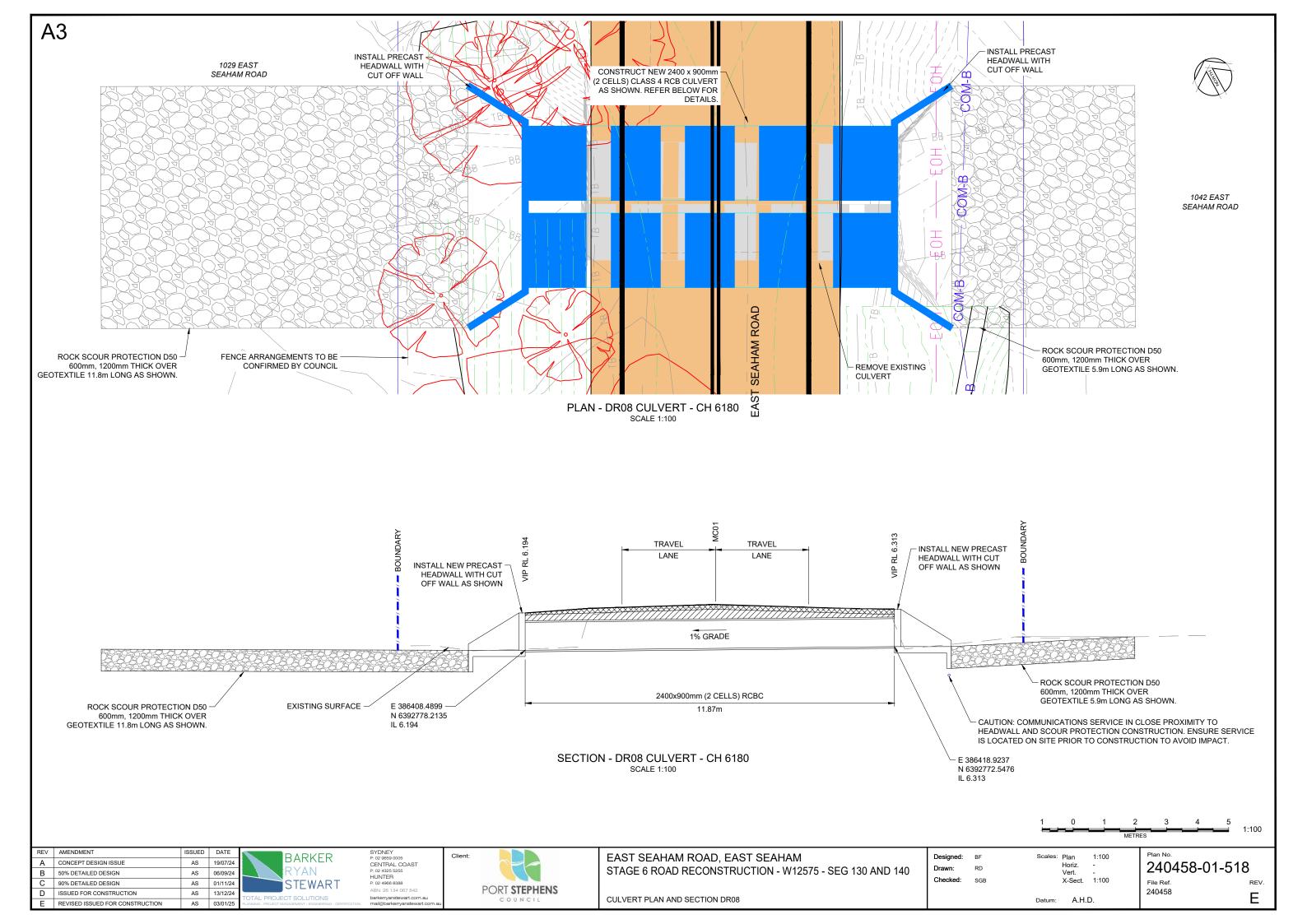


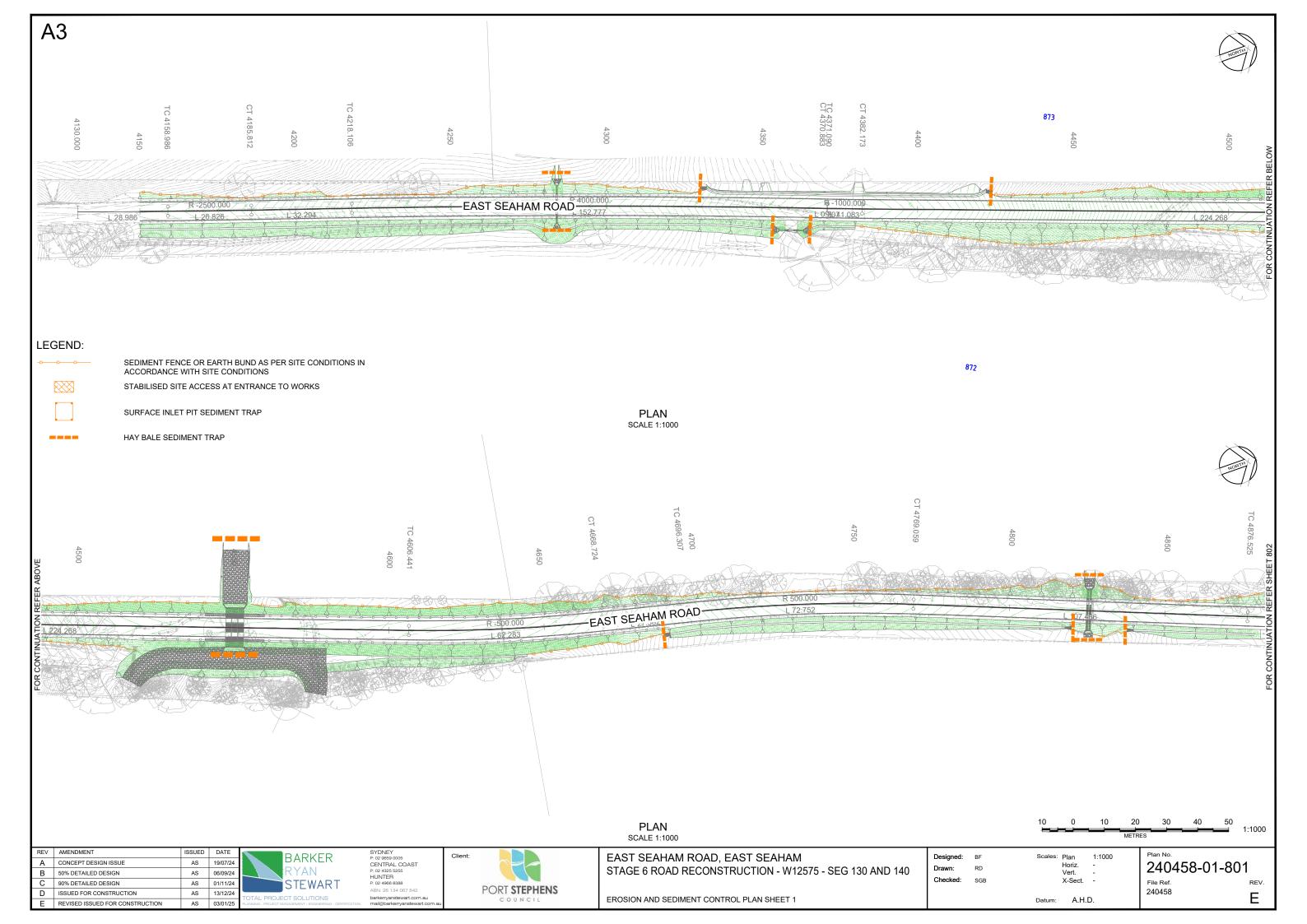


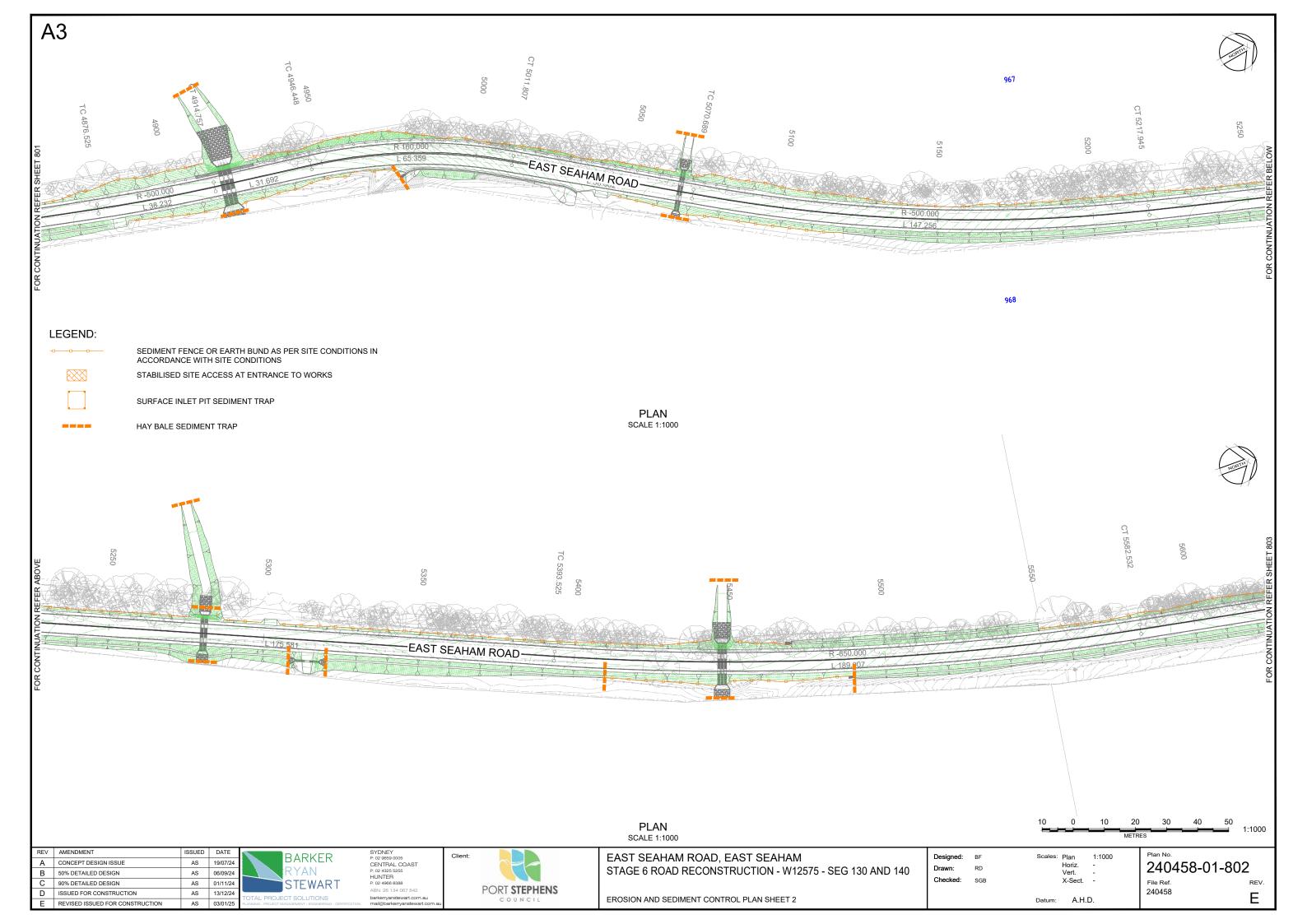


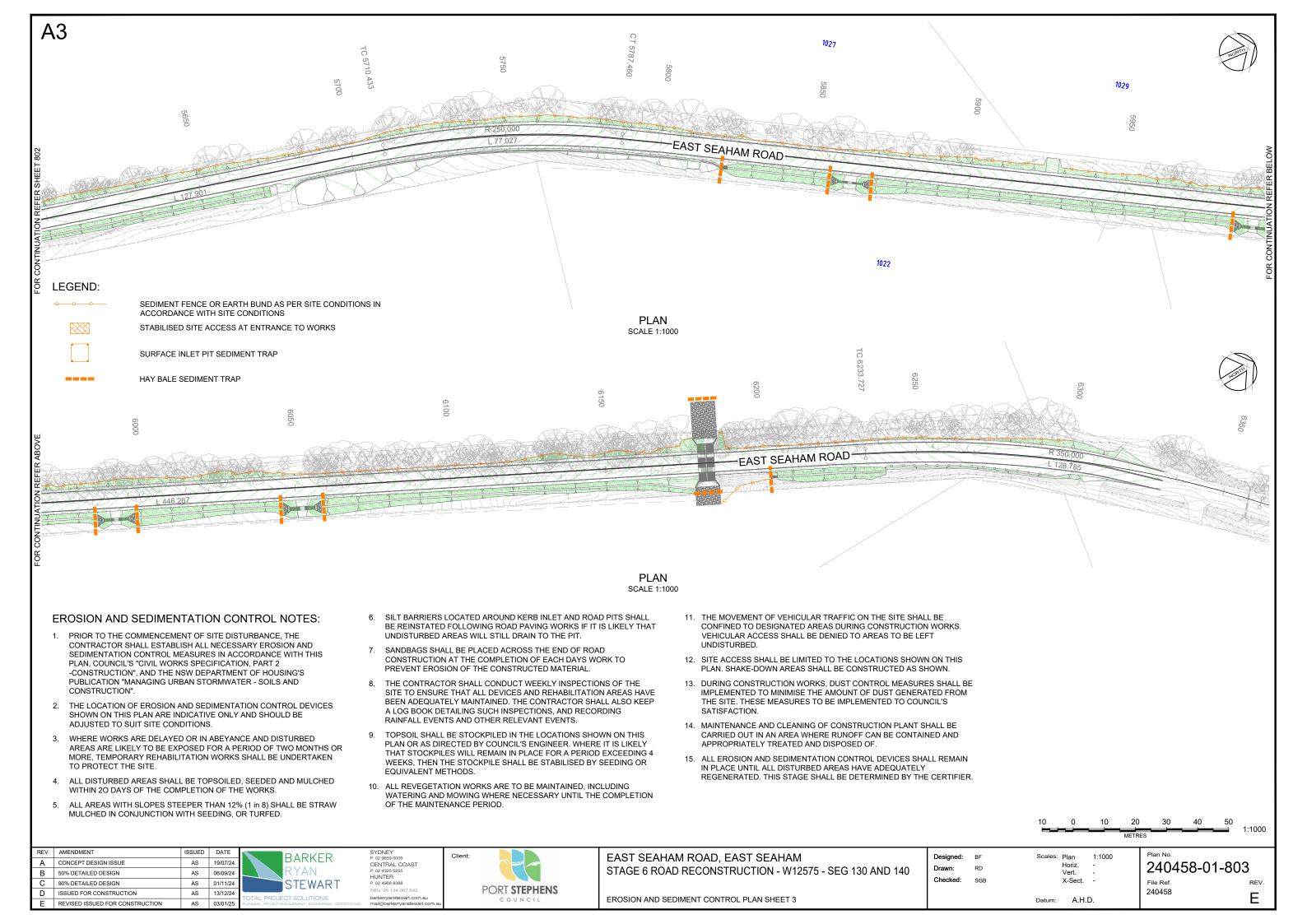


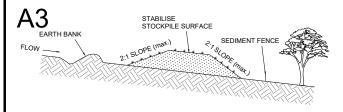












CONSTRUCTION NOTES

