S.C. HEINRICH
& CO PTY LTD

MINING LEASE PROPOSAL

Mineral Claim 4311

(Extension of sand mining over Koch land)
Section 469W Hundred of Clinton
Northern Yorke Peninsula

S. C. Heinrich & Co. Pty Ltd
PO Box 2256 Clare SA 5453
Malcolm Heinrich – 0418 859 294

Contact: David Keane – Mining Consultant
0408 088 031 dkeane@iweb.net.au

July 2012

Mining Lease Proposal

MC 4311

Clinton Sand Quarry Expansion from EML 5901

S.C. Heinrich & Co. Pty Ltd (based at Clare)

Koch Land
Section 469W Hundred of Clinton

July 2012
(Version 3)

Prepared by:
Landscape Profile Pty Ltd
C/- Post Office
Inglewood SA 5133

David Keane
Mining and Rehabilitation Consultant

Ph: (08) 8389 2352
Fax: (08) 8389 2113
Mobile: 0408 088 031
e-mail: dkeane@iweb.net.au

CONTENTS

1. SNAP SHOT OF OPERATIONS

NAME OF SITE	Koch Land - Clinton
TYPE OF PROJECT	Extension of open cut quarry operation into new area
SIZE OF PROJECT AREA	85 Hectares
TENEMENT NUMBER	MC 4311
MINERAL SOUGHT	Sand for Construction Materials Use
LOCATION	Between Price and Clinton on Yorke Peninsula
LAND OWNER	Malcolm Gordon Koch of Port Clinton SA 5570
TYPE OF COUNTRY	Cropping/grazing and sand mining
MINING COMPANY/OPERATOR	S. C. Heinrich & Co. Pty Ltd PO Box 2256 Clare 5453
METHOD OF MINING	Strip mining with Dozer/Excavator/Scraper
DEPTH OF MINING	to 30 metres
MINING RATE	Generally 5,000 to 20,000 tonnes per year.
OPERATING HOURS	7 am to 5.30 pm 5 days per week, occasionally on Sat.
FREQUENCY OF OCCUPANCY	Continuous as per market demand
AVAILABLE RESERVES	Approx. 1,000,000 tonnes
MINE LIFE	60 to 80 years

2. EXECUTIVE SUMMARY

"One of the most significant changes in Adelaide's extractive industry over the last decade has been the rapid growth in concrete sand production from large, relatively clean deposits in a Tertiary palaeochannel on the northern Yorke Peninsula" (*Ref: MESA Journal 2002* and *Report book 92/56*)

This application is for one of many operations which operate within the vicinity of this proposed site. MC 4311 is merely an extension of EML 5901 operated by the same applicants (S. C. Heinrich & Co. Pty Ltd), once approved it will be incorporated into current operations.

This document, the Mining Lease Proposal (MLP), is the first application stage of the proposal for a mining program, a Mining and Rehabilitation Program (MARP), which gives the tenement holder rights to mine the area. An Extractive Mineral Lease (EML) will be sought. This application will be dedicated to the winning of construction sand.

Access will be gained from existing roads into the operating EML 5901 from Clinton Road, to the north. No new tracks onto the land are required. Mining will start from the existing operations and advance in a northerly direction following the sand deposit. In time the sand pit will expand across the whole of the land.

Rehabilitation of worked out areas will commence when the appropriate timelines are reached, that is; when areas have been economically worked out and the land is not required at a later stage for further research or development. Topsoil and overburdens will be stored and maintained for backfilling and final rehabilitation. The land will be returned to farming, similar to present use.

Monitoring and remedial work to reduce environmental impacts will be a normal part of mining operations as the pit advances over the land. Consultation with the landowner and other stakeholders will occur at regular intervals through the operational period. The likely closure date will be between the years 2080 – 2090.

3. DESCRIPTION OF THE LAND AND ENVIRONMENT

3.1 Introduction

a) Legislative framework

This Mining Lease Proposal (MLP) for MC 4311 is made in accordance with the Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE) Regulations under the Mining Act 1971, and the current guidelines for extractive operations for mining programs under (PIRSA now DMITRE) Regulatory Guideline MG6. The MLP is the first stage of the process in developing a Program for Environmental Protection and Rehabilitation (PEPR) under the Act and the Regulations. MLP is undertaken with the consultation process.

b) Land ownership and relevant contacts

Land owner contact:

The land is under freehold title in the name of Malcolm Gordon Koch of Port Clinton SA 5570. The land is held under Volume 5830 Folio 581 Sect 469W Hundred of Clinton. There is an easement over the land which contains a transmission line administered by ElectraNet Pty Ltd.

