Western Rail Coal Unloader

ENVIRONMENTAL ASSESSMENT

CHAPTER 3 – PROJECT DESCRIPTION

- April 2007

Contents

3. Project Description

This chapter provides a description of the proposal, including construction and operation.

3.1 Location

The proposed site for the rail loop and coal unloader is owned by Delta Electricity and is located at 708 Portland Road, Wallerawang, within Lots 1 and 2 of DP 800003, Lithgow City, Parish of Lidsdale, County of Cook. This property lies between Pipers Flat Road and the base of the ridgeline that forms Mount Piper. It comprises a cleared flat area that is traversed by Pipers Flat Creek, a tributary of the Coxs River. The Wallerawang – Mudgee Main Rail Line is located in close proximity to the project site, running almost parallel with Pipers Flat Road.

The proposed site of the conveyor adjoins the rail loop site to the north. The proposed coal conveyor from the unloader to Mt Piper Power Station would traverse property to the north, owned by Centennial Coal, comprising Lots 159/160/ 164/165/166 DP 751638. The conveyor would follow or be close to the alignment of the existing water supply pipeline easements which connects Thompsons Creek Dam and the Mt Piper Power Station. The easements are listed as DP 645476, DP645215 and DP 643327.

Once it crosses the Centennial Coal land the conveyor passes onto the Mt Piper Power Station site, owned by Delta Electricity, comprising Lot 191 DP 629212, Lot 14, DP 804929, Lot 1 DP 829065, Lot 18 DP 751636 and Lot 2 DP 702619 (site of the power station).

Land and property details are shown on **Figure 3-1**.

3.2 Elements of the Project

The project comprises four distinct elements, each of which is interlinked to form the project infrastructure. The rail loop would essentially comprise a branch rail line off the Wallerawang – Mudgee Main Line (generally known as the Mudgee Line) that would enable trains loaded with coal from the north to divert to the coal unloader facility. At this facility the coal would be released into a hopper located below the rail line. From the hopper the coal would be fed onto a conveyor belt that would traverse the terrain north towards the power station. Within the power station the coal would be conveyed to an existing coal handling facility and associated stockpiles.

A general layout of the western rail coal unloader is depicted in **Figure 3-2**. A detailed description of each element is outlined below.

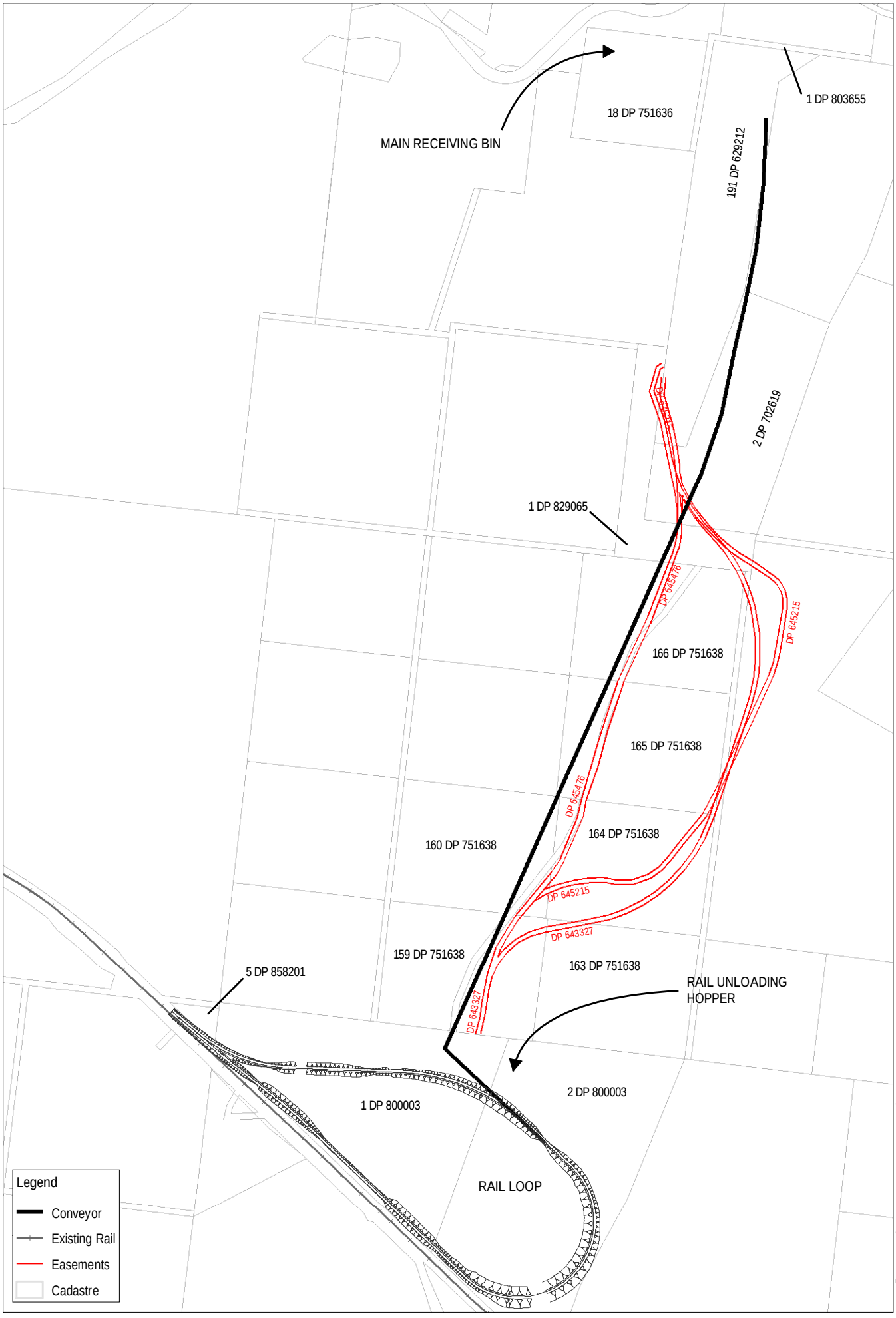


Figure 3.1 Land and Property Details

Delta Electricity Western Rail Coal Unloader
GDA 94 MGA Zone 56

0 150 300
Metres

Figure 3.2 General Layout

Delta Electricity Western Rail Coal Unloader
GDA 94 MGA Zone 56

0 150 300
Metres

I:\ENVR\Projects\EN02154\Technical Data\GIS\Template\EN02154_029.mxd
February 16, 2007

3.2.1 Rail Loop

The rail loop location plan is shown in **Figure 3-3a**. It connects to the Mudgee Line at one turnout location, south of Portland, onto Delta's property. The track would be 25 tonne axle load (TAL) capable and the mainline turnout would be 1:15. The connection to the Mudgee Line is formed on a straight and with the initial horizontal alignment duplicating that of the Main Line. The alignment of the rail loop has been defined by the requirement to locate all of the railway track and coal handling facilities that comprise the rail loop on the available land and so that a southbound train entering the loop can exit from the loop onto the line as a northbound train. The alignment would form a loop using a track radius of 250m. The loop would allow departing trains to return to the north utilising the same connection on the line where the train entered without introducing operational difficulties. The length of the loop from and to the crossing connection would be about 3.5 kilometres.

Trains with a maximum length of 1400 metres would be able to operate on the loop, although train lengths typically about 1050 metres are anticipated. The layout of the loop has been designed to accommodate up to three trains, thereby allowing trains to arrive and depart according to the availability of train paths on the Mudgee Line, without affecting the unloading operation and without the unloading affecting main line operations.

Once the loop track leaves the main line it curves towards the unloading bin. The rail loop would be constructed predominantly upon an embankment at RL 919.5 mAHD. Where it leaves the main line it would be at RL 924 mAHD and this first section would be in cut. The loop track would therefore grade down 4.5m over the distance to the rail unloader. On the approach to the coal unloader the track gradient would be zero. The land at Pipers Flat is undulating, with most of the alignment on embankment which is likely to vary in height up to 16 metres above the existing ground level (at the eastern end), so as to obtain a consistent vertical track alignment.

