

SIMTA Intermodal Terminal Facility- Stage 1 Utilities Enabling Works



SIMTA

SYDNEY INTERMODAL TERMINAL ALLIANCE

Part 4, Division 4.1, State Significant
Development

Utility Enabling Works

Review of Existing Utilities

Client: SIMTA

ABN: N/A

Prepared by

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Executive Summary

To support of the Part 4, State Significance Development Application for the Sydney Intermodal Terminal Facility Stage 1 proposal at Moorebank Avenue, Moorebank, AECOM has undertaken an investigation of the utilities within the vicinity of the Intermodal Terminal and proposed rail connections.

The outcome of the investigation is that all necessary major utilities can be made available to service the Sydney Intermodal Terminal Alliance (SIMTA) proposal. The extent of upgrades of existing utility provider assets and the connection are subject to detailed negotiations with utility providers at final design stage.

In producing this report the following review of documentation have been undertaken;

- Dial Before You Dig;
- Review of Detail Services Survey (DSS); and
- As-constructed drawing;

The majority of the impacts to the existing utilities occurs adjacent to the East Hills Rail corridor although there is significant impacts at the connection to the Southern Sydney Freight Line and within and adjacent to Moorebank Avenue and Anzac Road.

Further stakeholder consultation and investigations will need to be undertaken in the subsequent design phases.

1.0 Introduction

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.

This report is intended to accompany the submission documents for a Part 4, State Significance Development Application.

The following investigations have been undertaken:

- Dial Before You Dig (DBYD) requests for Anzac Road, Moorebank Avenue, East Hills Rail Corridor, Main South Line and Georges River and part of the proposed SIMTA site;
- Review of Sydney Trains Detail Services Survey (DSS) drawings for the proposed rail corridor adjacent to the East Hills Rail Corridor;
- Review of ARTC construction drawings for the Southern Freight Link for the proposed rail connections to the Southern Sydney Freight Corridor; and
- Stakeholder engagement where critical infrastructure assets have been identified.

1.2 Objectives

This report aims to identify within the proposed IMT, surrounding roads and proposed rail connections the following:

- Location, type and owner / operator of existing utilities;
- Extent of impact to existing utilities resulting from the proposed development;
- Potential works required to protect, relocate or remove existing utilities; and
- Identification of further stakeholder engagement and design works to be undertaken within subsequent design stages.

1.3 Assumptions

This report is based on information made available to AECOM at the time of writing and based on inputs of the sources outlined above.

2.0 Dial Before You Dig (DYBD) Investigation

A review of the existing utilities within vicinity of the proposed works areas has been undertaken within the following areas:

- Anzac Road;
- Moorebank Avenue;
- East Hills Rail Corridor; and the
- Main South Line and Georges River.

The tables presented below provided a commentary of the review undertaken. The extents investigation for each DBYD job number is provided in Appendix A.

2.1 Anzac Road

Table 1 Dial Before You Dig – Anzac Road

Anzac Road- DBYD Job No. 86006704		
Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
RMS	No works identified. Infrastructure typically for signals exists at intersections of Heathcote Rd and Nuwarra Rd, Anzac Road and Moorebank Avenue and in this location are not within vicinity of the intended works.	No further action.
Endeavour Energy	No works identified. Buried cables do exist within the area but are limited to the northern section of Moorebank Avenue near the intersection with Anzac Avenue and are therefore in this location not within vicinity of the intended works.	No further action.
Telstra	Utilities are present on both sides of Moorebank Avenue and within the north western sector of the DNSDC site. The utilities within the DNSDC site will encroach on the footprint of the IMT in this area and will therefore require relocation or removal.	Removal or relocation of existing utilities is to be further investigated with Telstra during subsequent design phase.
Optus Uecomm NSW	No works identified. Utilities are present but are located on Moorebank Avenue or at the intersection and with and along Anzac Avenue. The utilities in this location are not within vicinity of the intended works.	No further action.
Jemena Gas West	No works identified. A 75mm medium pressure gas main exists on the western side of Moorebank Avenue. In this location they are not within vicinity of the intended works.	No further action.
Sydney Water	No works identified. There is a 750mm SCL sewer rising main and 150mm CACL water main the western side of Moorebank Avenue and a 90mm AC water main on the eastern side of Moorebank Avenue. In this location these utilities are not within vicinity of the intended works.	No further action.

2.2 Moorebank Avenue

Table 2 Dial Before You Dig – Moorebank Avenue Corridor

Moorebank Avenue - DBYD Job No. 86006777		
Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
Freyssinet	No works identified. No information received from DBYD to date, although APA Group Transmission Gorodok has provided relevant information and in this location is not within vicinity of the intended work.	It is understood Freyssinet is affiliated with APA Group Transmission Gorodok and therefore have an interest Ethane pipelines.
RMS	Existing traffic signals are present at the intersections of Chatham Avenue, Anzac Road, Entrance to 2nd Base Workshop and Main Entrance to SIMTA Site. Modification to traffic signals at the Main Entrance and Second Main Entrance to SIMTA Site will be required in this location.	Removal or relocation of existing traffic signals is to be further investigated with RMS during subsequent design phase.
AAPT PowerTel NSW	Utility exists although locations are yet to be confirmed as no further information received from DBYD to date.	Confirmation of presence and location of existing AAPT PowerTel utilities to be confirmed with AAPT PowerTel during subsequent design phase.
Endeavour Energy	No works identified. Utilities limited to Anzac Avenue and northern section of Moorebank Avenue, therefore in this location these utilities are not within vicinity of the intended works.	No further action.
Telstra NSW	Telstra buried services are Moorebank Avenue traverses new freight line. The existing line currently traverses the East Hills passenger rail line.	Removal or relocation of existing utilities are to be further investigated with Telstra during subsequent design phase.
Optus Uecomm NSW	Buried utilities are present within Moorebank Avenue, Bapaume and Anzac Roads and within SME site. The utilities within Moorebank Avenue and the SME site may require relocation or removal.	Removal or relocation of existing utilities is to be further investigated with Optus Uecomm during subsequent design phase.
Jemena Gas West	No works identified. A 75mm medium pressure (210kPa) gas main exists on the western side of Moorebank Avenue and on the southern and northern sides of Anzac Avenue. In this location they are not within vicinity of the intended works.	No further action.
Sydney Water	Extent of works to be confirmed. The 750mm dia SCL sewer pressure main crosses East Hills Rail Line parallel to Moorebank Avenue on the eastern side of the Moorebank Avenue overbridge. The proposed rail line will be within the East Hills rail corridor in this location. The Sydney Water drawings do not indicate concrete encasement with the boundaries of the rail corridor.	It is understood from meeting with Sydney Water that this rising main is used for transferring treated sewage. The existing main does not appear to be concrete encased at the existing East Hills Rail crossings. The protection requirements are likely based on maintaining cover from existing rail and limiting working loads. Confirmation of cover requirements and maximum working loads or protection requirements will

		need to be determined in further consultation with Sydney Water during the subsequent design phase.
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2.3 East Hills Rail Corridor

Table 3 Dial Before You Dig – East Hills Rail Corridor

East Hills Rail Corridor - DBYD Job No. 8606887		
Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
Freyssinet	No information received from DBYD to date.	
Nextgen NCC - NSW	No impact, utility is on western side of main south line adjacent to works.	No further action required.
AAPT PowerTel NSW	Utilities are present and will likely require relocation adjacent to the Moorebank Avenue underbridge and protection or realignment at transverse crossings.	Detail information not yet received, response based on DSS information. Relocation of ducts is to be further investigated with AAPT PowerTel during subsequent design phase.
PIPE Networks	Utility is present in this area within Telstra Ducts. No works allowed unless Telstra duct plan have been appraised by PIPE networks.	
Endeavour Energy	No impact. No utility present within this area.	No further action required.
Telstra NSW	Telstra Line on western side of Moorebank Avenue crossed by new freight line.	
Optus Uecomm NSW	No impact. Utility is beyond western boundary of Main South Rail Corridor and not within vicinity of intended works.	No further action required.
Jemena Gas West	A gas main is present within the vicinity of intended works. A 210kPa main is present adjacent to Moorebank Avenue and traverses the East Hills Rail Corridor.	Relocation or protection of the existing Gas main is to be further investigated during the subsequent design phase.
Sydney Water	A 675mm dia SCL Sydney Water sewer pressure main is present within the vicinity of intended works. A transverse crossing of the existing East Hills Rail corridor and proposed freight line occurs to the west of the Moorebank Avenue overbridge.	Refer to Moorebank Avenue Sydney Water review above.
NBN Co NSW	No impact. Utility exists on beyond western boundary of Main South Rail Corridor and not within vicinity of intended works.	No further action required.
APA Group Transmission Gorodok	High pressure Ethane Gas Main is present and will be impacted by the proposed works near the Moorebank Avenue Overbridge. The intended works will cross the pipeline least twice over a distance of approximately 60m.	Refer to Moorebank Avenue APA Group Transmission Gorodok review above.