Operator contact:

- S. C. Heinrich & Co. Pty Ltd PO Box 2256 Clare 5453 (ABN 27066232782). Office: 88424200 Fax: 88423145 Malcolm Heinrich mobile: 0418 859 294 scheinrich@bigpond.com.au

DMITRE contact: Mine Regulation and Rehabilitation, Level 5, 101 Grenfell Street (GPO Box 1671) Adelaide SA 5000

- Kate Walsh (Assessment Officer) Mining Regulation and Rehabilitation Branch. 08 8463 3367 – 0467 733 302
- Glenn Orr (Mining Compliance Officer – for the site) 0407 942 529 email: orr.glen@saugov.gov.au

ElectraNet Pty Ltd contact: David Manley (Landholder Liaison Coordinator) Ph 8404 7653 based at 52-55 East Terrace Rymill Park Adelaide SA 500 (PO Box 7096 Hutt Street)

Exploration Licence Holder (EL 3874): Rex Minerals (SA) Pty Ltd of 209 Dana Street, Ballarat, Victoria 3350

District Council: DC of Yorke Peninsula PO Box 88 Minlaton SA 5575 Ph: 8853 3850

3.2 Local community

The operation will be situated in a rural area approximately 5km NW of Price and 5km SW from Clinton which are small coastal townships. The population in the vicinity is sparse with large farms in an agricultural and mining landscape. Three homesteads are situated in the area with one within 400 metres of the proposed mine area, this is owned by the landowner (M. Koch) of the property to be mined. Three to six people live in the area.

3.3 Land use

The land use is currently cropping, grazing and sand mining. The regional landscape is cleared for farming with some roadside vegetation. The land is zoned for rural and mining activity and within the District Council of Yorke Peninsula.

3.4 Proximity to infrastructure and housing

'Exempt Land' within proposed operations area as per *Section 9* of the *Mining Act 1971*:

	Section Item	Exemption required	Owner	Obtained
1	(1) (d) (i) Building	400 metres from a place of residence	Malcolm Koch (landowner)	yes
2	(1) (a) (i) Cultivated field	To traverse and mine the land within the approved areas	Malcolm Koch (landowner)	yes
3	(1) (b) (ii) Structure	150 metres from transmission poles	Electra Net Pty Ltd	Waiver in process

A small disused dam (which does not hold water) is now being used as a soil disposal area by the landowner. Rex Minerals Pty Ltd currently holds an exploration licence over the area and has given permission to mine the sand (agreement with DMITRE). Waivers will be obtained from relevant parties (owners) using *Form 23A 'Waiver of Exemption Request'*, and *Form 23B 'Waiver of Exemption – Agreement'*. This will give the rights to enter the exempt area for mining operations. The land is no longer 'exempt' from approved operations once waived. Note: A Waiver of Exemption is not required unless mining occurs within the set legislative distances and exempt areas.

3.5 Amenity

The operation will be a continuation of and incorporated into the existing operations. No amenity will be affected. Sand mining is already dominant in the area. The site is distant from local businesses and tourism routes. Roads are mainly used by local farmers. The site is hidden within the landscape and screened along the Melton South Road.

3.6 Noise, dust and air quality

The region is generally dusty in the summer months due to open grazed paddocks, unsealed roads and open cut sand mining. Sand mining will pose little change to local dust impacts. Noise and dust will not impact on the isolated farm houses as the operations are distant enough not to cause issues. The site is in a remote setting with no affected close proximity receptors.

The farm houses are well shielded from dust caused by operations due to their seclusion and vegetative screening. The majority of dust created is fine dust from unsealed roads that run alongside each of the 2 northern houses and mine dust is minimal due to the nature of the sand; that is, being coarse grained and clean of fine dust, any dust present falls within the operations area. There is a great distance between the operations and the farm houses, and the exposed surfaces are further protected from crop and pasture which reduces dust from the paddock and surrounding area during the summer. The photo on following page (3.7 *Topography and landscape*) shows that the impacts are negligible. (See appendix 9)

3.7 Topography and landscape

The proposed extraction area is situated around 100 metres above sea level (AHD). The region consists of low rolling hills to flat land used for mining and agriculture. There are no trees or indigenous flora in the path of mining as the land is used for cropping.