The rail embankment would cross Pipers Flat Creek (twice), Irondale Creek and Thompsons Creek. Pre-cast concrete box culverts or appropriate bridging structures would be provided at these crossing locations for drainage and to manage any potential for flooding. Flood studies undertaken for the project are discussed in Chapter 5 and **Appendix B**. These indicate the basis for the sizing and location of the creek structures.

A rail siding (two lines) of about 100m, as shown in **Figure 3-3a**, would be provided at the eastern end of the loop to allow for some minor wagon maintenance. The fuel storage area is shown in **Figure 3-3b**.

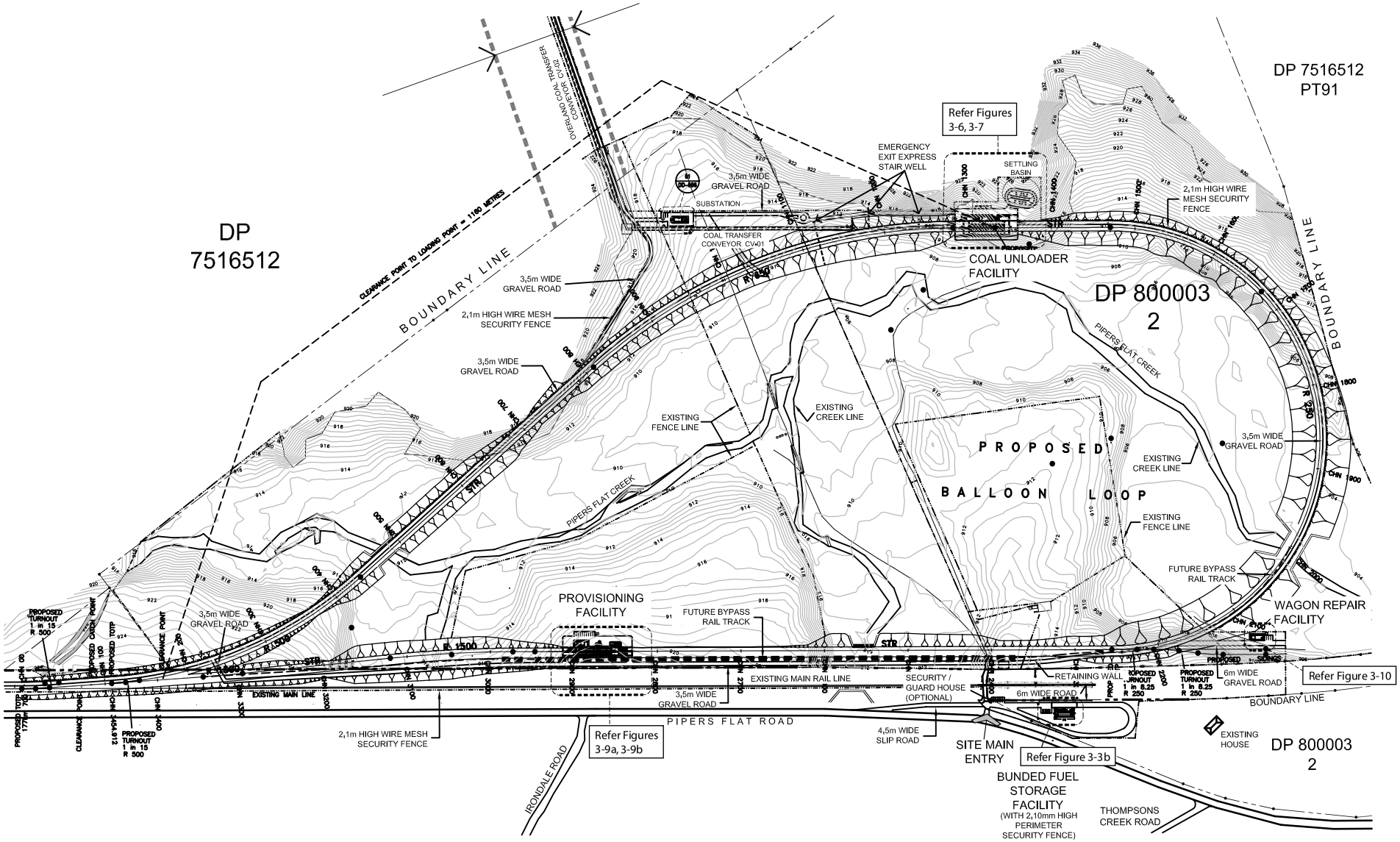
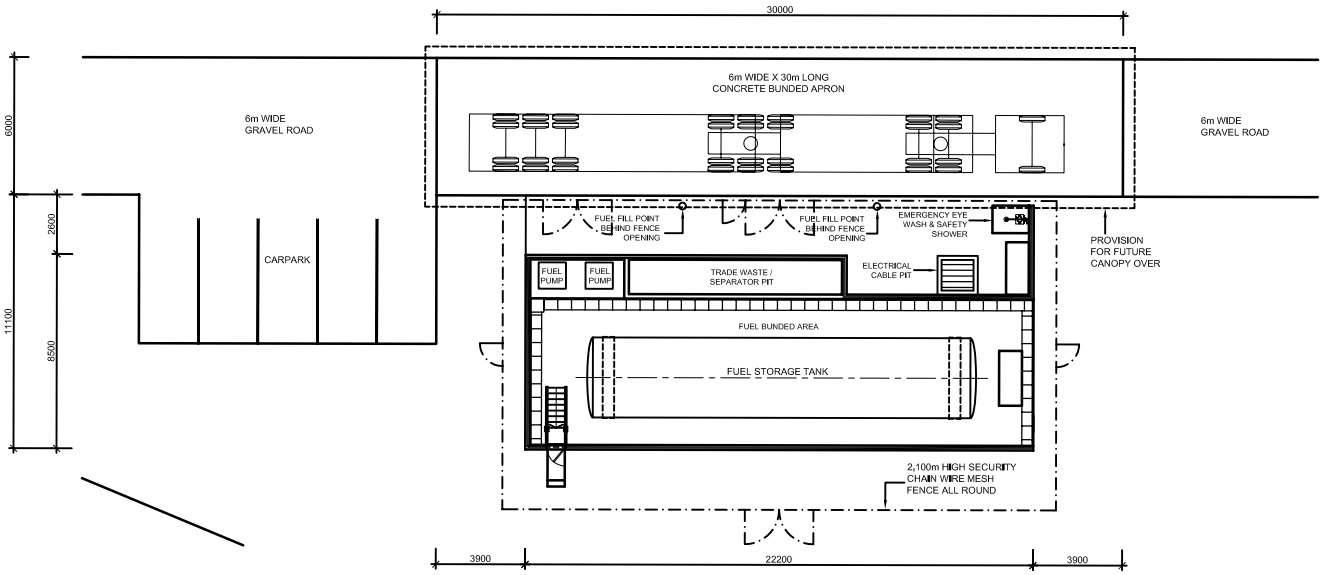


