AECOM

SIMTA Intermodal Terminal Facility- Stage 1

Rail Access Report

SIMTA

SYDNEY INTERMODAL TERMINAL ALLIANCE

Part 4, Division 4.1, State Significant Development

31 / March / 2015

Moorebank Intermodal Terminal Facility - Stage 1

Rail Access Report

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Revision B2 – 31-Mar-2015
Prepared for – Sydney Intermodal Terminal Alliance (SIMTA) – ABN: 14 149 723 053

Moorebank Intermodal Terminal Facility - Stage 1

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Rail Access Report

Client: Sydney Intermodal Terminal Alliance (SIMTA)

ABN: 14 149 723 053

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31-Mar-2015

Job No.: 60337283

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Quality Information

Document Moorebank Intermodal Terminal Facility - Stage 1

Ref 60337283

Date 31-Mar-2015

Prepared by Bruce Skinner

Reviewed by John McDermott

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
1	27-Jan-2015	For Review	John McDermott Technical Director	
B	31-Mar-2015	Revised For SSD Application	John McDermott Technical Director	

Moorebank Intermodal Terminal Facility - Stage 1

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Moorebank Intermodal Terminal Facility - Stage 1

1.0 Introduction

AECOM was engaged by the Sydney Intermodal Terminal Alliance (SIMTA), to assess the SIMTA Rail Link for the State Significant Development (SSD) Application for Stage 1 of the proposed Moorebank Intermodal Terminal facility (SIMTA proposal). AECOM has prepared this technical note to

- document the rail connection design from the Southern Sydney Freight Line to the SIMTA site,
- identify the process of design refinements applied to the indicative scheme proposed under the Concept Plan Approval (MP10_0193) to result in the design proposed under this SSD Application,
- respond to the Secretary's Environmental Assessment Requirements (SEARs) received in December 2014 from the Department of Planning and Environment (DP&E), for the Proposal.

1.1 Background

The SIMTA Project involves the development of an intermodal facility, including warehouse and distribution facilities, freight village (ancillary site and operational services), stormwater, landscaping, servicing and associated works on the eastern side of Moorebank Avenue, Moorebank (the SIMTA site). The SIMTA Project also includes a rail link, within an identified rail corridor (the Rail Corridor), which connects from the southern part of the SIMTA site to the Southern Sydney Freight Line (SSFL) (the entire area, SIMTA site and Rail Corridor referred to as the Project site). The SIMTA Project is to be developed in three key stages:

- Stage 1- Construction of the Intermodal Terminal Facility and Rail Link
- Stage 2- Construction of Warehouse and Distribution Facilities
- Stage 3- Extension of the Intermodal Terminal Facility and completion of Warehouse and Distribution Facilities.

A summary of the approvals undertaken to date for the SIMTA site, relating to the SIMTA Project, include:

- EPBC Approval (No. 2011/6229) granted in March 2014 for the impact of the SIMTA Project on listed threatened species and communities (sections 18 and 18A of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)) and Commonwealth land (sections 26 and 27A of the EPBC Act).
- Concept Approval (No. 10_0193) granted by the Planning Assessment Commission (PAC) on the 29 September 2014 for the 'Concept Approval' of the SIMTA Project under Part 3A of the EP&A Act.

Both of these approvals involved the preparation of design and environmental assessment documentation.

1.2 Report purpose

This Report has been prepared for approval of the initial stage of the SIMTA Project, known as the Stage 1 Proposal. A summary of the works included in the Stage 1 Proposal is provided below. This Report has been prepared to support a State Significant Development (SSD) Application for which approval is sought under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This Report has been prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) (ref: SSD 14-6766 and dated December 2014). Table 1 provides a summary of the SEARs and the section where they have been addressed in this Report.

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Table 1 SEARs (SSD 14-6766) Compliance Table

Section / Number	SEARs	Where addressed
6	**Rail**	
	Addressing the requirements of TfNSW including:	
a)	detailed design and engineering drawings for the rail link, including the freight line track, supporting infrastructure and clearances with the East Hills Passenger Line and the relocation of any Sydney Trains services and infrastructure, prepared by an Asset Standards Authority Authorised Engineering Organisation;	Drawings are located in the following Sections - Detailed Design Drawings in Appendix A of this Report - Clearances within the East Hills passenger Line in Appendix A of this Report - Sydney Train services and infrastructure requiring relocation in Appendix B of this Report Confirmation that AECOM is an Asset Standards Authority Authorised Engineer Organisation is provided in Section 2.2
b)	identifying the forecast annual train movements including an estimated range of daily train movements, and the capacity of existing and proposed rail network to handle predicted increases in traffic, based on appropriate empirical evidence and modelling;	Section 2.3
c)	demonstrate how the use of the proposed Moorebank Station site would ensure priority access by Sydney Trains at all times.	Section 4.2.2 and Appendix A of this Report
	Assessment of the impacts of the rail link on the Glenfield Waste Facility in consultation with the EPA, including:	
c)	Any proposed impacts on pollution control and monitoring systems including existing groundwater and landfill gas bores and their subsequent repair / replacement;	Section 6.1 and 6.2
d)	The proposed methodology to ensure that the landfill barrier system disturbed in the removal process is replaced / repaired to ensure its ongoing performance. The Proponent should detail matters such as subgrade preparation / specifications, line installation / reinstallation procedures and construction quality assurance procedures;	Section 6.3

1.3 Key Terms

Table 2 provides a summary of the key terms which are included within this Report. Figure 1 also provides an indication of the site areas discussed in this table.

Table 2 Key Terms

Term	Description
Concept Plan Approval	Concept Plan Approval (MP 10_0193) granted on 29 September 2014 for the development of the SIMTA Moorebank Intermodal Terminal Facility at Moorebank. This reference includes the associated Conditions of Approval (CoA) and Statement of Commitments (SoC) which form the approval documentation for the Concept Plan Approval.
EPBC Approval	Approval (No. 2011/6229) granted under the EPBC Act on March 2014 by the Commonwealth Department of Environment for the development of the SIMTA Moorebank Intermodal Terminal Facility at Moorebank.
SIMTA Project	The SIMTA Moorebank Intermodal Terminal Facility at Moorebank as approved by the Concept Plan (MP_10_0913).
SIMTA site	Includes the former Defence National Storage and Distribution Centre (DNSDC) site, the land owned by SIMTA which is subject to the Concept Plan Approval (refer to Figure 1).
Rail Corridor	Area defined as the 'Rail Corridor' within the Concept Plan Approval. The rail link is also included within this area (refer to Figure 1).
Project site	Includes the SIMTA site and the Rail Corridor, i.e. the entire site area which was approved under the Concept Plan Approval (refer to Figure 1).
Stage 1 site	The subject of this EIS, the western part of the SIMTA site which includes all areas to be disturbed by the Stage 1 Proposal (including the Operational area and Indicative Construction area) (refer to Figure 1). This area does not include the Rail Corridor.
Construction area	Extent of construction works, namely areas to be disturbed during construction of the Stage 1 Proposal (refer to Figure 1).
Operational area	Extent of operational activities for the operation of the the Proposal (refer to Figure 1).
Proposal site	Includes the Stage 1 site and the Rail Corridor, i.e. the area for which approval (construction and operation) is sought within this EIS.
rail link	The rail link including the area on either side to be impacted by the construction works included in the Stage 1 Proposal.
Former DNSDC South	The land to the south of the operational footprint of the Intermodal Terminal, to the boundary fence of the former DNSDC.
Southern Boot Land	Commonwealth owned land to the south of Former DNSDC South, and to the north of the RailCorp Land (part of the Boot Land in the MIC proposal).
RailCorp Land	Lot 1 DP 825352 (part of the Rail Corridor) and owned by RailCorp.

Term	Description
The Proposal	Stage 1 of the SIMTA Moorebank Intermodal Terminal Facility including construction and operation of the intermodal terminal facility and rail link, i.e. all works and built form for which approval is sought in this EIS/Technical Report.
MIC Proposal	The development of an intermodal facility, associated commercial infrastructure (warehousing) and a rail link (3 options have been provided) to be located on the MIC site, for which an approval, under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979.* This proposal is currently under assessment by the Department of Planning and Environment.
MIC site	The former School of Military Engineering site to the immediate west of the SIMTA site, across Moorebank Avenue.

Figure 1: SIMTA Stage 1 Location Plan and key areas

Figure 1 Key terms and proposal locations

1.4 Proposal overview

The Proposal involves the construction and operation of the necessary infrastructure to support a container freight volume of 250,000 TEU (twenty-foot equivalent units) throughput per annum. Specifically, Stage 1 includes the following key components, which together comprise the intermodal terminal facility:

- Truck processing, holding and loading areas- entrance and exit from Moorebank Avenue.
- Rail loading and container storage areas – installation of four rail sidings with adjacent container storage area serviced by manual handling equipment initially and overhead gantry cranes progressively. .
- Administration facility and associated car parking- light vehicle access from Moorebank Avenue.
- The rail link – located within the Rail Corridor, including a connection to the intermodal terminal facility, traversing of Moorebank Avenue, Anzac Creek and Georges River and connection to the SSFL.
- Ancillary works- vegetation clearing, remediation, earth works, utilities installation/connection, signage and landscaping.

2.0 Project Description

2.1 Stage 1 Definition

The SIMTA site, including the Stage 1 site, is located approximately 27 kilometres south-west of the Sydney Central Business District (CBD) and approximately 26 kilometres west of Port Botany. The SIMTA site is situated within the Liverpool Local Government Area (LGA), in Sydney's South West Sub-Region, approximately 2.5 kilometres from the Liverpool City Centre.

The SIMTA site is located approximately 800 metres south of the intersection of Moorebank Avenue and the M5 Motorway. The M5 Motorway provides the main road link between the SIMTA site and the key employment and industrial areas within the West and South Western Sydney Sub-Regions. The M5 Motorway connects with the M7 Motorway to the west, providing access to the Greater Sydney Metropolitan Region and NSW road network. Similarly the M5 Motorway is the principal connection to Sydney's north and north-east via the Hume Highway.

The Southern Sydney Freight Line (SSFL) is located one kilometre to the west of the proposed SIMTA site. The SSFL is a 36 kilometre dedicated freight line between Macarthur and Chullora.

The SIMTA site was recently operating as the Defence National Storage and Distribution Centre (DNSDC) however Defence has recently relocated this operation and vacated the SIMTA site. The majority of land immediately surrounding the SIMTA site is owned and operated by the Commonwealth and comprises:

- School of Military Engineering (SME), on the western side of Moorebank Avenue directly adjacent to the SIMTA site.
- Holsworthy Military Reserve, to the south of the site on the southern side of the East Hills Passenger Railway Line.
- Commonwealth Residual Land, to the east between the SIMTA site and the Wattle Grove residential area.
- Defence National Storage and Distribution Centre (DNSDC), to the north and north east of the SIMTA site.

The site to immediate west of the SIMTA site which currently includes the SME is the subject of a Development Application (DA) (SSD-5066), under Part 4, Division 4.1 of the EP&A Act, for the development of an intermodal facility known as the Moorebank Intermodal Terminal Project (MIC Proposal). The EIS for the MIC Proposal has recently been prepared and publically exhibited on 8 October 2014 to 8 December 2014. A Preferred Project Report (PPR) is currently under preparation to respond to submissions received during public exhibition. The MIC Proposal has yet to be determined by the Department of Planning and Environment (DP&E).

A number of residential suburbs are located in proximity to the Stage 1 site, including:

- Wattle Grove, located approximately 600 metres from the Stage 1 site and 750 metres from the rail link to the east.
- Moorebank, located approximately 1,700 metres from the Stage 1 site and more than 2,700 metres from the rail link to the north.
- Casula, located approximately 1,100 metres from the Stage 1 site and 250 metres from the rail link to the west.
- Glenfield, located over 1,700 metres from the Stage 1 site and 750 metres from the rail link to the south-west.

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2.2 The Rail Link

The Rail Link consists of new rail construction between the IMT facility and the Southern Sydney Freight Line (SSFL). The line has been designed to accommodate the 650m long port shuttle trains from Port Botany and does not preclude its use by trains of up to 1800m length. A 650m long port shuttle train consists of a 600m long rake plus locomotive.

The proposed rail alignment has been designed in accordance with ARTC standards to a design speed of 60km/h, which is consistent with the design and operation speed of that section of the SSFL. The design speed was discussed and agreed with ARTC in order to allow an 1800m long train to enter the Rail Link at line speed from the SSFL, and be completely clear of the SSFL prior to the train slowing.

This request from ARTC is to ensure that the proposed SIMTA Rail Link does not preclude its potential for future use by interstate trains in order to access other facilities planned within the total precinct. Such train movements and facilities to cater for interstate trains do not form part of this Stage 1 SIMTA proposal.

The route from the SSFL is through land owned by Glenfield Waste Service Facility (GWS), then via a new bridge crossing over Georges River before entering the former School of Military Engineering (SME) land (MIC site). From the MIC site, the route enters a short section of the East Hills Rail Corridor to allow the rail link to pass under the Moorebank Avenue road overbridge. To the east of Moorebank Avenue, the Rail Link passes through land owned by RailCorp and the Commonwealth, and over Anzac Creek via a proposed culvert, prior to accessing the proposed IMT facility.

The State of NSW is currently in the process of vesting all RailCorp owned land to Transport for New South Wales. For the purpose of this Report, the land owner will continue to be referred to as RailCorp.

Reference to Sydney Trains for the purpose of this Report will be as the owner/operator of the railway and the assets within the RailCorp owned corridor.

Two connections are proposed to the SSFL, one facing south and one facing north. The southern connection will connect near the north end of the existing passing loop on the SSFL, and the northern connection will connect to the main line south of Casula Station.

These connections converge and will continue as dual tracks through the GWS land and across the proposed Georges River Bridge into MIC site. The Rail Link turns into a single track within the MIC site and continues as a single line under the Moorebank Avenue Bridge and into the proposed IMT facility.

Prior to the IMT facility, the single track turns out to form the 4 sidings that are proposed within the IMT.

Facing and trailing crossovers have been provided within the dual rail sections (just east of the Georges River) to facilitate access to both SSFL connections as well as enabling a train to wait for clearance to enter the SSFL, whilst maintaining a clear path for trains exiting the SSFL.

The layout of the Rail Link is shown in Figure 2 below.

Figure 2 Moorebank Stage 1 Rail Link – General Arrangement

The 4 rail sidings within the IMT facility are no less than 650m long to allow the port shuttle to sit completely within the IMT for loading and unloading. It is envisaged that up to 3 sidings will be actively used for the loading and unloading of trains with one siding as a dedicated escape path to allow a locomotive access and connect to the Port Botany end of the rake. The locomotive is manoeuvred from the head of the rake to the escape path via a locomotive shifter.

Detailed Design and Engineering Drawings have been prepared by AECOM Pty Ltd who is an accredited Asset Standards Authority Authorised Engineering Organisation. These drawings are collated in Appendix A of this Report.

The drawings include the following:

- Overall Plan of corridor showing
    - rail alignment and set-out,
    - rail formation extents,
    - rail corridor planning boundaries as identified in the Concept Approval,
    - cadastre boundaries with lot/DP numbers,
    - potential structural extents,
    - future East Hills Passenger Line quadruplication options
    - future Moorebank Station options
    - maintenance access to the SIMTA rail link and interaction with existing ARTC and Sydney Trains maintenance access
- Detail plans of northern and southern connections into the SSFL identifying ARTC and Sydney Trains assets within the corridor which may require protection or relocation as a part of the works,
- Detail plan of the route within the East Hills Railway Corridor identifying Sydney Trains assets within the corridor which may require protection or relocation,
- Typical sections at specific locations identifying the rail and formation in association with existing ground levels and Rail Corridor planning boundaries
- Detailed elevation within the East Hills Railway Corridor demonstrating clearances between the proposed freight line and the East Hills Railway Corridor.
- Detail of how a potential future quadruplication of the East Hills Line and future railway station at Moorebank would be able to be constructed with the SIMTA rail link in place.

2.3 Forecast Annual Train Movements

The Rail Access Report accompanying the Concept Plan Approval (MP10_0193) (Appendix H of the Concept Environmental Assessment) identified the number of train paths for various stages of TEU growth.

Table 3 Forecast Annual Train Movements

TEUs per annum	Train Paths/Direction/Day
200,000	**5**
500,000	**11**
800,000	**17**
1,000,000	**21**

Source: Concept Plan Approval (MP10_0193) Appendix H Rail Access Report Section 2.2 - Hyder, June, 2013

These numbers were based upon the following assumptions

- Usage is spread across 24 hours per day, 360 days of the year on reasonably regular headways;
- Each train would carry 73 TEU based upon 80% utilisation of a 600m long rake.

The level of TEUs to be processed under this application, 250,000 TEUs per annum, equates to 5 train paths / direction / day.

The provision of 5 train movements per day in each direction on the freight network from Port Botany, to service SIMTA for 250,000 TEU freight throughput per annum, has been subject to:

- Preliminary independent empirical analysis and advice commissioned by SIMTA
- Ongoing consultation with ARTC.

The preliminary independent empirical analysis concluded that there was currently likely to be up to 10 train paths available each way on the freight network between Port Botany and Moorebank and that ongoing planned upgrades of currently identified bottlenecks, will continue to provide additional paths within the network.

The results of ongoing consultation with ARTC have highlighted that there are train paths available to service the SIMTA site and reinforced an imperative to enter into relevant interface agreement(s) with ARTC to ensure that the required number of train paths are able to be secured. SIMTA and ARTC are currently working towards these agreements.

ARTC has identified a series of strategic network improvements which are planned to be implemented to address network limitations and to provide additional train paths, when demand requires. These works include the Botany Rail Link Project, which is currently under detailed planning and includes:

- Provision of a new crossing loop between Cabramatta and Warwick Farm;
- Extension of the Leightonfield Loop;
- duplication of the single track section between Cooks River and Botany Yard;
- duplication of track at Mascot;
- duplication of track between Botany yard and Mascot;
- Botany Yard alterations;
- a simultaneous entry loop south of Minto.

Further capacity reviews will be undertaken by ARTC and SIMTA as the 250,000 TEU's per annum cap is reviewed.

2.4 Train Turnaround Times

The Rail Access Report accompanying the Concept Plan Approval (MP10_0193) (Appendix H of the Concept Environmental Assessment) described train turnaround times expected with the IMT facility is operating at full capacity (i.e. based upon a forecast maximum demand of 1,000,000 TEUs per annum).

This was based upon 21-22 trains per day per direction spread across an entire 24 hour period and based upon using gantry systems to load and unload trains and trucks, and based upon the following assumptions:

- Each train would carry 73 TEU (based on 80% utilisation of 600 m train).
- Each gantry (or similar) has capacity to undertake approximately 30 moves per hour; equating to 49.5 TEU movements per hour (allowing for 20/40 ft. split).

At full operation, it is possible to achieve a 1 hour turn around for each train.

Initially the unloading and loading process for the Stage 1 Proposal would be undertaken using reach stackers or container forklifts. The Stage 1 site would contain two types of gantry cranes to undertake different functions.

It is estimated that the turnaround time to strip a 600m train using reach stackers and manually processes ready for return to Port Botany is in the order of 2.5 hours. However the timing of the train movements for the 250,000 TEUs per year, is potentially more influenced by operations at the train's return destination and available windows within the freight train network, than by ensuring that train turnaround time at Moorebank is minimised.

2.5 Rail Operation

The rail operation envisaged for Stage 1 is as follows:

- A train arrives to the IMT Facility via the SSFL and enters one of the available working roads in the proposed IMT.
- The locomotive is detached and shifted using a locomotive shifter to an empty road.

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- The locomotive is shunted back to the entry to the yard and is attached to another set of wagons that is ready to depart.
- The locomotive attaches to the second set of wagons and departs the proposed IMT when a path is available.
- The first set of wagons is unloaded and re-loaded using reach stackers, independent of the locomotive.

In this fashion, the operation minimises the use of locomotives and keeps fuel consumption and cost to a minimum.

3.0 Access Requirements

3.1 ARTC Corridor

The Rail Access Report accompanying the Concept Plan Approval (MP10_0193) (Appendix H of the Environmental Assessment) described a number of SSFL network upgrades needed to accommodate the 21 train paths per day in each direction, for the ultimate throughput of 1,000,000 TEUs.

For these Stage 1 works, ARTC has indicated that the SSFL currently has sufficient train paths available each way and therefore sufficient capacity for the additional daily train movements on the SSFL associated with the transport of 250,000 TEU's per annum. Correspondence from ARTC is located in Appendix C of this Report. The reservation of train paths to service the SIMTA site will be subject to SIMTA entering into an interface agreement with ARTC.

3.2 RailCorp Corridor

Rail access to and from the SIMTA site has been reviewed since the Concept Plan Approval (MP10_0193), particularly with regard to the use of the RailCorp corridor, and in response to RailCorp's queries.

SIMTA has since been able to value engineer an option mitigating a number of constraints to works within RailCorp land (to the immediate north of the East Hills Railway Corridor). This design reflects a new route which is predominantly located within Commonwealth lands, the MIC site and the Glenfield Waste Facility, whilst maintaining its position inside the rail corridor identified within the Concept Plan Approval (MP 10 0193)l.

The Concept Plan route through the East Hills Railway Corridor influenced the rail alignment through the Glenfield Waste Services site and the Georges River Bridge.

Further, the use of the East Hills Railway Corridor for the entire length between Georges River and Moorebank Avenue Overbridge resulted in impacts to RailCorp, and other third party assets. The impacted RailCorp assets included a signal hut and signalling within the East Hills Railway Corridor.

A short section of the proposed Rail Link, is still required to be within the East Hills Railway Corridor to enable the line to pass under the existing Moorebank Avenue Overbridge. This improves the overall design and functionality of this crossing and also ensures that significant impacts on Moorebank Ave are minimised.

The shorter length of the route within the East Hills Railway Corridor also represents a significant reduction in impacts on RailCorp owned assets within the corridor. (Refer to Stage 1 Utilities Strategy Report which forms part of this State Significant Development Environmental Assessment).

Overall, the considerable reduction of the length of the Rail Link to be included in the East Hills Railway Corridor represents an improved outcome for RailCorp and results in the a decrease in potential impacts.

In addition to this, the Stage 1 Rail Link does not preclude future access to other facilities planned within the total precinct, and subject to approval, it is envisaged that two developments would be able to operate complimentary within this Rail Link proposed within minimum impact on the East Hills Railway Corridor.

3.3 Maintenance Access within the SIMTA Rail Link Corridor

Maintenance access along the SIMTA Rail Link will be provided for

- the SIMTA Rail Link operators to maintain the track and formation
- ARTC to maintain signalling within the Rail Link which will be under the direct operation of ARTC

Drawings RA0070 and 71 in Appendix A, shows that maintenance access for vehicles is provided for the entire length of the Rail Link except where the Rail Link runs under the Moorebank Avenue overbridge, where pedestrian access only can be provided.

Maintenance access is divided into three section with street access as follows:

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3.3.1 West of Georges River

The section west of Georges River runs from the Georges River Bridge to the SSFL through the GWS facility.

This section will need to be accessed by both the SIMTA Rail Link operators and ARTC to maintain their signals.

Street access will be from Cambridge Avenue and through the GWS main entry, similar to the arrangement RailCorp has to access the section of the East Hills Rail Corridor which runs through the GWS facility.

The main access track will be located on the eastern side of the Rail Link formation, which will facilitate ARTC access. A level area will be provided at the cross over to facilitate its future maintenance and improvements.

An informal asphalt surfaced level crossing will be provided in this area to allow vehicles to access the southern connection.

West of the Georges River the SIMTA maintenance access and RailCorp maintenance access are completely independent of each other.

3.3.2 East of Georges River

The section east of Georges River, runs from the Georges River Bridge to Moorebank Avenue.

This section will need to be accessed by both the SIMTA Rail Link operators and ARTC to maintain their signals.

Street access will be from Moorebank Avenue, with the opportunity for future access options through MIC site. Pedestrian (restricted personnel) access is available under the Moorebank Avenue Overbridge.

The main access track will be located on the northern side of the corridor, with opportunity to access under the new Georges River Bridge via an existing access track.

East of the Georges River the SIMTA maintenance access and RailCorp maintenance access are completely independent of each other..