Native vegetation is largely restricted to surrounding roadways and these are mainly scattered trees and shrubs. The land proposed for sand mining is used for cropping and grazing.

3.8 Climate

The average rainfall in the area (statistics from Price BoM Station) is 331 mm per annum over a 67 year period. The heaviest rainfall arrives in the months of May to October, July being the wettest month. The temperature ranges from mild frosts and freezing in the winter to mid 40's in the summer. Winds are generally from the SW. (Ref: BoM) (See attachment rainfall charts)

3.9 Geo-hazards

There is no geological instability or hazardous materials present.

3.10 Hydrology

There are no creeks or water bodies within the proposed excavation site or that would be affected by this operation.

3.11 Groundwater

There are no natural water catchments in surrounding sand mines and no likelihood of intersecting groundwater. The sand to be extracted is within a deep sand basin where water is not held. The envisaged depth of mining will be to approximately 30 metres. The small disused farm dam does not hold water. Substantial drilling on site was conducted by geologist *P. Johnson* on 11/7/91 over section 469W Hundred of Clinton to a depth 18 - 24 metres (at an elevation of 89m) and no water was encountered (ref. SARIG). There are no bores in close proximity. The adjacent areas (Clinton Quarries) are also mined at a great depth and no groundwater has been encountered.

3.12 Vegetation, weeds, and plant pathogens

The area is devoid of indigenous vegetation except a few small eucalypts around the disused dam. These trees may have been planted and, in any case, will not be affected by mining operations. The land owner is intending to backfill the hole. There are no recorded or reported plant pathogens for the site. The area is a low risk management zone for these issues.

3.13 Fauna

The area is free of significant native habitat. Rabbits and foxes are occasionally seen. The land is used for cropping and grazing. The fauna is restricted to the roadsides. Clearance has been widespread and heavy on Yorke Peninsula.

3.14 Topsoil and subsoil

The topsoil exists over the property where it is fertilized and weed controlled to produce crops. The soil is fairly rich, dark and loamy at the surface and to a depth of 250 mm. The subsoil contains a metre or so of clayey material, the main content of the overburden from current mining.

3.15 Heritage – Aboriginal, European and Geological

There are no known Aboriginal, European Heritage or Geological monuments or any heritage relic or significance over the site. The land is freehold and not subject to any claims or sites of significance. If any relics are found they will be recorded.

3.16 Proximity to conservation areas

The mine area is not in proximity to any conservation areas or public amenity.

3.17 Pre-existing site contamination and previous disturbance

There is no pre-existing site contamination, only clearance of vegetation by previous farming activity.

4. DESCRIPTION OF THE OPERATION

4.1 General description and summary

This application is to ensure a long term available resource and is merely an extension of existing operations. Sand mining from the current lease will continue in a northerly direction and advance into the new area. The mined faces will advance in a similar manner until the potential resource depth is reached, keeping in mind the gradient and final batters to be developed under progressive rehabilitation and the return of the crop. No permanent plant or infrastructure will be erected over the extension area. The steps required for the extraction of the sand are simply to dig out the sand with a loader/excavator, place in a screen for grading, stockpile and make ready for delivery. Trucks will transport the finished products to the market.

4.2 Reserves and products

4.2.1 Geological environment

No detailed geology is required as the sand is already known. Sand is a naturally occurring unconsolidated (quartzite) deposit of material between 2 and 0.063 millimetres in size. This proposed operation is to be a continuation of the current operating lease EML 5901 which will expand over the site. The Yorke Peninsula palaeochannel deposits were formed in a fluvial environment with coarse cross-bedding and cut-and-fill structures, which with cause rapid variations in lithology both vertically and horizontally. Proven reserves of dry screenable coarse construction sand are in place in the vicinity of Price, Kulpara and Clinton with a large open cut in the adjoining property to the west. The sand deposit is situated in the Geo-morphic unit of the Cunningham Plain, an ancient alluvial deposit. (ref. MESA journal)

4.2.2 Reserves and resources

The reserves over the 80 hectare site are estimated to reap up to two million tonnes, based on drilling over the existing lease, scout sampling and survey predictions.

