

# **Central West Regional Road / Rail Freight Terminal**

## **Proposed Rail Siding Connection & Operational Arrangements**

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**WANDS SOLUTIONS Pty Ltd**

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## **Introduction**

SLOBOBAX Pty Ltd proposes to establish a Road / Rail Freight terminal at Raglan, 4.5km east of Bathurst. WANDS SOLUTIONS Pty Ltd are engaged to facilitate negotiations with RailCorp (Rail Corporation New South Wales) and ARTC (Australian Rail track Corporation) to determine available train paths, establish rail access to the site, and oversee preparation of design and construct documentation.

WANDS SOLUTIONS Pty Ltd is an independent company providing consultancy services to the rail industry. Director, Warren Mills, has thirty-nine years experience in the NSW rail industry predominantly in railway signalling.

RIC (Rail Infrastructure Corporation) was established on 1 January 2001 as a statutory State Owned Corporation under the *Transport Administration Amendment (Rail Management) Act 2000*. As part of the reform to NSW rail, in 2003-04 the metropolitan functions of RIC were transferred to the new RailCorp.

RailCorp was officially formed on 1 January 2004 and is a merger of the State Rail Authority of NSW and the metropolitan functions of the Railway Infrastructure Corporation. It is a state-owned corporation that has as its main focus the provision of a safe, clean and reliable passenger rail network throughout NSW. RailCorp provides passenger rail transport throughout NSW via its CityRail and CountryLink services and is responsible for the safe operation, crewing and maintenance of passenger trains and stations. **It also owns and maintains the metropolitan rail network and provides access to freight operators in the metropolitan area.**

On 5 September 2004, the functions of RIC underwent further change. RIC now owns the NSW CRN (Country Regional Network) and through its CRD (Country Rail Division) manages RIC's agreements with ARTC. The CRN, consisting of the lines not included in the Metropolitan and Lease Networks, is operated by ARTC on behalf of RIC under a sixty-year alliance agreement. The principal objective of the CRD is to ensure that those parts of the CRN under its responsibility enable safe and reliable passenger and freight services to be provided in an efficient, effective and financially responsible manner.

ARTC was created after the Commonwealth and State Governments agreed in 1997 to the formation of a 'one stop' shop for all operators seeking access to the National interstate rail network. ARTC currently has responsibility for the management of 5861 route kilometres of standard gauge interstate track, in South Australia, Victoria and Western Australia, and New South Wales. ARTC also manages the Hunter Valley Coal Rail network in New South Wales (311 km) and other regional rail links in New South Wales (651 km).

Rail access to the Slobobax site will be via connection of its sidings to the main western line at Raglan. The main western line is under the management of ARTC.

Slobobax will negotiate an "Access Agreement", a "Connection Agreement" and an "Interface Safety Plan" with ARTC which include approval for design and construct works within the corridor.

All design and rail construction works within the Slobobax site and the Rail Corridor will be carried out to conform with Australian Standards and ARTC Engineering standards.

## Operational & Site Design Considerations

Capacity of the operation is limited by:

1. Topography of the site and available land within the site to construct long rail sidings or a continuous loop line.
2. Existing rail infrastructure at Raglan does not permit direct entry to the Master Siding from Sydney. Requires trains from Sydney to go to Bathurst, engines change ends then return beyond Raglan and reverse into siding. This requires additional staff to pilot the rear of the train when reversing into sidings.
3. Train tonnage and motive power requirements to traverse the sections with steep grades between Lithgow to Edgecombe in the Up Direction (to Sydney) and Springwood to Katoomba in the Down Direction (from Sydney).

Improved capacity and 'turn around' time can be achieved by:

1. Installation of additional points and signal infrastructure at Raglan and provision of 'run round' facilities within the site. This will permit direct entry to the Maser Siding from Sydney, provide for engines to change ends within the site thus eliminating the need to go to Bathurst and will also eliminate the need for additional staff to pilot the rear of the train when reversing into sidings.
2. Designing the site so as to maximise the length of the sidings within the site.

Train Capacities – based on Pacific National locomotives and wagons.