2.4 Main South Line and Georges River

Table 4 Dial Before You Dig – Main South Line and Georges River

Main South Line and Georges River - DBYD Job No. 8607052		
Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
Freyssinet	No impact. No information received from DBYD to date, although APA Group Transmission Gorodok has provided relevant information and in this location is not within vicinity of the intended work.	It is understood Freyssinet is affiliated with APA Group Transmission Gorodok and therefore have an interest Ethane pipeline. The process for next steps would be as described for APA Group Transmission Gorodok above.
Nextgen NCC - NSW	No impact, utility s located in Casula beyond western boundary of main south line and not within vicinity of the intended works.	No further action required.
PIPE Networks	No impact, utility s located in Casula beyond western boundary of main south line and not within vicinity of the intended works.	No further action required.
Endeavour Energy	No impact, utility s located in Casula beyond western boundary of main south line and not within vicinity of the intended works.	No further action required.
Telstra NSW	No impact, utility s located in Casula beyond western boundary of main south line and not within vicinity of the intended works.	No further action required.
Optus Uecomm NSW	No impact, utility s located in Casula beyond western boundary of main south line and not within vicinity of the intended works.	No further action required.
Jemena Gas West	No impact, utility s located in Casula beyond western boundary of main south line and not within vicinity of the intended works.	No further action required.
Sydney Water	No impact, utility s located in Casula beyond western boundary of main south line and not within vicinity of the intended works.	No further action required.
NBN Co NSW	No impact, utility s located in Casula beyond western boundary of main south line and not within vicinity of the intended works.	No further action required.
APA Group Transmission Gorodok	No impact, utility is located adjacent to the alignment of the East Hills Lines to the south and not within vicinity of the intended works.	No further action required.
Freyssinet	No impact. No information received from DBYD to date, although APA Group Transmission Gorodok has provided relevant information and in this location is not within vicinity of the intended work.	It is understood Freyssinet is affiliated with APA Group Transmission Gorodok and therefore have an interest Ethane pipeline. The process for next steps would be as described for APA Group Transmission Gorodok above.

3.0 Detailed Services Survey (DSS) Investigations

A review of the existing utilities within vicinity of the proposed rail works disturbance areas has been undertaken near the following locations:

- Northern Connection to Southern Sydney Freight Line;
- Southern Connection to Southern Sydney Freight Line; and
- Adjacent to the East Hills Rail Line near the Moorebank Avenue Overbridge;

The tables presented below provide a commentary of the review undertaken and should be read in conjunction with sketches provided in Appendix B.

A number of utilities identified in the DSS review are believed to be servicing the Department of Defence Holsworthy Barracks site adjacent to the East Hills Rail Corridor and Moorebank Avenue. This investigation has included review of available Defence as-constructed documentation in an attempt to identify these services. It is recommended a more detail review of the existing Defence services be conducted with Defences Contracted Maintenance Services (CMS) contractor and regional planning officers during the subsequent design phase.

3.1 Works adjacent to Main South Line / Southern Sydney Freight Line

Table 5 Northern Connection to Main South Line and Southern Sydney Freight Line (Sketch 1)

Area / Utility	Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
(106) HV Electrical (Aerial)	Sydney Trains	Pole locations appear to be unaffected. Confirm clearance of cables at crossing over new rail line is acceptable.	Obtain as-built drawings cables or obtain survey to confirm clearances from proposed rail line are acceptable.
(12) Signals, Optical Fibre, HV Cable (Ducted Pipe)	Sydney Trains	Existing pit, points at Ch39+415km and buried ducts are within the footprint of the proposed rail works and will therefore require relocation. Length of ducts affected is approximately 75m.	Relocation of existing utility to be further investigated with Sydney Trains during subsequent design phase.
Stormwater Drainage	ATRC	Subsoil drainage, stormwater pits and transverse drainage are located within the footprint of the proposed rail works and will therefore require relocation.	Relocation of existing drainage to be further investigated with ARTC during subsequent design phase.

Table 6 Northern Connection to Main South Line and Southern Sydney Freight Line (Sketch 2)

Area / Utility	Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
NA	NA	No impacts currently identified to existing utilities identified in this location.	No further action required.

Table 7 Northern Connection to Main South Line and Southern Sydney Freight Line (Sketch 2)

Area / Utility	Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
NA	NA	No impacts currently identified to existing utilities identified in this location.	No further action required.

3.2 Works Adjacent to East Hills Line

Table 8 Connection Adjacent to East Hills Line (Sketch 1)

Area / Utility	Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
(200) Electrical ,< 33kV (External Agency) (GLT)	TBC	The cable trough traverses the footprint of the proposed rail works and will therefore require relocation.	Establish ownership. Relocation of existing utility to be further investigated with owner / operator during subsequent design phase.
(203) High Pressure Gas (External Agency)	APA Group Ethane Pipeline	The high pressure Ethane Gas Main will be crossed by the proposed works . Where the intended works cross or imposed load on the pipeline, protection of th pipeline will be required. Typically concrete protection slabs and piles are required to bridge over the pipeline at crossings.	"APA Group Transmission has been contacted to understand utility protection requirements and process for gaining approvals. APA have provided a reference design for a similar crossing at the Southern Sydney Freight Corridor and outlined approval for works and construction process.
(207R) Telstra (Ducted Pipe)	Telstra	The utility is located within the footprint of the proposed work and may require relocation.	Confirm if utility is redundant or live and if existing cover is adequate to the proposed rail crossing. If required relocation of existing utility to be further investigated with Telstra during the subsequent design phase.
(16) Optical Fibre (Ducted Pipe)	Sydney Trains	The utility is located with the footprint of the proposed works and may require relocation.	Confirm cover is adequate at transverse crossing west of Moorebank Avenue Overbridge. If cover is not adequate relocation of existing utility to be further investigated with Powertel during the subsequent design phase.
(215) Powertel (Ducted Pipe)	AAPT / PowerTel	The existing utility is located with the footprint of the proposed works and may require relocation.	Confirm cover is adequate at transverse crossing west of Moorebank Avenue Overbridge. If cover is not adequate relocation of existing utility to be further investigated with Powertel during the subsequent design phase.

Area / Utility	Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
(106) High Voltage (Aerial)	Sydney Trains	The High voltage aerial cable will cross the proposed rail line in this location. This utility may require relocation if the clearances to the proposed line Pole PP53 is not adequate.	Confirm clearances are adequate. If clearances are not adequate relocation of the existing utility to be further investigated with Sydney Trains during subsequent design phase.
(25) Signals, Copper Communication and Optical Fibre (Direct Buried)	Sydney Trains	No impact. Utility is not within vicinity of works of the intended works in this location.	No further action required.