3.3.3 East of Moorebank Avenue

The section east of Moorebank Avenue runs from the Overbridge to the SIMTA site.

This section will need to be accessed by the SIMTA Rail Link operators only as ARTC signals are located west of the Moorebank Avenue Overbridge. Vehicular access will be from the SIMTA site to the Anzac Creek culvert and from Moorebank Avenue to enable vehicular access between Moorebank Avenue and the Anzac Creek culvert crossing. Pedestrian access will be available over the Anzac Creek culvert.

The only interaction between the SIMTA maintenance access and RailCorp maintenance access east of Moorebank Avenue, is the requirement to provide an informal asphalt surfaced level crossing and safety warning signals to allow RailCorp vehicles to cross the SIMTA Rail Link to access their maintenance track from the current Moorebank Avenue access track.

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4.0 Stakeholder Interaction and Project Integration

4.1 ARTC Consultation

Meetings have been held between ARTC, QUBE, Tactical Group and AECOM as a part of the Stage 1 consultation process to discuss the design and operation of the SSFL and the SIMTA Rail Link.

As a result of these meetings, and notwithstanding advice received as a part of the consultation for the Concept Plan Approval (MP10_0193), ARTC has expressed their preference for changes to the design of the northern connection to the SSFL.

As an outcome of this consultation, the design has been refined, which results in improvements to the efficiency of the operation of the SSFL, and increase in SSFL capacity. These changes incorporate the following:

- Moving of the northern connection point further to the north to remove any requirement to extend the existing Glenfield Passing Loop and reconfigure the existing signals, to allow the opportunity for simultaneous entry and exit from the passing loop.

  This is achieved by providing a full 300m clear overlap between the signals at the north end of the Passing Loop, and the entry to the north connection.

  By providing the overlap, simultaneous entry can be achieved, allowing trains from the south to continue moving northwards as a train from the north is entering the northern connection. This provides significant operational flexibility and capacity for ARTC.

  This functionality is currently not achievable under the scheme proposed under the current Concept Plan Approval (MP10_0193). Without this functionality, trains from the south would not be able to enter either the passing loop or main line north of Glenfield Station (the southern end of the loop) until a train from north had entered the north connection and cleared the main line.
- Provide a minimum 60kph operational speed for the northern connection. This will allow a 650m train to exit the SSFL from the north at speed and be completely clear of the SSFL prior to slowing. This functionality will also be available for longer trains. The operational speed of the southern connection is unchanged from that defined in the Concept Plan Approval (MP10_0193), at 35kph.
- Provide 2 roads on the western side of the George's River. These two roads provide functional efficiencies for trains entering and leaving the SIMTA Rail Link, and enables trains to be parked closer to the SSFL whilst awaiting for path clearance to both SSFL and the IMT.

The designs for the two connections to the SSFL as developed in conjunction with ARTC are summarised as follows:

4.1.1 Southern Connection - Geometry

The geometry of the SIMTA southern connection to the SSFL as documented for the Concept Plan Approval (MP10_0193) remains unchanged from that described in the Concept Plan Approval (MP10_0193).

The key design feature of the southern connection geometry is the adoption of a 160m curve with an operating speed of 35km/h. The connection point is located on the Glenfield Passing Loop and does not adversely affect the operations of the passing loop.

4.1.2 Northern Connection - Geometry

The design as presented in the Concept Plan Approval (MP10_0193) had the SIMTA northern connection coming off the Glenfield Passing Loop with a standard left hand R500:12 tangential turn-out with 60 kph train speed.

This resulted in the existing Glenfield Passing Loop line being extended north approximately 228m due to signalling overlaps and stopping distances requirements, with an additional 81m extended southwards. The extension of the loop by 81m to the south may have resulted in significant impact upon existing RailCorp assets.

The revised design for this Stage 1 Proposal has moved the standard turnout approximately 60m to the north of that proposed in the Concept Plan Approval (MP10_0193). This allows the signals and the existing loop to remain as existing and provides operational advantages by creating the 300m long overlap as discussed above.

The operating speed remains at 60kph from the clearance point of the SSFL. With the realignment of the Georges River bridge to reflect the proposed rail alignment through the MIC site a larger radius can be achieved. This larger radius will allow an operational speed of 60kph over the bridge in line with ARTC requirements.

The 60kph operational speed achieved from the SSFL connection, through the Glenfield Waste Facility and over the Georges River Bridge, will allow trains of up to 1800m long to exit the SSFL at speed (60kph) and be completely clear of the SSFL prior to slowing, thus achieving ARTC's preferred outcome.

It is understood that the section of the SSFL south of Casula Station, does not currently have vehicular access for maintenance, and maintenance access is only available by walking teams from Casula Station. When establishing the design of the Northern Connection, maintenance access is considered to be a key design component in establishing the corridor.

The section of the SSFL corridor where the northern connection is being made is located adjacent to a narrow section of riparian corridor with a steep embankment to the Georges River. Consequently there is little opportunity to widen the existing corridor without encroaching over the embankment and removing vegetation, to provide for a higher level of maintenance access than what currently exists in this section.

The design of the Northern Connection maintains the existing capability to walking maintenance crews from Casula Station.

4.2 RailCorp/TfNSW Consultation

QUBE and Tactical Group have an ongoing dialogue with RailCorp and TfNSW, particularly with respect to the proposed sections of the rail alignment through RailCorp owned land.

The rail alignment enters RailCorp land at the following locations:

- East Hills Railway Corridor to pass under the Moorebank Avenue Overbridge.
- Main Southern Railway Corridor at the connections into the SSFL
- A portion of land to the east of Moorebank Avenue and bounded by Moorebank Avenue and the East Hills Railway Corridor

Enabling works are required within the East Hills Railway Corridor and these works would include:

- Relocation of services, including potable water, sewer, telecommunications and gas.
- Protection works including an Ethane Gas pipeline and a 750mm diameter Sydney Water rising main
- Relocation of signalling cables,
- Establishment of a protection barrier within the East Hills Railway corridor to allow for the concurrent construction of the rail link and operation of the East Hills Railway corridor.
- Modifications to Moorebank Avenue Overbridge abutment

It should be noted that the signalling hut, overhead wiring structures and power poles within the East Hills Railway Corridor identified in the Concept Plan Approval (MP10_0193) will now no longer require relocation.

The SIMTA Rail Link has been designed with the following considerations for ongoing and future operation of the East Hills Corridor:

- Ensure and maintain a continued and safe level of maintenance access roads;
- Maintain and demonstrate the ability to accommodate for potential future quadruplication of RailCorp's existing East Hills Railway Corridor;
- Demonstrate the feasibility of the construction of a future Moorebank Railway station and demonstrate how priority access can be maintained to this site.

4.2.1 RailCorp Maintenance Access within the East Hill Rail Corridor

The current RailCorp maintenance access roads are located on the up side and down side of the East Hills Rail Corridor.

The SIMTA Rail Link will only enter the East Hills Rail Corridor at the Moorebank Avenue Overbridge to the north of the existing up side of the maintenance access road.

The existing up line maintenance access track is currently located between a small retaining wall and the bridge supporting column under the northern span of the overbridge. This small retaining wall will be removed as a part of the works to remove the spill through embankment.

Survey shows that the northern span of the bridge has up to 12.4m clearance between faces of the column supports and the northern abutment. This clearance allows for a standard 4.3m to be provided between the centreline of the SIMTA Rail and the northern abutment, and over 8m between the centreline of the SIMTA Rail Link and the column support. This is sufficient to maintain a safe maintenance vehicle access track.

Figure 3 below shows the typical section through the Moorebank Avenue Overbridge

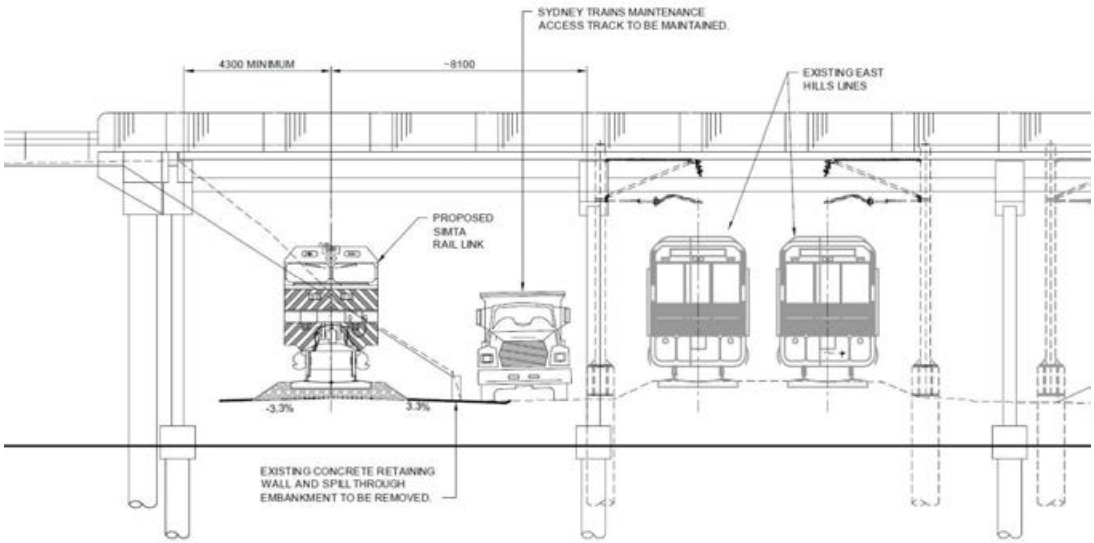


Figure 3 Moorebank Ave Overbridge showing Rail Link with Sydney Trains maintenance vehicle

RailCorp vehicles can currently access the East Hills Rail Corridor from Moorebank Avenue via a gate located approximately 300m north of the East Hills Rail Corridor. The gate and unsealed access track is on the eastern side of the road formation and runs within the road reserve at the base of the embankment.

To maintain this road access from the East Hills Rail Corridor to Moorebank Avenue, an informal asphalt level crossing will be established across the SIMTA Rail Link. This level crossing will be provided with warning signals which will identify to the level crossing user, the presence of approaching trains. Figure 4 shows the existing track from Moorebank Avenue and an indicative location of the proposed level crossing.

The details of this arrangement will be discussed and designed in association with RailCorp safety and maintenance personnel.

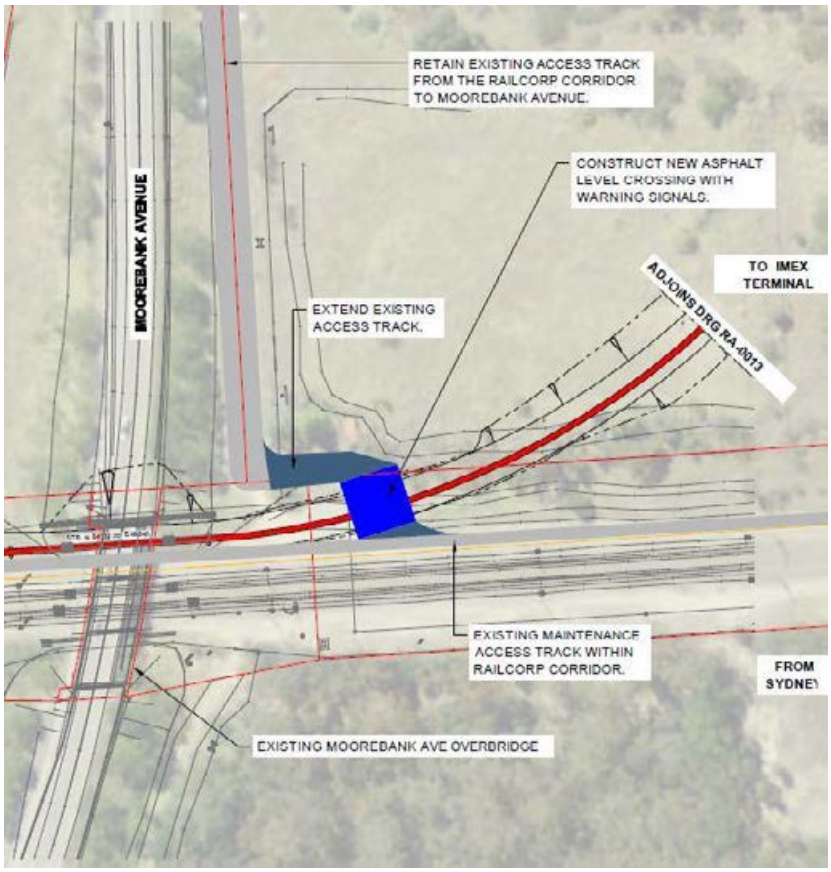


Figure 4 Indicative location of level crossing to maintenance access track

4.2.2 Future East Hills Line Quadruplication and Moorebank Station

The use of the East Hills Rail Corridor at Moorebank Avenue Overbridge by the SIMTA Rail Link does not preclude the ability to construct a future quadruplication of the East Hills Line and the establishment of a future Moorebank Station east of Moorebank Avenue with priority access by Sydney Trains to the Moorebank Station at all times.

There are two options which could be used to quadruplicate the East Hills Line, being:

- Maintain the existing Main East Hills Lines through the central span and build new up and down Relief Lines through the northern and southern span respectively. This arrangement would easily allow the construction of a new Moorebank Station immediately to the east of Moorebank Avenue Overbridge and would allow the construction without significant disruption to the operation of the existing East Hills lines,
- Build two new lines through the southern span. With this option it would be difficult to place a new Moorebank Station close to the Overbridge and would result in access problems and greater disruption to the existing network operation during construction.

The SIMTA Rail Link is proposed to be placed within the northern span of the road overbridge, with the spill through from the abutment removed and retained through the construction of a contiguous pile wall behind the bridge abutment.

The survey shows that the northern span has a clear span of 12.4m, between the face of the abutment and the face of the supporting bridge column. This will be sufficient to allow for

- a minimum dimension of 4.3m between the centreline of the SIMTA Rail Link and the face of abutment columns

- a minimum dimension of 4.5m between centreline of the SIMTA Rail Link and the centreline of the northern quadruplicated passenger line,
- a minimum dimension of 3.5m between the centreline of the northern quadruplicated passenger line and the face of the supporting bridge column.

These dimensions comply with accepted RailCorp and ARTC standards.

A concept design has been developed to show how the East Hills Line can be quadruplicated and a future Moorebank Station could be incorporated into the quadruplication. The Moorebank Station concept shows island platforms between the up and down main and relief lines. This concept is shown on Drawing RA0080 in Appendix A of this Report.

Priority access to Moorebank Station can be made via a footbridge from within the RailCorp land adjacent to Moorebank Avenue. The remainder of this RailCorp land could be used for carparking associated with Moorebank Station with future street access, loosely following the existing maintenance track. The actual location of such a road would need to be formalised with adjoining land owners.

4.2.3 Maintenance Access within the East Hill Rail Corridor after Quadruplication

Continuous maintenance access for vehicles on the southern side of the corridor can be located within the southern span, shared with the down relief line, after removal of the spill through embankment, similar to what is proposed for the northern span.

For the northern side of the corridor, the up relief line will be located within the northern bridge span, shared with the SIMTA Rail Link. The up relief line would use the allocation currently used as maintenance access and therefore vehicle access would not be able to be achieved under the bridge on the northern side of the corridor.

As described earlier an access track and gates currently exists on the eastern side of Moorebank Avenue. This track provides street access from Moorebank Avenue to the maintenance track. An informal level crossing with warning signals is proposed to provide access over the SIMTA Rail Link.

To maintain contiguous maintenance vehicle access after the quadruplication of the tracks, a second Moorebank Avenue street access track with gates will need to be established on the southern side of Moorebank Avenue. A second informal level crossing with signals would need to be established over the SIMTA Rail Link.

Drawing RA0080 in Appendix A following shows the proposed quadruplication of the East Hills Railway Line, Moorebank Station and maintenance access arrangement.

5.0 Infrastructure Design Overview

Through ongoing consultation with relevant authorities and asset owners, the refinement in the design for the Rail Link has resulted in:

- Change in the route location between Georges River and Moorebank Avenue Overbridge from being within the East Hills Railway Corridor to being predominantly within the MIC site;
- Construction of two tracks on the GWS site from day 1, instead of the second track being constructed later
- Change in the location of the Georges River Bridge to reflect the approach required for the realignment of the Rail Link east of the Georges River and to not preclude the use of this line by larger trains exiting the SSFL at speed,
- A refinement of the northern connection design which shifts the connection point approximately 60m to the north and avoids a requirement to extend the Glenfield Passing Loop to the north and south and the requirement for significant works to existing Railcorp assets (particularly to the south of the existing Glenfield Passing Loop);
- A shift in the alignment through the Glenfield Waste Facility to accommodate dual tracks and a maintenance track whilst avoiding any incurrence over the Georges River Riparian Corridor boundary identified in the Concept Plan Approval (MP10_0193).

The current rail alignment and connection to the SSFL proposed to service the SIMTA site, is a complimentary solution which provides functionality for longer trains.

Consultation with ARTC, RailCorp, Sydney Trains and TfNSW will continue in order to obtain relevant approvals.

The Rail Access Report accompanying the Concept Plan Approval (MP10_0193) (Appendix H of the Concept Environmental Assessment) provided an overview of a number of key sectors of the rail link. In a similar approach, the following Table 4 compares the designs to demonstrate consistency between the Concept Plan Approval (MP10_0193) design and that proposed for Stage 1, and how the Stage 1 design provides a superior outcome and achieves the requirements defined through Authority and asset owner consultation.

Table 4 Comparison between Indicative Rail Link Proposed under the Concept Plan Approval (MP10_0193) and this SSD Application

Section	Concept Plan Approval (MP10_0193) Design	Stage 1 Application Design
SSFL Loop Line Modification	The SIMTA proposal to connect the rail spur with SSFL to the north and to the south will impact on the loop operation; therefore it was proposed to undertake a modification (extension) to the existing loop. This will result in the length of the passing loop measured from the clearance point of the northern turnout to the clearance point of the southern turnout to be approximately 2200m, as indicated by ARTC as the minimum to be provided. The proposed SIMTA connections have impacted upon the original SSFL loop arrangement and as such the following changes to the loop have been made: The northern turnout has been relocated approximately 230m towards Casula Station on a curved track; therefore the turnout becomes a special turnout, similar flexure R1200:18.5 tangential turnout with the points at approximately 39.190 km. The southern standard right hand turnout on the current SSFL loop has been relocated further towards Glenfield Station by approximately 94m but has been specified as a left hand turnout. The reason that this left hand turn out has been changed from the typically provided right hand turn out to a left hand turnout is to avoid any significant impact to the communication building in the vicinity of the points. The provision of this turnout was the subject of a number of design iterations and discussions with ARTC which resulted in no objections from ARTC. There will be minor alignment adjustments on the SSFL main line on both ends of the current passing loop due to proposed extensions. With these changes, the proposed SSFL rail alignment will not encroach onto lands not owned by RailCorp or ARTC The track will be constructed in accordance with ARTC standards to the necessary class to suit the proposed freight operations and the design.	Through consultation with ARTC, they have indicated that their preferred design outcome is to extend the connection point approximately 60m to the north, which means that there will be no impact on the operations of the loop and the signalling and hence there will be no requirement to extend the existing loop and modify the signals

Section	Concept Plan Approval (MP10_0193) Design	Stage 1 Application Design
SIMTA North and South Connections	SIMTA proposed two connections to the SSFL, namely a northern connection running from the turnout on the SSFL loop line at approximate kilometrage of 39.390 km or (0.00km along the SIMTA alignment) via the Glenfield Waste Facility to the turnout on the proposed Georges River bridge at approximately 1.131 km and a southern connection running from the turnout on the SSFL loop line at approximately 39.880km or (0.00km via SIMTA southern connection turnout) via the Glenfield Waste Facility to the turnout on Georges River bridge as well. The north connection uses a standard left hand R500:12 tangential turnout for 60 kph speed and the southern connection standard right hand R190:7 tangential turnout for 35 kph speed.	Two connections to the SSFL are still proposed. The southern connection remains unchanged. The northern connection point has been moved approximately 60m to the north The north connection uses a special tangential turnout R1200:18.5 for 60 kph speed and the southern connection uses a standard right hand R190:7 tangential turnout for 35 kph speed. The maintenance access track on the SSFL is maintained through the northern connection, with a proposed level crossing at a point to be established, over the Rail Link.
Alignment over Glenfield Waste Facility area	The design speed of the alignment on the southern SIMTA connection is 35 kph with a minimum horizontal curve radius of 160m. The length of track that can permit 35kph speed from SCP (Safety Clearance Point) of SSFL turnout connection to the safety point of the special turnout on the bridge is approximately 882m, the required stopping distance for a train speed of 35 kph is approximately 851m. The design speed of the alignment of the northern connection is 60 kph with minimum horizontal curve radius of approximately 350m. The length of track, that can permit 60kph speed from SCP (Safety Clearance Point) of SSFL turnout along the northern SIMTA connection is approximately 978m, the required stopping distance for a 650m long freight train reducing the speed from 60 kph to 45 kph is approximately 975m.	The alignment of the over the Glenfield Waste Facility is driven by the route east of Georges River now being through the School of Military Engineering and not through the East Hills Rail Corridor. This allows the horizontal radius to the approach to Georges River Bridge to be increased to minimum 215m, which allows an operational speed of 60kph. Where the north and south connections merge, the line continues as dual track with a crossover using standard R500:15 turnouts. A maintenance access track is maintained on the eastern side of the formation with the edge of the rail corridor forming the edge of the maintenance access track. The whole formation is wholly contained within the Rail Corridor. Geotechnical investigations undertaken within the Glenfield Waste Facility shows that an approximate length of 600m of rail formation will need to be supported by a retaining structure. The form and extent of the structure will be subject to targeted geotechnical investigations, stability modelling and detailed structural analysis and design

Section	Concept Plan Approval (MP10_0193) Design	Stage 1 Application Design
Alignment over Georges River Bridge	The design speed of SIMTA rail alignment over the Georges River Bridge is proposed to be 45 kph and it is generally single a track with some portion on the western side of the bridge, near the proposed special turnout, as double track. The proposed turnout on the bridge is a special tangential similar flexure outside based on R800:15 standard turnout. The reason that the turnout is on the bridge is twofold, the required stopping distance for trains travelling along the northern connection at 60 kph, reducing the speed to 45 kph just before the bridge and the property boundaries issue at approximately 1.150km where the rail corridor is not wide enough to allow for two tracks.	The design speed of the rail alignment over the Georges River Bridge is proposed to be 60kph. Dual tracks are maintained
Alignment within East Hills Rail Corridor	SIMTA spur line within the East Hills Line corridor is single track with very large radius following the alignment of the existing Up Main. The current RailCorp maintenance access road is located on the up side of the corridor and can serve both the existing Up and Down East Hills Main lines as well as the SIMTA Rail Spur Line. In the event of future RailCorp (Sydney Trains) East Hills Line quadruplication then the existing access road may be used for the future Up Relief track, therefore the existing access road could be relocated on the down side of the corridor. In undertaking this assessment we have allowed for the proposed rail line servicing the SIMTA site to be placed in the land directly north of the East Hills line and provided concept sketches (Appendix B) to satisfy that the quadruplication can be catered for to the south of the current East Hills line. An existing signalling hut is on the up side of the corridor conflicting with the proposed SIMTA rail spur line therefore it may be required to relocate this hut within the rail corridor.	The alignment is modified within the East Hills Corridor to pass under the 33kV AC High Voltage Line and to miss the signal hut. An Ethane gas pipeline and a 750mm diameter Sydney Water rising main will require protection. Access gates and fencing will still need to be agreed to provide RailCorp (Sydney Trains) with their required access.

Section	Concept Plan Approval (MP10_0193) Design	Stage 1 Application Design
Alignment within Commonwealth Land	The rail corridor going east from the Moorebank Avenue and then north from the existing East Hills Lines up to the SIMTA site is on the Commonwealth land. The alignment in this area is designed for 35 kph speed with minimum horizontal curve radius of 200m	Once the rail corridor is clear of the Moorebank Avenue Overbridge, the rail alignment turns north towards the SIMTA site. The rail alignment passes through a short section of RailCorp land before entering Commonwealth Land, crossing Anzac Creek and turning out to form the 4 roads within the SIMTA site.