4.2.3 Production rate and products

The yield per year is expected to be between 5,000 and 20,000 tonnes, can exceed this. This is dependent on material quality, product blending and markets. The products include all types of construction sands for concrete, brick making, filling etc. Markets include Adelaide, Clare Valley and surrounding Yorke Peninsula townships. This would supplement current markets and at competitive costs for the construction industry.

4.3 Mining plan

4.3.1 Type of mining operation to be carried out

The type of mining to be carried out is open cut.

4.3.2 Sequence of mining and rehabilitation operations

Sequence of mining (see mining stages plans 1-5 and appendix 5)

- Firstly the topsoil will be stripped off from the advancing area, usually in two hectare stages, and stored at the lease or resource perimeters for future reinstatement under rehabilitation or taken directly for progressive rehabilitation, the preferred option. The topsoil depth varies from 100mm to 300mm.

- The next profile to be stripped is the overburden, the subsoil clay layer just above the sandy resource. This material is stockpiled either at the resource perimeters or taken directly for reinstating the land prior to topsoiling. In the short term overburden will be used for screening the activity to reduce any visual impacts that may arise. Overburden and subsoils are stockpiled separately from topsoil and the sand resource/products.

- Sand faces/benching will be consistent with current configurations which will advance from the current lease area. Heights of benched areas will vary from 4 to 8 metres with berms of 6 to 10 metres. The benches will vary according to the stability of the sand composition and geological structure.

- The screened product will be stockpiled ready for delivery.

Sequence of Rehabilitation

Progressive/final rehabilitation is not likely to commence until the southern boundary has been reached. The sand types vary over the area and blending is required along with individual sand locations. The area will be returned to cropping and grazing. A seven year sequence is not practicable or economic until approximately 2030; there are no finished worked out areas. *Ref: Mining stages plan 1-5*

- Remedial rehabilitation, levelling and tidying the worked out areas will occur following the path of mining when the area has been exhausted of winnable sand. This will happen when an area is available according to practical, economic and seasonal criteria. Final rehabilitation will be undertaken when a winnable depth is exhausted.

- When an excavation area is finally completed the floor will be levelled then ripped with a dozer in preparation for final rehabilitation and returned to its prior grazing use. The final levels of the land will be graded according to natural drainage flows, catchment criteria and the landowner requirements.

  The final batters will be graded to long slopes of 1 in 3 or shallower and left as a depression over the whole excavated site.

- The stored and maintained topsoil will be replaced to the surface of the re-contoured land and sown to rye-corn/crop etc, as per landowner specification for stabilisation. The area will be maintained for at least two years and made acceptable to the landowner.

Consultation with ElectraNet for a Waiver Exemption has now been processed. Overhead lines will be unaffected as the mining is taking place beyond the easement area. (See Appendix 5)

4.4 Mining operations

4.4.1 Modes and hours of operation

Operations will be active only during daylight hours, usually from 7.00 am to 5.30 pm 5 days per week and a half day on Saturday. Saturday operations will usually be deliveries from stockpiles only. Although the quarry will be open during the day, mining will be infrequent to service market demands.

4.4.2 Workforce

The workforce at the quarry consists of 2 to 5 operators/contractors.

4.4.3 Use of explosives

Explosives will not be used for the development or production of the sand.

4.4.4 Type of equipment

Equipment required will be a Cat 938F loader for preparing the site, stockpiling and loading trucks. All other requirements, including diesel, power, water and maintenance, will be obtained from the existing lease on EML 5901. A hired or contracted Scraper is brought in on occasion during larger campaigns and stripping overburden. The equipment is no different from general farm equipment. Fuel/oil leaks are cleaned up as part of normal operations and disposed of in accordance with EPA requirements.

4.5 Stockpiles

There will be product stockpiles near the mobile screening plant as processing will be carried out on the existing lease, in the short term. Topsoil and overburden will be stored on site as indicated on the plans. Stockpile heights are normally to 4 to 6 metres and are situated near the conveyor. Stockpiles are stable and confined to a small area of the property. Stockpile locations are depicted on the plans, the main dump being around 20,000 tonnes on the southern boundary.

4.6 Crushing, processing and product transport

4.6.1 Fixed plant

There will be no requirement for fixed plant at this site.