Table 9 Connection Adjacent to East Hills Line (Sketch 2) & Defence Utility (Sketch 1)

Area / Utility	Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
(220U) Water (External Agency) / Utility is believed to be Defence 375mm dia Water Main (East of Moorebank Avenue)	TBC	No impact. Utility is not within vicinity of works of the intended works in this location.	Establish ownership and type.
(222U) Other (Unknown) / Utility is believed to be Defence 50mm Electrical Conduit.	TBC	Confirm utility type and cover to new rail crossing. If cover is not adequate, replace or protect section of utility.	Establish ownership, type and cover to new rail crossing. Relocation of existing utility to be further investigated with owner / operator during subsequent design phase.
(20) Low Voltage Electrical (Ducted Pipe)	Sydney Trains	The existing electrical conduits are located within the proposed work areas and will therefore require relocation. It is anticipated the utility would need to be moved adjacent to proposed contiguous pile wall at the Moorebank Avenue overbridge.	Relocation of existing utility to be further investigated with Sydney Trains during subsequent design phase.
(207R) Telstra (Ducted Pipe)	Telstra	The existing Telstra conduits are located within the proposed work areas and will therefore require relocation. It is anticipated the utility would need to be moved adjacent to proposed contiguous pile wall at the Moorebank Avenue overbridge.	Confirm if utility is redundant or live. Relocation or removal of existing utility to be further investigated with Telstra during subsequent design phase.
(203) High Pressure Gas	Gorodok Ethane Pipeline, APA	The high pressure Ethane Gas Main will be crossed by	"APA Group Transmission has been contacted to understand

Area / Utility	Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
(External Agency)	Group	the proposed works . Where the intended works cross or imposed load on the pipeline, protection of th pipeline will be required. Typically concrete protection slabs and piles are required to bridge over the pipeline at crossings.	utility protection requirements and process for gaining approvals. APA have provided a reference design for a similar crossing at the Southern Sydney Freight Corridor and outlined approval for works and construction process.
(200) Power <33kV (External Agency) / Utility is believed to be Defence Electrical Conduit.	TBC	The existing electrical conduits will be crossed by the proposed rail line and may therefore require relocation.	Establish ownership, type and cover to new rail crossing. Relocation of existing utility to be further investigated with owner / operator during subsequent design phase.
(16) Optical Fibre (Ducted Pipe)	Sydney Trains	The existing optical fibre conduits are located within the proposed work areas and will therefore require relocation. It is anticipated the utility would need to be moved adjacent to proposed contiguous pile wall at the Moorebank Avenue overbridge.	Relocation of existing utility to be further investigated with Sydney Trains during subsequent design phase.
(215) Powertel (Ducted Pipe)	AAPT / PowerTel	The existing AAPT / Powertel conduits are located within the proposed work areas and will therefore require relocation. It is anticipated the utility would need to be moved adjacent to proposed contiguous pile wall at the Moorebank Avenue overbridge.	Relocation of existing utility to be further investigated with AAPT / Powertel during subsequent design phase.
(235U) Stormwater (External Agency) (Ducted Pipe) / Utility is believed to be Defence stormwater drainage culvert.	TBC	The existing stormwater drainage culvert will be crossed by the proposed rail line and will therefore require extension, modifications or replacement.	Establish ownership, type and cover to new rail crossing. Relocation of existing stormwater drainage culvert to be further investigated with owner / operator during subsequent design phase.
(222U) Other Service (External Agency) (Direct Bury) / Utility is thought to be Defence 375mm dia Water Main.	TBC	The existing water main will be crossed by the proposed rail line and may require protection, modification or replacement. The course of action will be defined by the pipe type and existing cover to the proposed rail line. If the existing pipe is SCL and	Establish ownership, pipe type and cover to proposed rail crossing. If required protection, modification or relocation of existing water main to be further investigated with owner / operator during subsequent design phase.

Area / Utility	Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
		cover adequate, concrete encase pipe section at rail crossing in accordance with Sydney Water DTC drawings. If pipe is DICL at crossing or cover is not adequate, replace pipe with concrete encased SCL at new crossing.	
(222U) Other Service (External Agency) (Direct Bury) / Utility is believed to be Defence 250mm water supply main.	TBC	The existing water main will be crossed by the proposed rail line and may require protection, modification or replacement. The course of action will be defined by the pipe type and existing cover to the proposed rail line. If the existing pipe is SCL and cover adequate, concrete encase pipe section at rail crossing in accordance with Sydney Water DTC drawings. If pipe is DICL at crossing or cover is not adequate, replace pipe with concrete encased SCL at new crossing.	Establish ownership, pipe type and cover to proposed rail crossing. If required protection, modification or relocation of existing water main to be further investigated with owner / operator during subsequent design phase.
(221U) Sewer (750mm dia SCL Rising Main)	Sydney Water	The existing sewer rising main will be crossed by the proposed rail line and may require protection. If cover is not adequate at proposed crossing the pipe may require protection via concrete encasement or a protection slab or similar.	Confirm pipe type and cover is adequate at proposed transverse crossing. AECOM has undertaken preliminary meeting with Sydney Water and have discussed the potential works in vicinity of this rising main. If required protection of existing water main to be further investigated with Sydney Water during subsequent design phase.
(222U) Other Service (External Agency) (Direct Bury) / Utility is thought to be Defence 100mm water main.	TBC	The existing water main will be crossed by the proposed rail line and may require protection, modification or replacement. The course of action will be defined by the pipe type and existing cover to the proposed rail line. If the existing pipe is SCL and cover adequate, concrete encase pipe section at rail crossing in accordance with Sydney Water DTC drawings. If pipe is DICL at	Establish ownership, pipe type and cover to proposed rail crossing. If required protection, modification or relocation of existing water main to be further investigated with owner / operator during subsequent design phase.

Area / Utility	Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
		crossing or cover is not adequate, replace pipe with concrete encased SCL at new crossing.	
(233U) Power <33kV (Aerial)	TBC	The High voltage aerial cable will cross the proposed rail line in this location. This utility may require relocation if the clearances are not adequate.	Establish ownership, confirm clearances are adequate. If clearances are not adequate relocation of the existing utility to be further investigated with owner / operator during subsequent design phase.
(202U) Low Pressure Gas (Jemena 210 KPa)	Jemena	The low pressure gas main will be crossed by the proposed rail line in this location and may require protection, modification or replacement.	Establish pipe type, cover and any existing protection to the gas main at the existing rail crossing. If required protection, modification or relocation of existing utility at the new crossing to be further investigated with Jemena during subsequent design phase.
(16) Optical Fibre (Ducted Pipe)	Sydney Trains	The existing utility is located with the footprint of the proposed works and may require relocation.	Confirm cover is adequate at transverse crossing. If cover is not adequate relocation of existing utility to be further investigated with Sydney Trains during the subsequent design phase.
(215) Powertel (External Agency)(Ducted Pipe)	AAPT / PowerTel	The existing utility is located with the footprint of the proposed works and may require relocation.	Confirm cover is adequate at transverse crossing. If cover is not adequate relocation of existing utility to be further investigated with AAPT / Powertel during the subsequent design phase.
(25) Signals, Copper Communication and Optical Fibre (Direct Buried)	Sydney Trains	No impact. Utility is not within vicinity of works of the intended works.	No further action required.
(20) Low Voltage (Ducted Pipe)	Sydney Trains	The existing utility is located with the footprint of the proposed works and will likely require relocation.	Relocation of existing utility to be further investigated with Sydney Trains during subsequent design phase.
(106) HV Electrical (Aerial)	Sydney Trains	The High voltage aerial cable will cross the proposed rail line in this location and will require relocation.	Relocation of existing utility to be further investigated with Sydney Trains during subsequent design phase.

Table 10 Connection Adjacent to East Hills Line (Sketch 3)

Area / Utility	Owner / Operator	Potential Works Identified	Next Steps / Stakeholder Engagement
(106) HV Electrical (Aerial)	Sydney Trains	The existing pole PP55 and High voltage aerial cable are within the proposed work area and will require relocation.	Relocation of existing utility to be further investigated with Sydney Trains during subsequent design phase.
(20) Low Voltage (Ducted Pipe)	Sydney Trains	The existing utility is located with the footprint of the proposed works and will likely require relocation.	Relocation of existing utility to be further investigated with Sydney Trains during subsequent design phase.
(25) Signals, Copper Communication and Optical Fibre (Direct Buried)	Sydney Trains	No impact. Utility is not within vicinity of works of the intended works.	No further action required.
Signals Hut	Sydney Trains	No impact. Building is not within the footprint of the intended works.	No further action required.