6.0 Work within the Glenfield Waste Facility

The Rail Link is proposed to run along the eastern boundary of the Glenfield Waste Services Facility (GWS).

The design of the Rail Link support through the GWS including detailed earthworks stability modelling and structural design will require further targeted geotechnical investigation. The results of this investigation will allow the designers to undertake detailed geotechnical modelling of existing and proposed conditions to define the most efficient engineering solution.

The outcome of this investigation will then be subject to a rigorous value engineering process to identify an engineering solution which will be a combination of earthworks and structures such as insitu concrete retaining walls or reinforced soil walls to maintain the Rail Link within the corridor and minimise encroachment into the GWS site.

Figure 5 shows the rail route through the waste facility and the existing pollution control and monitoring systems that have been installed by GWS as a part of their EPA licensing commitments.

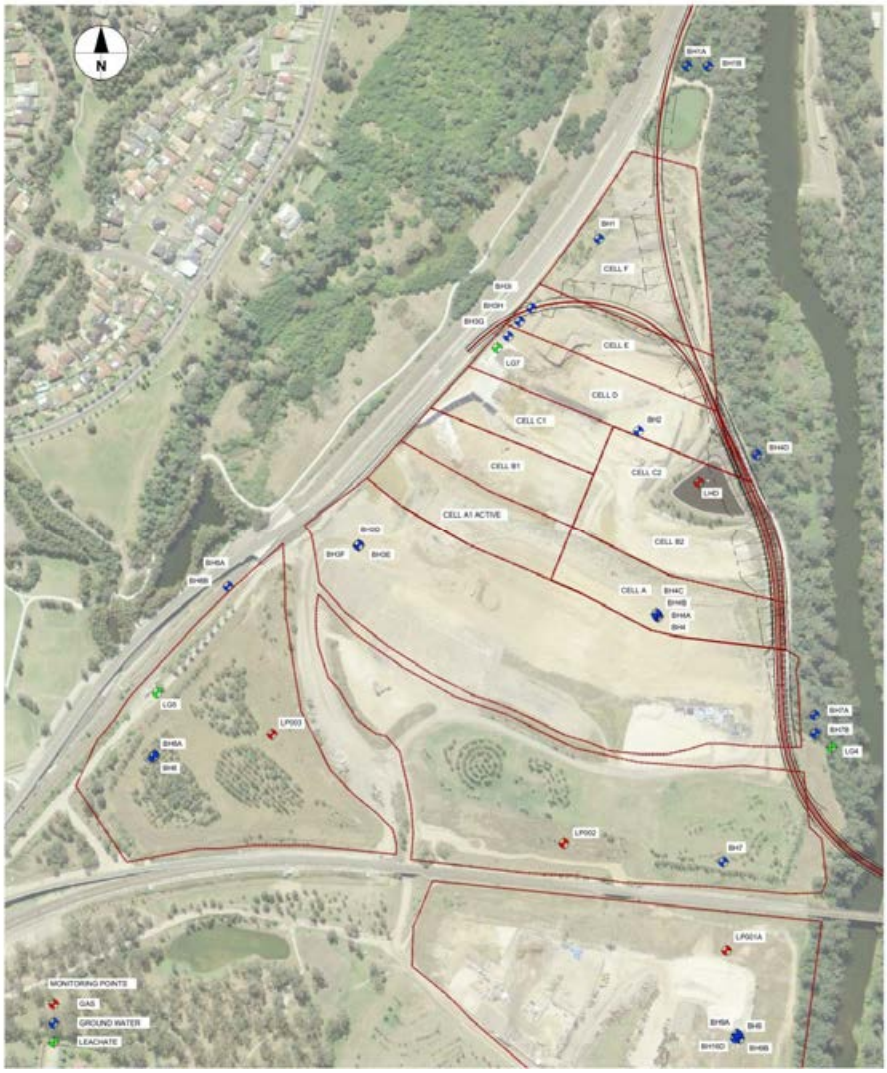


Figure 5 Glenfield Waste Facility showing existing pollution control and monitoring systems

(Information sourced from geo-environmental G10030GLE Figures 1 and 2 – April 2013, Consulting Earth Scientists Report CES031101-LAK – February, 2007 and UAV Geomatics Survey Reference GW14002 dated 30 January, 2015)

Figure 5 shows the locations of gas monitoring wells (red), groundwater (blue), leachate (green) and stormwater monitoring points (cross), in relation to the proposed Rail Link. It also shows the location of the existing operational leachate collection basin and the stormwater collection basins.

The leachate basin collects and stores leachate from the existing cells and the stormwater basin collects surface water that falls into the pit. Water from both of these basins is either lost through evaporation or is collected and pumped to be used as part of GWS operations.

The route shows that the proposed Rail Link will impact some of the monitoring wells and points and the two basins.

6.1 Treatment of Monitoring Wells

Figure 5 shows that there are potentially 7 monitoring wells and points which may be impacted by construction works. During the course of design development, some of these may be demonstrated to be clear of impact, while there may be others which when fully surveyed may be within the influence of the construction works.

As a part of this ongoing design development, the following process will be undertaken:

- Liaise with GWS to identify all current monitoring wells and points required for the operation of their EPA license;
- Liaise with EPA through GWS to inform them of the works being undertaken and the potential wells and points which may be impacted by the construction of the Rail Link;
- Identify all monitoring wells and points which may fall within the footprint of the Rail Link or within construction activity areas such as haul roads and compounds;
- Locate, survey and inspect the condition of identified monitoring wells and points with GWS and EPA (if required);
- Agree with GWS and EPA a suitable location outside of the construction footprint of all monitoring wells and points which may be impacted by construction activities. It will need to be demonstrated that each of these new locations will be able to be easily and safely accessed at all times during and after construction activities;
- Re-establish each of the agreed monitoring points and wells with suitable access tracks

6.2 Stormwater and Leachate Basins

6.2.1 Stormwater Basin

The alignment of the northern connection from the Rail Link to the SSFL intersects with a corner of the existing stormwater basin located at the north eastern corner of GWS, and will need to be reconfigured.

The basin is currently proposed to remain in in its current location and reshaped to provide an equivalent facility and is subject to further consultation with GWS and EPA.

The reconfiguration process will involve the following:

- Liaise with GWS and EPA with regards to their requirements for the reconfiguration of the basin
- Undertake specifically targeted testing of water and sediments within the existing basin;
- Undertake specifically targeted geotechnical and contamination testing under the footprint of the new basin extension, which may include potential for settlement and embankment stability, material porosity and potential for acid sulphates;
- From the results of the testing and in accordance with the current Remedial Action Plan (RAP), complete a specific defining the works required to
    - safely decommission the existing basin
    - the removal/reuse options for the sediments within the basin under the footprint of the northern connection,
    - recommendations as to the design of the new basin and

- establishment of new monitoring wells and points;

- Design and document the reconfigured basin incorporating any requirements for lining, overflows, pumping facilities, access arrangements over the railway;
- Construct the new basin and decommission the existing in accordance the RAP.

6.2.2 Leachate Basin

The existing leachate basin is located midway along the length of the Rail Link within the GWS site. It is located immediately adjacent to an existing cut embankment. The Rail Link is proposed to be constructed along this embankment.

It is intended for the leachate basin to remain in place, however this will be subject to ongoing design development and geotechnical assessment of the stability of the embankment and any supporting structure for the Rail Link.

It is possible that the leachate basin will require relocation if the geotechnical assessment determine that the conditions are unsuitable. A potential site for the relocation of the leachate pond is within the triangle formed by the SSFL and the Northern and Southern Connection. In this situation the following relocation process would be involved:

- Liaise with GWS and EPA with regards to their requirements for the relocation of the leachate basin and the infrastructure associated with the collection of the leachate
- Undertake specifically targeted testing of water and sediments within the existing basin;
- Undertake specifically targeted geotechnical and contamination testing under the footprint of the new basin location, which may include potential for settlement and embankment stability, material porosity and potential for acid sulphates;
- From the results of the testing, complete a specific Remedial Action Plan (RAP) defining the works required to
    - safely decommission the existing basin
    - the removal/reuse options for the sediments within the basin,
    - recommendations as to the design for the new basin
    - establishment of new monitoring wells and points;
    - reuse or disposal options for the existing lining
- Design and document the new basin incorporating any requirements for lining, overflows, pumping facilities, access arrangements;
- Submit RAP to EPA for their assessment of the proposal's compliance to the current licensing conditions for GWS and for approval and conditions of the relocation and monitoring process;
- Construct the new basin and decommission the existing in accordance the RAP and EPA conditions of approval.

6.3 Landfill Barrier System

Figure 5 shows the approximate locations of existing and proposed landfill cells.

The figure shows there is one completed cell in the vicinity of the proposed rail link. It is understood that this cell are lined and it is intended that the construction of the Rail Link will not disturb or compromise the integrity of the lining.

There is currently a cell which is being lined and filled and a number of areas identified as future cells.

The Rail Link will run along the edge of these completed and proposed cells. The Rail Link formation is proposed to be a combination of earthworks and structure, and will be subject to an intensive geotechnical assessment and design. It is not anticipated that any structural solution will involve piling within the footprint of any completed lined cell.

For the completed cell it will be critical to identify and survey its actual edge. This information will be incorporated into the geotechnical design in order to achieve an outcome which does not involve disturbance to the cell lining.

For the cell which is currently being filled, the progress will be assessed against the preferred design outcome discussed with GWS, and a geotechnically based outcome will be agreed with GWS which will allow the construction of the Rail Link without compromising any existing lining.

For the future cells the location of the edge of the planned cells will be discussed with GWS in association with the preferred design outcome and if required changes to the extent of the cells will be agreed.

Moorebank Intermodal Terminal Facility - Stage 1

Appendix A
Detailed Design Drawings

ISO A1 594mm x 841mm

SIMTA INTERMODEL

TERMINAL FACILITY STAGE 1 - CONCEPT DESIGN

DRAWING LIST

GENERAL

GE-0001 COVER SHEET AND DRAWING LIST

RAIL DESIGN

RA-0001 GENERAL ARRANGEMENT PLAN

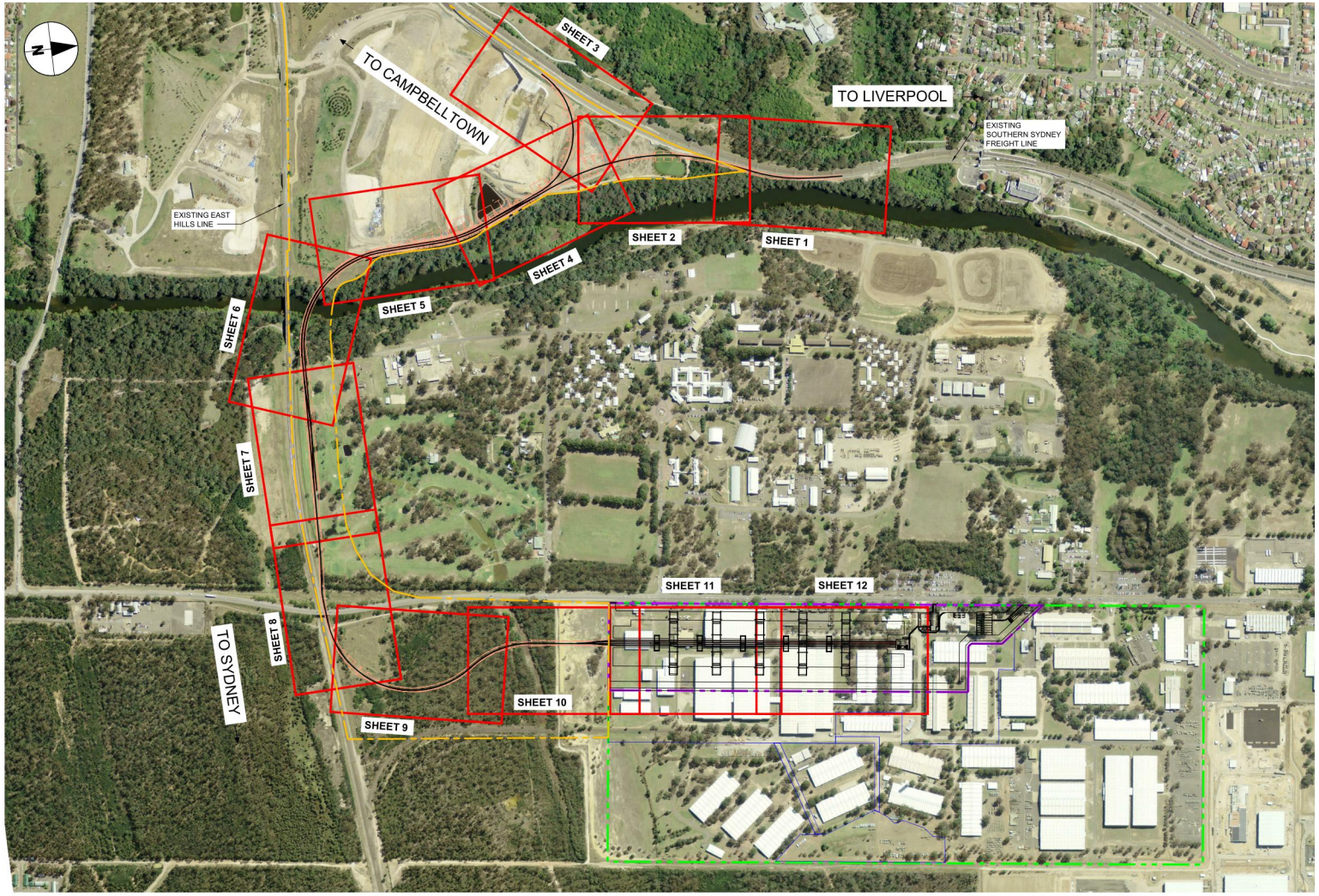
RA-0005 RAIL SETOUT PLAN SHEET 1
RA-0006 RAIL SETOUT PLAN SHEET 2
RA-0007 RAIL SETOUT PLAN SHEET 3
RA-0008 RAIL SETOUT PLAN SHEET 4
RA-0009 RAIL SETOUT PLAN SHEET 5
RA-0010 RAIL SETOUT PLAN SHEET 6
RA-0011 RAIL SETOUT PLAN SHEET 7
RA-0012 RAIL SETOUT PLAN SHEET 8
RA-0013 RAIL SETOUT PLAN SHEET 9
RA-0014 RAIL SETOUT PLAN SHEET 10
RA-0015 RAIL SETOUT PLAN SHEET 11
RA-0016 RAIL SETOUT PLAN SHEET 12

RA-0020 NORTHERN LINE VERTICAL ALIGNMENT SHEET 1
RA-0021 NORTHERN LINE VERTICAL ALIGNMENT SHEET 2
RA-0022 NORTHERN LINE VERTICAL ALIGNMENT SHEET 3

RA-0030 SOUTHERN LINE VERTICAL ALIGNMENT SHEET 1
RA-0031 SOUTHERN LINE VERTICAL ALIGNMENT SHEET 2
RA-0032 SOUTHERN LINE VERTICAL ALIGNMENT SHEET 3
RA-0033 SOUTHERN LINE VERTICAL ALIGNMENT SHEET 4
RA-0034 SOUTHERN LINE VERTICAL ALIGNMENT SHEET 5
RA-0035 SOUTHERN LINE VERTICAL ALIGNMENT SHEET 6

RA-0060 TYPICAL SECTIONS SHEET 1
RA-0061 TYPICAL SECTIONS SHEET 2

RA-0080 MOOREBANK STATION - FUTURE QUADUPLICATION



LOCALITY PLAN
SCALE 1:5000

AECOM

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PROJECT

SIMTA
INTERMODAL
TERMINAL FACILITY
STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES

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PROJECT MANAGEMENT INITIALS

D.P	J.M	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P3	23.03.2015	FOR SSD APPLICATION
P2	13.03.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

60337283

SHEET TITLE

MOOREBANK INTERMODAL
GENERAL
COVER SHEET AND DRAWING LIST

SHEET NUMBER

60337283-SHT-10-GE-0001

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ISO A1 594mm x 841mm

PLAN
SCALE 1:5000

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PROJECT
SIMTA
INTERMODAL
TERMINAL FACILITY
STAGE 1

CLIENT
SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER
TACTICAL GROUP

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES
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PROJECT MANAGEMENT INITIALS

D.P	J.M	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P2	23.03.2015	FOR SSD APPLICATION
P2	13.03.2015	ISSUED FOR INFORMATION
P1	04.02.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER
60337283

SHEET TITLE
MOOREBANK INTERMODAL
RAIL DESIGN
OVERALL RAIL PLAN

SHEET NUMBER
60337283-SHT-10-RA-0001

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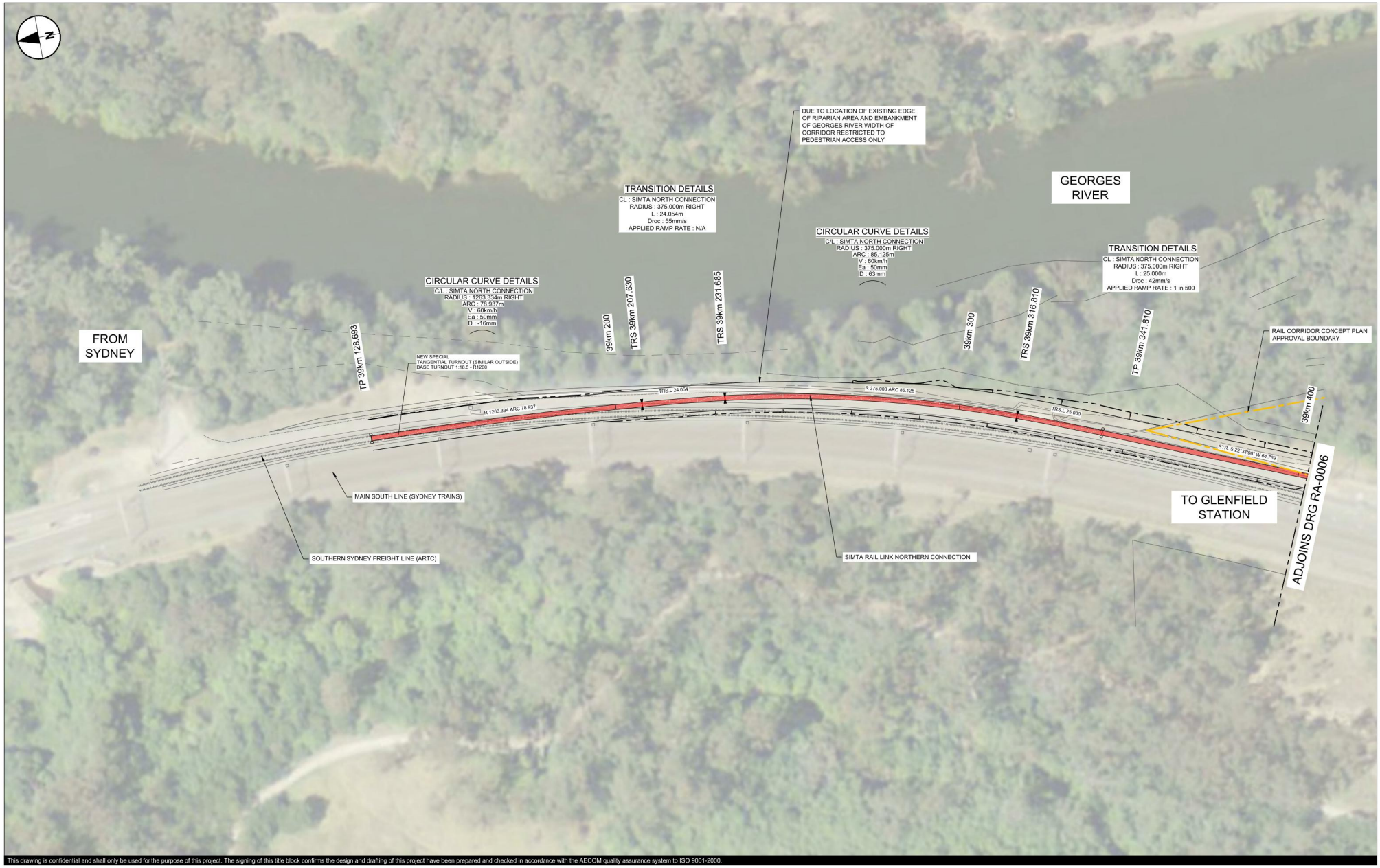

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CONSULTANT
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PROJECT
SIMTA
INTERMODAL
TERMINAL FACILITY
STAGE 1

CLIENT
SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER
TACTICAL GROUP

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES
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1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

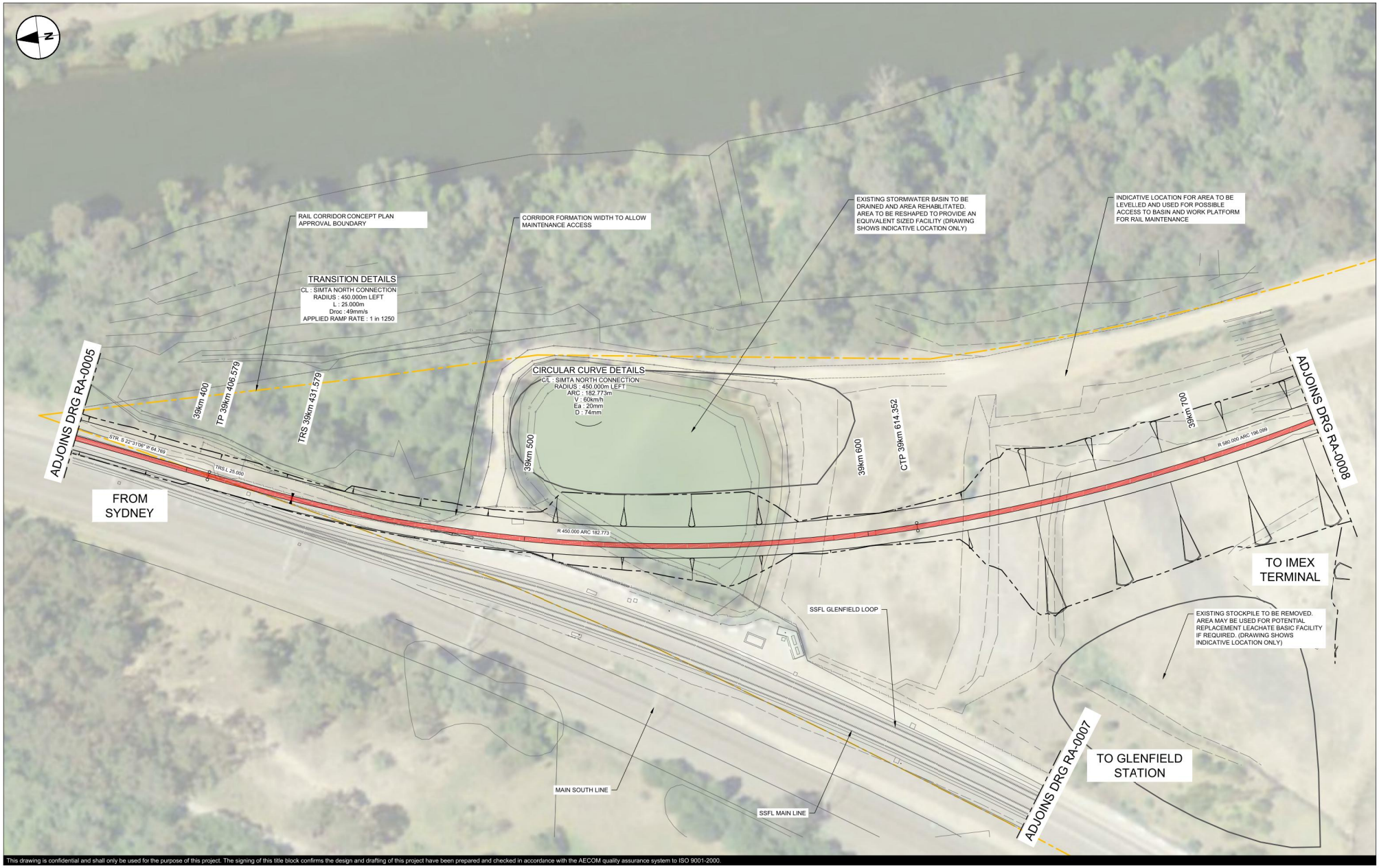
P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION
I/R	DATE	DESCRIPTION