Figure 3-3a Location Plan

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

Drawing design by WorleyParsons



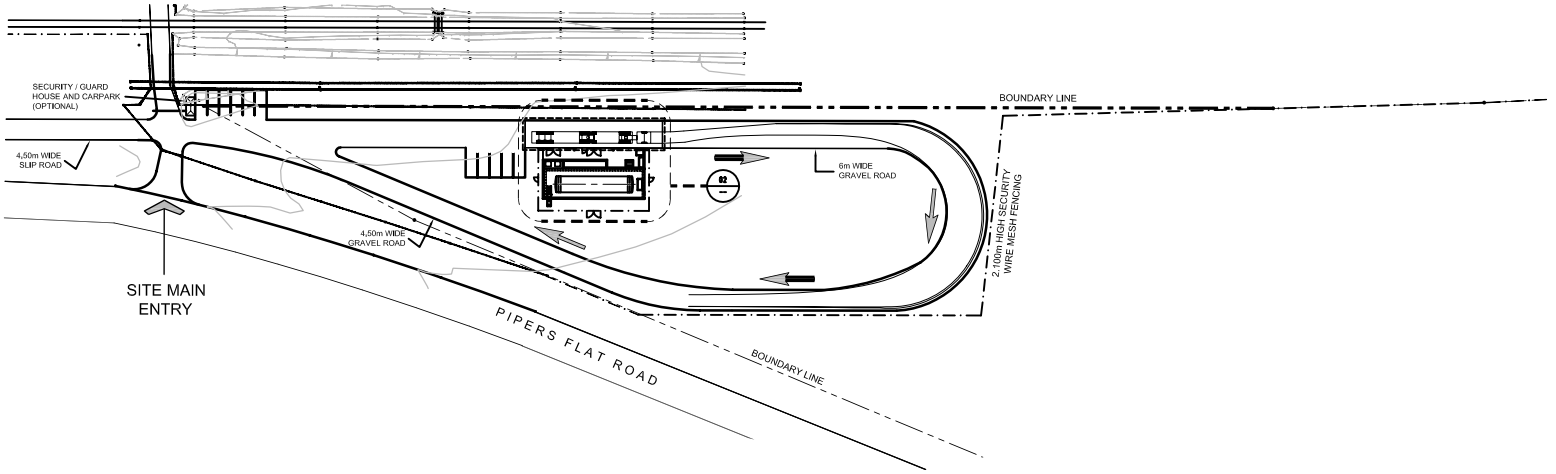


Figure 3-3b Bunded Fuel Facility Area Plan

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

Drawing design by WorleyParsons

The Rail Loop long section is shown in **Figure 3-4**. A typical embankment cross section is shown in **Figure 3-5**.

3.2.2 Access to the site

A new Type F (lights and bells) level crossing would be provided over the Main Line from Pipers Flat Road to provide vehicular access to the centre of the coal unloader. The access location is at the site of the existing **'**occupational' crossing on the eastern end of the site, as shown in **Figure 3-3a,b.**

3.2.3 Coal Unloader

A typical design layout for the coal unloader is shown in **Figure 3-6** and **Figure 3-7**. It would be constructed at approximately 17 metres below the level of the rail track, within a chamber. The structure would consist of a reinforced concrete chamber housing a steel dump hopper of 2,000 tonnes capacity, anchored to bed rock. The above ground component of the unloader would consist of the elevated rail line housed within a protective building about two storeys high (up to 7 metres), with an approximate length of 40 metres. This housing would provide protection for the unloading facility and also provide visual and noise shielding for the operation. Dust suppression (using water) and ventilation systems would be installed within the building.

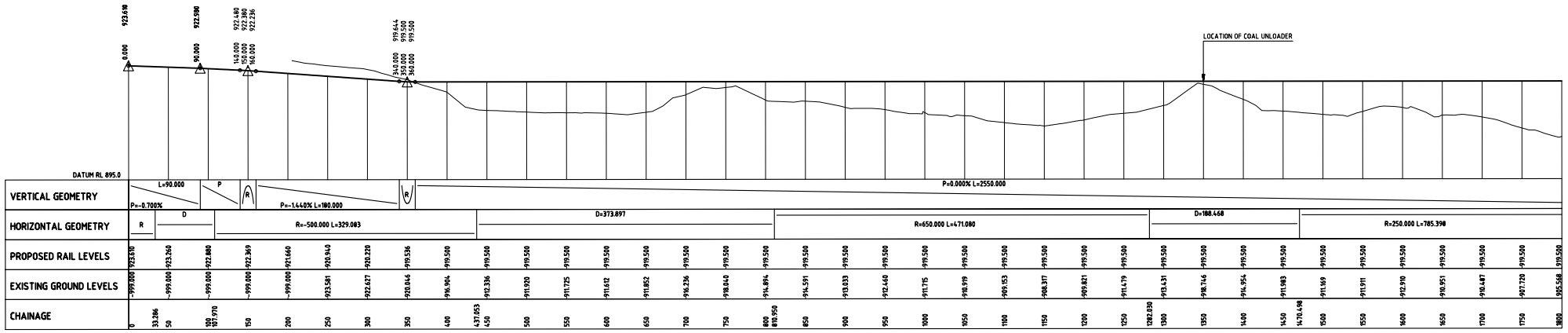
An access gantry would be included in the design to facilitate inspection and maintenance. The facility would also include provisions for wash down with a sump and sump pump to dispose of water accumulated within the chamber. Wash down water would be treated in a settling pond and used for irrigation on the site. The main construction materials used would be reinforced concrete components (cast *in-situ*) and steel structural and cladding materials.

No stockpiling of coal would be required outside of the unloader facility. As part of the coal unloader building a small side-building will be provided, including an office and amenities area (kitchen, toilet, shower).

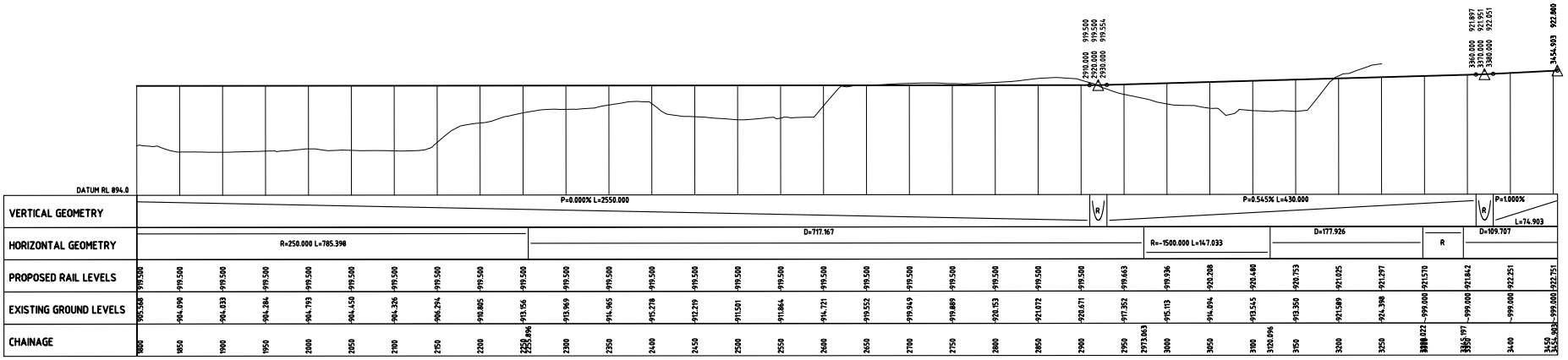
3.2.4 Conveyor

The conveyor would be located within a tunnel from the bottom of the dump hopper. The dump hopper would discharge to a belt feeder located underground which would feed the overland conveyor system at a rate of up to 2,500 tonnes per hour (tph). The conveyor would emerge to the surface adjacent to the railway embankment and proceed to a transfer structure located 300m west of the unloader. From this point it would form a continuous curve to the station terminal point and be supported on concrete plinths. The conveyor length above ground would be housed within continuous steel cladding.

The proposed conveyor concept is shown in **Figure 3-8**.