LOCOMOTIVES						
Loco Type	Load Cat	Horse-power	Length Metres	Weight Tonnes	Pulling Capacity per Loco Tonnes	
					Raglan to Sydney	Sydney to Raglan
81	L4	3000	21.2	129	1000	450
82	L3	3000	22	132	1000	450
WAGONS						
Wagon Type		Class	Length Metres	Tare Weight	Max Gross Weight Tonnes	Max Gross Payload Tonnes
NQOF		C	20.1	19.2	76	56.8

TRAIN CONSIST OPTIONS						
UP DIRECTION	Maximum Haul Tonnage	No of Wagons	No of 6mtr Containers Loaded	Total length of Wagons	Total length of Locomotives	Total length of Train
1 Loco	1000	13	39	262	22	284
2 Loco	2000	26	78	523	44	567
3 Loco	3000	39	117	784	66	850
4 Loco	4000	52	156	1045	88	1133
DOWN DIRECTION	Maximum Haul Tonnage	No of Wagons	No of 6mtr Containers	Total length of Wagons	Total length of Locomotives	Total length of Train
1 Loco	450	13	9 Loaded 30 Empty	262	22	284
2 Loco	900	26	18 Loaded 60 Empty	523	44	567
3 Loco	1350	39	27 Loaded 90 Empty	784	66	850
4 Loco	1800	52	36 Loaded 120 Empty	1045	88	1133

Based on Sectional Running Times the journey times are:

- Raglan to Enfield – 4.5 Hours
- Enfield to Raglan – 4 hours

Note: These are the minimum transit times. Paths allocated by ARTC and RailCorp may require the train be held in crossing loops for other services to pass. Transit between Enfield and Port Botany has not been considered at this time.

## ***The Proposal***

After reviewing several options described in the following pages it was obvious that the greatest capacity and efficiencies are to be achieved from a layout which will provide direct access to the siding for trains to and from Sydney utilising the optimum train consist to negotiate the steep grades of the Blue Mountains.

To achieve this it was necessary to revisit the site design to provide for two sidings each being 630metres in length with points either end enabling the locomotives to run-around the train (change ends) within the site ready for the return trip.

Provision of main line crossover points on the Sydney side of the siding connection points negates the need for trains to travel beyond Raglan to Bathurst for the locomotives to run-around the train then enter the siding on the return journey by propelling (reversing) into the siding. Propelling into the siding would require the rear wagon to have suitable facilities for a qualified person to pilot the rear of the train into the siding. This is considered a major advantage over other existing and planned intermodal sites.

Slobobax will design and construct two sidings within the site. No 1 siding will be a total of 840 metres in length and provides for 630 metres of wagon loading area plus 140 metres on the western end and 70 metres on the eastern end for locomotive detach and run-around. No 2 siding will primarily serve as the engine run-around track however will be available to place a second train for loading. The two sidings will converge prior to entering the rail corridor boundary as a single track. See Appendix A.

Slobobax are committed to fund, design and construct track and signalling infrastructure within ARTC's rail corridor to provide for connection of the siding to the up main line and a crossover between up and down main lines. This arrangement will permit a train travelling from Sydney on the down main line to cross over to the up main line then through the points connecting the siding to the up main line. This infrastructure will be located between rail kilometrage 235.410km to 235.620km. See Appendix B.

Slobobax will also fund, design and construct a signalling system to operate the points and signals required to enter and exit the siding. This system will interface to the existing arrangements at Raglan and Kelso and will be remotely controlled from the Western Rail Management Centre at Orange. A functional specification is being prepared for approval by ARTC.

Slobobax will enter into an agreement with an operator for hire of wagons and locomotives. Additionally Slobobax will negotiate an "Access Agreement", a "Connection Agreement" and an "Interface Safety Plan" with ARTC which include approval for design and construct works within the corridor.

All design and rail construction works within the Slobobax site and the Rail Corridor will be carried out to conform with Australian Standards and ARTC Engineering standards.