NOT FOR CONSTRUCTION

PROJECT NUMBER
60337283

SHEET TITLE
MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 1

SHEET NUMBER
60337283-SHT-10-RA-0005



ISO A1 594mm x 841mm

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PROJECT

SIMTA
INTERMODAL
TERMINAL FACILITY
STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

60337283

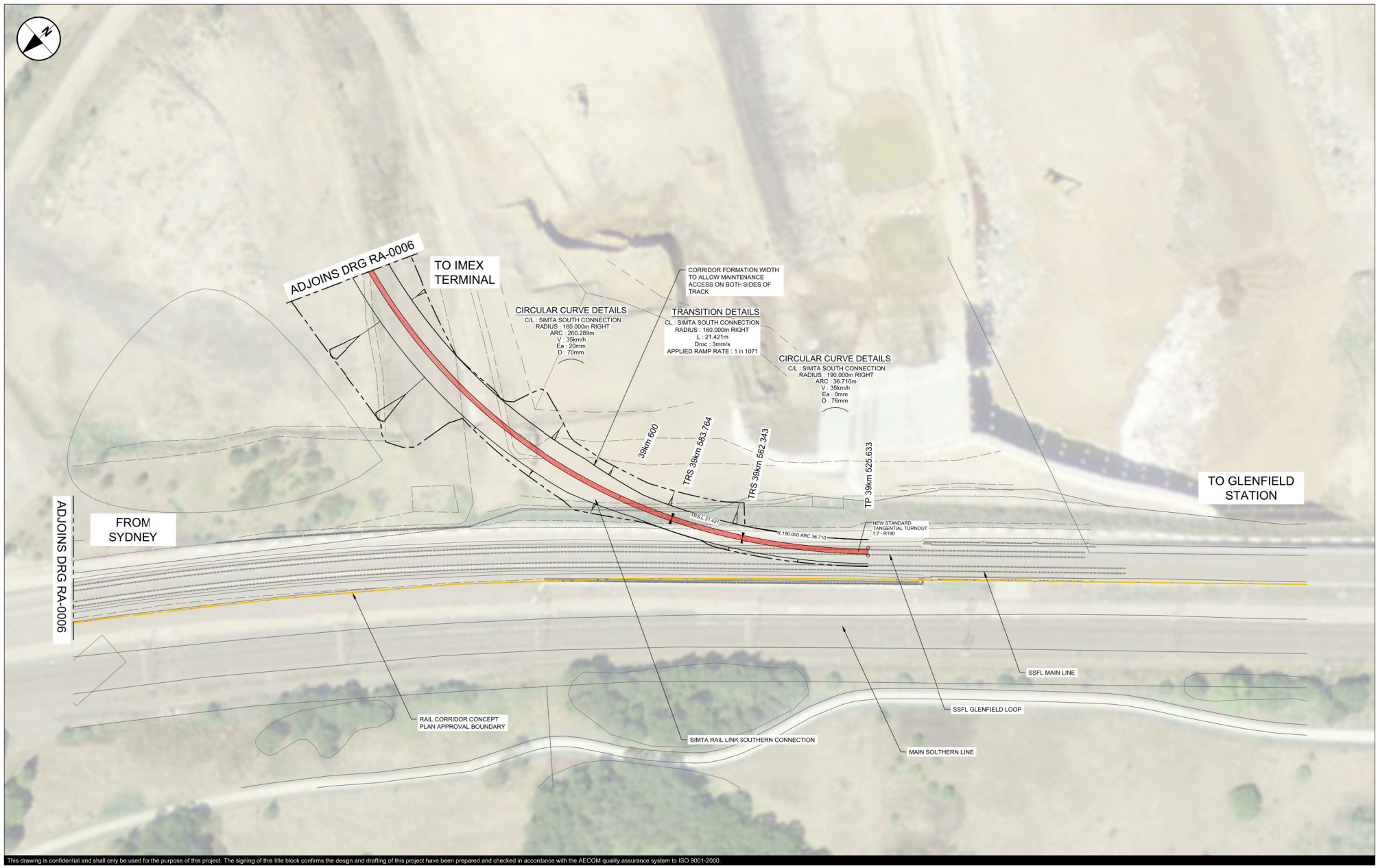
SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 2

SHEET NUMBER

60337283-SHT-10-RA-0006

ISO A1 594mm x 841mm



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PROJECT

SIMTA
INTERMODAL
TERMINAL FACILITY
STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P4	23.03.2015	FOR SSD APPLICATION
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P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

60337283

SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 3

SHEET NUMBER

60337283-SHT-10-RA-0007

Last saved by: PATELG(2015-03-30) Last Plotted: 2015-03-30
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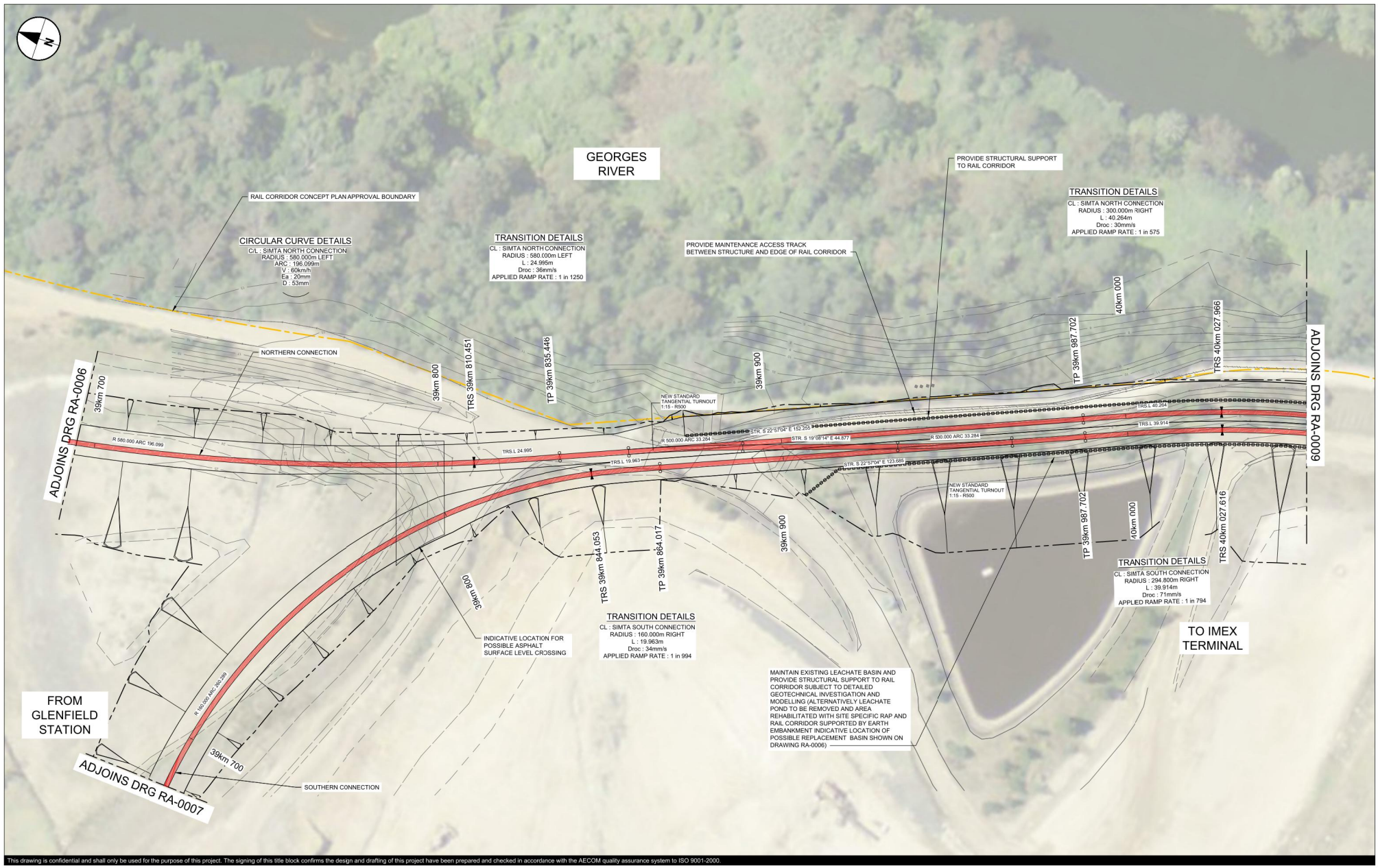

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PROJECT

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STAGE 1

CLIENT

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PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION
I/R	DATE	DESCRIPTION

NOT FOR CONSTRUCTION

PROJECT NUMBER

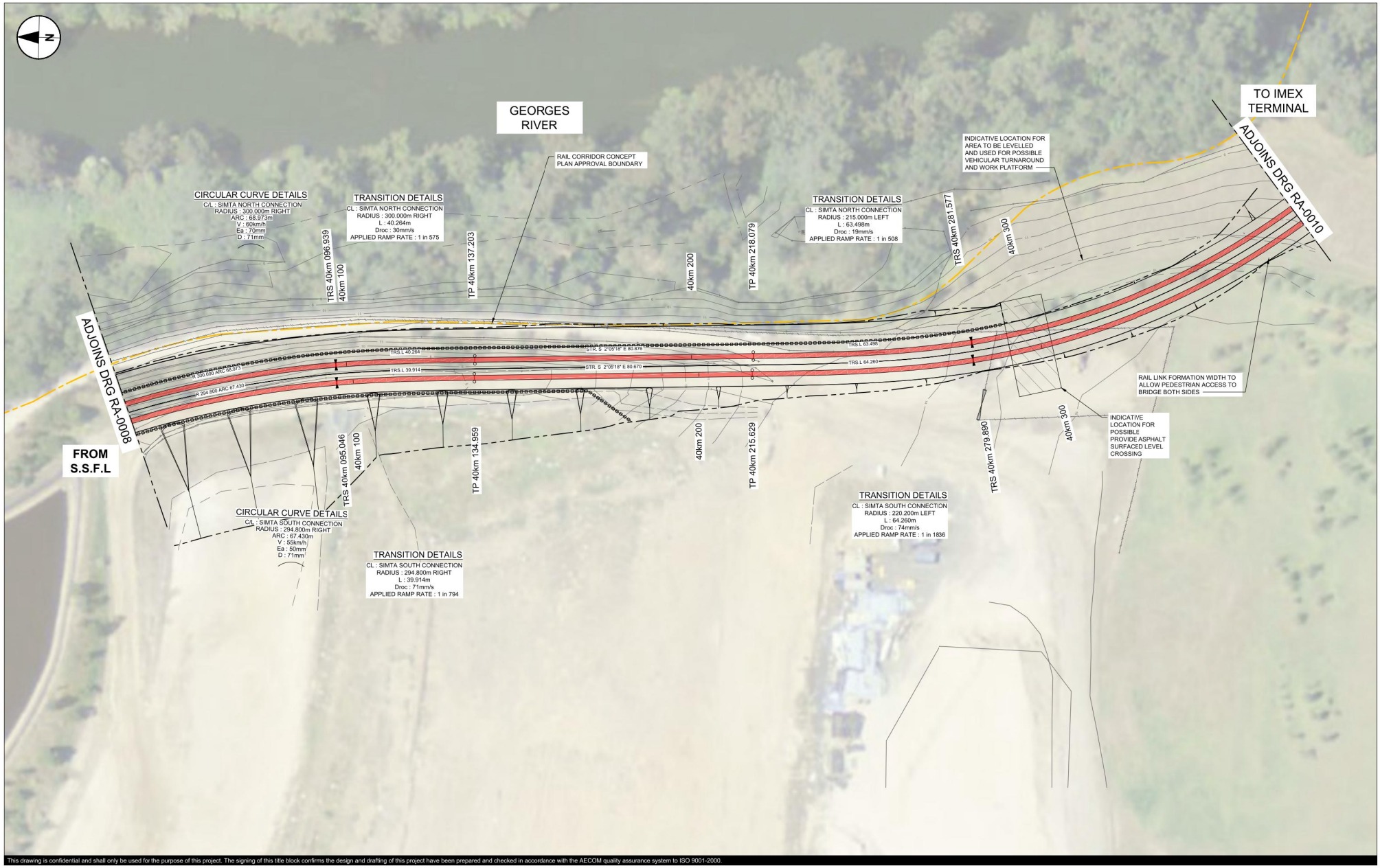
60337283

SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 4

SHEET NUMBER

60337283-SHT-10-RA-0008



ISO A1 594mm x 841mm

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PROJECT

SIMTA
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STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

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P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

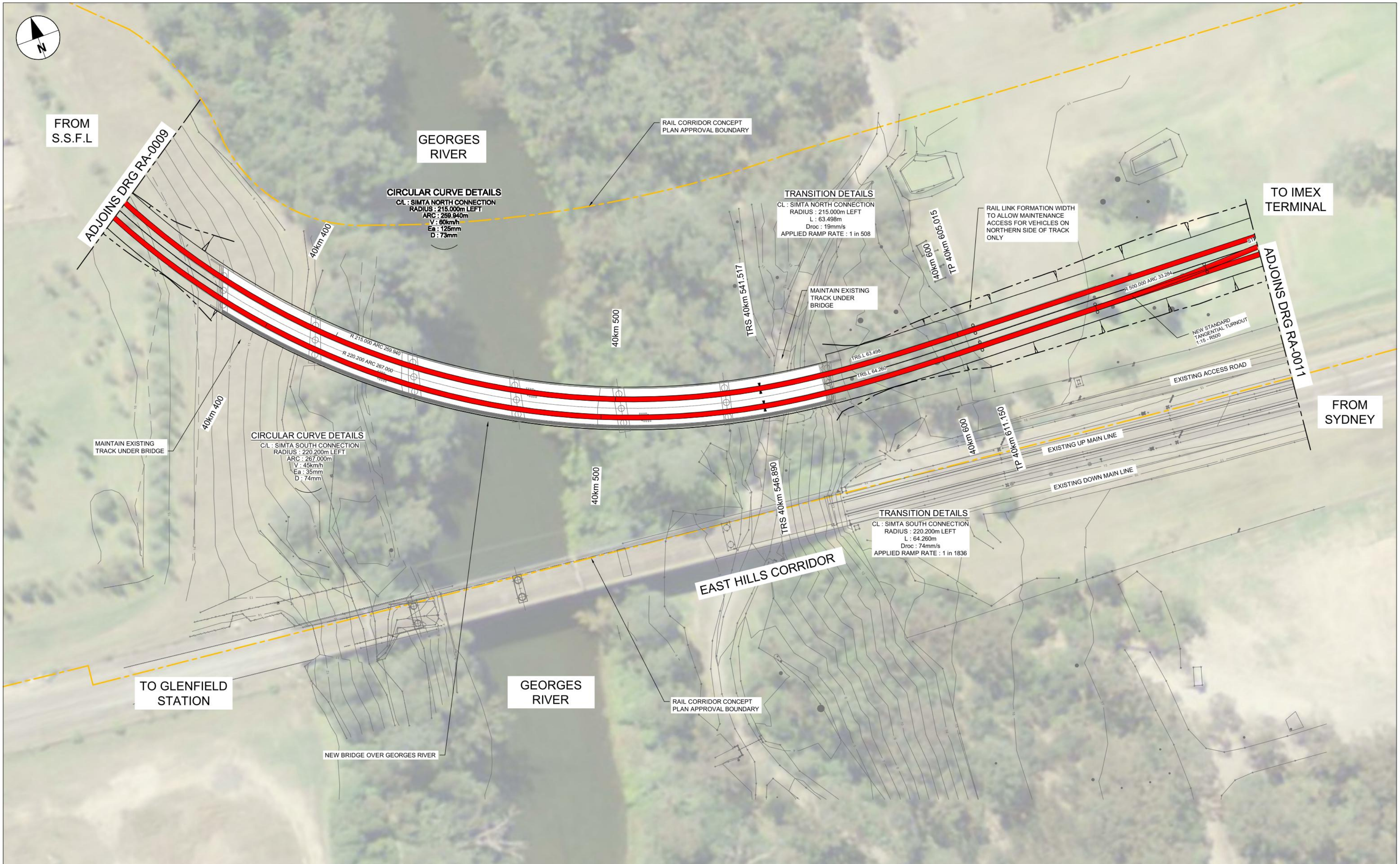
60337283

SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 5

SHEET NUMBER

60337283-SHT-10-RA-0009



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PROJECT

SIMTA
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TERMINAL FACILITY
STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

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☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

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P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

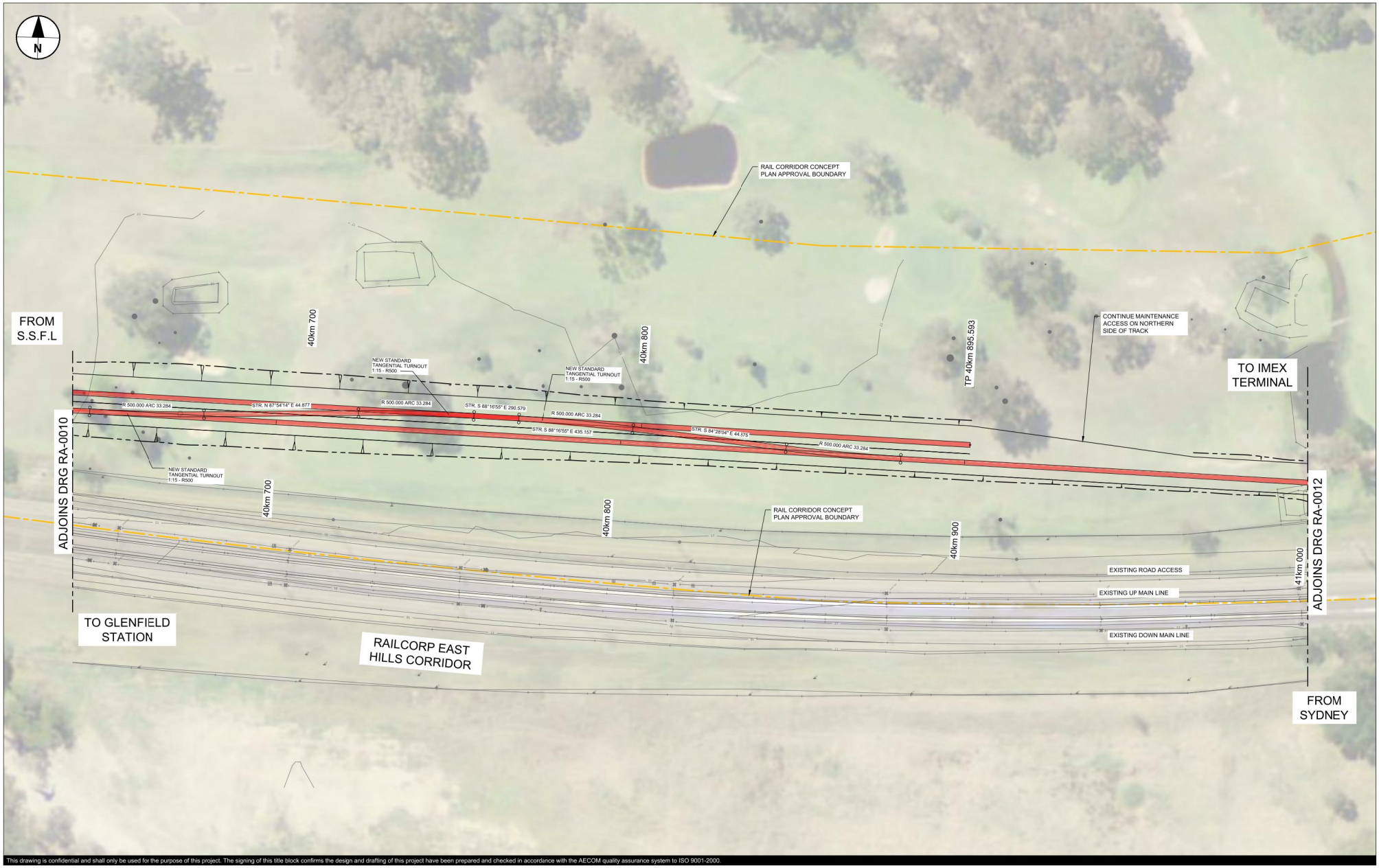
60337283

SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 6

SHEET NUMBER

60337283-SHT-10-RA-0010



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PROJECT

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STAGE 1

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PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
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P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

60337283

SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 7

SHEET NUMBER

60337283-SHT-10-RA-0011

ISO A1 594mm x 841mm
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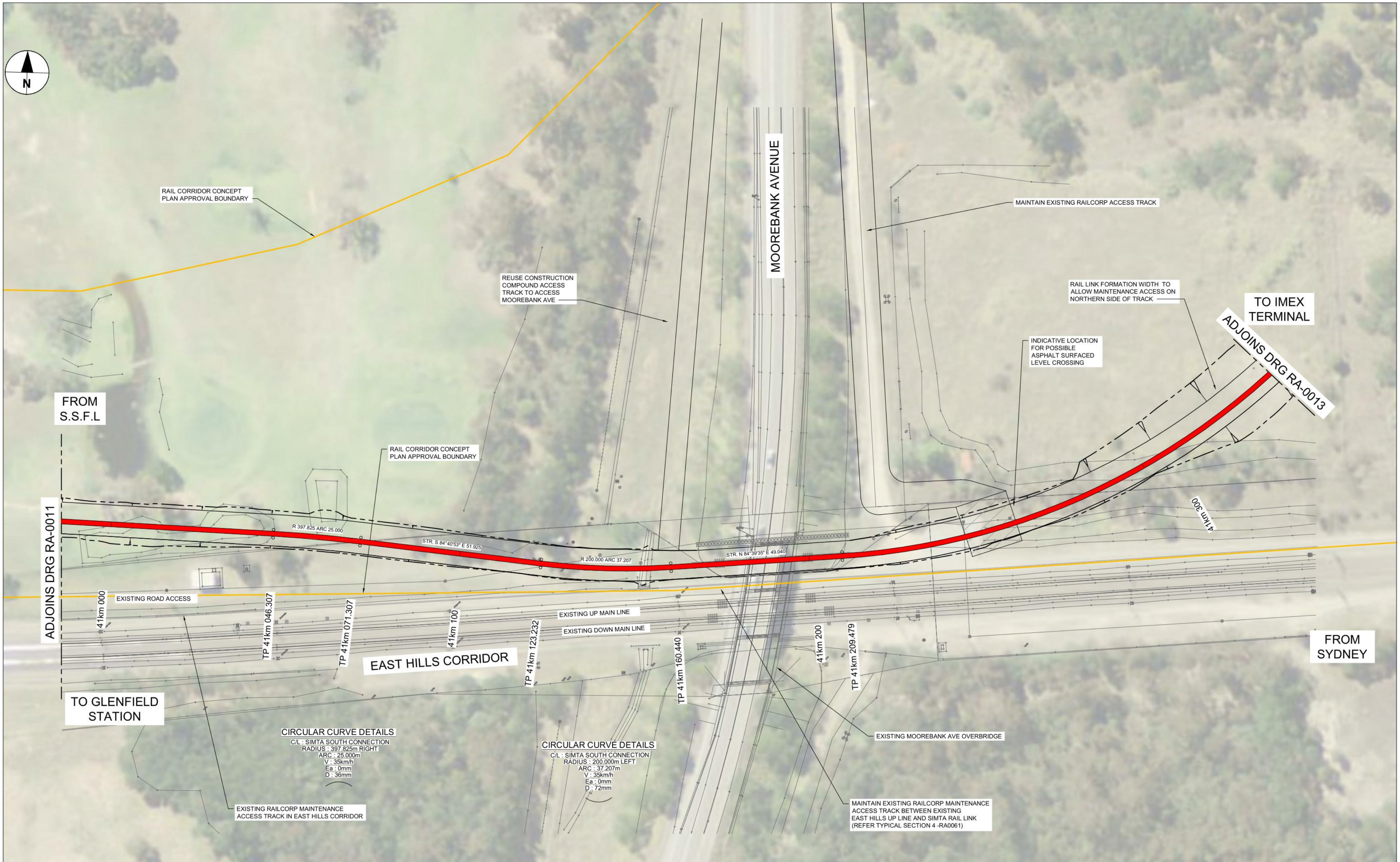