TRACKWORK GRADING LONGSECTION
CH 0.000 to CH 1800.000
SCALES 1:5000 H 1:1000 V

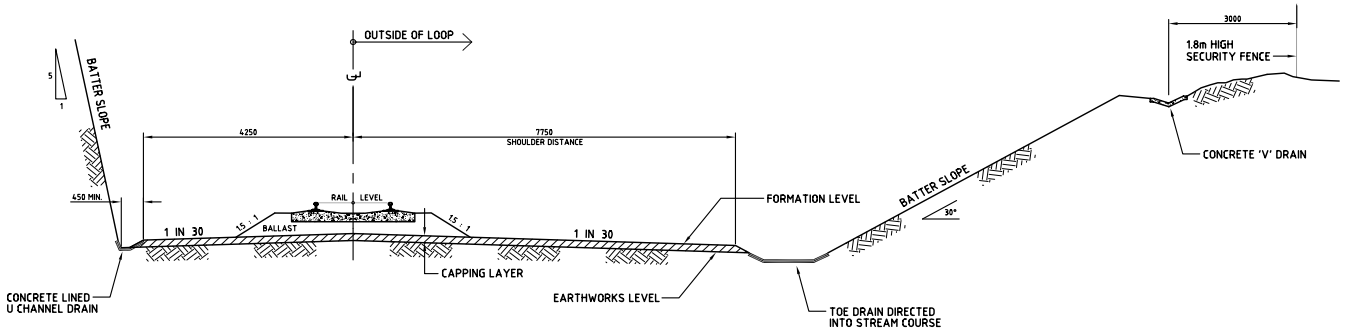


TRACKWORK GRADING LONGSECTION
CH 1800.000 to CH 3454.903
SCALES 1:5000 H 1:1000 V

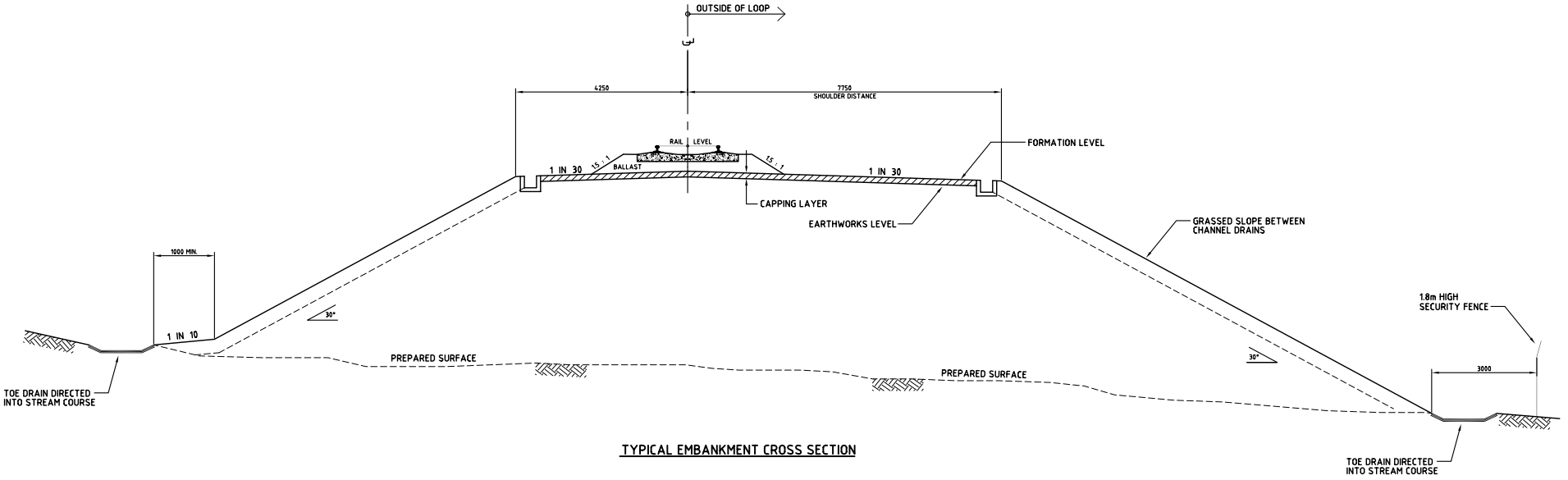
Figure 3-4 Rail Loop Long Section

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

Drawing design by WorleyParsons



TYPICAL CUTTING CROSS SECTION



TYPICAL EMBANKMENT CROSS SECTION

Figure 3-5 Rail Loop Cross Sections

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

Drawing design by WorleyParsons

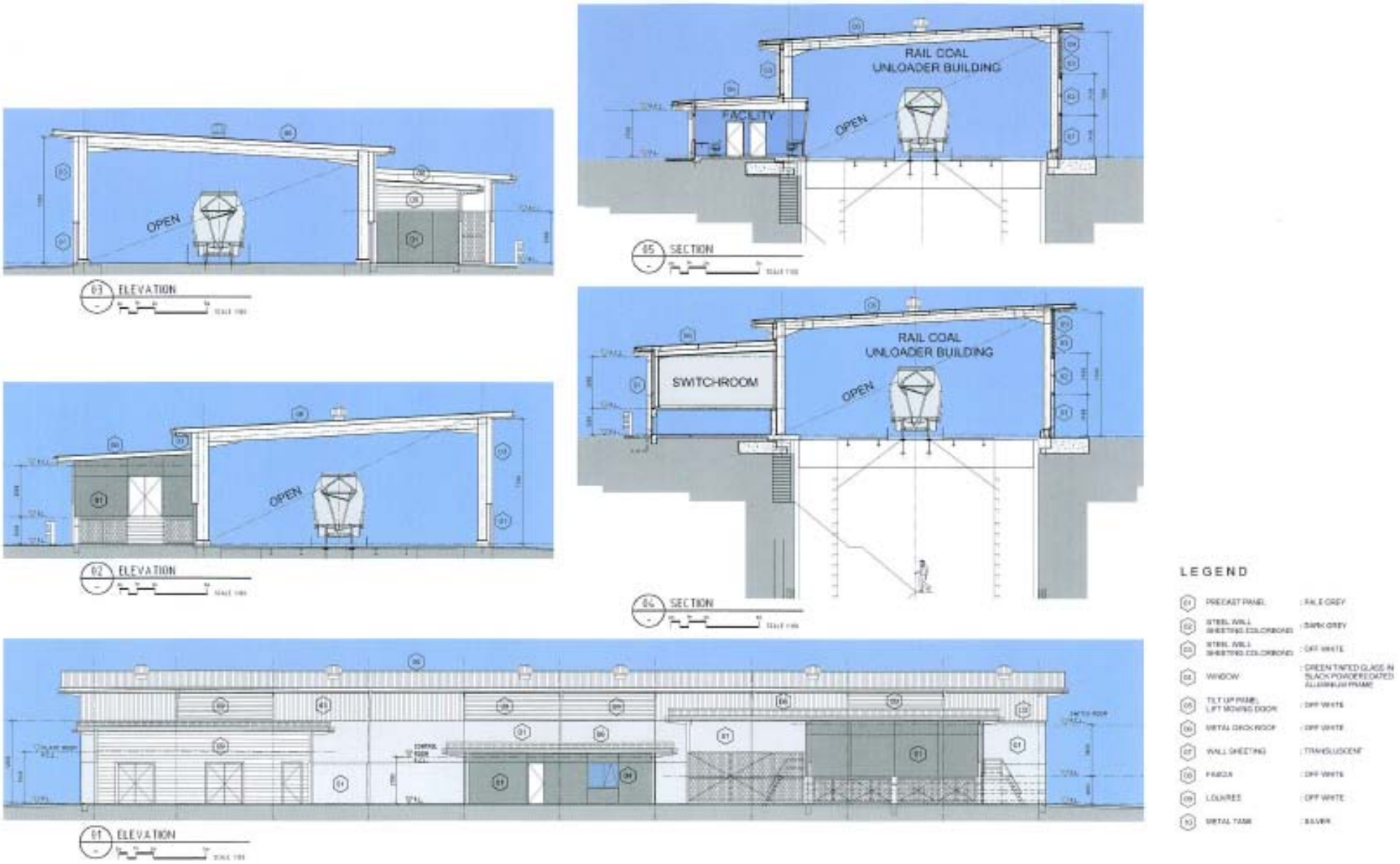


Figure 3-6 Coal Unloader (Elevation and Sections)