Initially, Slobobax propose to run one train per day consisting of two 81/82 class locomotives hauling twenty-six NQOF (or similar C class) wagons for a total length of 567 metres and total weight of 1976 tonnes in the up direction (laden with 78 x 6m containers) and 683 tonnes in the down direction (with 18 laden and 60 unladen x 6m containers). This will increase to three trains per day over the next ten years.

Preliminary discussions have been held with ARTC who have advised the proposal described in this report is feasible and have offered assistance in further development of the rail operations and interface requirements.

ARTC have indicated there are ample train paths on the Western Line between Bowenfels and Raglan.

ARTC have submitted the proposal by way of a "Third Party Proposal" to RIC's CRD for approval.

RailCorp have indicated paths are available in the section Bowenfels to Port Botany.

## **Other Options Considered**

Various options for the siding configuration within the site and for connection to the main western line have been considered. Sketch plans are included at Appendix C.

### **Option 1:**

Extend the existing Master Siding along the ARTC rail corridor west of Raglan then into the Slobobax site forming two sidings each a minimum of 400 metres in length.

#### Advantages:

- No changes required to the ARTC infrastructure at Raglan.

#### Disadvantages:

- Trains from Sydney must proceed to Bathurst for engines to 'run around' (change ends) adding approximately 50 minutes to turn around time, hire cost of motive power and access charges.
- Raglan Signal Box must be manned to facilitate entry to Master Siding
- Additional staff must be provided to pilot the rear of the train into the siding.
- Window (train path) required for movement between Bathurst – Raglan and shunt to Siding is approximately 40 minutes and not preferred.
- Train must be divided into the two sidings for loading.
- Large machinery required on site for 'loading over' wagons.

### **Option 2a:**

Install points and signalling equipment at approx 235.200km enabling movements from the Up Main to the Master Siding with minimum 850 metres standing room between these points and No 10 points at Raglan. Operate the new points by way of Releasing Switch and Ground Frame. Extend the Master Siding along the ARTC rail corridor then into the site forming two sidings each of a minimum of 400 metres in length.

#### Advantages:

- Window (train path) required for movement between Bathurst – Raglan and shunt to Siding is reduced by approximately 10 minutes over Option 1.

#### Disadvantages:

- As for Option 1 however no need man Raglan Signal Box to facilitate entry to Master Siding

### **Option 2b:**

Install points and signalling equipment at approx 235.200km enabling movements from the Up Main to the Master Siding with minimum 850 metres standing room between these points and No 10 points at Raglan. Operate the new points by way of Motorised, Remote Control from Orange Control Centre. Extend the Master Siding along the ARTC rail corridor then into the site forming two sidings each of a minimum of 400 metres in length.

#### Advantages:

- No additional staff required to facilitate entry to Master Siding.
- Window (train path) required for movement between Bathurst – Raglan and shunt to Siding is reduced by approximately 20 minutes over Option 1 and 10 minutes over Option 2a.

#### Disadvantages:

- Trains from Sydney must proceed to Bathurst for engines to 'run around' (change ends).
- Additional staff required to facilitate entry to Master Siding and to pilot the rear of the train when moving in the reverse direction in the siding.
- Window (train path) required for movement between Bathurst – Raglan and shunt to Siding is approximately 20 minutes.
- Train must be divided into two sidings for loading.
- Large machinery required on site for 'loading over' wagons.

**Option 3a:**

Acquire additional parcel of land adjoining the rail corridor and to the east of the existing site.  
Install points and signalling equipment at approx 235.200km enabling movements from the Up Main to the Master Siding with minimum 850 metres standing room between these points and No 10 points at Raglan.  
Operate the new points by way of Releasing Switch and Ground Frame.  
Slew the Master Siding from the ARTC rail corridor onto the new site forming two sidings each of a minimum of 800 metres in length.

Advantages:

- Window (train path) required for movement between Bathurst – Raglan and shunt to Siding is reduced by approximately 10 minutes over Option 1.
- No requirement to divide train on site for loading.
- Smaller machinery may be used on site for loading wagons – (no 'loading over').