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STAGE 1

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SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
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P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

FOR INFORMATION ONLY

PROJECT NUMBER

60337283

SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 8

SHEET NUMBER

60337283-SHT-10-RA-0012

ISO A1 594mm x 841mm

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PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
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P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

60337283

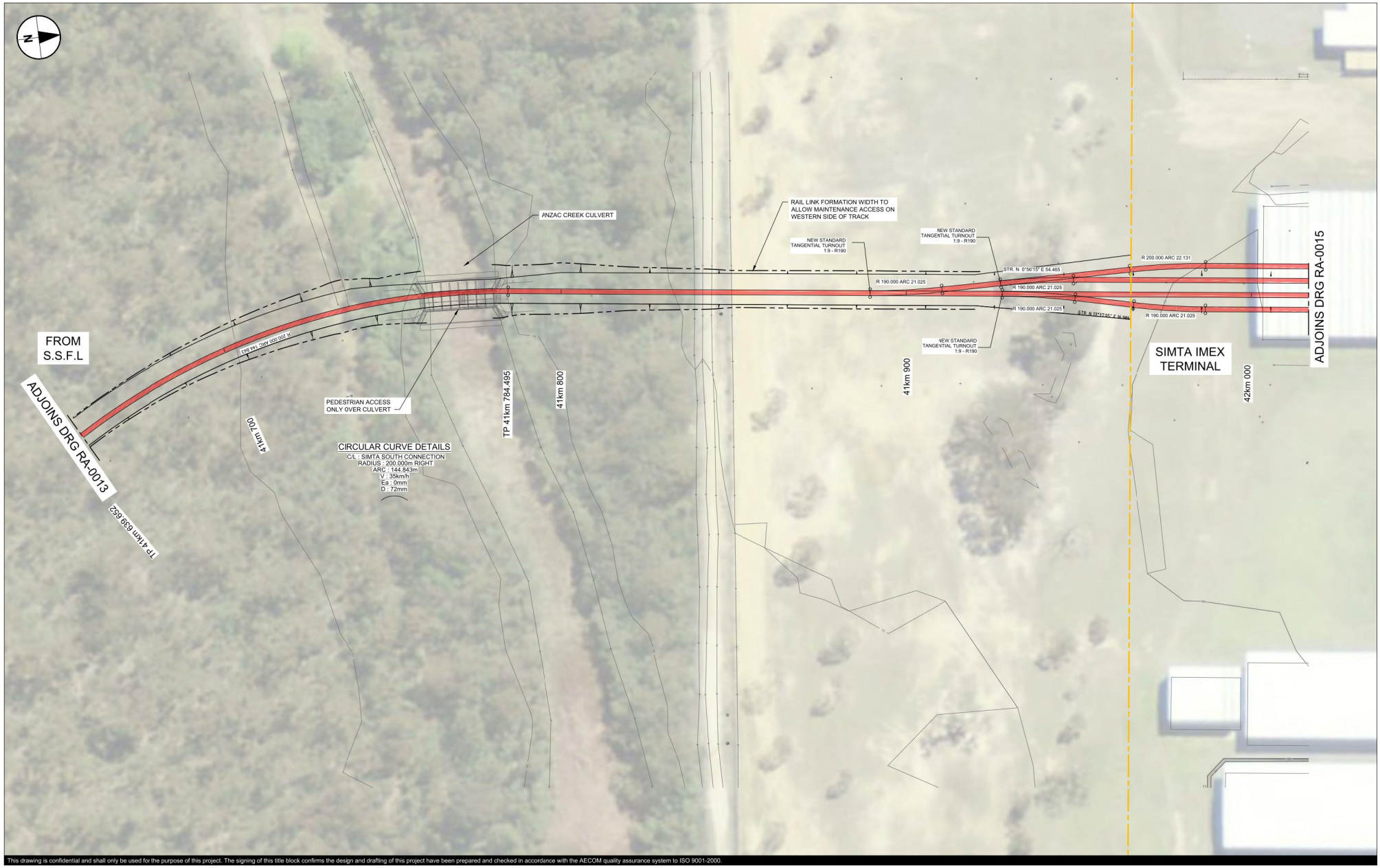
SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 9

SHEET NUMBER

60337283-SHT-10-RA-0013

ISO A1 594mm x 841mm



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PROJECT

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STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION
I/R	DATE	DESCRIPTION

NOT FOR CONSTRUCTION

PROJECT NUMBER

60337283

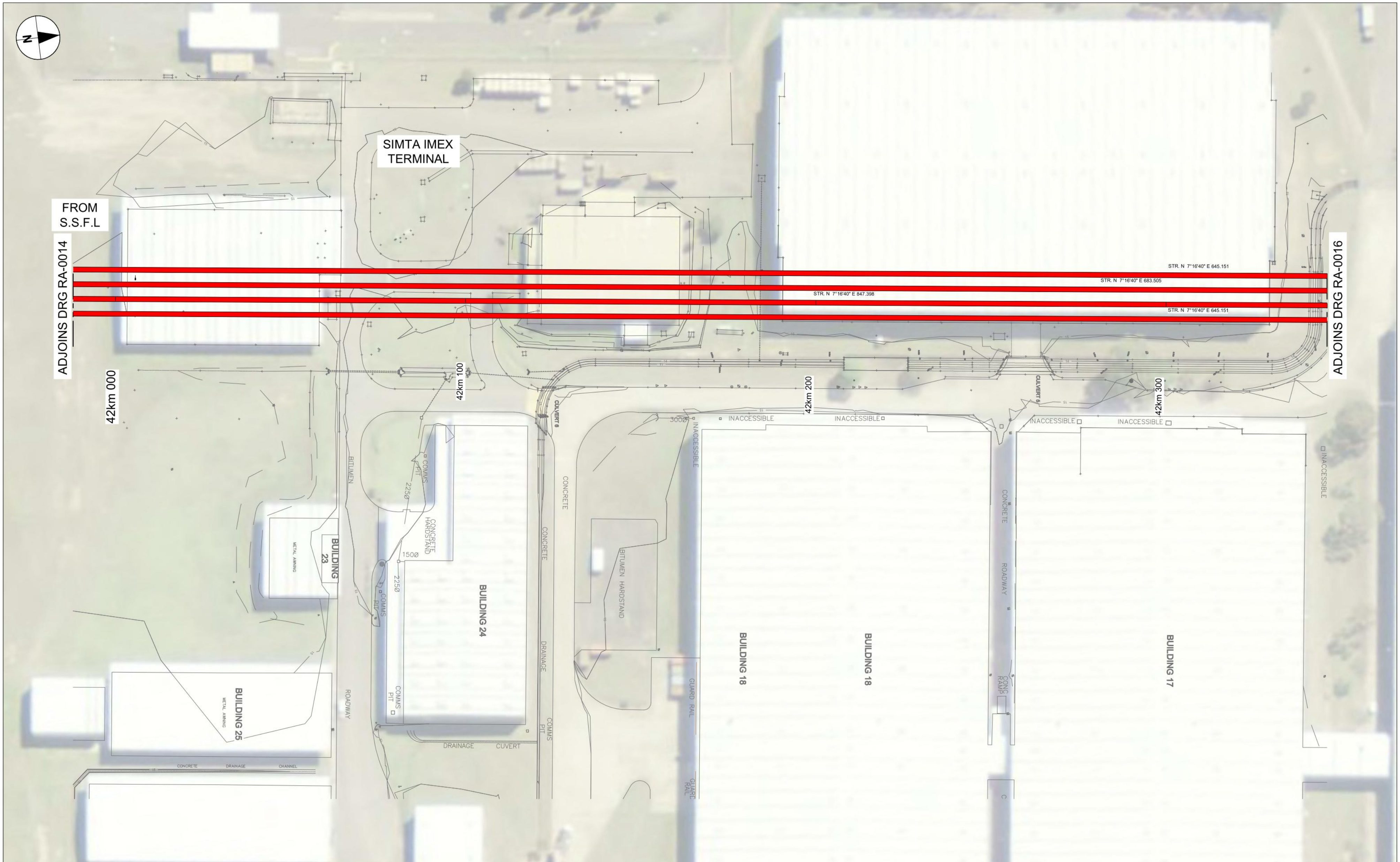
SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 10

SHEET NUMBER

60337283-SHT-10-RA-0014

ISO A1 594mm x 841mm



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PROJECT

SIMTA INTERMODAL TERMINAL FACILITY STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

P4	23.03.2015	FOR SSD APPLICATION
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P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION
I/R	DATE	DESCRIPTION

NOT FOR CONSTRUCTION

PROJECT NUMBER

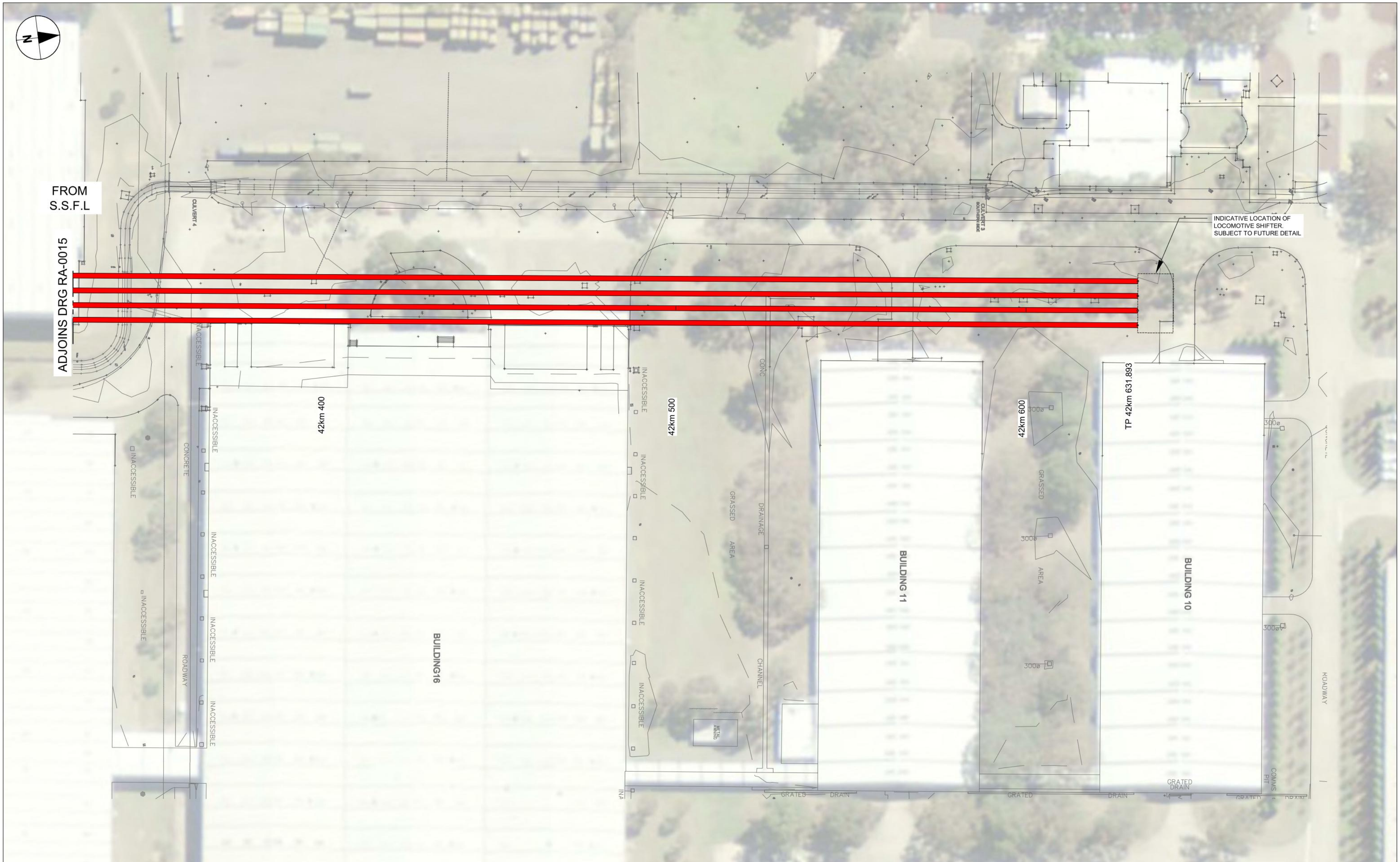
60337283

SHEET TITLE

MOOREBANK INTERMODAL RAIL DESIGN RAIL SETOUT PLAN SHT 11

SHEET NUMBER

60337283-SHT-10-RA-0015



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PROJECT

SIMTA INTERMODAL TERMINAL FACILITY STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 12.5 25 m
1:500

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

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P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

60337283

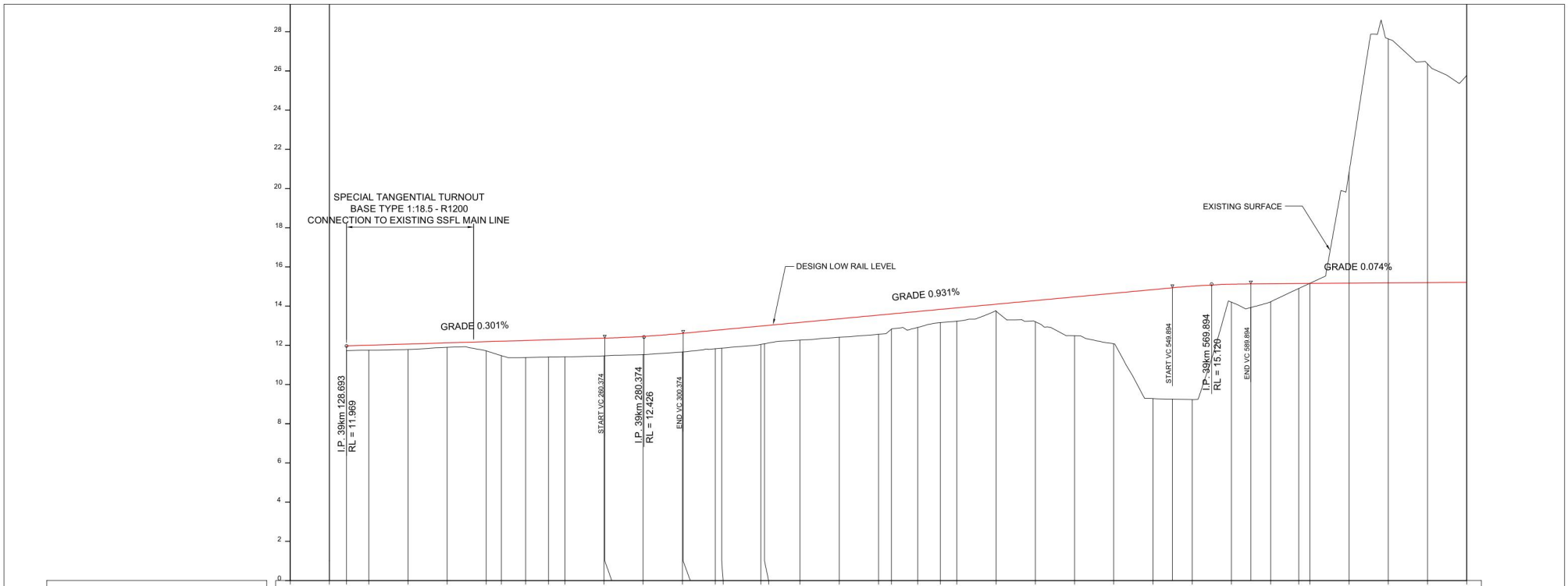
SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN
RAIL SETOUT PLAN SHT 12

SHEET NUMBER

60337283-SHT-10-RA-0016

ISO A1 594mm x 841mm



KILOMETRAGE:	39km 100.000 · 39km 120.000 · 39km 128.693 · 39km 140.000 · 39km 160.000 · 39km 180.000 · 39km 200.000 · 39km 207.630 · 39km 220.000 · 39km 231.685 · 39km 240.000 · 39km 260.000 · 39km 280.000 · 39km 300.000 · 39km 316.810 · 39km 320.000 · 39km 340.000 · 39km 341.810 · 39km 360.000 · 39km 380.000 · 39km 400.000 · 39km 406.579 · 39km 420.000 · 39km 431.579 · 39km 440.000 · 39km 460.000 · 39km 480.000 · 39km 500.000 · 39km 520.000 · 39km 540.000 · 39km 560.000 · 39km 580.000 · 39km 600.000 · 39km 614.352 · 39km 620.000 · 39km 640.000 · 39km 660.000 · 39km 680.000 · 39km 700.000
PROPOSED VERTICAL DESIGN:	L: 131.681 GRADE: 0.301% · VC=40.00 R. 6351.39 · L: 249.520 GRADE: 0.931% · VC=40.00 R. 4666.77 · L: 995.611 GRADE: 0.074%
VERTICAL CARDINALS:	POB 128.693 · SVC 260.374 · EVC 300.374 · SVC 549.894 · EVC 589.894
PROPOSED LOW RAIL LEVELS:	11.969 · 12.003 · 12.063 · 12.123 · 12.184 · 12.207 · 12.244 · 12.279 · 12.304 · 12.364 · 12.455 · 12.608 · 12.765 · 12.794 · 12.981 · 12.997 · 13.167 · 13.353 · 13.539 · 13.600 · 13.725 · 13.833 · 13.911 · 14.097 · 14.284 · 14.470 · 14.656 · 14.842 · 15.017 · 15.117 · 15.143 · 15.153 · 15.157 · 15.172 · 15.187 · 15.201 · 15.216
PROPOSED LOW RAIL LIFTS:	0.232 · 0.252 · 0.277 · 0.227 · 0.467 · 0.732 · 0.868 · 0.880 · 0.895 · 0.901 · 0.924 · 0.945 · 0.942 · 0.942 · 0.936 · 0.918 · 0.901 · 0.943 · 0.976 · 0.775 · 0.812 · 0.671 · 0.681 · 0.353 · 1.084 · 1.983 · 2.581 · 5.561 · 5.787 · 0.915 · 0.923 · 0.250
PROPOSED LOW RAIL CUTS:	0.005 · 5.651 · 12.449 · 11.160 · 10.553
EXISTING RAIL LEVELS:	11.737 · 11.751 · 11.786 · 11.896 · 11.717 · 11.475 · 11.376 · 11.399 · 11.409 · 11.463 · 11.531 · 11.663 · 11.823 · 11.852 · 12.045 · 12.079 · 12.266 · 12.410 · 12.563 · 12.825 · 12.913 · 13.162 · 13.230 · 13.744 · 13.200 · 12.487 · 12.075 · 9.281 · 9.230 · 14.202 · 14.220 · 14.903 · 15.162 · 20.823 · 27.636 · 26.361 · 25.769
HORIZONTAL ALIGNMENT:	RAD 1263.334 ARC 78.937 · TRS L 24.054 · RAD 375.000 ARC 85.125 · TRS L 25.000 · STR. L 64.769 · TRS L 25.000 · RAD -450.000 ARC 182.773 · RAD -580.000 ARC 196.099
HORIZONTAL CARDINALS:	TP 128.693 · TRS 207.630 · TRS 231.685 · TRS 316.810 · TP 341.810 · TP 406.579 · TRS 431.579 · CTP 614.352

Last saved by: CHEAD (2015-03-23) Last Plotted: 2015-03-23
Filename: P:\60337283\03_CAD\20-SHEETS\10_CON\EPT\60337283-SHT-10-RA-0020.DWG

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PROJECT

SIMTA
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TERMINAL FACILITY
STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES

0 25 50 m H=1:1000
0 2.5 5 V=1:100

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

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I/R	DATE	DESCRIPTION
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P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

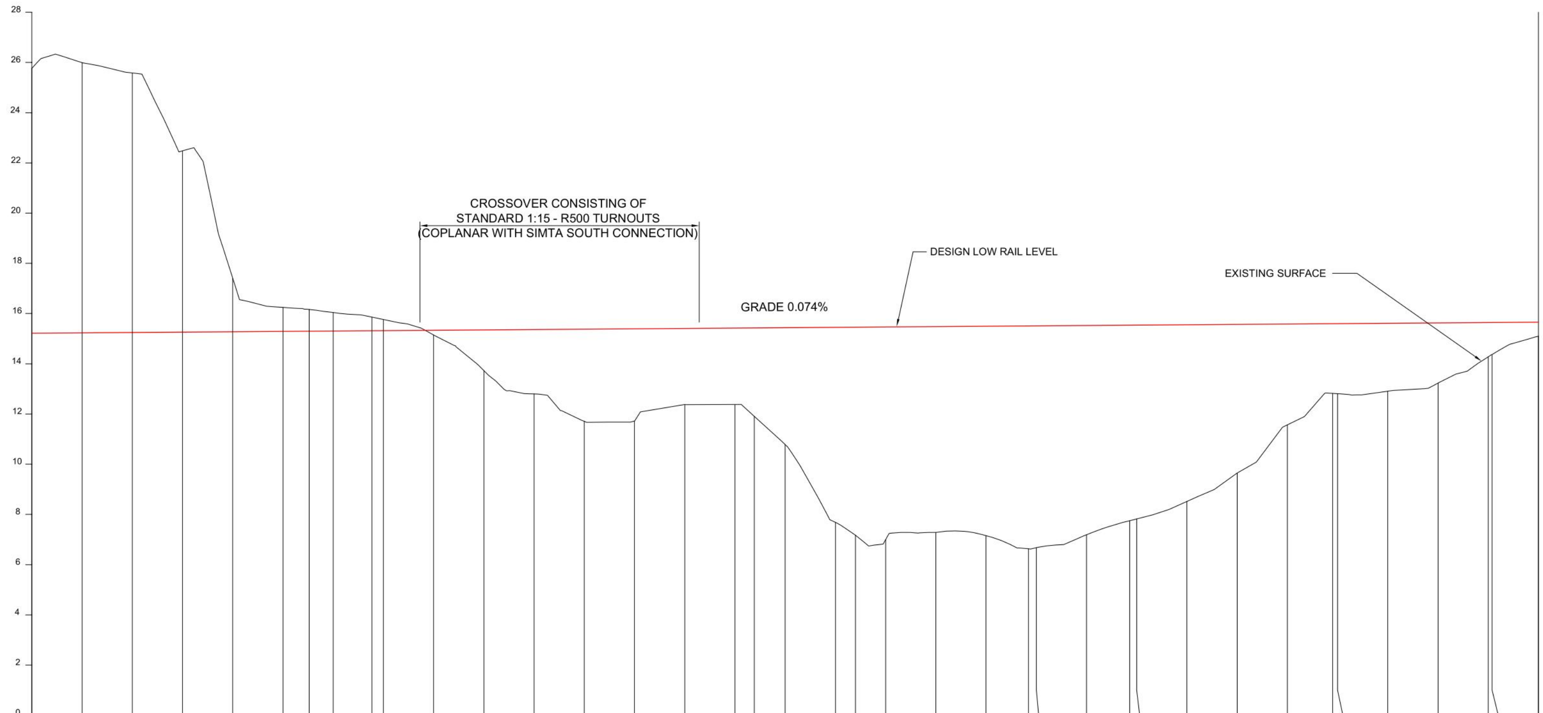
60337283

SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN - NORTHERN LINE
VERTICAL ALIGNMENT SHT 1

SHEET NUMBER

60337283-SHT-10-RA-0020



PROPOSED VERTICAL DESIGN: L: 995.611 GRADE: 0.074%

VERTICAL CARDINALS:

KILOMETRAGE	PROPOSED LOW RAIL LEVELS	PROPOSED LOW RAIL LIFTS	PROPOSED LOW RAIL CUTS	EXISTING RAIL LEVELS	HORIZONTAL CARDINALS
39km 700.000	15.216		10.553	25.769	
39km 720.000	15.231		10.765	25.996	
39km 740.000	15.246		10.337	25.583	
39km 760.000	15.260		7.223	22.483	
39km 780.000	15.275		2.123	17.398	
39km 800.000	15.290		0.957	16.247	
39km 810.451	15.298		0.865	16.163	TRS 810.451
39km 820.000	15.305		0.738	16.043	
39km 835.446	15.316		0.543	15.859	TP 835.446
39km 840.000	15.319		0.445	15.764	
39km 860.000	15.334	0.184		15.150	
39km 880.000	15.349	1.616		13.733	
39km 900.000	15.364	2.563		12.801	
39km 920.000	15.378	3.671		11.707	
39km 940.000	15.393	3.677		11.716	
39km 960.000	15.408	3.034		12.374	
39km 980.000	15.422	3.044		12.378	
39km 987.702	15.428	3.519		11.909	TP 987.702
40km 000.000	15.437	4.656		10.781	
40km 020.000	15.452	7.765		7.687	
40km 027.966	15.458	8.289		7.169	TRS 027.966
40km 040.000	15.467	8.470		6.997	
40km 060.000	15.481	8.199		7.282	
40km 080.000	15.496	8.338		7.158	
40km 096.939	15.509	8.877		6.632	TRS 096.939
40km 100.000	15.511	8.835		6.676	
40km 120.000	15.526	8.337		7.189	
40km 137.203	15.538	7.787		7.751	TP 137.203
40km 140.000	15.540	7.718		7.822	
40km 160.000	15.555	7.038		8.517	
40km 180.000	15.570	5.923		9.647	
40km 200.000	15.585	4.018		11.567	
40km 218.079	15.598	2.780		12.818	TP 218.079
40km 220.000	15.599	2.793		12.806	
40km 240.000	15.614	2.708		12.906	
40km 260.000	15.629	2.401		13.228	
40km 280.000	15.643	1.367		14.276	
40km 281.577	15.645	1.271		14.374	TRS 281.577
40km 300.000	15.658	0.559		15.099	

HORIZONTAL ALIGNMENT:
RAD -580.000 ARC 196.099
TRS.L 24.995
STR. L 152.255
TRS.L 40.264
RAD 300.000 ARC 68.973
TRS.L 40.264
STR. L 80.876
TRS.L 63.498
RAD -215.000 ARC 259.940

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PROJECT
SIMTA INTERMODAL TERMINAL FACILITY STAGE 1

CLIENT
SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER
TACTICAL GROUP

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES
0 25 50 m H=1:1000
0 2.5 5 V=1:100

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

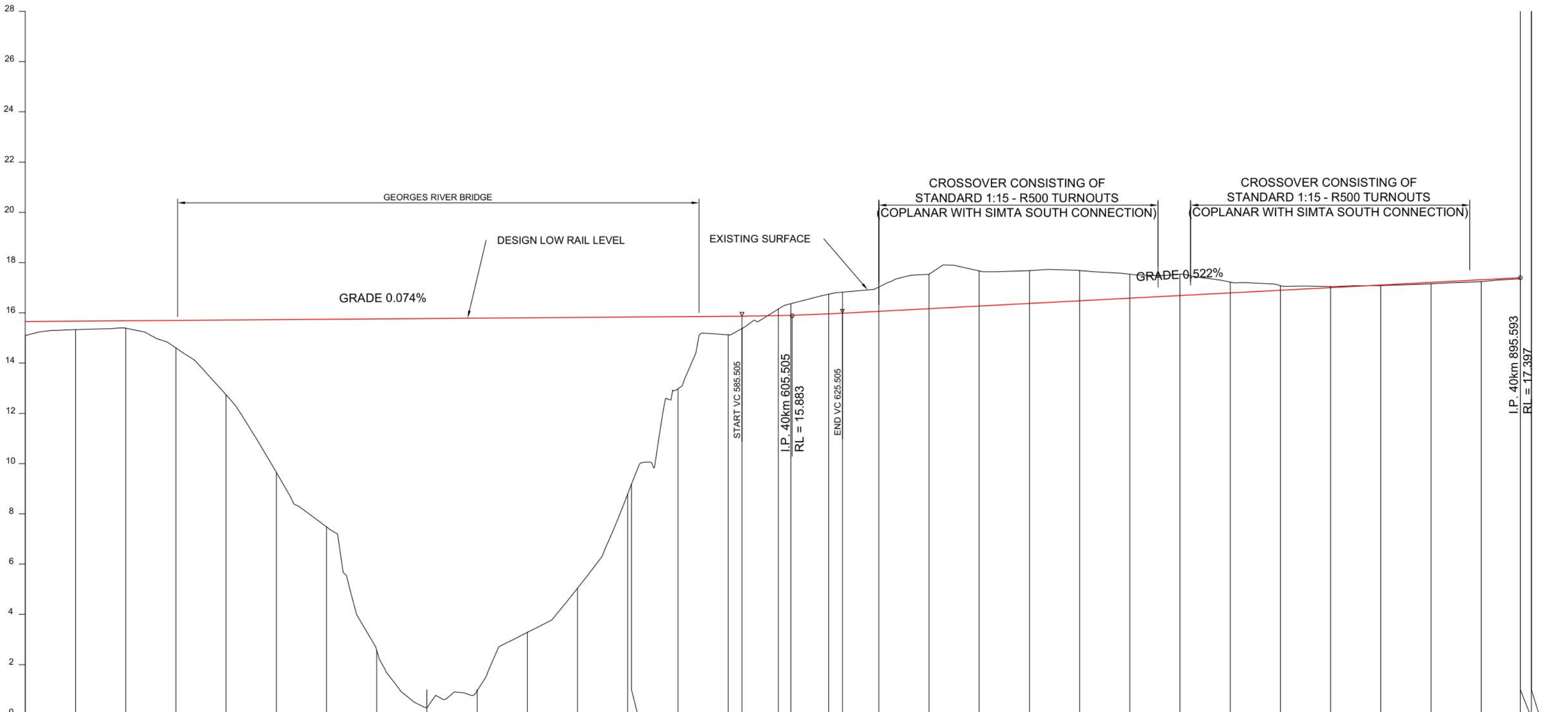
NOT FOR CONSTRUCTION

PROJECT NUMBER
60337283

SHEET TITLE
MOOREBANK INTERMODAL RAIL DESIGN - NORTHERN LINE VERTICAL ALIGNMENT SHT 2

SHEET NUMBER
60337283-SHT-10-RA-0021

ISO A1 594mm x 841mm



PROPOSED VERTICAL DESIGN: L: 995.611 GRADE: 0.074% — VC=40.00 R. 8921.79 — L: 270.088 GRADE: 0.522%

HORIZONTAL ALIGNMENT: RAD -215.000 ARC 259.940 — TRS.L 63.498 — STR. L 290.579

KILOMETRAGE:	VERTICAL CARDINALS:	PROPOSED LOW RAIL LEVELS:	PROPOSED LOW RAIL LIFTS:	PROPOSED LOW RAIL CUTS:	EXISTING RAIL LEVELS:	HORIZONTAL CARDINALS:
40km 300.000		15.658	0.559		15.099	
40km 320.000		15.673	0.344		15.329	
40km 340.000		15.688	0.298		15.390	
40km 360.000		15.702	1.097		14.605	
40km 380.000		15.717	2.979		12.738	
40km 400.000		15.732	6.084		9.648	
40km 420.000		15.747	8.267		7.480	
40km 440.000		15.761	13.198		2.563	
40km 460.000		15.776	15.487		0.289	
40km 480.000		15.791	14.829		0.962	
40km 500.000		15.805	12.524		3.281	
40km 520.000		15.820	10.783		5.037	
40km 540.000		15.835	7.037		8.798	
40km 541.517		15.836	6.652		9.184	TRS 541.517
40km 560.000		15.850	2.870		12.980	
40km 580.000		15.864	0.737		15.127	
	SVC 585.505					
40km 600.000		15.891		0.260	16.151	
40km 605.014		15.904		0.462	16.366	TP 605.014
40km 620.000		15.961		0.780	16.741	
	EVC 625.505					
40km 640.000		16.063		0.967	17.030	
40km 660.000		16.168		1.367	17.535	
40km 680.000		16.272		1.397	17.669	
40km 700.000		16.376		1.304	17.680	
40km 720.000		16.481		1.207	17.688	
40km 740.000		16.585		0.954	17.539	
40km 760.000		16.690		0.845	17.535	
40km 780.000		16.794		0.429	17.223	
40km 800.000		16.898		0.183	17.081	
40km 820.000		17.003		0.040	17.043	
40km 840.000		17.107	0.022		17.085	
40km 860.000		17.212	0.058		17.154	
40km 880.000		17.316	0.074		17.242	
40km 895.593	POE 895.593	17.397	0.044		17.353	POE 895.593
40km 900.000						

Last saved by: CHEAD(2015-03-23) Last Plotted: 2015-03-23
Filename: P:\603X\60337283\5_CAD\20-SHEETS\10_CONCEPT\60337283-SHT-10-RA-0022.DWG

AECOM

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PROJECT

SIMTA INTERMODAL TERMINAL FACILITY STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES

0 25 50 m H=1:1000
0 2.5 5 V=1:100

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

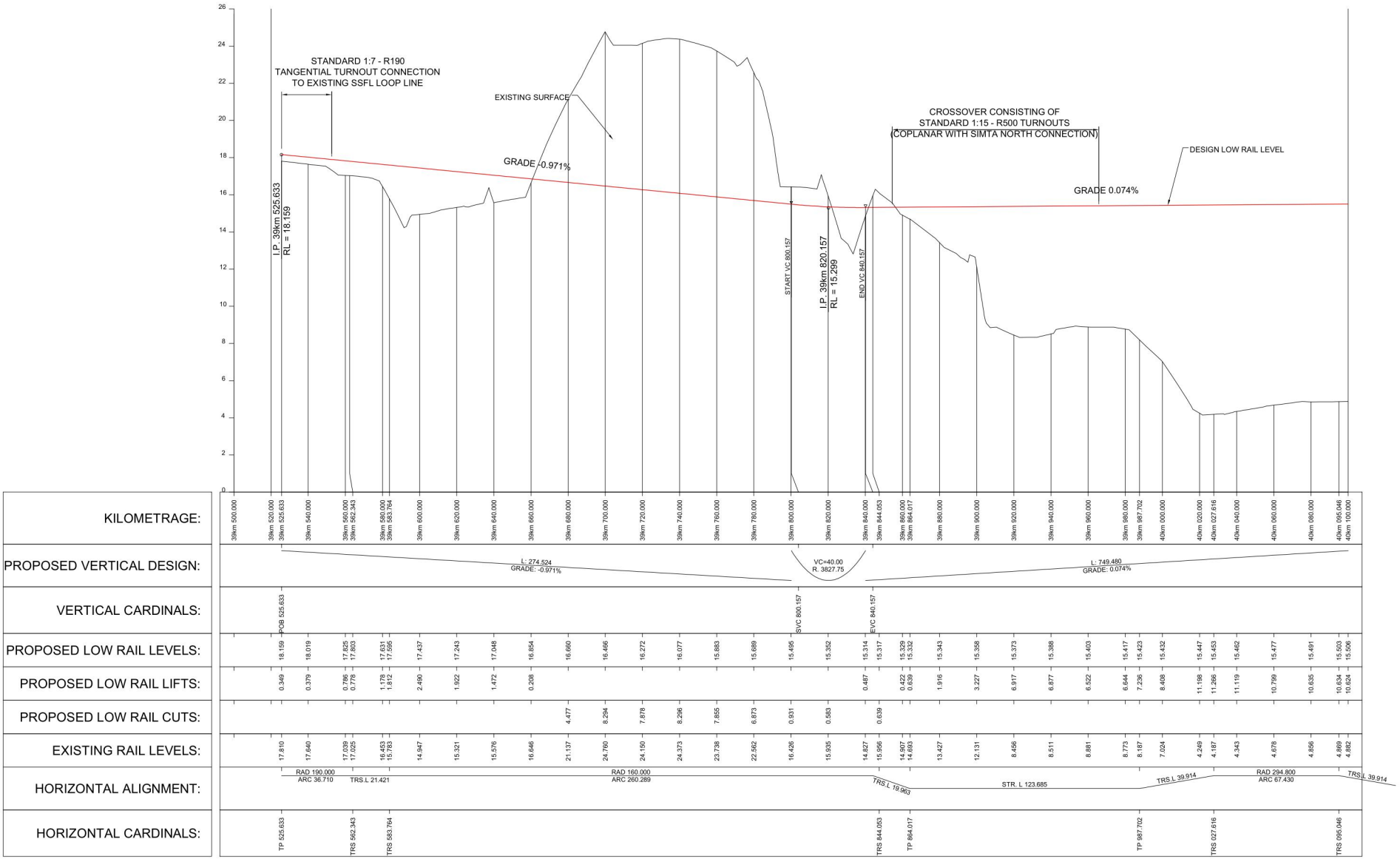
60337283

SHEET TITLE

MOOREBANK INTERMODAL RAIL DESIGN - NORTHERN LINE VERTICAL ALIGNMENT SHT 3

SHEET NUMBER

60337283-SHT-10-RA-0022



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PROJECT

SIMTA
INTERMODAL
TERMINAL FACILITY
STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 25 50 m H=1:1000
0 2.5 5 V=1:100

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

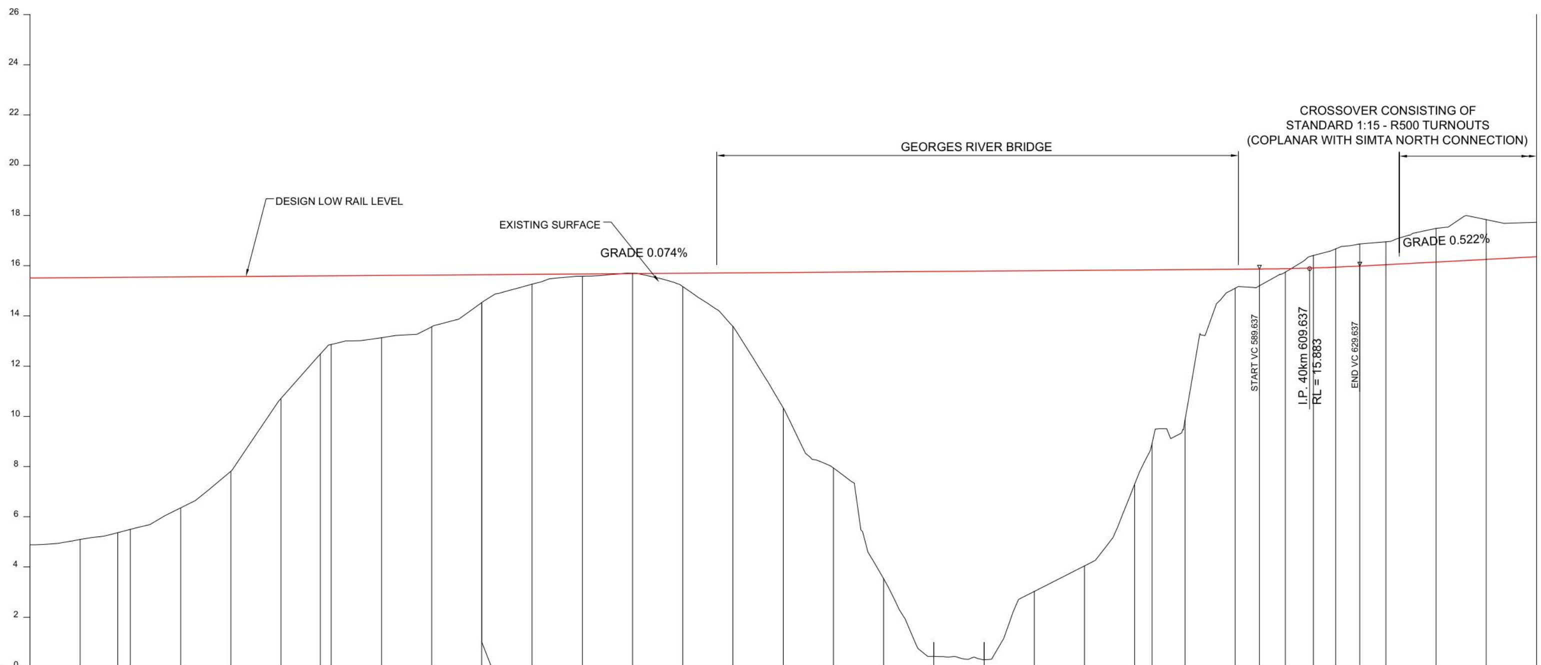
60337283

SHEET TITLE

MOOREBANK INTERMODAL
RAIL DESIGN -SOUTHERN LINE
VERTICAL ALIGNMENT SHT 1

SHEET NUMBER

60337283-SHT-10-RA-0030



KILOMETRAGE:	PROPOSED LOW RAIL LEVELS:	PROPOSED LOW RAIL LIFTS:	PROPOSED LOW RAIL CUTS:	EXISTING RAIL LEVELS:
40km 100.000	15.506	10.624		4.882
40km 120.000	15.521	10.427		5.094
40km 134.959	15.532	10.164		5.368
40km 140.000	15.536	10.038		5.498
40km 160.000	15.551	9.200		6.351
40km 180.000	15.565	7.759		7.806
40km 200.000	15.580	4.868		10.712
40km 215.629	15.592	3.110		12.482
40km 220.000	15.595	2.734		12.861
40km 240.000	15.610	2.479		13.131
40km 260.000	15.625	2.057		13.568
40km 279.890	15.639	1.107		14.532
40km 280.000	15.639	1.099		14.540
40km 300.000	15.654	0.392		15.262
40km 320.000	15.669	0.086		15.583
40km 340.000	15.684		0.013	15.697
40km 360.000	15.699	0.535		15.164
40km 380.000	15.713	2.136		13.577
40km 400.000	15.728	5.389		10.339
40km 420.000	15.743	7.799		7.944
40km 440.000	15.758	12.220		3.538
40km 460.000	15.773	15.338		0.435
40km 480.000	15.787	15.484		0.303
40km 500.000	15.802	12.776		3.026
40km 520.000	15.817	11.773		4.044
40km 540.000	15.832	8.519		7.313
40km 546.890	15.837	6.903		8.934
40km 560.000	15.847	5.996		9.851
40km 580.000	15.861	0.760		15.101
40km 600.000	15.882	0.134		15.748
40km 611.150	15.910		0.495	16.405
40km 620.000	15.943		0.724	16.667
40km 640.000	16.042		0.908	16.950
40km 660.000	16.146		1.338	17.484
40km 680.000	16.251		1.586	17.837
40km 700.000	16.355		1.371	17.726

PROPOSED VERTICAL DESIGN: L: 749.480 GRADE: 0.074% — VC=40.00 R. 8931.58 — L: 415.996 GRADE: 0.522%

VERTICAL CARDINALS: SVC 589.637 — EVC 629.637

HORIZONTAL ALIGNMENT: TRS.L 39.914 — STR. L 80.670 — TRS.L 64.260 — RAD -220.200 ARC 267.000 — TRS.L 64.260 — STR. L 435.157

HORIZONTAL CARDINALS: TP 134.959 — TP 215.629 — TRS 279.890 — TRS 546.890 — TP 611.150

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PROJECT

SIMTA INTERMODAL TERMINAL FACILITY STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES

0 25 50 m H=1:1000
0 2.5 5 V=1:100

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

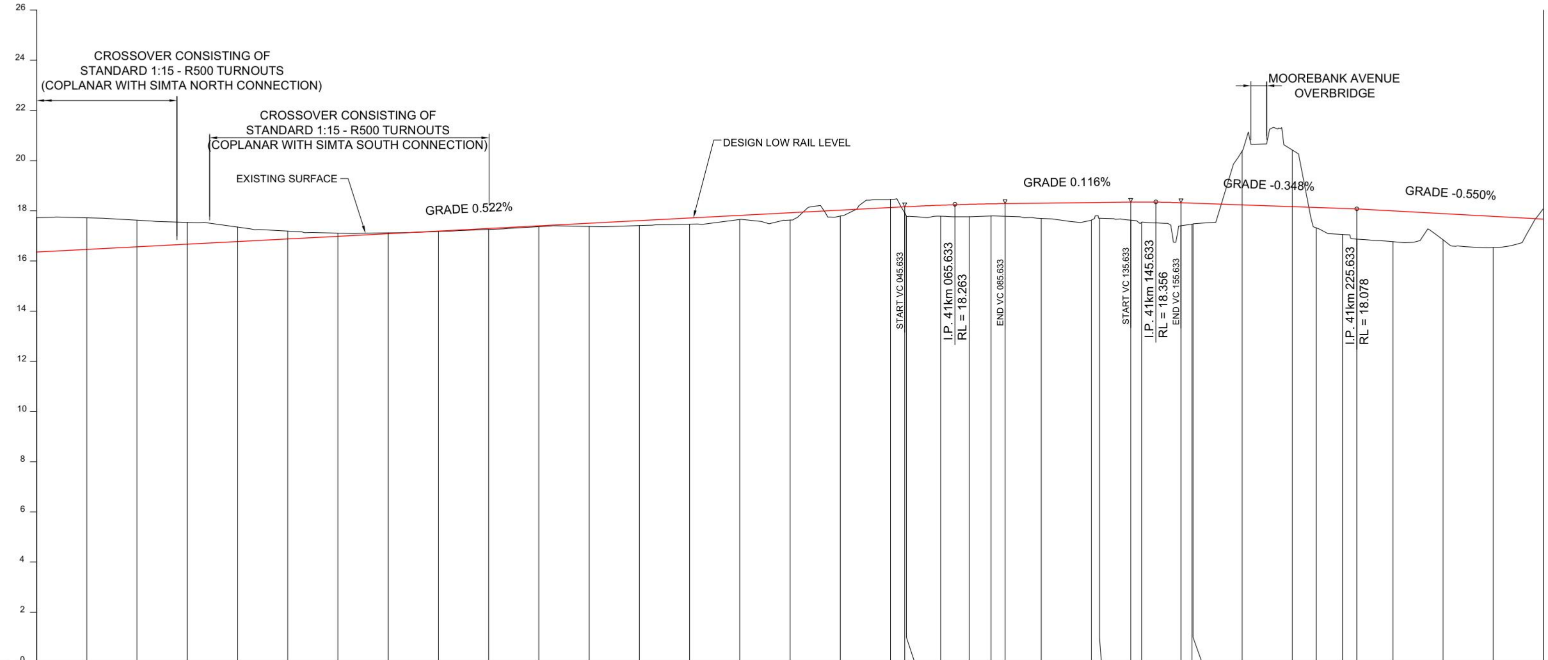
60337283

SHEET TITLE

MOOREBANK INTERMODAL RAIL DESIGN -SOUTHERN LINE VERTICAL ALIGNMENT SHT 2

SHEET NUMBER

60337283-SHT-10-RA-0031



KILOMETRAGE:	PROPOSED LOW RAIL LEVELS:	PROPOSED LOW RAIL LIFTS:	PROPOSED LOW RAIL CUTS:	EXISTING RAIL LEVELS:	HORIZONTAL CARDINALS:
40km 700.000	16.355		1.371	17.726	
40km 720.000	16.459		1.262	17.721	
40km 740.000	16.564		1.059	17.623	
40km 760.000	16.668		0.871	17.539	
40km 780.000	16.772		0.581	17.353	
40km 800.000	16.877		0.316	17.193	
40km 820.000	16.981		0.131	17.112	
40km 840.000	17.086		0.033	17.119	
40km 860.000	17.190	0.014		17.176	
40km 880.000	17.294	0.037		17.257	
40km 900.000	17.399	0.033		17.366	
40km 920.000	17.503	0.126		17.377	
40km 940.000	17.607	0.197		17.410	
40km 960.000	17.712	0.247		17.465	
40km 980.000	17.816	0.165		17.651	
41km 000.000	17.920	0.288		17.632	
41km 020.000	18.025	0.236		17.789	
41km 040.000	18.129		0.327	18.456	
41km 046.307	18.162	0.363		17.799	TP 046.307
41km 060.000	18.223	0.441		17.782	
41km 071.307	18.259	0.496		17.763	TP 071.307
41km 080.000	18.278	0.486		17.792	
41km 100.000	18.303	0.604		17.699	
41km 120.000	18.326	0.698		17.628	
41km 123.232	18.330	0.628		17.702	TP 123.232
41km 140.000	18.347	0.801		17.546	
41km 160.000	18.306	0.836		17.470	
41km 160.440	18.305	0.828		17.477	TP 160.440
41km 180.000	18.237		2.148	20.385	
41km 200.000	18.167		2.256	20.423	
41km 209.479	18.134	0.814		17.320	TP 209.479
41km 220.000	18.098	1.041		17.057	
41km 240.000	17.999	1.229		16.770	
41km 260.000	17.889	1.044		16.845	
41km 280.000	17.779	1.240		16.539	
41km 300.000	17.669		0.420	18.089	

