Escarpment Mine Project
Denniston Plateau, Westport

Landscape Assessment
Addendum Report

Prepared for L&M Coal Ltd

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1.0 Executive Summary

The following is a summary of the salient points in the landscape assessment addendum:

The mine operation covers a wide area from the Denniston Plateau to the coastal plain. The operation includes many construction components, although several are a thin sinuous alignment and will cause only minimal impact on the landscape.

The two components causing the most significant, although localised, change beyond the mine itself are the coal preparation plant site and the stockpile facility area on the coastal plain. This assessment has identified appropriate mitigation measures to the landscape impacts for all the components so that they become integrated into the landscape.

2.0 Introduction

This landscape assessment of the mine components beyond the actual Escarpment mine site forms an addendum to the September 2008 landscape assessment.

The scope of this assessment includes:

(i) Water supply (pump station, pipeline and powerline)
(ii) Coal preparation Plant. Haul Rd and Powerline
(iii) Slurry Pipeline and 33kV Powerline
(iv) Dewatering and Stockpiling Site
(v) Mine Perimeter Benching Area

The purpose of the landscape assessment is to outline any potential landscape and visual effects of the mining components and to recommend appropriate mitigation measures. An addendum has been added as a result of L&M Coal Ltd changing the road alignment to avoid adverse effects on heritage values of the Whareatea Mine area. This alignment change makes no consequential difference in terms of the findings in this report, including the assessment of effects and mitigation measures.

3.0 Site Visit

A site visit inspection was made on 5th and 6th July 2010. All the areas mentioned above were visited and photos and plans are included in the graphic supplement.

4.0 RMA Matters

The Denniston Plateau was assessed in our September 2008 report as, *"not being an outstanding landscape",* and that the, *"natural character was high to moderate."*

For the other landscapes in which the pump station, powerlines, CPP area, slurry line and stockpile area are all located, a similar conclusion can be reached for the landscape quality and naturalness. Throughout these additional landscapes, parts of them are already modified by man-induced intrusions such as high tension pylons and wires, powerlines and cut over areas and routes.

It is a landscape that has had numerous industrial or utility developments imposed throughout, which tends to diminish the landscape's natural quality. However, these developments have created interesting cultural overlays and remnants in the location, with a number of heritage values and the area is considered a place for tourist visitation.

The heritage values associated with the previous Whareatea Mine and its features will be retained through a road realignment, avoiding adverse effects on the features (see map in Appendix 7.1). Existing vegetation that is required to be removed for this realignment is of a degraded nature, being already highly modified and so the effect on the natural quality will be of low impact.

5.0 Coal Processing and Transport Sites

The landscape character of much of the Denniston Plateau has been described in the original landscape assessment. However, the site now encompasses a much wider area. This includes the Waimangaroa River, a wider part of the Denniston Plateau, the plateau embankment and the flood plain at sea level. For each component the landscape character and quality will be assessed along with the landscape and visual effects of the scheme components, and the potential mitigation measures in order to integrate these components.

5.1 Water Supply (Pump Station, Pipeline and Powerline)

5.1.1 Pump Station

The Waimangaroa River is set in a narrow but well defined valley east of the Denniston Plateau. It is accessed by a four-wheel drive track from Burnetts Face. The valley consists of a landscape of basement rock and low growing vegetation and dense podocarp-beech forest above the valley floor.

Traversing the valley are two sets of high tension powerlines adjacent to and on the east side of the road, while an 11 KV line runs through the northern and opposite side through to Burnetts Face. The location of the pump station is in a narrow strip of dense vegetation between the road and river.

The valley is a secluded landscape with very little apparent usage, although four-wheel driving and mountain biking are recreational pursuits associated with the valley. It is dominated by the high tension power lines and beneath these the forest is cut over.

<u>Landscape and Visual Effects</u>

Currently the site between the road and river is vegetated and because of the limited area available for the pump station much of the vegetation will be removed. The pump station will then become visible from the road and river but the effects will be minor due to the small sized pump station in a large scaled landscape of vegetation and openness.

Mitigation Measures

To mitigate potential landscape and natural character effects the following measures should occur:

- Keep the access as narrow as possible to the pump station
- Paint the pump station in a recessive colour
- Retain as much surrounding vegetation as possible

5.1.2 Pipeline from Pump Station to CPP

A pipeline will be generally laid overland, except where required to mitigate adverse effects, from the pump station to the CPP, a distance of about 5km. The first 100m will be a 270mm diameter steel pipe, the next 3km is a 355mm diameter plastic pipe, and the final 1.95km is a 315mm diameter plastic pipe.