4.6.2 Type of mobile plant and equipment

All processing (screening the sand) and stockpiles will be located on the current lease. Mobile plant includes a LP 16/75 Stockpiler and 200 tonne p/hr capacity (diesel) screening plant. The equipment is no different from general farm machinery and the potential risks to the area negligible. Fuel/oil leaks are cleaned up as part of normal operations and disposed of in accordance with EPA requirements. As the plant will be screened by the walls and stockpiles of the mine itself, no noise will emanate beyond a 200 hundred metres. All vibration will be neutralised by the nature of the geology (sand) itself. There will be no affect on public infrastructure.

4.7 Wastes

4.7.1 Overburden

Only overburden will be produced at this site and will be stored appropriately at the perimeters. Overburden will be used for backfilling in the sand pit under rehabilitation to form the new slopes for returning to cropping and grazing. The overburden is made up of clayey material beneath the topsoil. There is no distinct subsoil layer as the sand is readily exposed.

4.7.2 Crushing and processing wastes

Only overburden will be processed, produced or manufactured at this site, and will be used for backfilling for rehabilitation.

4.7.3 Industrial and domestic wastes

Negligible industrial or domestic wastes will be produced on site. Large repairs to machinery will be carried out at the operator's workshop in Clare, if possible. Minor repairs will be carried out on site and any incidental wastes will be removed at the time of service or on a regular basis. Fuel/oil leaks are cleaned up as part of normal operations and disposed of in accordance with EPA requirements.

4.7.4 Silt control and drainage

Silt will not be produced as there is no watering requirement for processing at this operation. Runoff from normal rainfall will remain on site in depressions, filter into the sandy surface or evaporate. All drainage from excavations will remain on site.

4.8 Supporting surface infrastructure

4.8.1 Access

Access to the sand will be gained from EML 5901, as mining advances from the existing pit. The site is accessed from the Clinton Road to the north through a defined track across the cropping land. No further roads/tracks are required.

4.8.2 Accommodation and offices

There will be no requirement for permanent offices or amenities as the site is only occupied for short periods, although the quarry is open during the day. Long term occupation may require toilets and other amenities which will be brought in when necessary. Weighing is undertaken on the loader.

4.8.3 Public roads, services and utilities used by the operation

Existing traffic use of the roads is for sand mining, exploration activity, agricultural and council equipment, and other local transport. The operator will continue to maintain safe road conditions at the existing entry/egress points. Mobile phones or two-way radios are the only communications required. No other services or utilities are required.

4.8.4 Visual screening and site security

Several adjoining sand operations have a dominant visual issue and it is the operator's aim to reduce further impacts over the regional landscape. A visual analysis from the surrounding area indicates that there is no urgent requirement for visual screening at this stage.

The site is located in a secluded part of a rural area. It is the operator's intention to monitor and address any visual issue as it arises. Gates are kept closed when not occupied by the operators. (See Appendices for possible future locations of screening mounds).

Analysis of the boundaries for potential views into operations:

Aspect	*Type of screening in place*	*Future strategies to aid screening area*
Northern perimeter (from Clinton Road)	The site is currently hidden from road users by the natural topography	Overburden to be placed around the site and operations to form a buffer from roads. See appendices 4 & 7. Keep low profile stockpiles and dumps/monitor operations
Southern perimeter (adjoining other sand leases)	No screening required. No close proximity public views	No requirement (abutting another mining lease)
Western perimeter (Melton South Road)	A natural 'dense' vegetation 2 -3m high screen is in place	No requirement (roadside)
Eastern perimeter	The site is currently hidden by the natural topography	No requirement (farmland)

Information only: It is understood that the installation of screening mounds requires a subtle design so the mound does not become an eyesore in itself; this is evident in the area. The screening mounds should be designed to blend with the landscape and become unseen by the public wherever possible. If these steps are taken then no maintenance will be necessary and no eyesore will be created.

There is no immediate need for visual screening as there are no close proximity receptors.

Steps to developing future screening with spoil are as follows:

- Strip off topsoil from the area to receive the spoil (retained for respreading over the spoil after re-contouring).
- Place the spoil on the prepared area and re-contour to a low profile design with batters at no greater than 20 degrees or around 1 in 3 gradient.
- The final shape should not look square or 'engineered'; it should be rounded to blend with surrounding natural landforms.
- The topsoil is replaced evenly over the whole surface of the mound (roadside views first).
- The surface is then cropped as per the surrounding area which is not mined.