- WHERE POSSIBLE LOCATE STOCKPILE AT LEAST 5 METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOWS, ROADS, HAZARD AREAS AND MIN. 1.5m AWAY FROM EMBANKMENTS.
- 2. CONSTRUCT ON THE CONTOUR AS A LOW, FLAT ELONGATED MOUND.
- WHERE THERE IS SUFFICIENT AREA TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
- 4. REHABILITATE IN ACCORDANCE WITH THE SWMP/ESCP

CATCH DRAIN DETAIL

5. CONSTRUCT EARTH BANK (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT RUN OFF AROUND THE STOCKPILE AND A SEDIMENT FENCE (STANDARD DRAWING 6-8) 1 TO 2 METRES DOWNSLOPE OF STOCKPILE

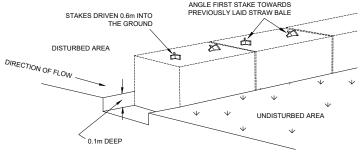
TOPSOIL STOCKPILE

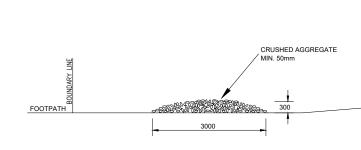
STAKES DROP INLET RUNOFF WATER STAKES BURIED FABRIC WATER GEOTEXTILE FILTER FARRIC

SURFACE INLET PIT SEDIMENT TRAP

CRUSHED ROCK OUTLET TO HALF THE HEIGHT OF BALES.