The location of the pipeline will vary from the road verge (a 1.5m width), to the toe of a cut face and, across undisturbed landscape from Coalbrookdale to the CPP. For some parts of the alignment the clearing of vegetation will be required, such as from Coalbrookdale to the CPP which could be 4m wide.

The landscape of the route consists of a podocarp-beech forest and shrubland beneath, while between Coalbrookdale to the CPP site is a more open and exposed landscape with a predominance of basement rock and scrubland plants.

Landscape and Visual Effects

The pipeline (approx. 3km) from the pump station to the coal haul access road near Burnett's Face will be visible to the users of the access track. The pipeline route will require the removal of vegetation and soil. From the coal haul road through to the end of Coalbrookdale settlement, the route will follow a walking track. This will be visible for track users and a limited amount of vegetation will be cleared. From Coalbrookdale across to the CPP site vegetation clearance will be required for a 4m corridor for an access track next to the pipeline. Generally the effects will be of a minor nature, especially through the vegetation, but in an open landscape the effects could become more significant when the viewer is close at hand due to the higher impact.

Mitigation Measures

To mitigate potential landscape and natural character effects the following measures should occur:

- Steel pipe left to weather naturally
- Plastic pipes to be black in colour (polyethylene)
- Any cutting or clearance of the vegetation to be undertaken in a sensitive manner
- Bury the pipe wherever possible

5.1.3 11kV Powerline

An 11kV powerline will be installed from the CPP site to the pump station adjacent to the road between the pump station and Burnetts Face. The landscape is the same as described for the pipeline.

Landscape and Visual Effects

The power line will be visible from the vehicle and walking access tracks. It will also be visible where it crosses the Whareatea Mine road adjacent to the CPP. The proposed alignment is indicative only.

Between Coalbrookdale and the CPP site there appears to be no man-induced changes or additions to the landscape except for poles throughout, so it is important to avoid sensitive locations such as vegetated gullies. The effects will be more apparent where the powerline crosses an open landscape and where vegetation has been cleared, but due to the vastness of the landscape the effects will be minor.

Mitigation

To mitigate potential landscape and natural character effects the following measures should occur:

- If possible utilise the existing power line.
- For new lines, locate near existing lines, remove excavated soil from poles and remove vegetation from site.

- Between Coalbrookdale and CPP site, locate the line below the skyline ridge where possible.
- Use timber poles and leave to weather naturally

5.2 Coal Preparation Plant

The CPP concept plan includes the following components:

- Haul roads and on-site roading;
- Alternative public road to bypass the CPP;
- Run of Mine coal stockpile pad, truck dump and feeder breaker;
- Sizing station and conveyors;
- Coal preparation plant, thickener and rejects stockpile;
- Substations and powerlines;
- Workshop;
- Product stockpile area;
- Slurry system, including slurry line;
- Freshwater line and a clean water storage dam;
- General workshop area, employee parking, office/ablutions amenities complex, sewage treatment plant, diesel fuel station, laydown area and heavy equipment parking area;
- Recycle water storage dam (runoff water collection & recirculating plant water).

The CPP will be primarily constructed on cut areas. This will avoid stability issues on site. The office and workshop areas will be constructed on fill from the initial mining operation.

The eastern section of the CPP has a total footprint of 153,600 m^2 (15.36 ha). The layout of the site has been selected to avoid the rata/mountain beech forest and wetland area (identified in the flora survey) to the fullest extent practicable. The approximate area of rata and wetland avoided are:

- East of recycle pond – 4,000 m^2 – rata/mountain beech forest ;
- West of recycle pond – 2,900 m^2 – rata/mountain beech forest;
- South of office/workshop – 13,000 m^2 – wetland.

Provision has been made for direct placement of all of the rata/mountain beech forest that will be disturbed.

The western section of the CPP has a total footprint of 152,300 m^2 (15.2ha) which includes 42,000 m^2 under the proposed freshwater storage reservoir.

The platform for the CPP will require excavation of 35,000 m^3 of material to create a stable platform for construction. This material will be used as fill outside the foundations.