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

Drawing design by WorleyParsons

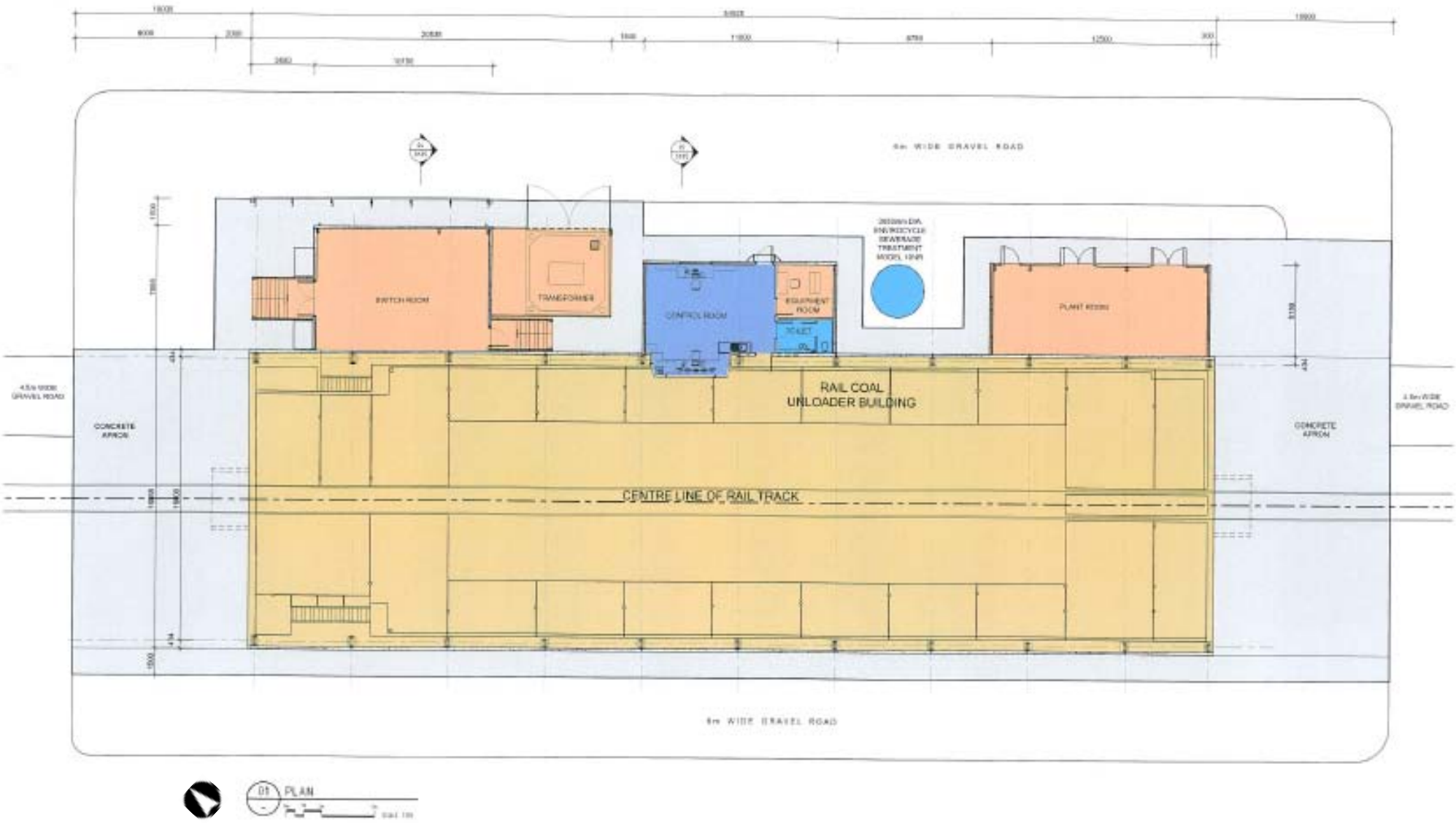


Figure 3-7 Coal Unloader Plan (Plan)

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

Drawing design by WorleyParsons

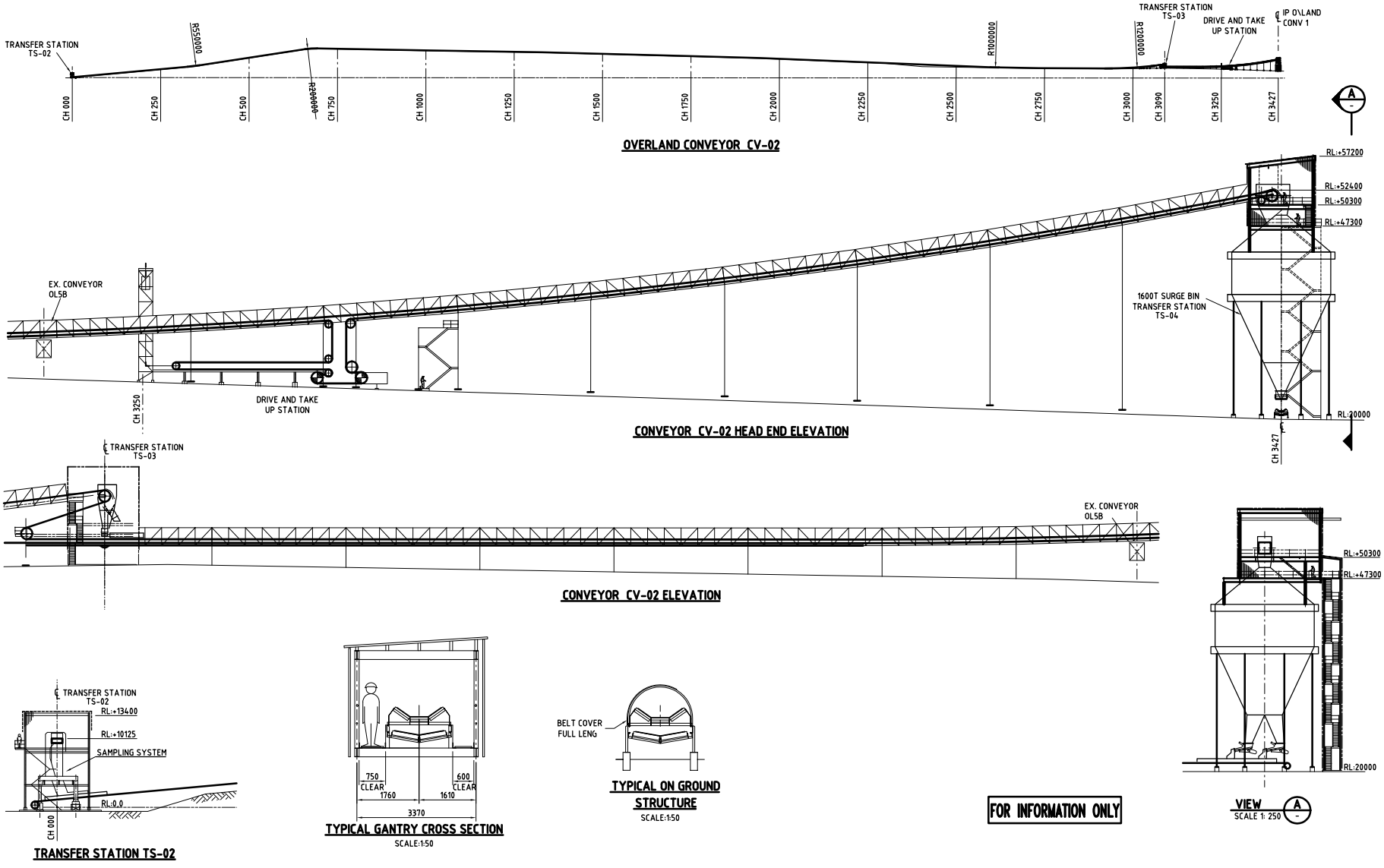


Figure 3-8 Conveyor Long Section

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

Drawing design by WorleyParsons

The conveyor system would also have:

- A gantry on either side at strategic locations to facilitate maintenance; and
- Vehicle access for maintenance and inspection along its length.

The corridor width to provide for the conveyor and access road is 15 metres.

To achieve the height of the loading point for the main receival bin at Mt Piper Power Station the conveyor would be elevated on trestles as it approaches the bin. These trestles would reach a maximum approximate height of 30 metres. Once coal reaches the main receival bin it would be managed by the existing coal handling system at the power station.

3.2.5 Provisioning Structure, Maintenance Area and Diesel Storage

A building structure about 50 m long would be provided on the outward part of the loop (see **Figure 3-3a**) for provisioning of locomotives. The building layout is shown in **Figure 3-9a,b**. This area would allow for locomotive refuelling and sanding.

A diesel storage farm which would provide storage for up to 106,000 litres of diesel fuel, would be located adjacent to the existing farm house (**Figure 3-3b**). The diesel storage area would meet the requirements of AS1940-2004: *The Storage and Handling of Flammable and Combustible Liquids* and the Dangerous Goods codes. Fuel would be delivered by truck (B-double) and piped under the rail way line and along the internal road system to the provisioning shed to fuel locomotives.