4.0 Conclusion

The review indicates that the majority of utility enabling works will be required at the proposed rail connections adjacent to the East Hills Rail Corridor.

The critical infrastructure that is likely to require protection, modification or relocation that has been identified near the Moorebank Avenue overbridge and East Hills Rail Corridor:

- High pressure ethane gas pipeline;
- Sydney Water 750mm sewer rising main;
- 375mm dia Water main believed to services Holsworthy Barracks;
- 250mm dia water main believed to services Holsworthy Barracks;
- Sydney Trains 33kV high voltage aerial feeder; and
- Numerous Telstra, Powertel and Sydney Trains communications conduits;

The critical infrastructure that is likely to require protection, modification or relocation that has been identified near the connection to the Southern Sydney Freight Line includes:

- Sydney Trains Signals, copper communications and optical Fibre;
- Stormwater drainage;

The critical infrastructure that is likely to require protection, modification or relocation that has been identified within and adjacent to Moorebank Avenue includes:

- RMS traffic signals; and
- Telstra conduits.

Further engagement with owners, operators of the existing utilities is to be undertaken in the subsequent design phase.

Appendix A

Dial Before You Dig Extents

Caller Details

Contact: Miss Katherin Angelin
Company: Not Supplied
Address: Level 21 , 420 George Street
Sydney NSW 2000

Caller Id: 1449497
Mobile: Not Supplied
Email: Katherin.Angelin@aecom.com
Phone: 0289340583
Fax: Not Supplied

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.



User Reference: Not Supplied
Working on Behalf of: Private
Enquiry Date: 02/12/2014
Start Date: 02/03/2017
End Date: 10/08/2018

Address: Moorebank Avenue
Moorebank NSW 2170
Job Purpose: Excavation
Onsite Activity: Mechanical Excavation
Location of Workplace: Both
Location in Road: CarriageWay, Footpath, Nature Strip

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:
Moorebank Avenue

Your Responsibilities and Duty of Care

- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at www.1100.com.au
- For more information on safe excavation practices, visit www.1100.com.au

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.

** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.

Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
42861464	AAPT / PowerTel, NSW	1800786306	NOTIFIED
42861470	APA Group Transmission (Gorodok)	1800103452	NOTIFIED
42861465	Endeavour Energy	0298534161	NOTIFIED
42861462	Freyssinet Australia Pty Ltd - Gorodok (formerly Savcor)	0294917177	NOTIFIED
42861468	Jemena Gas West	1300880906	NOTIFIED
42861467	Optus and/or Uecomm, Nsw	1800505777	NOTIFIED
42861463	Roads and Maritime Services	0288370285	NOTIFIED
42861469	Sydney Water	132092	NOTIFIED
42861466	Telstra NSW, Central	1800653935	NOTIFIED

END OF UTILITIES LIST

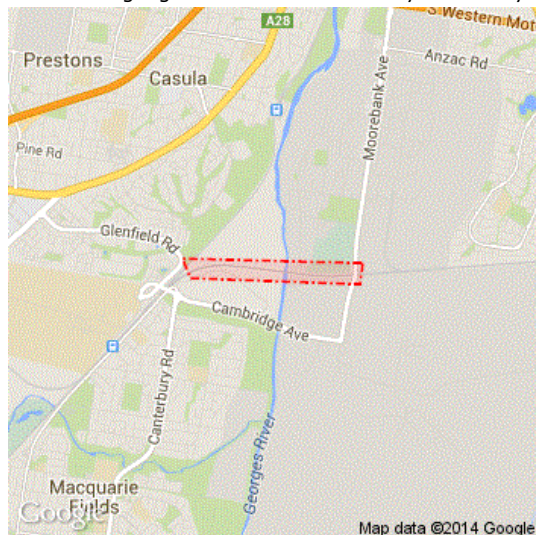
Caller Details

Contact: Miss Katherin Angelin
Company: Not Supplied
Address: Level 21 , 420 George Street
Sydney NSW 2000

Caller Id: 1449497
Mobile: Not Supplied
Email: Katherin.Angelin@aecom.com
Phone: 0289340583
Fax: Not Supplied

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.



User Reference: Not Supplied
Working on Behalf of: Private
Enquiry Date: 02/12/2014
Start Date: 21/07/2017
End Date: 21/06/2019

Address: Moorebank Avenue
Moorebank NSW 2170
Job Purpose: Excavation
Onsite Activity: Mechanical Excavation
Location of Workplace: Both
Location in Road: CarriageWay, Footpath, Nature Strip

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:
East Hills Line Rail Corridor

Your Responsibilities and Duty of Care

- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at www.1100.com.au
- For more information on safe excavation practices, visit www.1100.com.au

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.

** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.

Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
42862010	AAPT / PowerTel, NSW	1800786306	NOTIFIED
42862018	APA Group Transmission (Gorodok)	1800103452	NOTIFIED
42862012	Endeavour Energy	0298534161	NOTIFIED
42862008	Freyssinet Australia Pty Ltd - Gorodok (formerly Savcor)	0294917177	NOTIFIED
42862015	Jemena Gas West	1300880906	NOTIFIED
42862017	NBN Co, NswAct	1800626762	NOTIFIED
42862009	Nextgen, NCC - NSW	1800336886	NOTIFIED
42862014	Optus and/or Ucomm, Nsw	1800505777	NOTIFIED
42862011	PIPE Networks, Nsw	1800201100	NOTIFIED
42862016	Sydney Water	132092	NOTIFIED
42862013	Telstra NSW, Central	1800653935	NOTIFIED

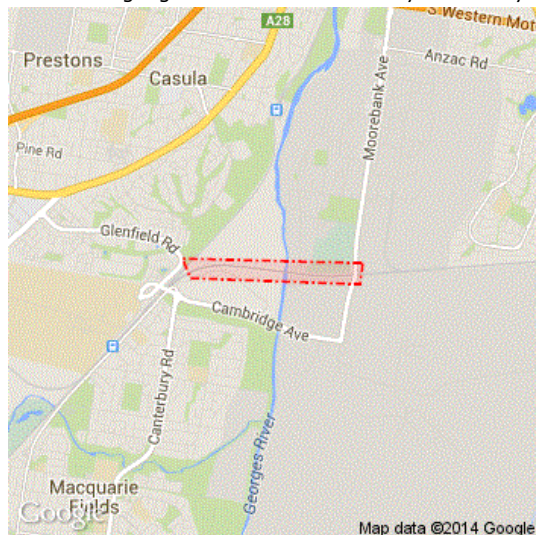
Caller Details

Contact: Miss Katherin Angelin
Company: Not Supplied
Address: Level 21 , 420 George Street
Sydney NSW 2000

Caller Id: 1449497
Mobile: Not Supplied
Email: Katherin.Angelin@aecom.com
Phone: 0289340583
Fax: Not Supplied

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.