The platform for the office and workshop will also form the recycle water reservoir and material for this platform will be supplied from the initial overburden stripping as will the material required to construct the haul road from the mine to the CPP.

5.2.1 Coal Preparation Plant

The CPP itself is located near to the proposed Escarpment Mine. The CPP site is where the waste rock is separated from the coal prior to the coal being sent down the slurry pipeline to the stockpile facility site on the coastal plain.

The site is located on the plateau between the Whareatea Mine Road and a dam site near Sullivans Mine. While it is a relatively high point on the plateau it is a large flat area on which to accommodate a number of utility structures. These structures include a 23.5m high building to house the CPP as well as the products conveyor, raw coal conveyor, bins, thickener products, stock piles, waste products, and reject bins. Only the CPP building is to be 23.5m high.

Currently there is a roughly constructed access road located on the site and this will be upgraded and refined to give access onto the site.

Two storage dams will be associated with the CPP. Figure 1.0 shows the concept plan that has been assessed from a landscape perspective (refer below). To create these reservoirs the upper parts of two gully systems will be dammed with a high wall of approximately 16m in height so as to contain the water. Reservoir site 1 is less visible from the existing Whareatea Mine Road

than reservoir site 2, but with the advent of the public road to the east of reservoir site 1 then it will also become more visible.

The gullies are vegetated with shrubby and wetland plants including manuka, flax, red tussock, hebe, three finger, bog and celery pine, *Drachophyllum* and there are isolated stands of yellow pine and rata. Rocky outcrops occur throughout these sites as well as basement rock contributing to a poorly drained landscape.

There are also two old powerlines bisecting dam site 1. From the road, reservoir site 2 can be viewed, although there is screening vegetation along the road at the upper end which will assist with the area retaining its integrity and character. Vegetation here includes hebe, NZ flax, manuka and three finger and NZ broadleaf.