The wagon maintenance area comprises a rail siding at the south east corner of the site which would have 2 hardstand areas of 5m x 50m and a small shed about 6m x 4m x 3m high for storage of equipment (**Figure 3-3a**). The building layout is shown in **Figure 3-10**. Wagons requiring maintenance would be detached and wagons re-entering service after maintenance would be attached to trains after the coal has been unloaded.

Access roads, parking, water tanks and a power distribution system will also be established on the rail unloader site.

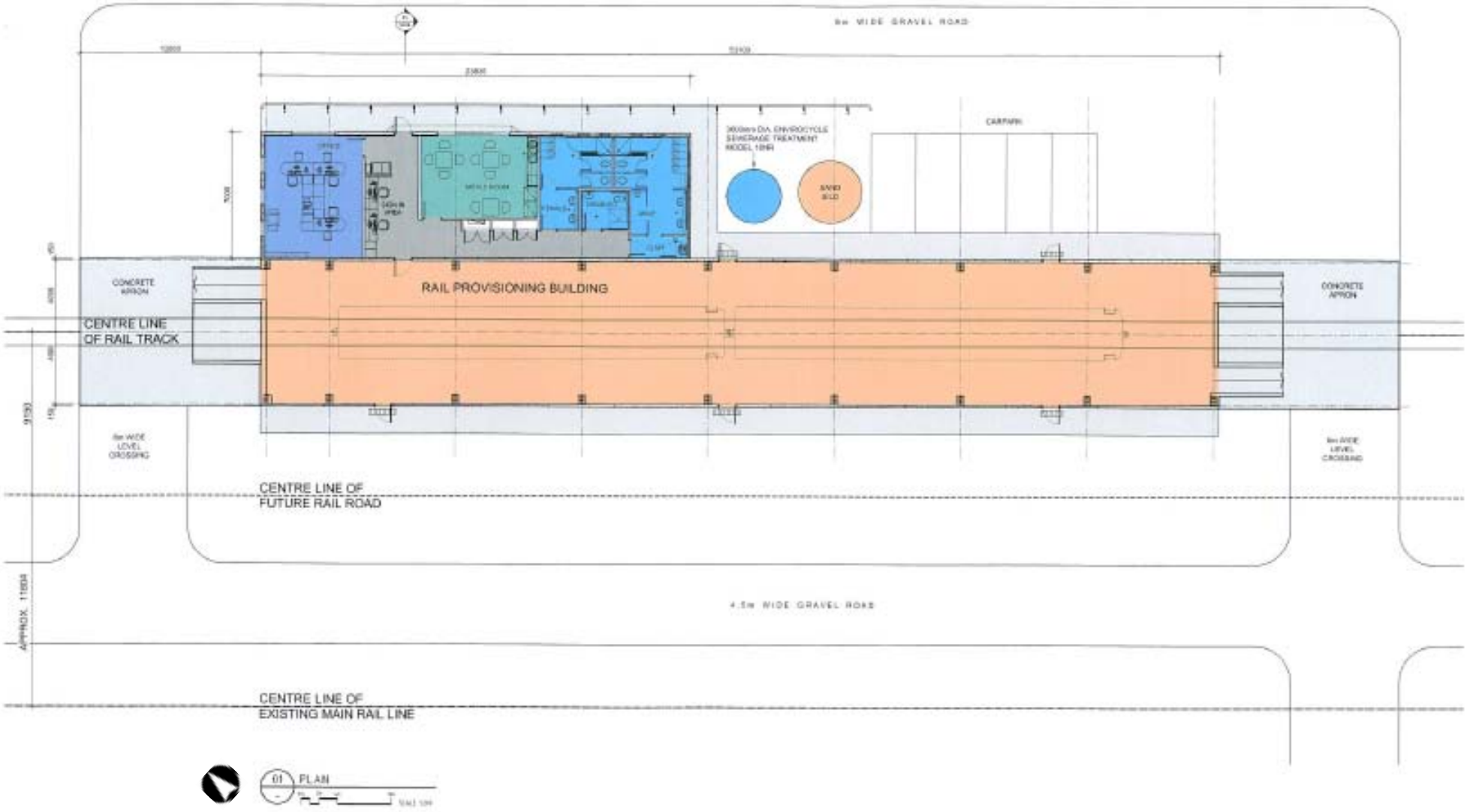
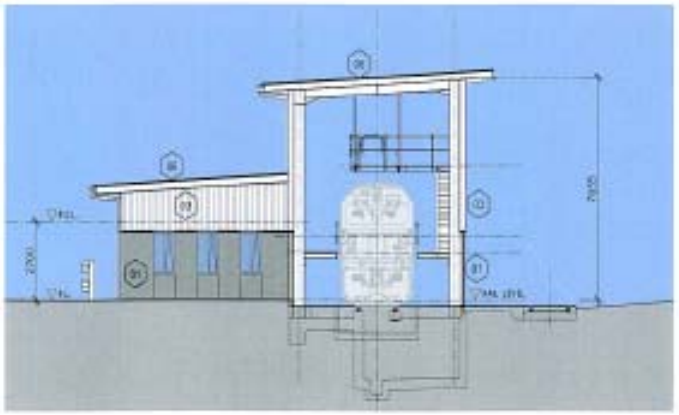


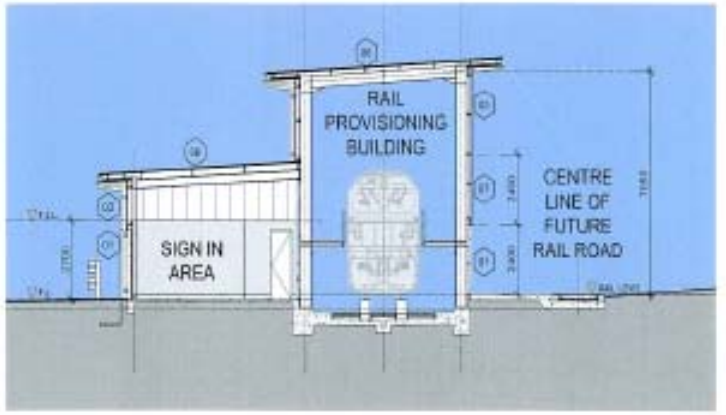
Figure 3-9a Rail Provisioning Area (Plan)

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

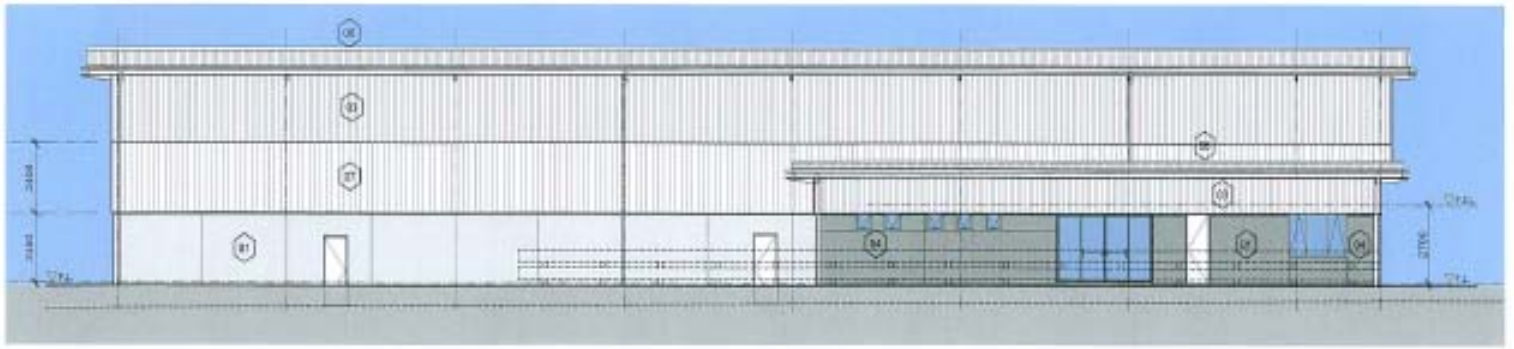
Drawing design by WorleyParsons



02 ELEVATION - WEST



03 SECTION



01 ELEVATION - SOUTH

LEGEND

31	PRECAST PANEL	: PALE GREY
32	STEEL WALL SHEETING COLORBOND	: DARK GREY
33	STEEL WALL SHEETING COLORBOND	: OFF WHITE
34	WINDOW	: GREEN TINTED GLASS IN BLACK POWDERCOATED ALUMINIUM FRAME
35	TILT UP PANEL (LIFT MOVING) DOOR	: OFF WHITE
36	METAL DECK ROOF	: OFF WHITE
37	WALL SHEETING	: TRANSLUCENT
38	FASCIA	: OFF WHITE
39	LOUVRES	: OFF WHITE
10	METAL TANK	: SILVER