User Reference: Not Supplied
Working on Behalf of: Private
Enquiry Date: 02/12/2014
Start Date: 21/07/2017
End Date: 21/06/2019

Address: Moorebank Avenue
Moorebank NSW 2170
Job Purpose: Excavation
Onsite Activity: Mechanical Excavation
Location of Workplace: Both
Location in Road: CarriageWay, Footpath, Nature Strip

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
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Notes/Description of Works:
East Hills Line Rail Corridor

Your Responsibilities and Duty of Care

- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
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Asset Owner Details

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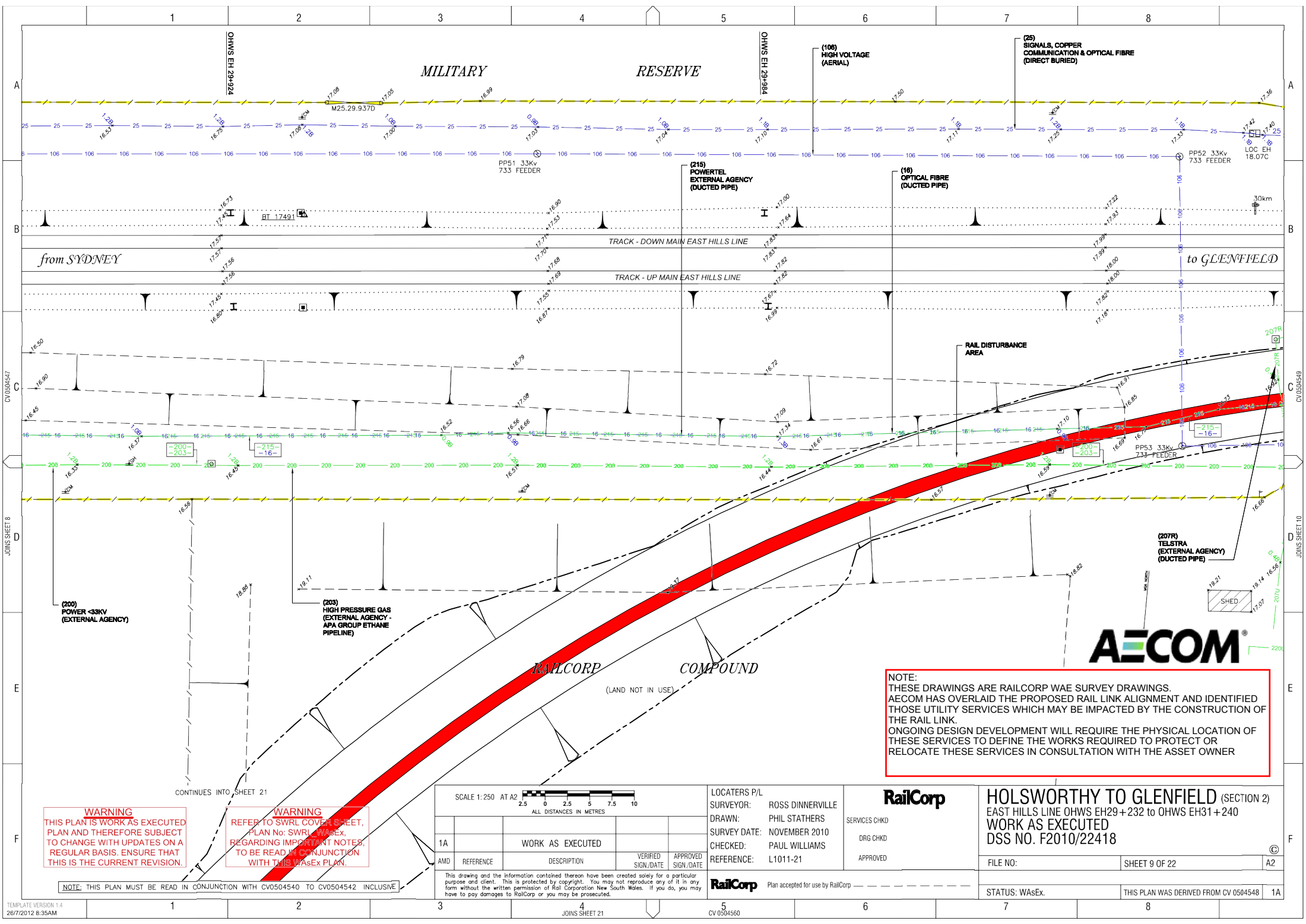
** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.

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Seq. No.	Authority Name	Phone	Status
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42862018	APA Group Transmission (Gorodok)	1800103452	NOTIFIED
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42862015	Jemena Gas West	1300880906	NOTIFIED
42862017	NBN Co, NswAct	1800626762	NOTIFIED
42862009	Nextgen, NCC - NSW	1800336886	NOTIFIED
42862014	Optus and/or Uecomm, Nsw	1800505777	NOTIFIED
42862011	PIPE Networks, Nsw	1800201100	NOTIFIED
42862016	Sydney Water	132092	NOTIFIED
42862013	Telstra NSW, Central	1800653935	NOTIFIED

Appendix B

Detail Service Survey Investigation Sketches



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

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

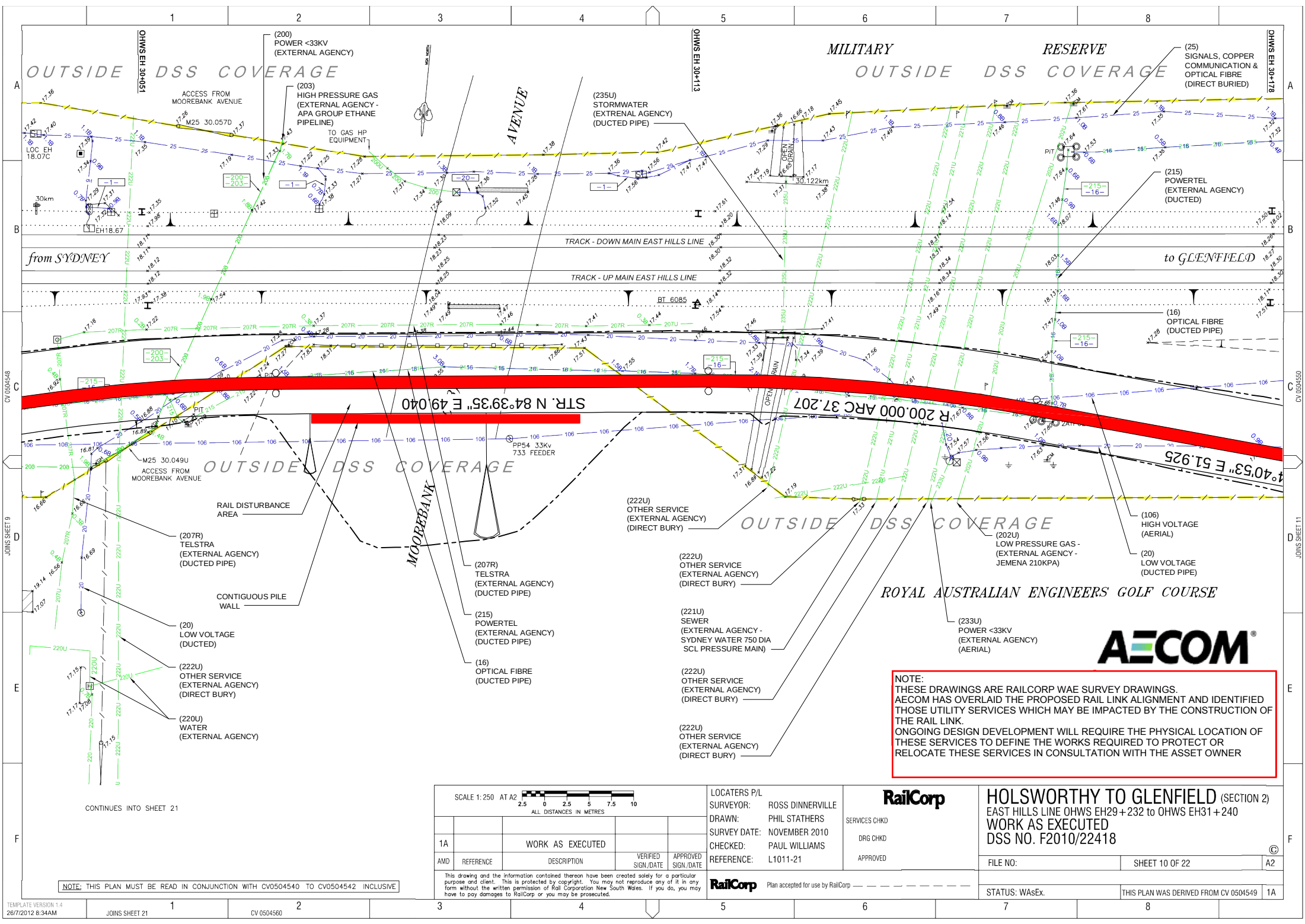
SCALE 1:250 AT A2				
ALL DISTANCES IN METRES				
1A	WORK AS EXECUTED			
AMD	REFERENCE	DESCRIPTION	VERIFIED SIGN/DATE	APPROVED SIGN/DATE