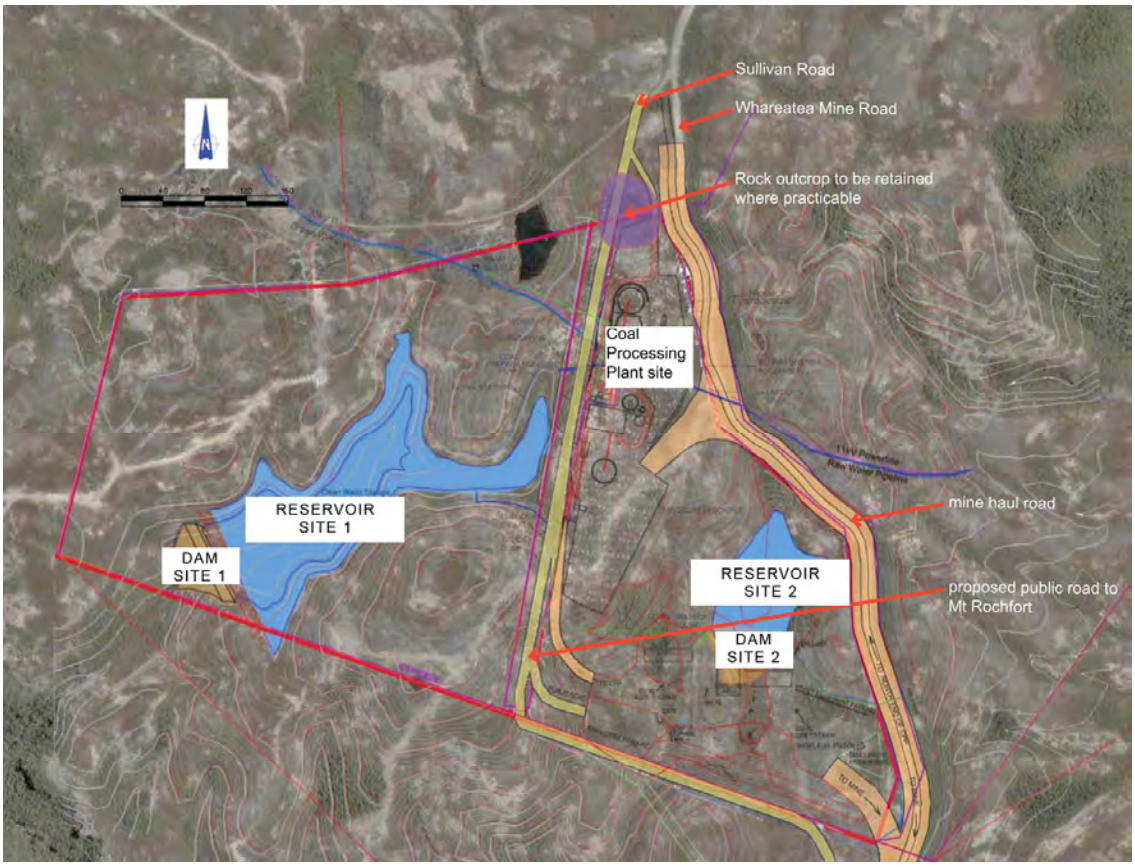

Fig 1.0 - Plan of the dam and reservoir sites 1 and 2

Landscape and Visual Effects

The most significant landscape effects to the whole project will occur on this site. The dam and reservoir sites are not large and integrate well with the landscape to cause the least possible damage. They are only visible when approaching each site. The dam walls will be connected to existing landforms.

Due to the scale of the buildings these will be seen from the plateau such as Denniston but not from the coastal plain or shoreline as they are well set back from the edge of the plateau (see Fig 2.0). The closest view of the buildings will be from the Whareatea Mine Road. The Denniston Plateau has numerous buildings and relics scattered over a wide area and they are all associated with the mining industry. These have become an accepted part of the coal industry heritage on the plateau.

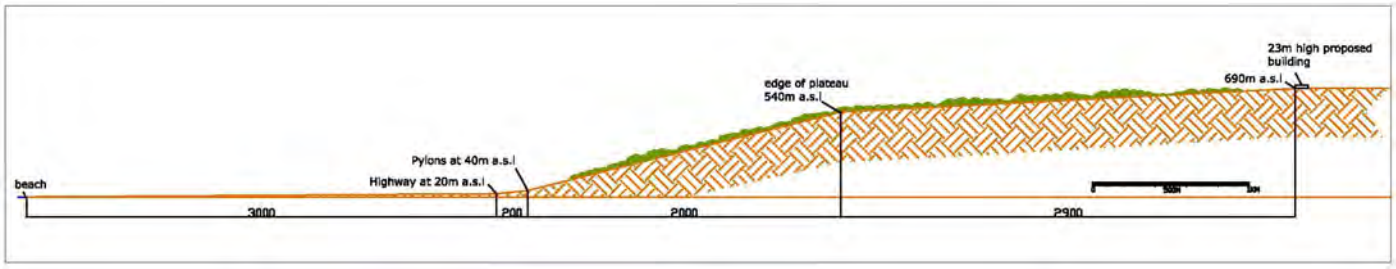

Fig 2.0- Sectional elevation from CPP to shoreline.

The large-scaled landscape can accommodate the CPP building, but every effort should be made to integrate the structures so as to minimise its impact.

For the CPP site the landscape and visual effects will be significant. This is due to the presence of a tall building, structures, roads, creating dams and flooding two valleys, all combining to create an industrial location in an otherwise moderate to high natural landscape. However, it is not unusual for such an effect to be created on the Denniston Plateau as such industrial developments have existed for the past century and still exist near Denniston. The effect is not something that will be set in perpetuity, but rather after completion of mining the installation will be dismantled and a rehabilitation scheme put in place. In the interim mitigation measures will assist to reduce some of the effects already mentioned.

Mitigation Measures

To mitigate potential landscape and natural character effects the following measures should occur:

- Any significant vegetation should be removed from the dam and lake formation e.g. rata, yellow pine etc, and where possible it should be stockpiled and replanted or direct transferred.
- The dam walls should be moulded into existing landforms.
- The dam walls coating material should be of a material that is either indigenous to the site or of a compatible texture and colour.
- The rocky outcrops closest to the junction of the Whareatea Mine Road and Sullivan Mine Road should remain, if practically possible or reinstated, as a buffer to the CPP site operations.
- The main building/s should be integrated into the site by lowering the level of the landform where practicable so as to further integrate it into the landscape.
- The building/s can be further integrated and enhanced by introducing compatible cladding material and colours that relate to the location.

5.2.2 Widening of the Whareatea Mine Road and 11kV Powerline

The existing mine road will be widened to 30m between the CPP area and the mine site to act as a haul road. The road will be restricted to mine traffic only and the road width is governed by safety and the need to manage water. This distance is 1.78km. The gradient of this stretch of road is reasonably shallow with width on both sides for widening. Between the CPP area and dam 2 the road follows a ridgeline and then the road flattens out towards Whareatea Mine. The power line will follow the road alignment from the CPP site to the mine. A public road will be established to the west of the CPP area which links with the Mt Rochfort Road, so as to allow for continued public access.