PROPOSED VERTICAL DESIGN: L: 415.996 GRADE: 0.522% | VC=40.00 R. 9861.95 | L: 50.000 GRADE: 0.116% | VC=20.00 R. 4312.67 | L: 70.000 GRADE: -0.348% | L: 190.000 GRADE: -0.550%

VERTICAL CARDINALS: SVC 045.633 | EVC 085.633 | SVC 135.633 | EVC 155.633 | IP 225.633

HORIZONTAL ALIGNMENT: STR. L 435.157 | RAD 397.825 ARC 25.000 | STR. L 51.925 | RAD -200.000 ARC 37.207 | STR. L 49.040 | RAD -200.000 ARC 414.956

ISO A1 594mm x 841mm

Last saved by: CHEAD(2015-03-23) Last Plotted: 2015-03-23
Filename: P:\603X\60337283\5. CAD\20-SHEETS\10_CONCEPT\60337283-SHT-10-RA-0032.DWG

AECOM

CONSULTANT
AECOM Australia Pty Ltd
A.B.N 20 093 846 925
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PROJECT
SIMTA INTERMODAL TERMINAL FACILITY STAGE 1

CLIENT
SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER
TACTICAL GROUP

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES
0 25 50 m H=1:1000
0 2.5 5 V=1:100

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

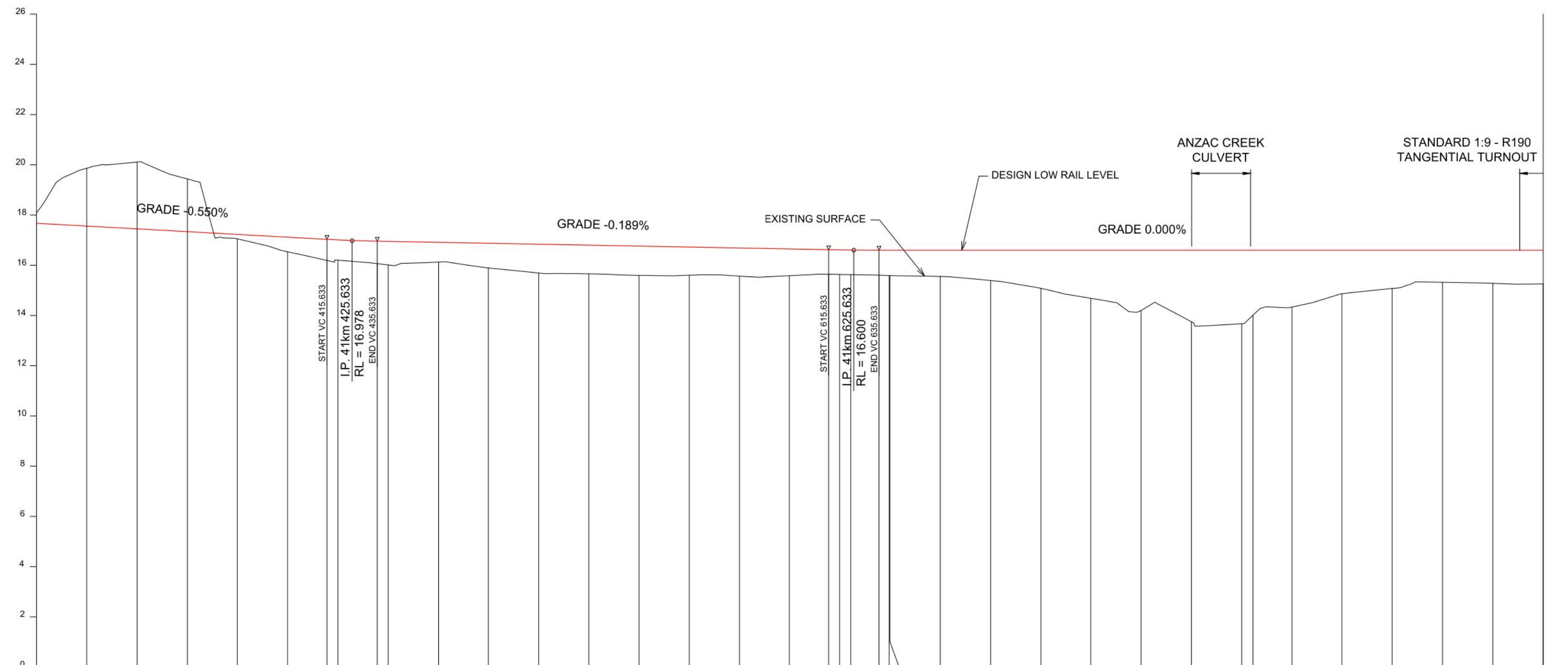
I/R	DATE	DESCRIPTION
P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER
60337283

SHEET TITLE
MOOREBANK INTERMODAL RAIL DESIGN -SOUTHERN LINE VERTICAL ALIGNMENT SHT 3

SHEET NUMBER
60337283-SHT-10-RA-0032



PROPOSED VERTICAL DESIGN: L: 190.000 GRADE: -0.550% | VC=20.00 R. 5540.17 | L: 180.000 GRADE: -0.189% | VC=20.00 R. 10582.01 | L: 996.260 GRADE: 0.000%

HORIZONTAL ALIGNMENT: RAD -200.000 ARC 414.956 | STR. L 15.216 | RAD 200.000 ARC 144.843 | STR. L 847.398

KILOMETRAGE:	VERTICAL CARDINALS:	PROPOSED LOW RAIL LEVELS:	PROPOSED LOW RAIL LIFTS:	PROPOSED LOW RAIL CUTS:	EXISTING RAIL LEVELS:	HORIZONTAL CARDINALS:
41km 300.000		17.669		0.420	18.089	
41km 320.000		17.559		2.305	19.864	
41km 340.000		17.449		2.663	20.112	
41km 360.000		17.339		2.098	19.437	
41km 380.000		17.229	0.178		17.051	
41km 400.000		17.119	0.580		16.539	
	SVC 415.633					
41km 420.000		17.011	0.806		16.205	
	EVC 435.633					
41km 440.000		16.951	0.938		16.013	
41km 460.000		16.913	0.787		16.126	
41km 480.000		16.875	0.979		15.896	
41km 500.000		16.837	1.145		15.692	
41km 520.000		16.800	1.140		15.660	
41km 540.000		16.762	1.168		15.594	
41km 560.000		16.724	1.120		15.604	
41km 580.000		16.686	1.119		15.567	
41km 600.000		16.648	1.064		15.584	
	SVC 615.633					
41km 620.000		16.612	0.977		15.635	
41km 624.436		16.606	0.979		15.627	TP 624.436
	EVC 635.633					
41km 639.652		16.600	1.008		15.592	TP 639.652
41km 640.000		16.600	1.009		15.591	
41km 660.000		16.600	1.046		15.554	
41km 680.000		16.600	1.208		15.392	
41km 700.000		16.600	1.517		15.083	
41km 720.000		16.600	1.915		14.685	
41km 740.000		16.600	2.403		14.197	
41km 760.000		16.600	2.848		13.752	
41km 780.000		16.600	2.927		13.673	
41km 784.495		16.600	2.588		14.012	TP 784.495
41km 800.000		16.600	2.264		14.336	
41km 820.000		16.600	1.732		14.868	
41km 840.000		16.600	1.523		15.077	
41km 860.000		16.600	1.278		15.322	
41km 880.000		16.600	1.321		15.279	
41km 900.000		16.600	1.343		15.257	

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PROJECT

SIMTA INTERMODAL TERMINAL FACILITY STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES

0 25 50 m H=1:1000
0 2.5 5 V=1:100

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

60337283

SHEET TITLE

MOOREBANK INTERMODAL RAIL DESIGN -SOUTHERN LINE VERTICAL ALIGNMENT SHT 4

SHEET NUMBER

60337283-SHT-10-RA-0033

ISO A1 594mm x 841mm
Last saved by: PATELG(2015-03-30) Last Plotted: 2015-03-30
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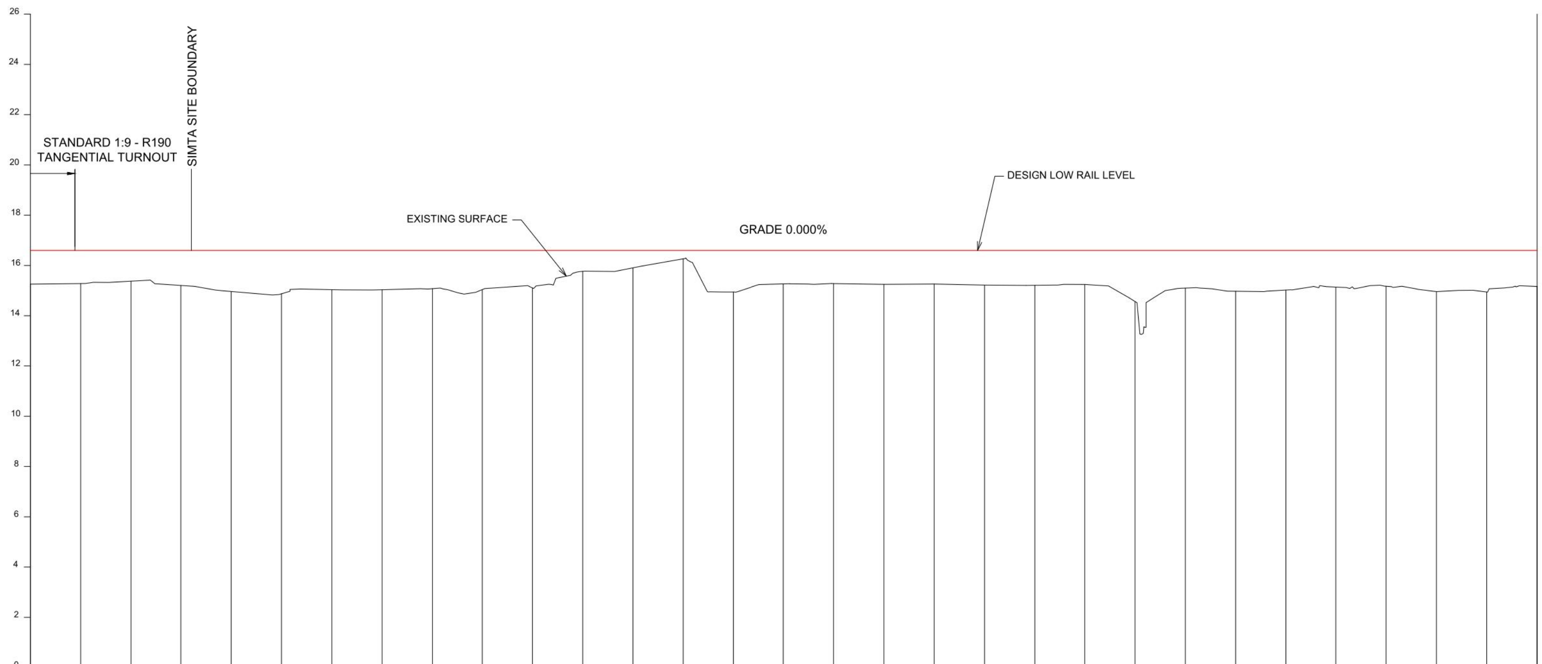
ISO A1 594mm x 841mm



PROPOSED VERTICAL DESIGN: L: 996.260, GRADE: 0.000%

VERTICAL CARDINALS:

HORIZONTAL ALIGNMENT: STR. L 847.398

HORIZONTAL CARDINALS:

KILOMETRAGE:	PROPOSED LOW RAIL LEVELS:	PROPOSED LOW RAIL LIFTS:	PROPOSED LOW RAIL CUTS:	EXISTING RAIL LEVELS:
41km 900.000	16.600	1.343		15.257
41km 920.000	16.600	1.320		15.280
41km 940.000	16.600	1.224		15.376
41km 960.000	16.600	1.396		15.204
41km 980.000	16.600	1.636		14.964
42km 000.000	16.600	1.725		14.875
42km 020.000	16.600	1.564		15.036
42km 040.000	16.600	1.565		15.035
42km 060.000	16.600	1.523		15.077
42km 080.000	16.600	1.560		15.040
42km 100.000	16.600	1.496		15.104
42km 120.000	16.600	0.834		15.766
42km 140.000	16.600	0.696		15.904
42km 160.000	16.600	0.337		16.263
42km 180.000	16.600	1.658		14.942
42km 200.000	16.600	1.333		15.267
42km 220.000	16.600	1.320		
42km 240.000	16.600	1.351		
42km 260.000	16.600	1.338		
42km 280.000	16.600	1.380		
42km 300.000	16.600	1.389		15.211
42km 320.000	16.600	1.355		15.245
42km 340.000	16.600	2.036		14.564
42km 360.000	16.600	1.502		15.098
42km 380.000	16.600	1.627		14.973
42km 400.000	16.600	1.580		15.020
42km 420.000	16.600	1.460		15.140
42km 440.000	16.600	1.428		15.172
42km 460.000	16.600	1.637		14.963
42km 480.000	16.600	1.656		14.944
42km 500.000	16.600	1.438		15.162

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PROJECT

SIMTA INTERMODAL TERMINAL FACILITY STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 25 50 m H=1:1000
0 2.5 5 V=1:100

PROJECT MANAGEMENT INITIALS

DESIGNER	CHECKED	APPROVED
H.P	P.S	J.M

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

PROJECT NUMBER

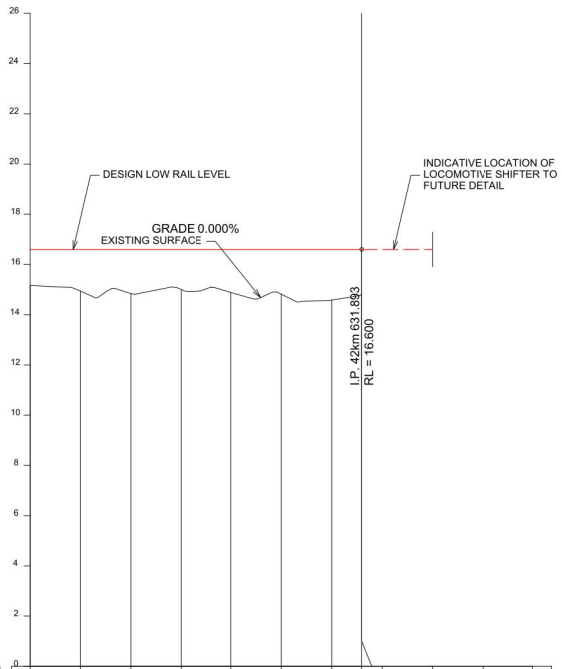
60337283

SHEET TITLE

MOOREBANK INTERMODAL RAIL DESIGN -SOUTHERN LINE VERTICAL ALIGNMENT SHT 5

SHEET NUMBER

60337283-SHT-10-RA-0034



	42km 500.000	42km 520.000	42km 540.000	42km 560.000	42km 580.000	42km 600.000	42km 620.000	42km 631.893	42km 640.000	42km 660.000	42km 680.000	42km 700.000
KILOMETRAGE:												
PROPOSED VERTICAL DESIGN:	L: 996.260 GRADE: 0.000%											
VERTICAL CARDINALS:								POE 631.893				
PROPOSED LOW RAIL LEVELS:	16.600	16.600	16.600	16.600	16.600	16.600	16.600	16.600				
PROPOSED LOW RAIL LIFTS:	1.438	1.657	1.754	1.596	1.710	1.781	2.019	1.797				
PROPOSED LOW RAIL CUTS:												
EXISTING RAIL LEVELS:	15.162	14.943	14.846	15.004	14.890	14.819	14.581	14.803				
HORIZONTAL ALIGNMENT:	STR. L 847.398											
HORIZONTAL CARDINALS:								POE 631.893				

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PROJECT

SIMTA
INTERMODAL
TERMINAL FACILITY
STAGE 1

CLIENT

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER

TACTICAL GROUP

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

SCALES

0 25 50 m H=1:1000
0 2.5 5 V=1:100

PROJECT MANAGEMENT INITIALS

H.P	P.S	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

P4	23.03.2015	FOR SSD APPLICATION
P3	13.03.2015	ISSUED FOR INFORMATION
P2	04.02.2015	ISSUED FOR INFORMATION
P1	16.01.2015	ISSUED FOR INFORMATION
I/R	DATE	DESCRIPTION

NOT FOR CONSTRUCTION

PROJECT NUMBER

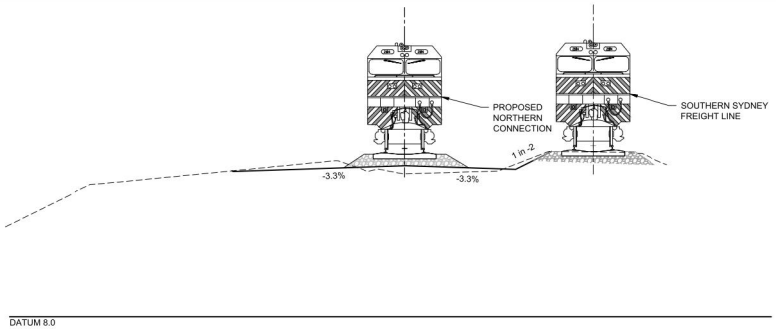
60337283

SHEET TITLE

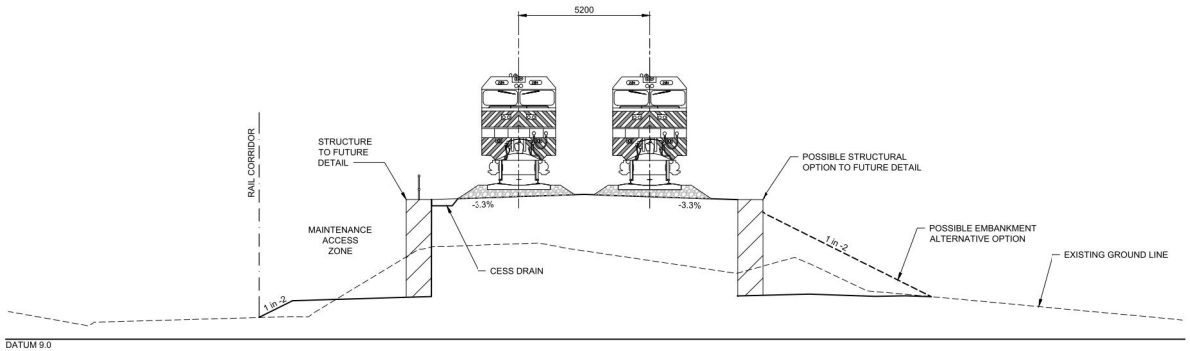
MOOREBANK INTERMODAL
RAIL DESIGN -SOUTHERN LINE
VERTICAL ALIGNMENT SHT 6

SHEET NUMBER

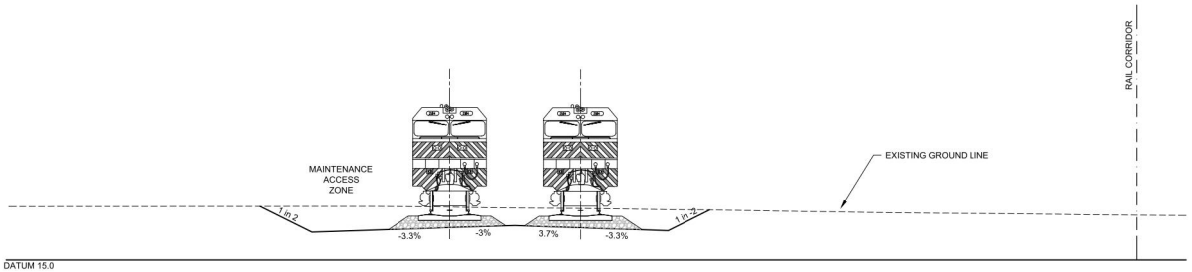
60337283-SHT-10-RA-0035



1 TYPICAL SECTION
RA-001 Scale 1:100



2 TYPICAL SECTION
RA-001 Scale 1:100



3 TYPICAL SECTION
RA-001 Scale 1:100

NOTE: REFER DRAWING RA-0001 FOR LOCATION OF TYPICAL CROSS SECTIONS.

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PROJECT
SIMTA
INTERMODAL
TERMINAL FACILITY
STAGE 1

CLIENT
SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER
TACTICAL GROUP

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES
0 0.625 1.25 m
1:25

PROJECT MANAGEMENT INITIALS

A.P	D.P	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

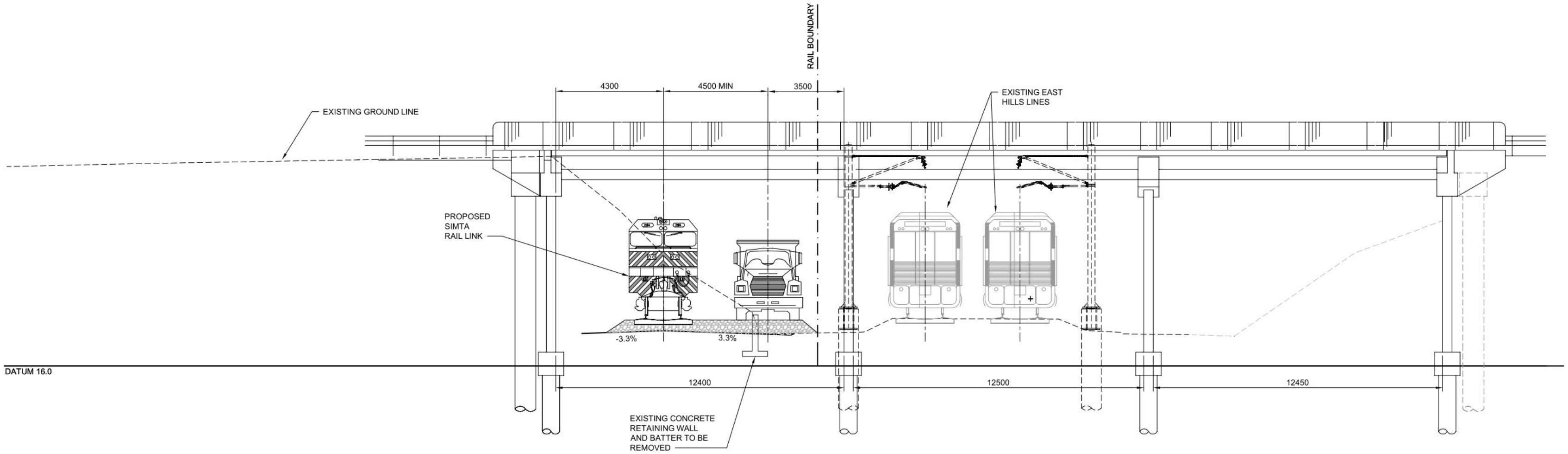
I/R	DATE	DESCRIPTION
P2	23.03.2015	FOR SSD APPLICATION
P1	13.03.2015	ISSUED FOR INFORMATION

NOT FOR CONSTRUCTION

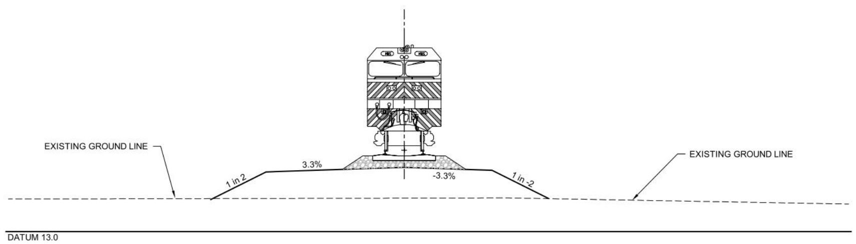
PROJECT NUMBER
TRACTRA

SHEET TITLE
MOOREBANK INTERMODAL
RAIL DESIGN
TYPICAL SECTIONS SHT 1

SHEET NUMBER
60337283-SHT-10-RA-0060



4 | TYPICAL SECTION
RA-001 Scale 1:100



5 | TYPICAL SECTION
RA-001 Scale 1:100

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PROJECT
SIMTA INTERMODAL TERMINAL FACILITY STAGE 1

CLIENT
SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER
TACTICAL GROUP

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES
0 0.625 1.25 m
1:25

PROJECT MANAGEMENT INITIALS

A.P	D.P	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P2	23.03.2015	FOR SSD APPLICATION
P1	13.03.2015	ISSUED FOR INFORMATION