Figure 3-9b Rail Provisioning Area (Section and Elevations)

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

Drawing design by WorleyParsons

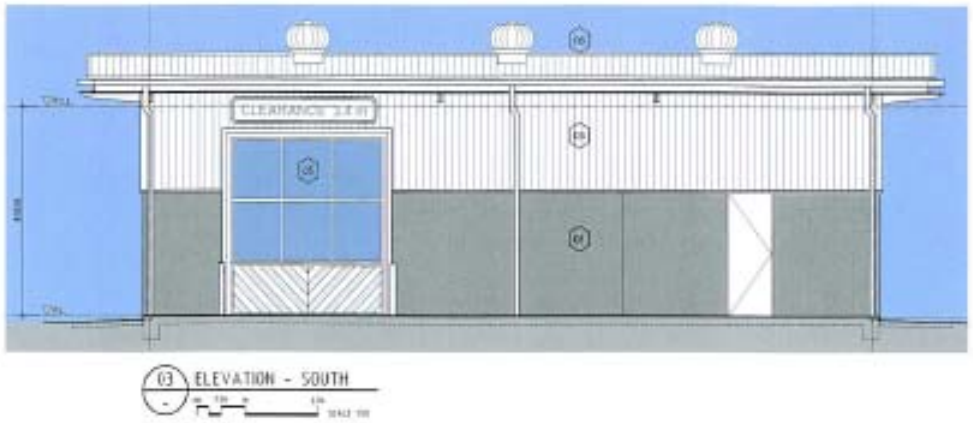


Figure 3-10 Wagon Repair Shed

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

Drawing design by WorleyParsons

3.2.6 Water Supply, Drainage and Treatment

Water requirements for the project are estimated as follows:

- For dust management – 20 L/s for 1 hour, assuming 6 deliveries per day = 432 kL/day;
- For washdown – 5 L/s for 1 hour per day = 18 kL/day;
- For showers and toilets – 300 – 1000 L/day.

Total water consumption would therefore be about 450 kL per day. This would be taken from the existing 750 mm water pipeline which crosses the land, running between Thompsons Creek Dam and the Mt Piper Power Station.

A settling basin will be constructed adjacent to the unloader, with capacity of 12 – 15 cu metres. The capacity would be designed to provide adequate retention time to allow its treatment prior to discharge. Following adequate settling time the water would either be transferred to the power station for reuse or used for irrigation / landscape on the unloader site. Coal fines retained in the basin system would be removed at regular intervals by bobcat and returned to Mt Piper Power Station for disposal in the existing ash storage area.

All wastewater from the toilet, kitchen, showers would be collected in appropriate drainage systems, treated in an aerobic treatment process (Envirocycle or similar) and used for site irrigation.

Site drainage from rail embankment areas would be collected and treated, and discharged to Pipers Flat Creek.

The Water Management Plan for the rail loop site is shown in **Figure 3-11**.

3.2.7 Power Distribution and Energy Usage

Electrical power would be supplied to the site from the Mt Piper Power Station via a constructed 11 kV power line which would follow the conveyor alignment to the coal unloading structure.

Energy requirements for the site operation (predominantly conveyors) would be about 3 MWhr demand over 6 hours, or 18 MWhr/day.

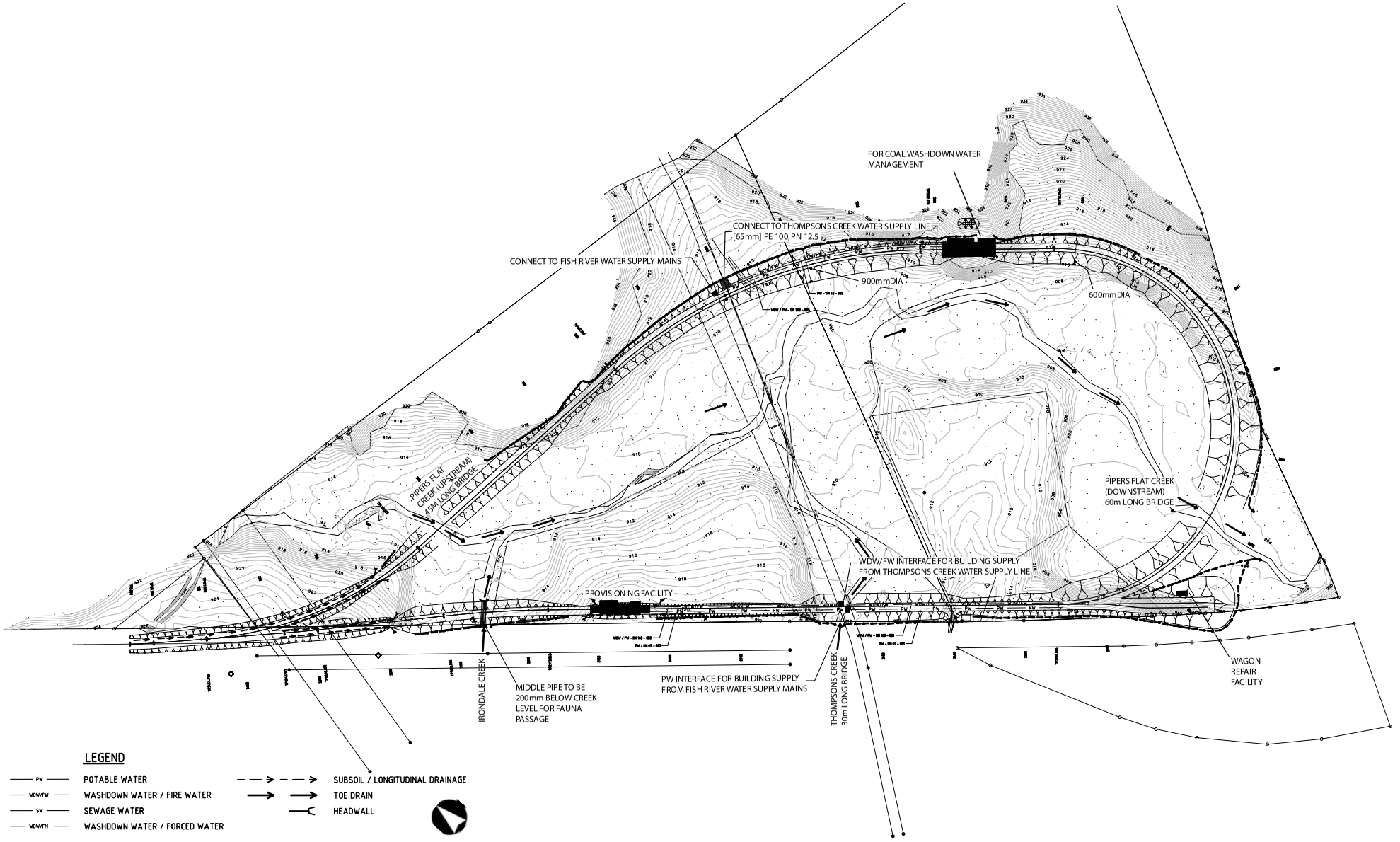


Figure 3-11 Water Management Plan

PIPERS FLAT - WESTERN RAIL COAL UNLOADER

Drawing design by WorleyParsons

3.2.8 Landscape

The existing site landscape has been disturbed by past clearing and grazing activities, and the vegetation in the creek systems is in poor condition.

A landscape plan and planting strategy will be prepared, with the intent of:

- Minimising the impacts of hard structures from view points on the southern side of Pipers Flat Road;
- Restoring as much of the cleared area as practicable to a vegetated condition; and
- Restoring the existing creekline to a condition which would maximise its environmental value.

More detail is provided in Chapter 5 (Sections 5-2 and 5-6).