Disadvantages:

- Trains from Sydney must proceed to Bathurst for engines to 'run around' (change ends).
- Additional staff required to facilitate entry to Master Siding and to pilot the rear of the train when moving in the reverse direction in the siding.
- Window (train path) required for movement between Bathurst – Raglan and shunt to Siding is approximately 30 minutes.

**Option 3b:**

Acquire additional parcel of land adjoining the rail corridor and to the east of the existing site.  
Install points and signalling equipment at approx 235.200km enabling movements from the Up Main to the Master Siding with minimum 850 metres standing room between these points and No 10 points at Raglan.  
Operate the new points by way of Motorised, Remote Control from Orange Control Centre.  
Slew the Master Siding from the ARTC rail corridor onto the new site forming two sidings each of a minimum of 800 metres in length.

Advantages:

- Window (train path) required for movement between Bathurst – Raglan and shunt to Siding is reduced by approximately 10 minutes over Option 1.
- No requirement to divide train on site for loading.
- Smaller machinery may be used on site for loading wagons – (no 'loading over').

Disadvantages:

- Trains from Sydney must proceed to Bathurst for engines to 'run around' (change ends).
- Additional staff required to facilitate entry to Master Siding and to pilot the rear of the train when moving in the reverse direction in the siding.
- Window (train path) required for movement between Bathurst – Raglan and shunt to Siding is approximately 30 minutes.

**Option 4:**

Install points and signalling equipment at approx 232.600km (east of Raglan) enabling movements from the Down Main to the Up Main thence into the Master Siding via No 10 points at Raglan.  
Acquire additional parcel of land adjoining the rail corridor and to the east of the existing site.  
Slew the Master Siding from the ARTC rail corridor onto the new site forming two sidings each of a minimum of 800 metres in length.

Advantages:

- Trains from Sydney have direct entry to siding.
- No additional staff required to facilitate entry to Master Siding or pilot the rear of train.
- Window (train path) required for movement between Bathurst – Raglan not required.
- No requirement to divide train on site for loading.
- Smaller machinery may be used on site for loading wagons – (no 'loading over').

Disadvantages:

- Larger capital outlay.

**Option 5:**

Install a continuous “balloon” loop within the site. This would also require the installation of points and signalling equipment at approx 232.600km (east of Raglan) enabling movements from the Down Main to the Up Main thence into the Master Siding via No 10 points at Raglan.

Although this option would provide the most efficient rail access to and from the main western line it was not progressed due to the topography of the site necessitating major earth works and the presence of the rail loop would restrict the establishment of proposed warehousing and bulky goods facilities.

**Option 6:**

Install two sidings and run round facility within the site. This would also require the installation of points and signalling equipment at approx 232.600km (east of Raglan) enabling movements from the Down Main to the Up Main thence into the Master Siding via No 10 points at Raglan.

This operation was considered to provide efficient rail access to and from the main western line however with the sidings providing for a maximum train length of 265metres equal to 13 wagons (39 six metre containers) it was agreed to rework the site design to provide for a more efficient train length. Hence Option 7 the “Preferred Option” detailed on Page 5 and Appendix A & B is now proposed.



## **Strategic Assessment**

### **National/State**

The proposal offers capacity for 24,336 TEU's per annum (1 x train x 6 days/week) with a maximum capacity of 73,008 TEU's per annum (3 x trains x 6 days/week) which by any standards makes it an economically viable investment. It is expected the majority of movements will be to and from Port Botany in Sydney however rail paths to Newcastle, Port Kembla, Brisbane or Melbourne can be readily accessed.

### **ARTC operations**

ARTC have indicated there are ample train paths on the Western Line between Bowenfels and Raglan and return. Slobobax have committed to financial expenditure which will enable efficient train movements in and out of the Slobobax site with no impact on other main line services. Less efficient options were available however these would have required using existing track and signal equipment at Raglan and Bathurst which is labour intensive in both operation and maintenance.

### **RIC operations**

ARTC have submitted to RIC's CRD a "Third Party Proposal" for the Slobobax proposal. This approval is expected to be forthcoming by 23<sup>rd</sup> December 2005.

### **RailCorp operations**

RailCorp have indicated paths are available in the section Bowenfels to Port Botany.