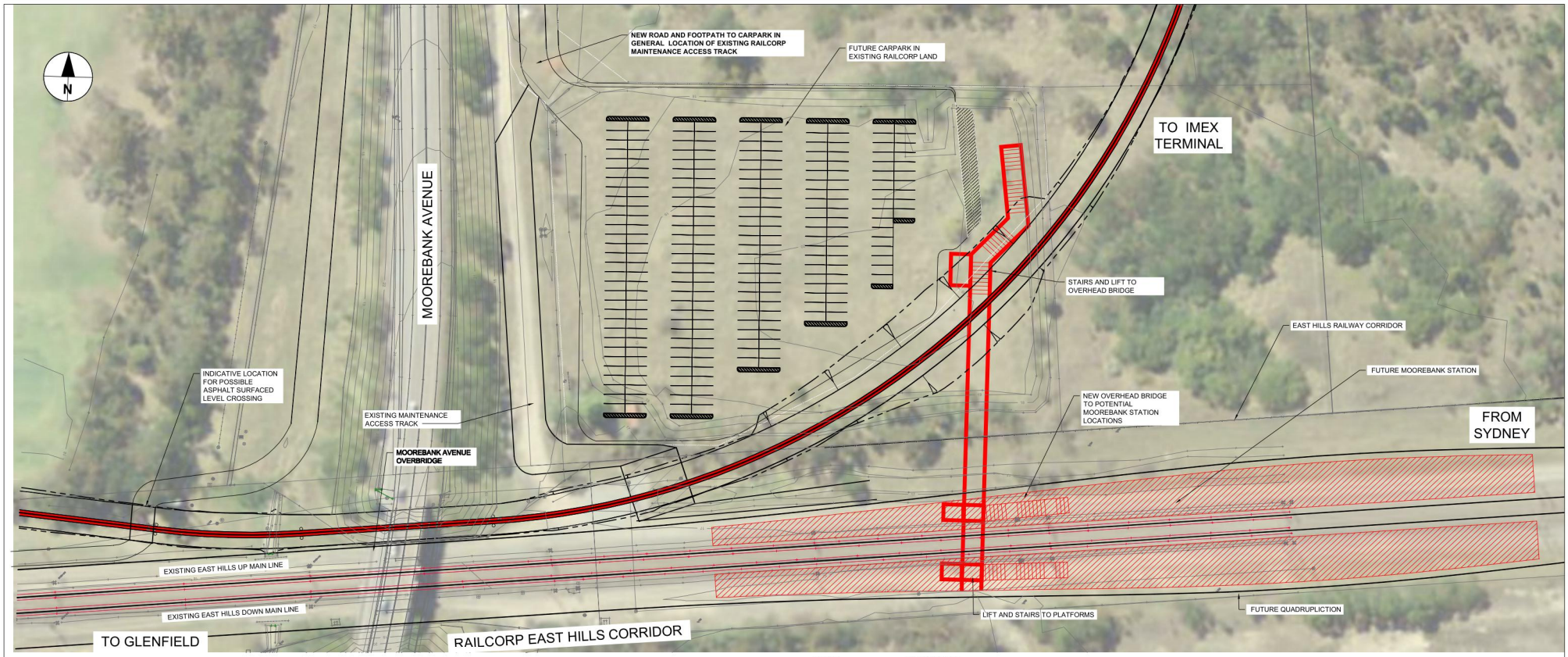
NOT FOR CONSTRUCTION

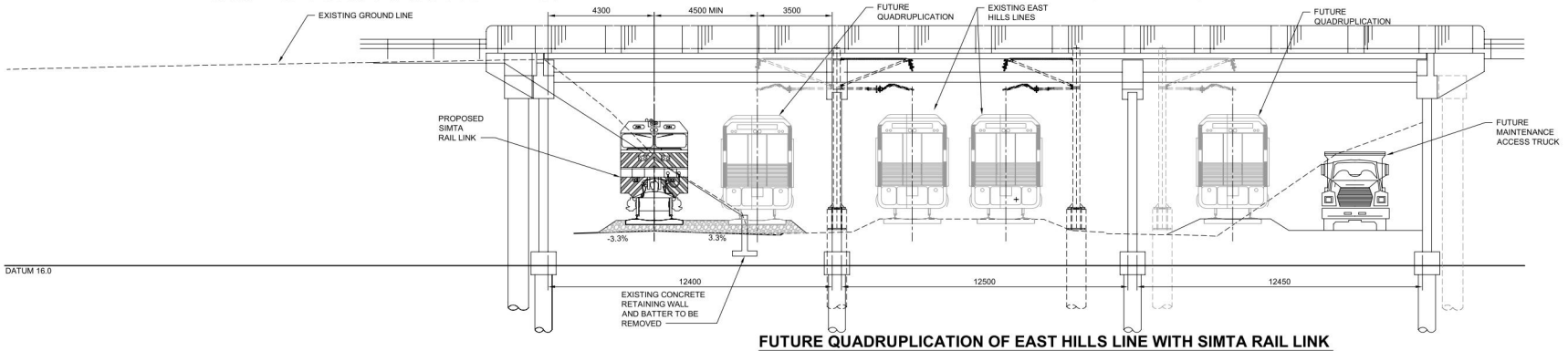
PROJECT NUMBER
60337283

SHEET TITLE
MOOREBANK INTERMODAL RAIL DESIGN TYPICAL SECTIONS SHT 2

SHEET NUMBER
60337283-SHT-10-RA-0061

ISO A1 594mm x 841mm





FUTURE QUADRUPLICATION OF EAST HILLS LINE WITH SIMTA RAIL LINK AT MOOREBANK AVENUE OVERBRIDGE

Last saved by: CHEAD (2015-03-31) Last Plotted: 2015-03-31
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PROJECT
SIMTA
INTERMODAL
TERMINAL FACILITY
STAGE 1

CLIENT
SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

PROJECT MANAGER
TACTICAL GROUP

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

SCALES
0 12.5 25 m
1:500
0 2.5 5 m
1:100

PROJECT MANAGEMENT INITIALS

A.P	D.P	J.M
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

P2	23.03.2015	FOR SSD APPLICATION
P1	13.03.2015	ISSUED FOR INFORMATION
I/R	DATE	DESCRIPTION

NOT FOR CONSTRUCTION

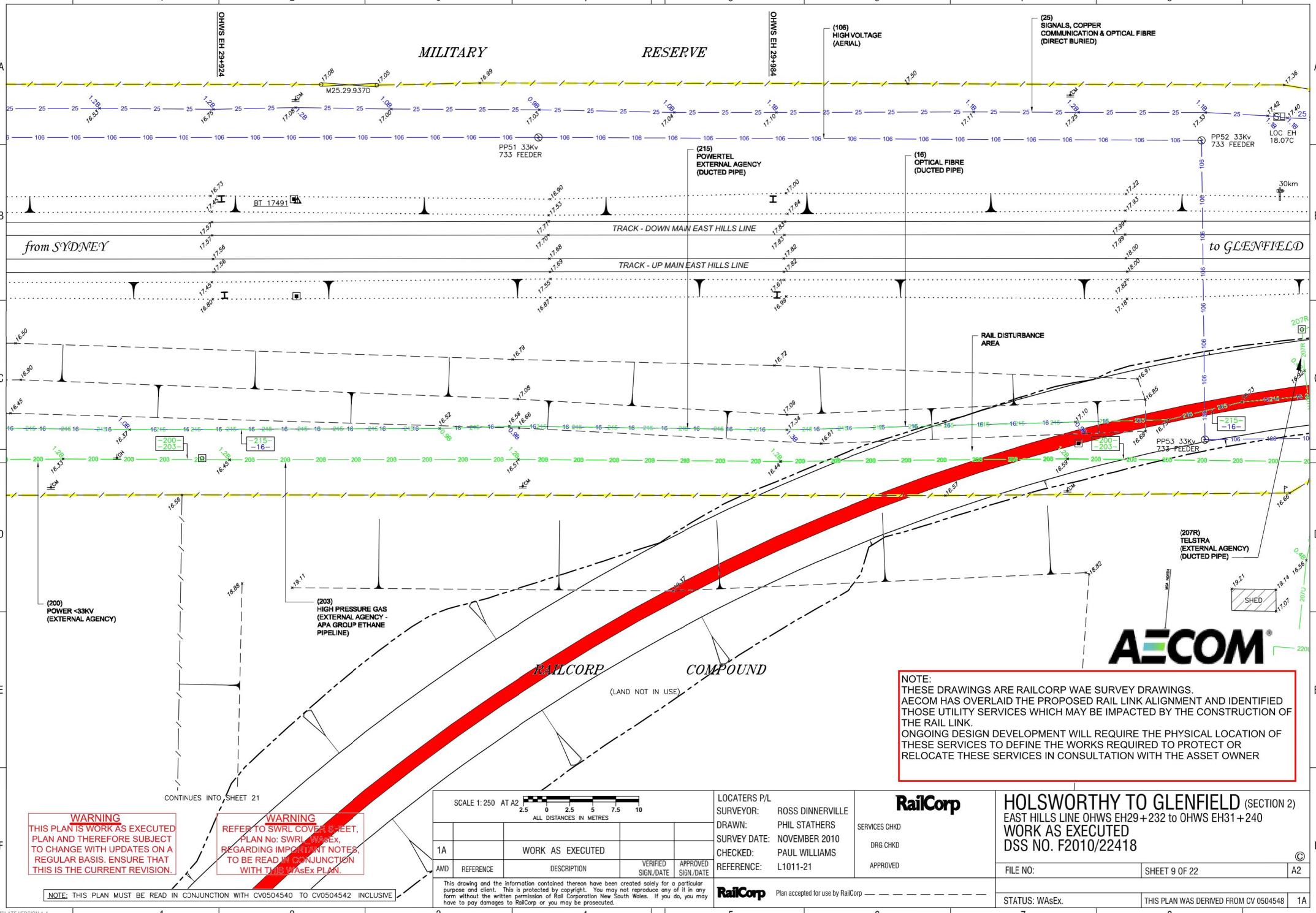
PROJECT NUMBER
60337283

SHEET TITLE
MOOREBANK INTERMODAL
RAIL DESIGN
MOOREBANK STATION - FUTURE QUAD

SHEET NUMBER
60337283-SHT-10-RA-0080

Moorebank Intermodal Terminal Facility - Stage 1

Appendix B
Sydney Trains Services and Infrastructure Requiring Relocation



AECOM

NOTE:
THESE DRAWINGS ARE RAILCORP WAE SURVEY DRAWINGS.
AECOM HAS OVERLAID THE PROPOSED RAIL LINK ALIGNMENT AND IDENTIFIED THOSE UTILITY SERVICES WHICH MAY BE IMPACTED BY THE CONSTRUCTION OF THE RAIL LINK.
ONGOING DESIGN DEVELOPMENT WILL REQUIRE THE PHYSICAL LOCATION OF THESE SERVICES TO DEFINE THE WORKS REQUIRED TO PROTECT OR RELOCATE THESE SERVICES IN CONSULTATION WITH THE ASSET OWNER

WARNING
THIS PLAN IS WORK AS EXECUTED PLAN AND THEREFORE SUBJECT TO CHANGE WITH UPDATES ON A REGULAR BASIS. ENSURE THAT THIS IS THE CURRENT REVISION.

WARNING
REFER TO SWRL COVER SHEET, PLAN No: SWRL-WASEx, REGARDING IMPORTANT NOTES, TO BE READ IN CONJUNCTION WITH THIS WASEx PLAN.

NOTE: THIS PLAN MUST BE READ IN CONJUNCTION WITH CV0504540 TO CV0504542 INCLUSIVE

SCALE 1:250 AT A2
2.5 0 2.5 5 7.5 10
ALL DISTANCES IN METRES

AMD	REFERENCE	DESCRIPTION	VERIFIED SIGN./DATE	APPROVED SIGN./DATE
1A		WORK AS EXECUTED		

LOCATERS P/L	
SURVEYOR:	ROSS DINNERVILLE
DRAWN:	PHIL STATHERS
SURVEY DATE:	NOVEMBER 2010
CHECKED:	PAUL WILLIAMS
REFERENCE:	L1011-21

RailCorp
SERVICES CHKD
DRG CHKD
APPROVED

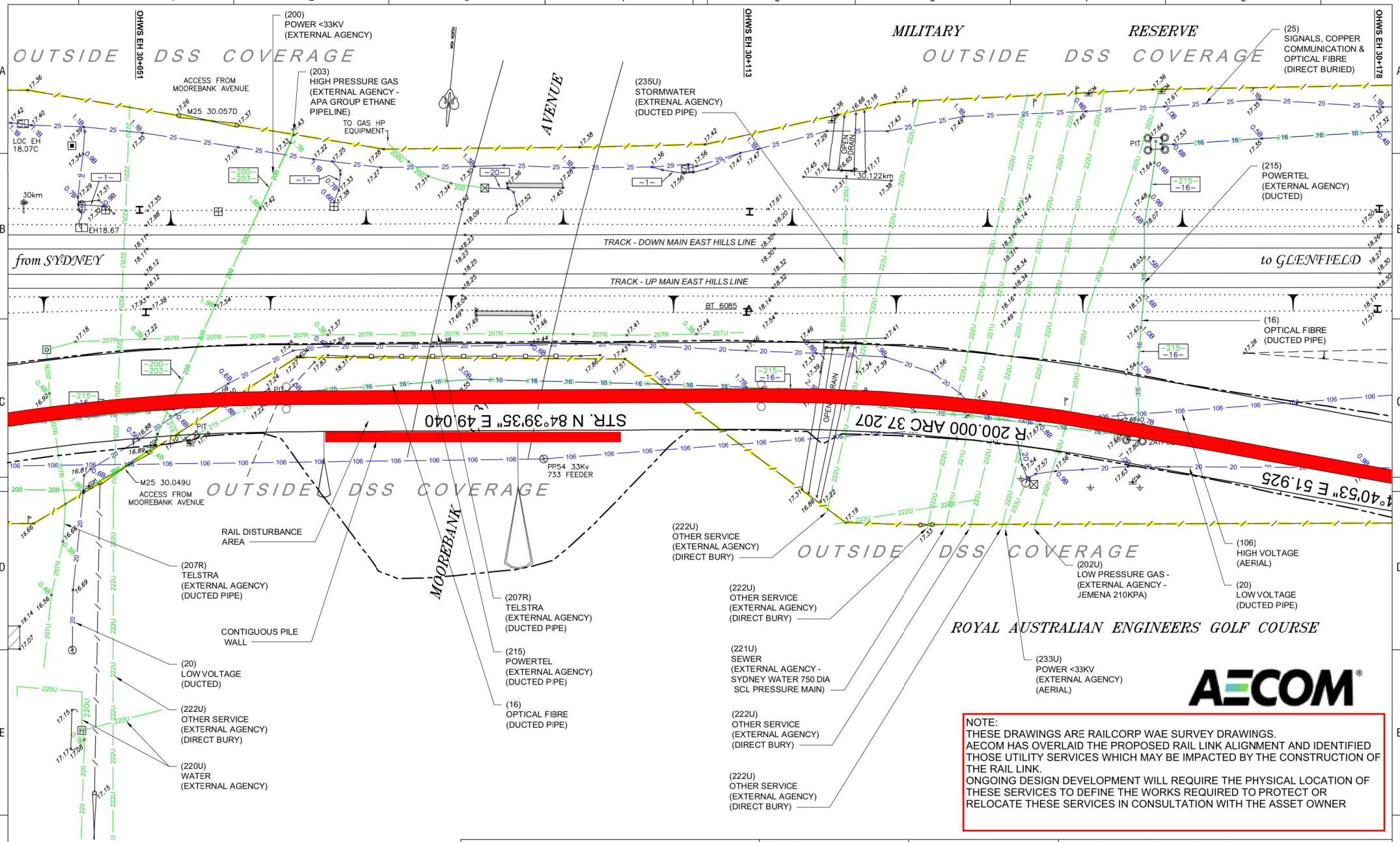
RailCorp Plan accepted for use by RailCorp

HOLSWORTHY TO GLENFIELD (SECTION 2)

EAST HILLS LINE OHWS EH29+232 to OHWS EH31+240
WORK AS EXECUTED
DSS NO. F2010/22418

FILE NO:	SHEET 9 OF 22	A2
STATUS: WAsEx.	THIS PLAN WAS DERIVED FROM CV 0504548	1A

TEMPLATE VERSION 1.4
26/7/2012 8:35AM



AECOM

NOTE:
THESE DRAWINGS ARE RAILCORP WAE SURVEY DRAWINGS.
AECOM HAS OVERLAID THE PROPOSED RAIL LINK ALIGNMENT AND IDENTIFIED THOSE UTILITY SERVICES WHICH MAY BE IMPACTED BY THE CONSTRUCTION OF THE RAIL LINK.
ONGOING DESIGN DEVELOPMENT WILL REQUIRE THE PHYSICAL LOCATION OF THESE SERVICES TO DEFINE THE WORKS REQUIRED TO PROTECT OR RELOCATE THESE SERVICES IN CONSULTATION WITH THE ASSET OWNER

SCALE 1:250 AT A2
2.5 0 2.5 5 7.5 10
ALL DISTANCES IN METRES

AMD	REFERENCE	DESCRIPTION	VERIFIED SIGN./DATE	APPROVED SIGN./DATE
1A		WORK AS EXECUTED		

LOCATERS P/L
SURVEYOR: ROSS DINNERVILLE
DRAWN: PHIL STATHERS
SURVEY DATE: NOVEMBER 2010
CHECKED: PAUL WILLIAMS
REFERENCE: L1011-21

RailCorp
SERVICES CHKD
DRG CHKD
APPROVED

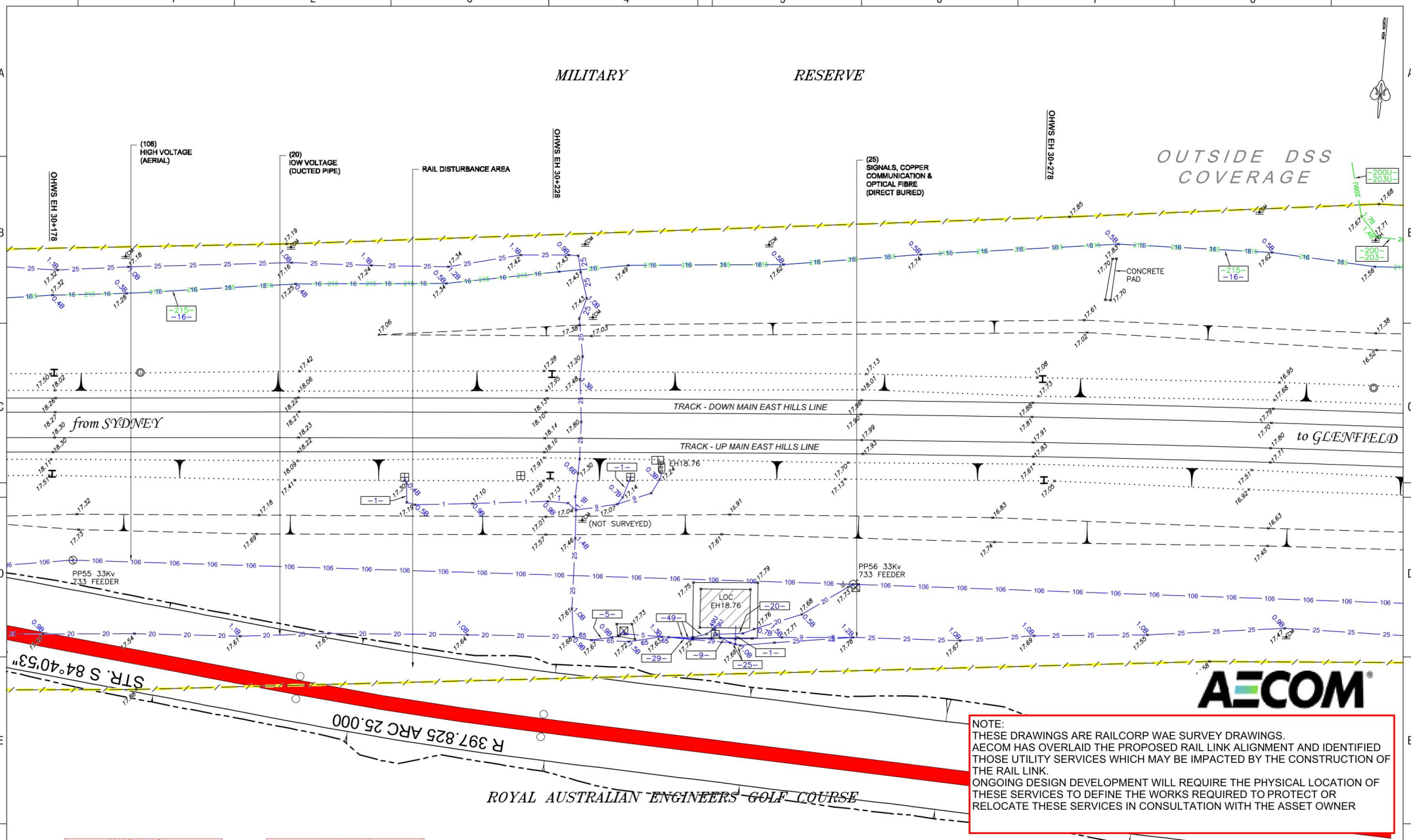
RailCorp Plan accepted for use by RailCorp

HOLSWORTHY TO GLENFIELD (SECTION 2)

EAST HILLS LINE OHWS EH29+232 to OHWS EH31+240
WORK AS EXECUTED
DSS NO. F2010/22418

FILE NO:	SHEET 10 OF 22	A2
STATUS: WAsEx.	THIS PLAN WAS DERIVED FROM CV 0504549	1A

NOTE: THIS PLAN MUST BE READ IN CONJUNCTION WITH CV0504540 TO CV0504542 INCLUSIVE



AECOM

NOTE:
THESE DRAWINGS ARE RAILCORP WAE SURVEY DRAWINGS.
AECOM HAS OVERLAID THE PROPOSED RAIL LINK ALIGNMENT AND IDENTIFIED THOSE UTILITY SERVICES WHICH MAY BE IMPACTED BY THE CONSTRUCTION OF THE RAIL LINK.
ONGOING DESIGN DEVELOPMENT WILL REQUIRE THE PHYSICAL LOCATION OF THESE SERVICES TO DEFINE THE WORKS REQUIRED TO PROTECT OR RELOCATE THESE SERVICES IN CONSULTATION WITH THE ASSET OWNER

WARNING
THIS PLAN IS WORK AS EXECUTED PLAN AND THEREFORE SUBJECT TO CHANGE WITH UPDATES ON A REGULAR BASIS. ENSURE THAT THIS IS THE CURRENT REVISION.

WARNING
REFER TO SWRL COVER SHEET, PLAN No: SWRL_WAsEx, REGARDING IMPORTANT NOTES, TO BE READ IN CONJUNCTION WITH THIS WAsEx PLAN.

NOTE: THIS PLAN MUST BE READ IN CONJUNCTION WITH CV0504540 TO CV0504542 INCLUSIVE

SCALE 1:250 AT A2
2.5 0 2.5 5 7.5 10
ALL DISTANCES IN METRES

AMD	REFERENCE	DESCRIPTION	VERIFIED SIGN./DATE	APPROVED SIGN./DATE
1A		WORK AS EXECUTED		

LOCATERS P/L	
SURVEYOR:	ROSS DINNERVILLE
DRAWN:	PHIL STATHERS
SURVEY DATE:	NOVEMBER 2010
CHECKED:	PAUL WILLIAMS
REFERENCE:	L1011-21

RailCorp
SERVICES CHKD
DRG CHKD
APPROVED

RailCorp Plan accepted for use by RailCorp

HOLSWORTHY TO GLENFIELD (SECTION 2)

EAST HILLS LINE OHWS EH29+232 to OHWS EH31+240
WORK AS EXECUTED
DSS NO. F2010/22418

FILE NO:	SHEET 11 OF 22	A2
STATUS: WAsEx.	THIS PLAN WAS DERIVED FROM CV 0504550	1A