3.2.9 Security Fencing and Lighting

The site will be secured and fenced so as to prevent access to building structures and the rail loop.

Limited external lighting will be provided for in building areas. Installation would be designed to meet ASNZS 4282 – *Control of Obtrusive Effects of Outdoor Lighting*.

3.3 Operational Activities

3.3.1 Train Numbers

In the early years of operation (from 2009 to 2014), it is anticipated that the facility would be required to handle about 2 million tonnes per year, with generally two train services per day for 6 days or 12 services per week. Typical train lengths would be 55 wagons (1,050 m), with each train carrying about 4,250 tonnes of coal.

In the medium term (2015 to 2030) the coal requirements would be about 4 million tonnes per year, with 3 trains per day for 6 days and 2 trains on the 7th day, or 20 trains per week. At peak times (ie when coal is not available from local mines) and beyond 2030, volumes may reach up to 8 million tonnes per year, which could result in up to 6 trains per day for 5 days and 5 trains per day for the remaining two days, totalling 40 trains per week.

The facility would be designed to run seven days per week, with the possibility that some deliveries would occur during night time hours due to the availability of train slots. The existing schedule on the line provides slots for 5 trains running north and 5 running south over 24 hours. The delivery of coal to the unloader would be from the north and the operators would need to apply for slot times, consistent with the existing operations on the line.

3.3.2 Line Operations

Entry to the loop and exit to the Mudgee Line would be signalled and remotely controlled by the Australian Rail Track Corporation (ARTC). No line side signalling is proposed in the loop. It is proposed that all train operations in the loop be by line-of-site, with specific train movement directives by radio or telemetry systems direct to the locomotive cab.

The loop would be able to accommodate up to three trains, thereby allowing trains to arrive and depart according to the availability of train paths on the Mudgee Line, without affecting the unloading operation and without the unloading affecting main line operations.

Once unloaded, the empty trains would then return to the main line via the loop. Opportunities are provided for delivery and pick up of wagons at the maintenance area and for refuelling on-site.

The internal layout in the loop would have the switch points controlled by the train driver for departure only and be self-restoring to the normal position. Normal point position would be for arrival of trains.

3.3.3 Unloader and Conveyor Operations

During the unloading process train speed through the facility would be at less than 1 km per hour. Each train would take one hour to unload.

The coal dumping operation would be a semi-automatic one. This would consist of a trackside installation of one or more door-opening triggers at the start of the dumping station bin and a door-closing trigger at the end of the bin. The unloading operation would continue until all wagons have been discharged.

The dump hopper would discharge to a belt feeder which would feed the overland conveyor system at a rate of up to 2,500 tonnes per hour (tph). The conveyor is expected to run continuously during and immediately after the unloading operation.

3.3.4 Employment

It is anticipated that about 10-15 full time jobs would result from the project. These would include two full time staff on site (24 hours) and two drivers for each train. Other positions would be generated from the need for site, locomotive and conveyor maintenance.

3.3.5 Incident Management Plan

An Emergency Response and Incident Management Plan would be prepared prior to commencement of operations on the site. This plan would be consistent with the processes outlined for Mt Piper Power Station and would provide detailed methods for the identification of emergencies and specific

measures to be undertaken for managing and mitigating any impacts resulting from emergencies or accidents at the site.

3.4 Construction Activities

3.4.1 Programme

The construction of the project is anticipated to begin before the end of 2007, subject to the determination of the EA and granting of project approval. Based on that start date, construction would be expected to last about 18 months and be completed by early 2009.

Construction would be in three main phases.

Phase one would take approximately 6 months and would involve major earthworks for the rail line loop and excavation of the coal unloader chamber. Work site set-up, including erosion and water control structures and vegetation clearance, would also be undertaken at this phase and perimeter fencing installed.

A total of about 600-645,000 cu metres of fill will be required for the embankments on the site. Some (about 42,000 cu metres) would be provided by excavations on the site (cuttings and unloader chamber), but the balance would required from off-site.

There are several million cu metres of overburden (virgin spoil) at an approved coal mining site (Lamberts Gulley) and the existing ash storage area, both adjacent to the existing Mt Piper Power Station. Delta is also investigating opportunities for using furnace bottom ash from the power station (up to about 100,000 m^3). The use of the ash would depend on its contamination levels and geotechnical properties and would, in the event of it containing contaminants, be subject to appropriate approvals from the DEC.

Sufficient volumes of these materials would be able to be transported to the rail loop site in trucks via the existing road reserve between the power station and the rail loop site. The road width would, however, need to be increased to about 8m to allow truck carriage. This would represent about 27,500 trucks to and from the site over a six month period (about 176 trucks per day, 6 days per week), but all of these truck movements would be retained on the project site and there would be no requirement to use public roads.

Delta also intends investigating the option of spoil from other locations in the event that not all of the spoil requirements can be sourced from sites adjacent to the power station. Where spoil is required to be carried on the public road system, the consequences of this possibility are addressed in Chapter 6 (Section 6-2).

Phase two would take about 9 months (month 7 to month 16) and include construction of the rail line infrastructure including drainage, rail track, crossing loops, signalling and level crossing. The main civil works for the coal unloader would also occur at this stage and this would include construction of the reinforced chamber and erection of steel structural elements to tie in with the rail line and access road to the unloader.

Phase three of the construction (month 11 to month 16) would involve construction of the coal unloader housing, the provisioning and maintenance facilities and the overland coal conveyor. This would include all the power, control and water management (wash down and fire fighting) requirements of the facility. The conveyors, hopper bins and transfer station components would be constructed by a supplier off site and brought to the site in sections for assembly during this phase.

The construction phase would culminate in the commissioning of the facility as the various elements of the system are tested and controlled to work in time with the delivery of the coal.

The main origin and destination of material coming on to the site (construction material) and material being taken off-site (waste material) is yet to be determined, but materials would be predominantly delivered via main roads such as the Castlereagh Highway and Pipers Flat Road.

Equipment used during construction is outlined in **Table 3-1**.

Table 3-1: Major plant and equipment

Phase	Activity	Major items of plant and equipment
Stage 1	Erosion and stormwater controls	Dozer, compactor, excavator, water cart and trucks
	General earthworks	Dozers, excavators, water carts, compactors (sheep's foot), articulated trucks and scrapers
	Access works	Roadworks - Graders, rollers (drum), water carts , excavator, backhoe, trucks and asphalting machines
	Reinforced earth wall for embankment	Dozer, excavator, compactor (sheep's foot), roller (drum), water cart, trucks, cranes
Stage 2	Railway line and sidings	Excavator, dozer, grader, trucks, concrete pump and rail machinery
	Pavement works	Graders, rollers (drum), water carts, backhoe, trucks, concrete kerb machines and asphalting machines
Stage 3	Structures	Crane, piling equipment (cast in-situ), grader, excavator, water cart, trucks and concrete pumps
	Landscaping	Backhoes, bobcats and minor smaller equipment

3.4.2 Construction Hours and Workforce

Hours of construction work would be 7am to 6pm, Monday to Friday, 8am to 1pm Saturday. Any work outside normal hours would be subject to separate approval of the relevant consent authority. Local residents would be informed of the timing and duration prior to any works outside the normal times.

The construction workforce would average about 150 full time jobs during the construction phase.

3.4.3 Construction Traffic

Construction traffic would occur over the 18 months. As noted above, spoil trucks would not use the public roads and construction traffic would be confined to delivery of materials, removal of waste and travel to and from the site by employees.

Approach signage and appropriate barrier tapers would be used to warn motorists of changed traffic conditions and temporary speed limits at the entrance to the site. Planning and notification will be undertaken in accordance with local government and Roads and Traffic Authority (RTA) requirements.

3.4.4 Work Compounds

Work site compounds would be located at appropriate locations on the construction site. Typically, the site compounds would comprise:

- Offices and meeting rooms for site personnel;
- Amenity and first aid facilities;
- Storage for light equipment and tools;
- Material storage areas;
- Communication facilities; and
- Parking areas.

Fencing with security points to control access would enclose the site compounds. Electricity, water and other utility services supplied to the compound would be obtained from the existing utilities adjacent to the compound. Appropriate security lighting would also be provided around the compounds.