### **Regional**

#### Relationship with other Operations

The Slobobax site being located 240km from Sydney Port is inside the optimum distance identified as sustainable in a report prepared for the "NSW Sea Freight Council" titled "Regional Intermodal Terminals - Indicators for Sustainability" dated March 2004. However, the Great Western Highway and the Bells Line of Road being the primary road transport routes between Bathurst and Sydney are in places unsuitable as a B-double truck route (see RTA Report "Bells Line of Road Corridor Study" November 2005). There is known to be a strong desire by the Blue Mountains Conservation Society (Website) and the Blue Mountains Council (Lithgow Mercury "Growing truck numbers causing concern" Tuesday, 16 July 2002) to reduce the number of truck movements on these roads. The Slobobax site, when operating at maximum capacity will be equivalent to 468 truck movements per day (based on 234 per day and 2 TEU's per truck).

#### Capacity of the rail network

There is ample capacity on the CRN (Raglan – Bowenfels) and sufficient capacity is available within the RailCorp Network (Bowenfels - Enfield - Port Botany) however scheduling of services will be of paramount importance to avoid downtime.

#### Capacity of receiving destinations

*Extract from: PORT FOCUS The Newsletter of Sydney Ports Corporation November 2004.* Sydney Ports continues to support the use of rail to transport containers across NSW. In 2003-04 there were approximately 250,000 TEUs moved to or from the port by rail, with some 160,000 TEUs within metropolitan Sydney. With the current rail access to Port Botany and the existing infrastructure there is capacity to handle more cargo on rail. Sydney Ports aims to achieve a 40 per cent rail mode share in the medium term. The NSW Metropolitan Freight Strategy will deliver a framework for the establishment of intermodal terminals across Sydney. This will assist Sydney Ports to achieve the 40 per cent target.

**Local**

Capacity of the rail network Potential conflicts with current rail traffic

The main western line presently carries a maximum of 6 services in each direction per day. There is ample capacity in the local rail network for the proposed Slobobax services.

Capacity of the site

Unloading / loading of each train will take approx 2 hours and the train turnaround through the site is expected to be less than 3 hours. The site can handle two trains simultaneously. The design of the site has allocated sufficient area to store 1200 containers at any one time. This is sufficient for 15 trains.

Consideration other sites, alternatives

The chosen site at Raglan is in an excellent location in respect of road and rail access. Competing sites within the Region have disadvantages with a rail access.

The proposed White Rock Road site at Kelso can only accept trains off the down main line. The planned rail operation for this site is unknown however the rail facilities will require trains from Sydney to travel beyond Kelso to Bathurst for the locomotives to run-around the train then enter the siding by travelling in the "wrong" direction on the down main between Bathurst and Kelso. Considering the majority of trains will travel east from the site the trains will need to travel west to Bathurst for the locomotives to again run-around the train before making the journey east to Sydney. These operations will have the potential to incur serious delays to other train services.

The existing site at Blayney impacts heavily on road traffic at the level crossing on the Mid Western Highway.

Impact of rail activities

The additional rail services to and from the Slobobax site will have little or manageable impact on other rail services or activities such as maintenance. When operating at maximum capacity of three trains per day, rail traffic on the main western line will increase to nine services each way per day.

**Conclusion:**

The Slobobax site and the rail transport proposal described herein will be an asset to the investors, the communities and tourists throughout the Blue Mountains in terms of reduced truck movements and to the Bathurst Region in terms of increased employment opportunities.

The increased train movements on the main western rail line will ensure the line is retained as a Class 1 line.