A new 11kV line will follow the haul road alignment from the CPP site to the mine. The poles will be timber and will weather to a natural colour.

Landscape and Visual Effects

Removal of rock and vegetation will occur for this section of road. This excavation and new formation could be visible from the mountain bike circuits of the Miners and Drill tracks but not elsewhere on the plateau until one reaches the CPP area. It is a reasonably discrete section of roading.

The powerline will be an addition to the landscape, but this will be easily absorbed in this large scaled landscape and perceived as being part of the industrial development.

The overall effects of the haul road, new public road and the powerline will be localised to the route which is relatively remote for the general public. However, for those traversing the mountain bike trails or descending from Mt Rochfort the visual effects could be moderate mainly due to the wide haul road.

The widening of the haul road and new public road will result in loss of vegetation and rock outcrops which will initially create a moderate effect. The mitigation measures, will in time, reduce the landscape and visual effects.

Mitigation Measures

To mitigate potential landscape and natural character effects the following measures should occur:

- Material from excavated cut slopes should be removed offsite and the batters should be smoothed off.
- Filled batter slopes should be limited, due to the spillage that occurs down the slope, making it more visible.
- Mature shrub vegetation should be retained where possible and replanted where possible.
- Revegetation of batter slopes should occur where required.

5.3 Slurry Pipeline and 33kV Powerline

A coal slurry line will be laid from the CPP site to the coal stockpile site on the coastal plain near Powerhouse Road. The pipeline will follow the shortest and most accessible route from the CPP site to the Whareatea River crossing. This will be

along a similar alignment as to the 33kV line. A 280mm diameter plastic pipe will be laid overland and held in position by cement bags or similar. A 4.0m wide construction path will be constructed to provide a flatter alignment and easier access for maintenance.

From the bush edge the pipe heads downhill off the plateau and the same dimensioned pipe will be secured by rock anchors with chains and collars. The pipe will cross the river on a steel single span truss. From this location to Lake Rochfort the alignment follows the KE access track.

The landscape on the plateau consists of native bush and basement rock which has low growing vegetation across it. From Lake Rochfort to the coastal plain a 250mm diameter steel pipe laid onto concrete sleepers (1.0m wide and 500mm high) will follow the existing KE route. From the KE powerhouse to the coal stockpile and dewatering plant the pipeline will be laid above ground on the same sleeper system across the farmland of the coastal plain.

Landscape and Visual Effects

The pipeline will have minimal visual effect and landscape disturbance. The corridor for the pipe is very narrow so as not to cause undue removal of vegetation of rock and vegetation.

The most visible part of the slurry pipeline route is the clearance of the route itself as it descends from Lake Rochfort to the coastal plain. This route has already been opened up by KE for their pipeline. Any adverse effects on landscape values and natural character have been avoided by this approach.

The overall visual effects will be of a minor nature due to the very small footprint of the slurry line, much of which is in a modified landscape.

Mitigation Measures

To mitigate potential landscape and natural character effects the following measures should occur:

- Given the lengthy time that it takes to establish vegetation on the Plateau, minimal disturbance as possible should occur.
- Vegetation and rock disturbance or removal on the Plateau could be direct transferred to existing disturbed sites nearby.
- The steel pipeline will be left to weather naturally.

A new 33kV powerline will be constructed from the Kawatiri Energy (KE) power house to the CPP site. The powerline will be located on timber poles up the slope to the plateau where it will pass through the landscape of basement rocks and low shrubland. This landscape is sensitive to changes due to its exposure, openness and lack of forest vegetation and generally following the slurry line to reduce disturbance. Changes are not easily absorbed, but there are numerous man-induced utilities throughout the plateau, including the disused Sullivan mine, powerlines and two sets of high tension powerlines and pylons. Because of the large scaled landscape the changes will become less significant than for a more enclosed valley landscape.

Landscape and Visual Effects

The effects of the 33kV line will be the presence of one line of timber or steel poles and wires traversing the landscape from the KE power house to the CPP site. The effect will be similar to a line that which currently exists in this area. The prominence of the line will diminish as the line recedes into the distance and the poles will weather to a grey colour if they are made from timber.