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

RailCorp
SERVICES CHKD
DRG CHKD
APPROVED

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

RailCorp Plan accepted for use by RailCorp
STATUS: WASEX. THIS PLAN WAS DERIVED FROM CV 0504548 1A



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		ALL DISTANCES IN METRES	
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AMD	REFERENCE	DESCRIPTION	

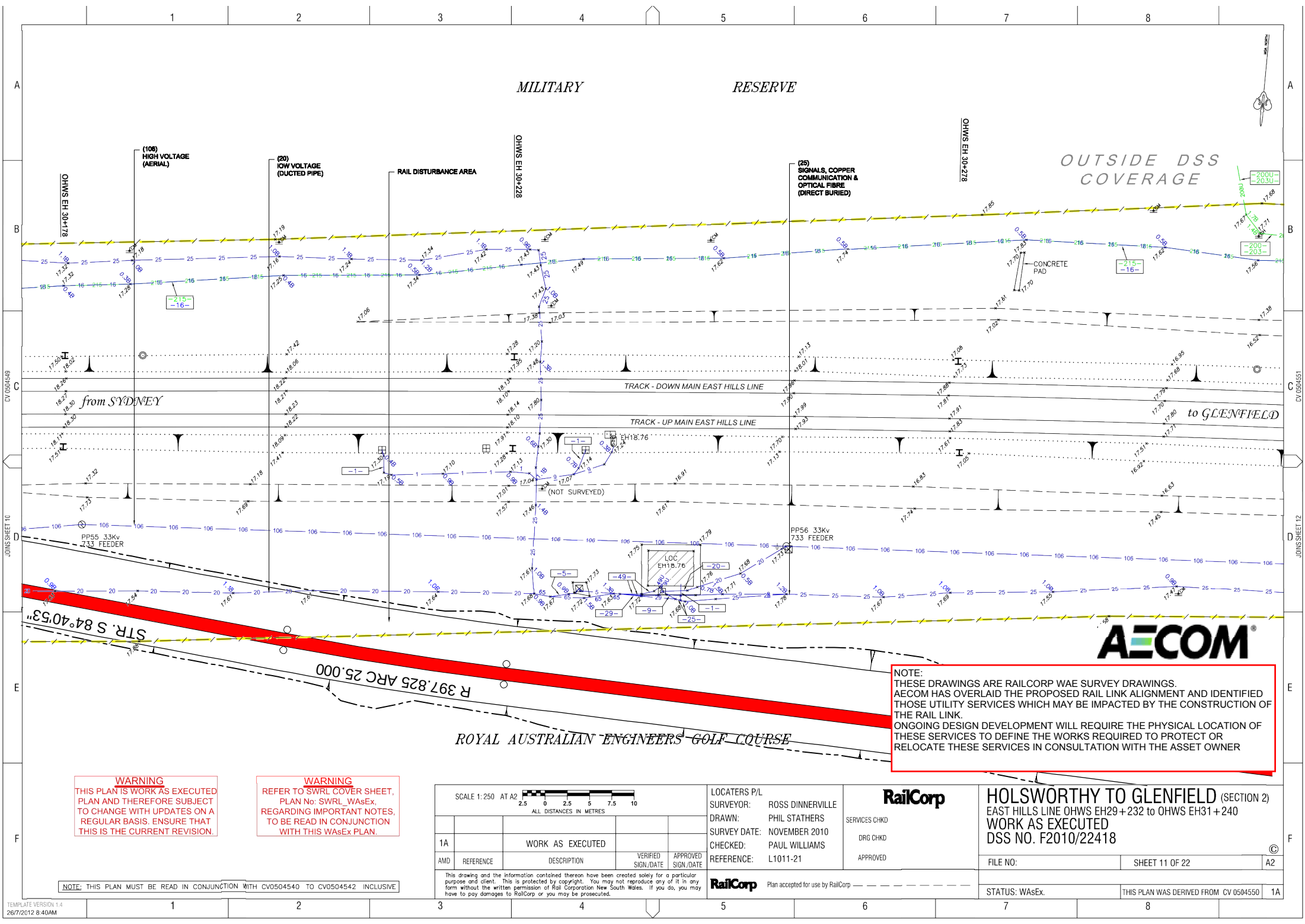
LOCATORS P/L
SURVEYOR: ROSS DINNENVILLE
DRAWN: PHIL STATHERS
SURVEY DATE: NOVEMBER 2010
CHECKED: PAUL WILLIAMS
REFERENCE: L1011-21

RailCorp
SERVICES CHKD
DRG CHKD
APPROVED

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
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RailCorp Plan accepted for use by RailCorp
STATUS: WAsEx
THIS PLAN WAS DERIVED FROM CV 0504549 1A



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			
ALL DISTANCES IN METRES			
1A	WORK AS EXECUTED		
AMD	REFERENCE	DESCRIPTION	VERIFIED SIGN/DATE
			APPROVED SIGN/DATE

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

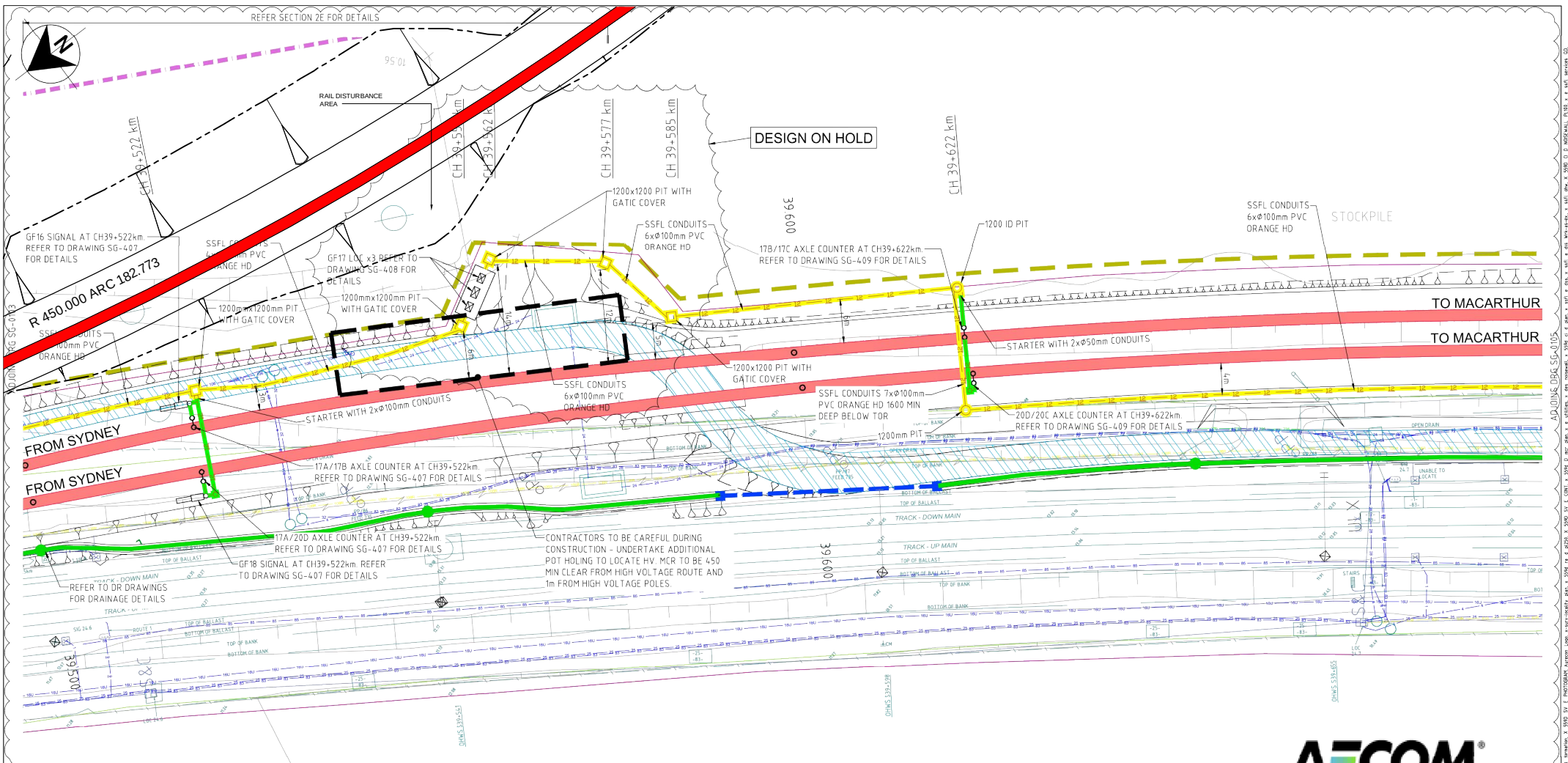
RailCorp Plan accepted for use by RailCorp