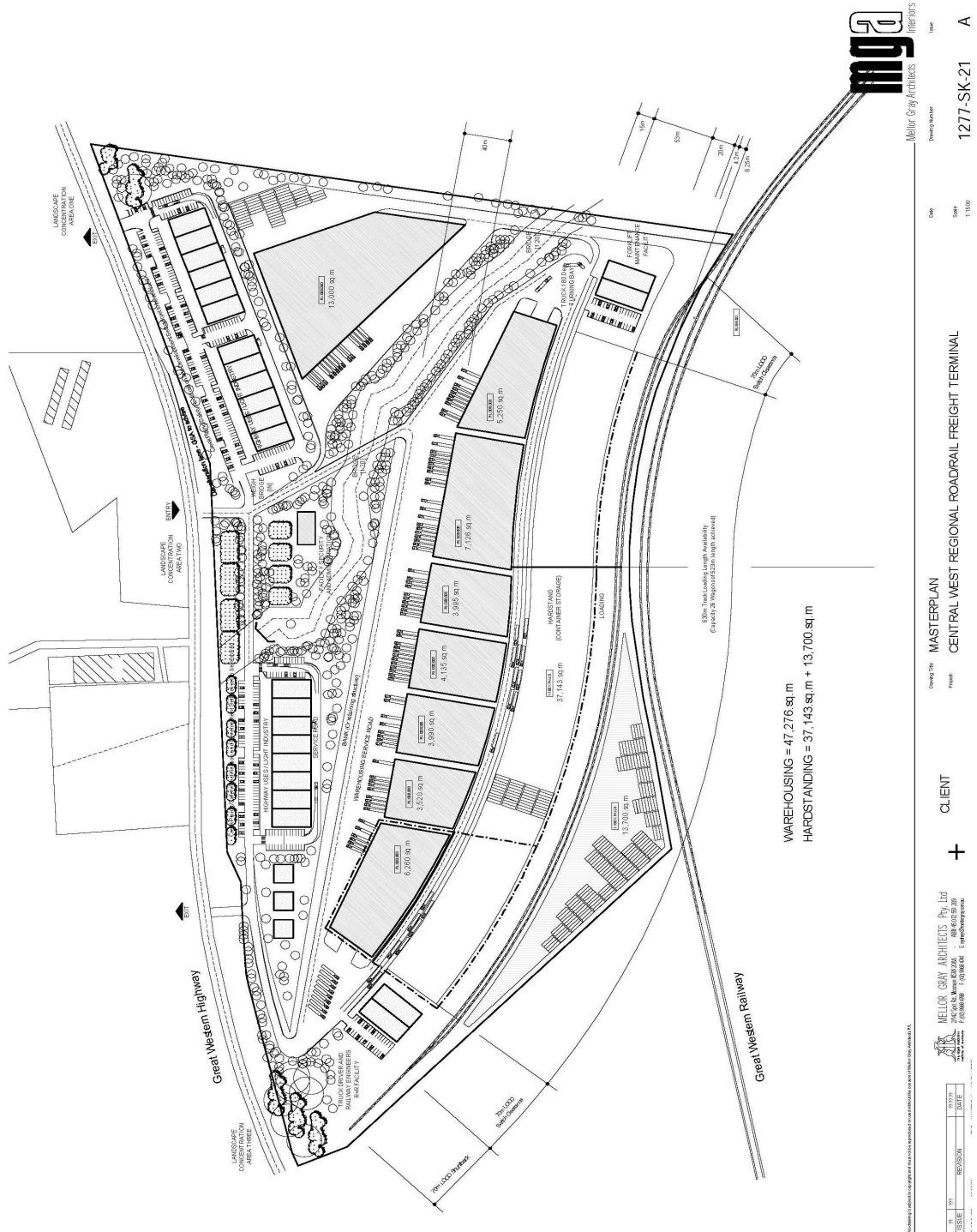
It is estimated that design and construction of the rail component, excluding earth works, will be completed in nine months from commencement and can proceed immediately upon approval by the various authorities.

Warren Mills  
Director

**WANDS SOLUTIONS Pty Ltd**

**Appendix A**

**....Plan of Rail sidings within Slobobax Site**



WAREHOUSING = 47,276 sq.m  
HARDSTANDING = 37,143 sq.m + 13,700 sq.m

**mg2**  
Mellor Gray Architects

Drawn: \_\_\_\_\_ Date: \_\_\_\_\_  
Checked: \_\_\_\_\_ Date: \_\_\_\_\_  
Scale: 1:1500