The effects will result in the removal of vegetation and basement rock for the timber poles with a surface area of 9m² for each pole. Restoration of the pole foundations will reduce the landscape effects to a minor mature, while the visual effects of the powerline will also be minor due to the utilisation of an existing route up the hillside. Across the plateau there are other poles and pylons so this is not a landscape devoid of structures. In this large-scaled landscape the thin and weathered poles and fine wires will create only a minor effect.

Mitigation Measures

To mitigate potential landscape and natural character effects the following measures should occur:

- Use timber poles
- Locate the line where possible in shallow depressions so as to reduce the visibility
- Remove all spoil from each pole site

5.4 Dewatering and Coal Stockpile Facility, Fairdown

This facility includes a dewatering and treatment plant, treated discharge, stockpiling and rail load out, earth bunds, emergency dump pond and light vehicle access road from Powerhouse Road. All this will be located on the coastal plain north of Deadman's Creek and on the east side of the road and railway.

The water treatment plant will be approximately 15m in height and enclosed in a building with lower infrastructure adjacent to the building. The proposed coal stockpiles height will be about 12.0m, and the bunds that will surround the site will be 4m in height.

It is screened from the state highway by flax and manuka located between the state highway and railway line. A podocarp forest forms the southern boundary of the site. A view of the site can be gained from the north-western end, but it is not visible from Powerhouse and Deadman's Roads on the lower hill slopes.

Landscape and Visual Effects

There will be a change from a rural character to an industrial one. The area north of Westport does have other isolated examples of industrial development adjacent to the road. Because of the narrow flat strip of land and its proximity to both road and rail lines, this is the only logical place to locate this stockpile and dewatering facility. It will be a large facility with different components but it can be absorbed due to the dense road edge shelter and a very high backdrop which will dwarf the facility. Other such facilities occur at Ngakawau.

The landscape and visual effects will be of a moderate nature for those travelling past the site and for neighbours on SH6. This is due to the change in the landscape that will occur from a pastoral scene to an industrial one, and the presence of tall structures and stockpiles. For those residents on Powerhouse and Deadman's Roads the site is at some distance and the views interrupted by shelter trees and stands of indigenous vegetation. For these people the effects will be of a minor nature.

Mitigation Measures

To mitigate potential landscape and natural character effects the following measures should occur:

- Wide and flat mounding and planting along the state highway could assist to integrate and partially screen the facility.
- Planting on the bunds and sowing with grass
- Attention to the materials and colours of the building could assist to enhance the location and improve the sites amenity value, reflective quality and integration into the landscape.
- Create a stream as a treated discharge channel into Deadmans Creek. Riparian planting along this channel could further enhance the outlet possible provide for nutrient uptake.

5.5 Mine Benching Area and External Pit Wall Benching

A "ring" around most of the original mining permit application area for the Escarpment Mine is proposed to provide for benching up from the coal floor, allowing mining of coal to the mining permit boundary. This benching is estimated at approximately 50 m outside the mining permit area (apart from the escarpment cliff face). These external wall bench areas total about 33.2 ha. This will result in the removal of scrubland vegetation and basement rock.

Landscape and Visual Effects

The increase in the mined area is very small in comparison to the mine size and the effects will be very minimal.

Mitigation Measures

The same mitigation measures will apply as for the mine.

6.0 Conclusion

Denniston Plateau has experienced mining operations for 130 years and the remnants are still visible. So important are these mining heritage values to the Buller District that some have been restored and interpreted to enhance the visitor experience. As a result of past exploits it is a modified landscape.

Many of the components of the proposed mine operation are small in scale, of sinuous alignment, and will utilise or expand upon existing routes. The dam sites and CPP area will be the most significant landscape effect during the operation. However, sensitive siting and treatment of the structures and ensuing rehabilitation will ensure that this site will become well integrated to the landscape. It will only be visible from the plateau itself, while there will be a small loss of the quality of natural character to the plateau landscape.

The stockpile facility on the coastal plain will change the rural character of the site to an industrial one. However, with measures such as retention bunding and planting of bunds, of existing perimeter planting and treatment of the structures cladding and colours, any adverse effects will be mitigated to a significant degree.

7.0 Appendix (see also separate document for graphic supplement)

7.1 Addendum to report: Road Realignment to Avoid Heritage Structures