RailCorp
SERVICES CHKD
DRG CHKD
APPROVED

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

STATUS: WasEx. THIS PLAN WAS DERIVED FROM CV 0504550



LEGEND

—	SOUTHERN SYDNEY FREIGHT LINE	—	PROPOSED ARTC MCR IN GST	—	UE COMM
—	PROPOSED RAILCORP WORK	—	PROPOSED ARTC GLT CABLE	—	RELOCATED SYDNEY WATER SEWERMAIN
—	EXISTING RAIL TO BE REMOVED	—	BURIED DUCTED PIPE	—	DRAINAGE WORKS
—	EXISTING RAIL LINE	—	GROUND SURFACE LCR	—	ROAD RECONSTRUCTION WORKS
—	RAIL CORP BOUNDARY	—	BURIED LCR	—	EXISTING SYDNEY WATER WATERMAIN
—	DP BOUNDARY	—	EXISTING ARTC MCR IN GST	—	PROPOSED 11kV/33kV U/G CABLE IN DUCTS
—	EPL BOUNDARY	—	EXISTING ARTC GLT CABLE	—	EXISTING SYDNEY WATER SEWERMAIN
—	POT HOLE SURVEY	—	BURIED DUCTED PIPE	—	PROPOSED RELOCATED AERIAL POWER LINE
—	PROPOSED COMBINED SERVICES ROUTE	—	EXISTING ARTC MCR IN BURIED DUCTED PIPE	—	STORMWATER
—	PROPERTY ACQUISITION	—	PROPOSED RELOCATED AERIAL POWER LINE	—	
—	PROPOSED NOISE BARRIER	—		—	

PLAN
1:250

—	OPTUS	—	SPEED SIGNS	—	SIGNAL & COMM PIT
—	LOCAL TELSTRA	—	POWER POLE	—	TUNING UNIT
—	GAS MAIN	—	MANHOLE	—	SIGNAL HUT
—	PROPOSED RELOCATED GAS MAIN	—	SUMP	—	HEADWALL
—	ELECTRICITY-ENERGY_AUST	—	IMP BONDS	—	DUCT UNDER SSFL REFER C163, C164, C165
—	VISIONSTREAM	—	TELEPHONE PILLAR	—	ELECTRICAL MANHOLE
—	ELECTRICITY-INTEGRAL_ENERGY	—	LV PIT	—	ELEC TRANSFORMER BOX
—	POWERTEL	—	LIGHT POLE	—	DUCT FOR RELOCATED RAILCORP SERVICES RUNNING ALONG THE CORRIDOR SHOWN IN BOX
—	RTA-TCS	—	CULVERT PIT	—	
—	EXISTING POWER LINE	—	SIGNAL	—	

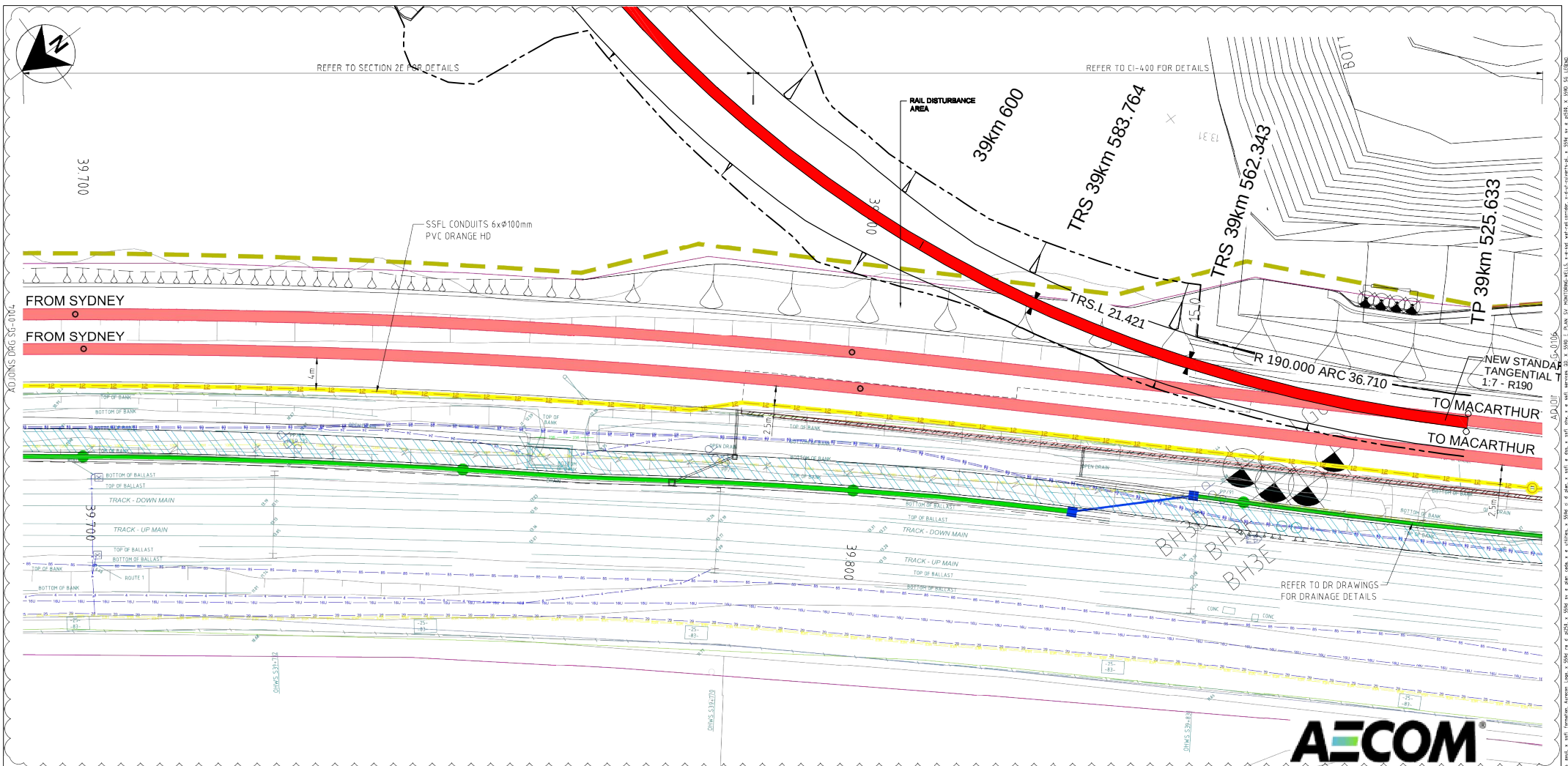
NOTES

NOTE:
THESE DRAWINGS ARE ARTC 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

ALL DRAWINGS ARE IN ISG CO-ORDINATES	SCALE 1:250	FOR CONSTRUCTION
ARTC Drawing No	RailCorp Drawing No	
ARTCN1110430097	CV0176707	