Project No: 1277-SK-21

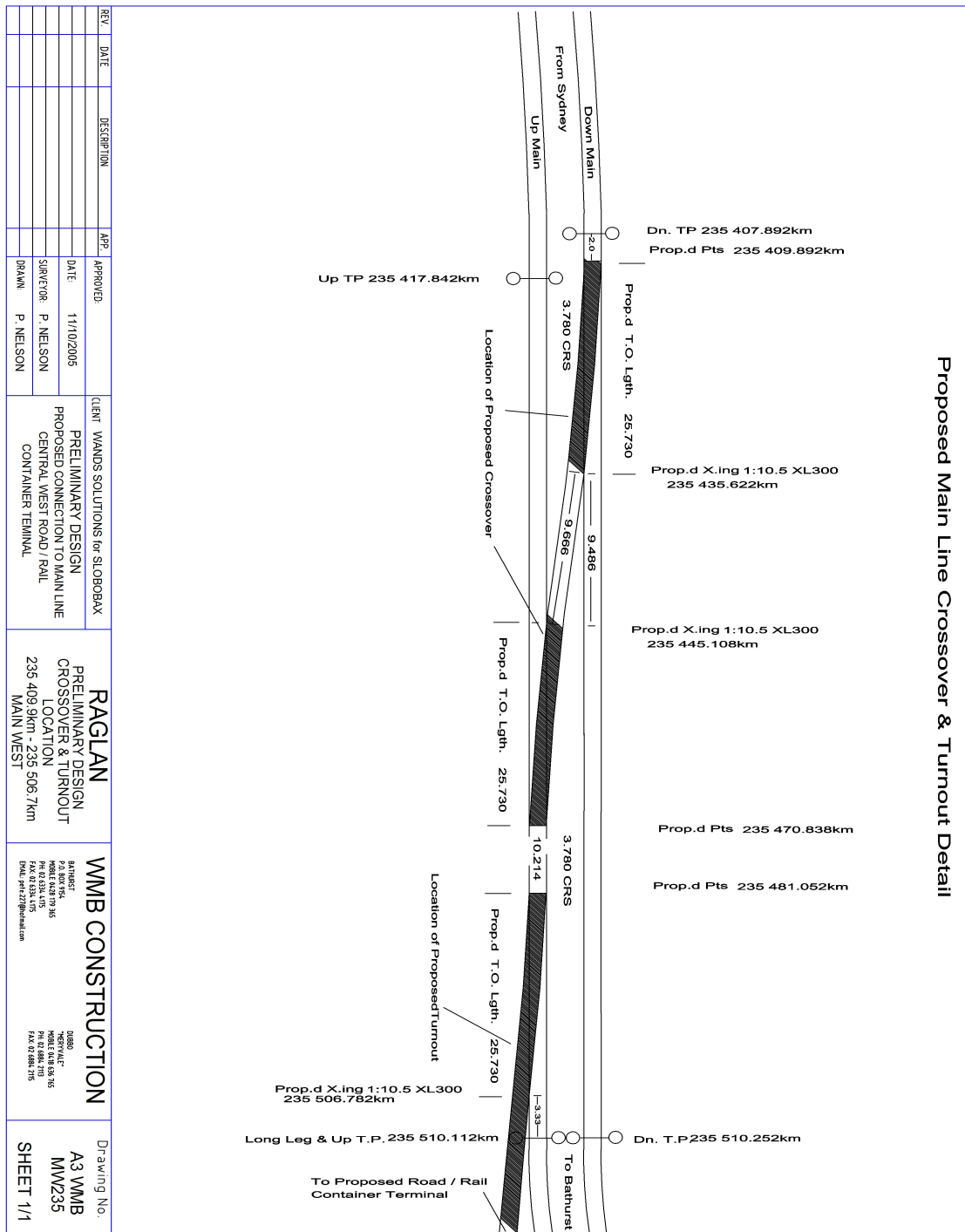
Client: **CENTRAL WEST REGIONAL ROADRAIL FREIGHT TERMINAL**

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NO.	REV.	REVISION	DATE

# Appendix B

....Rail Corridor Site Plan showing main line connection and crossover points



Appendix C

....Sketch plans of other options considered