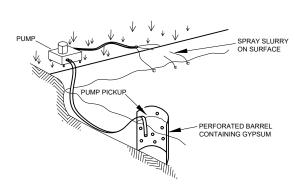
DRAINAGE AREA 0.4 ha MAX. SLOPE GRADIENT 1:2 MAX. SLOPE LENGTH 40m MAX. ANGLE FIRST STAKE TOWARDS PREVIOUSLY LAID STRAW BALE STAKES DRIVEN 0.6m INTO THE GROUND DISTURBED AREA DIRECTION OF FLOW UNDISTURBED AREA 0.1m DEEP





VEHICLE DUST SHAKE DOWN DETAIL

STRAW BALE SEDIMENT FILTER



CONSTRUCTION NOTES

IT WITH 25mm TO 50mm GRAVEL

FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH AND FILL

2. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH X 400mm WIDE.

3. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING FILTER

SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

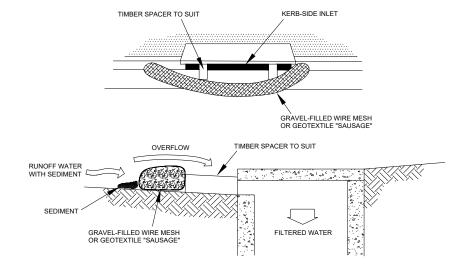
MESH & GRAVEL FILTER "SAUSAGE" BARRIER

NOTE:

KERB OUTLET

- FLOCCULATION TO BE USED IF WATER IS NOT CLEAR (IE: SEDIMENT GREATER THAN 50 mg/L) PRIOR TO DISCHARGING FROM TEMPORARY PUMP OUT
- FOR RATES & AGENTS SEE APPENDIX E OF HOUSING NSW "MANAGING URBAN SW SOILS & CONSTRUCTION".

FLOCCULATION DETAIL



CONSTRUCTION NOTES

- 2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
- 3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH X 400mm WIDE.
- 4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET MAINTAIN THE OPENING WITH SPACER BLOCKS.
- FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING FILTER.

Scales: Plan

Vert.

A.H.D.

SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH & GRAVEL INLET "SAUSAGE" FILTER



REVISED ISSUED FOR CONSTRUCTION

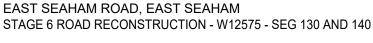
50% DETAILED DESIGN

90% DETAILED DESIGN

В







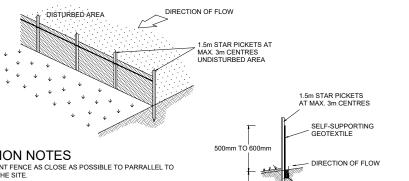
GEOFABRIC MAY BE A WOVEN OR NEEDLE

PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4-90) OF 2500 N

EROSION AND SEDIMENT CONTROL DETAILS



240458-01-811 File Ref. 240458



STRAW BALES STAKED TO GROUND. (REFER TO

STRAW BALE DETAIL)

MIN. WIDTH 3 METRES PROPERTY BOUNDARY RUNOFF DIRECTED TO SEDIMENT TRAP/FENCE DGB 20 ROADBASE OR 30mm AGGREGATE EXISTING ROADWAY **CONSTRUCTION NOTES** GEOTEXTILE FABRIC DESIGNED TO PREVENT INTERMIXING OF SUBGRADE AND BASE MATERIALS AND TO MAINTAIN GOOD PROPERTIES OF THE SUB-BASE LAYERS.

STRIP TOPSOIL AND LEVEL SITE.

- 2. COMPACT SUBGRADE.
- 3. COVER AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
- CONSTRUCT 200mm THICK PAD OVER GEOTEXTILE USING ROADBASE OR 30mm AGGREGATE. MINIMUM LENGTH 15 METRES OR TO BUILDING ALIGNMENT. MINIMUM WIDTH 3 METRES.
- 5. CONSTRUCT HUMP IMMEDIATELY WITHIN BOUNDARY TO DIVERT WATER TO A SEDIMENT FENCE OR OTHER SEDIMENT TRAP.

STABILISED SITE ACCESS

CONSTRUCTION NOTES CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARRALLEL TO THE CONTOURS OF THE SITE. 2. DRIVE 1.5m LONG STAR PICKETS INTO GROUND 2.5 METRES APART (MAX.) ON SOIL. 150mm X 100mm TRENCH WITH COMPACTED 3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED. BACKFILL AND ON ROCK, SET

SECTION DETAIL

INTO REINFORCED CONCRETE

STRAW BALE & CRUSHED ROCK

SEDIMENT FILTER

DIAL BEFORE

4. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.

5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.

6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE

AS 19/07/24

AS 06/09/24

AS 01/11/24

AS

13/12/24

CENTRAL COAST HUNTER barkerryanstewart.com.a