 Aurecon Australia Pty Ltd ABN 54 005 139 873 Telephone: +61 2 9465 5599 116 Military Road (PO Box 538) Neutral Bay Facsimile: +61 2 9465 5508 New South Wales 2089 Australia Email: aurocon@paucongroup.com												 AUSTRALIAN RAIL TRACK CORPORATION LTD												 SOUTHERN FREIGHT LINK											
A	27.07.12	ISSUED FOR CONSTRUCTION - SFL												RJT	FK	BG																			
Rev	Date	Revision Details												Drn	Ver.	App.																			
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SEFTON TO MACARTHUR MAIN SOUTH 31.780km to 59.100km SOUTHERN SYDNEY FREIGHT LINE SIGNAL ARTC MAIN CABLE ROUTE PLAN				559D-SW2700-SG-0104 Scale AS SHOWN Sheet Size A1 Drawing No Rev.			
SHEET 95 of 202				SG-104			



LEGEND

	SOUTHERN SYDNEY FREIGHT LINE		PROPOSED ARTC MCR IN GST		UE COMM		OPTUS		SPEED SIGNS		SIGNAL & COMM PIT
	PROPOSED RAILCORP WORK		PROPOSED ARTC GLT CABLE		RELOCATED SYDNEY WATER SEWERMAIN		LOCAL TELSTRA		POWER POLE		TUNING UNIT
	EXISTING RAIL TO BE REMOVED		PROPOSED ARTC MCR IN BURIED DUCTED PIPE		DRAINAGE WORKS		GAS MAIN		MANHOLE		SIGNAL HUT
	EXISTING RAIL LINE		GROUND SURFACE LCR		ROAD RECONSTRUCTION WORKS		PROPOSED RELOCATED GAS MAIN		SUMP		HEADWALL
	RAIL CORP BOUNDARY		BURIED LCR		EXISTING SYDNEY WATER MAIN		ELECTRICITY-ENERGY_AUST		IMP BONDS		DUCT UNDER SSFL REFER C163, C164, C165
	DP BOUNDARY		EXISTING ARTC MCR IN GST		PROPOSED 11kV/33kV U/G CABLE IN DUCTS		VISIONSTREAM		TELEPHONE PILLAR		ELECTRICAL MANHOLE
	EPL BOUNDARY		EXISTING ARTC GLT CABLE		EXISTING SYDNEY WATER SEWERMAIN		ELECTRICITY-INTEGRAL_ENERGY		LV PIT		ELEC TRANSFORMER BOX
	POT HOLE SURVEY		EXISTING ARTC MCR IN BURIED DUCTED PIPE		PROPOSED RELOCATED AERIAL POWER LINE		POWERTEL		LIGHT POLE		DUCT FOR RELOCATED RAILCORP SERVICES RUNNING ALONG THE CORRIDOR SHOWN IN BOX
	PROPOSED COMBINED SERVICES ROUTE		PROPOSED RELOCATED AERIAL POWER LINE		STORMWATER		RTA-TCS		CULVERT PIT		
	PROPERTY ACQUISITION						EXISTING POWER LINE		SIGNAL		
	PROPOSED NOISE BARRIER										

PLAN
1:250

NOTE:
THESE DRAWINGS ARE ARTC 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

ALL DRAWINGS ARE IN ISG CO-ORDINATES		SCALE 1:250		FOR CONSTRUCTION	
ARTC Drawing No	ARTCN1110430098	RailCorp Drawing No	CV0176708	Keystone Drawing No	559D-SW2700-SG-0105
Drawing Title	SEFTON TO MACARTHUR MAIN SOUTH 31780km to 59100km SOUTHERN SYDNEY FREIGHT LINE SIGNAL ARTC MAIN CABLE ROUTE PLAN				Scale AS SHOWN
Drawn	Designed	Verified	Approved	Drawing No	Rev.
RJT	HYL	FK	BG	SG-105	A
27.07.12	27.07.12	27.07.12	27.07.12	SHEET 96 of 202	

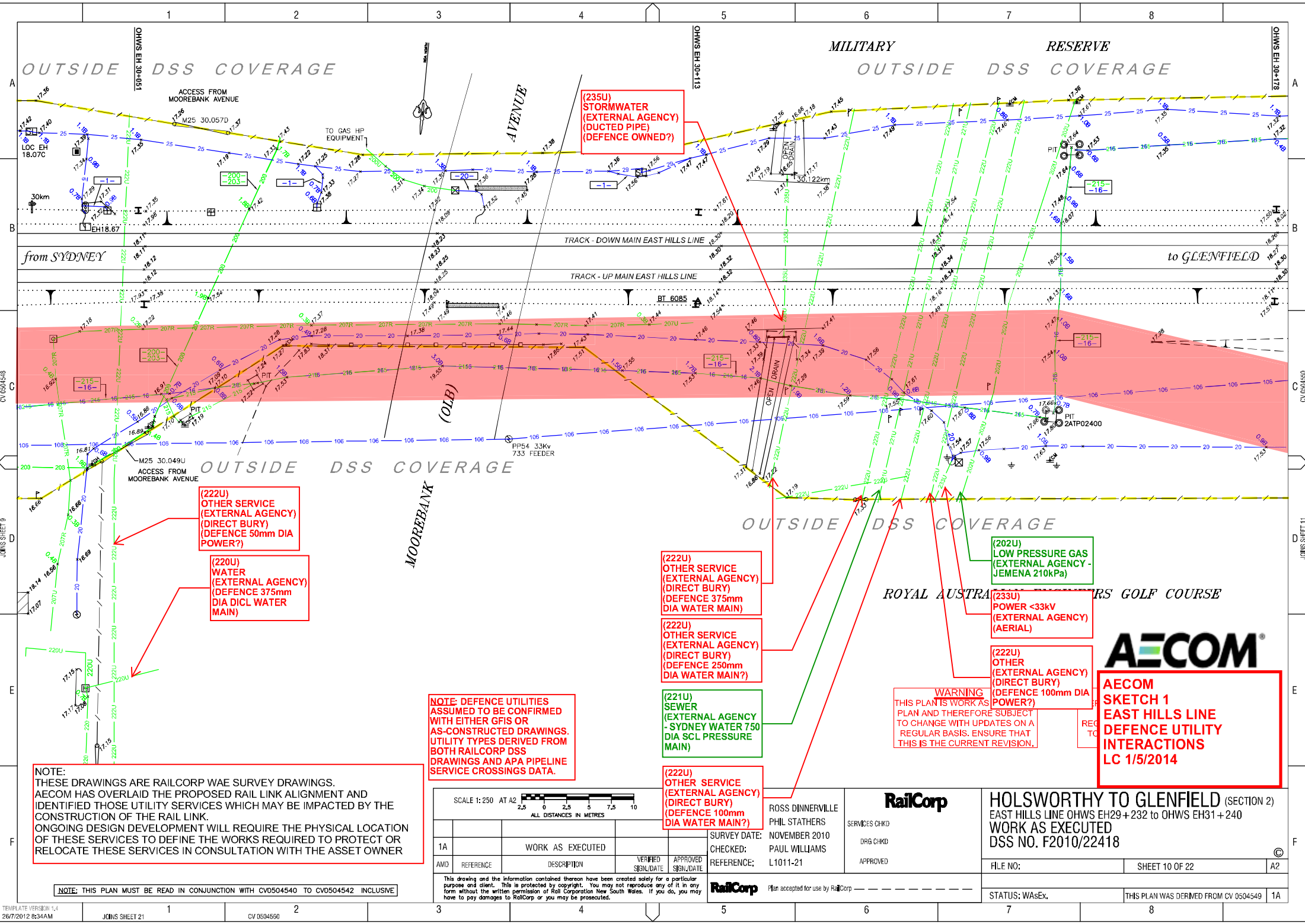
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ARTC
AUSTRALIAN RAIL TRACK CORPORATION LTD

SOUTHERN FREIGHT LINK

Rev.	Date	Revision Details	Drn	Ver.	App.
A	27.07.12	ISSUED FOR CONSTRUCTION - SFL	RJT	FK	BG



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