4.9 Water use

There is no requirement for water to be used in the production of this product. Tarpaulins will be used for dust suppression when necessary to save on water. If required, a water cart will be employed.

4.10 Mine completion

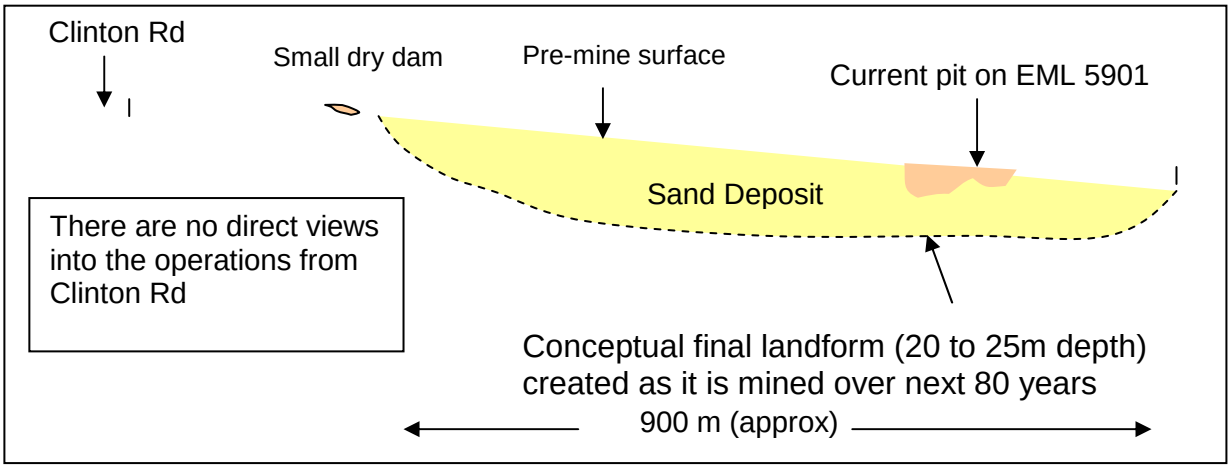
4.10.1 Description of mine site at completion

Regular rehabilitation and final contouring will be incorporated into operations during the mining period to ensure the land is progressively replaced and usable similar to previous pasture and grazing conditions. Drainage patterns will be redesigned to marry with natural catchments and depressions. There is no native vegetation over the intended operations areas. The site will be physically stable, with no risk of erosion or slumping. This will be achieved under nominal compaction during rehabilitation with the replacement of original upper soil profiles. Areas around power poles will be left for easy access along the easement and as recommended by the stakeholders.

Mine Closure

Decommissioning will be minimal as no infrastructure removal will be required. The quarry operator will liaise with DMITRE, consultants, landowners and environmental officers to ensure that compliance is met and there are no long term environmental, social and community issues remaining. The timing of end of mine life is uncertain but would be reviewed regularly. Closure will be determined by market demand for the product. Final rehabilitation and ongoing maintenance will be undertaken as required until the area is stable and blends with the surrounding landscape. The likely closure will be around 2080 at an average depth of around 25m. It is not possible to predict more accurately the land surface at this time.

<u>General concept of final landform looking east from Melton South Road</u>



Final landforms are to be shallower than 20 degrees around 1 in 3 (18 degrees). It is not possible to provide full details of final levels for mine closure at this stage as the deposit varies and the sand types are still being tested for the market.

The final levels will return the land back to a cropping and grazing use as final slopes and land will be shallow, stable and productive.

The final landform can only be envisaged at this stage due to the mining of this long-term asset for the next 80 years or so. A better idea of final levels will only be known around 2030 and is dependent on sales. A detailed surveyed drawing would only be in concept form, and would provide no more information than what has already been provided above. This is a small sand excavation over flat farmland where contours are spaced far apart.

Staging Rehabilitation - Rehabilitation of the land can not be progressively restored, in 7 year intervals, at this time because the final extremities have not been reached. Progressive and final rehabilitation will be commenced from the southern boundary in approximately fifteen years.

4.10.2 Completion risk assessment

Final risks associated with completion of the operation are rated as follows:

Risk	**Context**	**Risk Rating**
Financial	As remedial work is progressive over the life of mining, the costs of final rehabilitation will be reduced and more evenly dispersed during the operational period and while operational income is continuing. Final rehabilitation will be of minimal cost following final extraction.	Low
Public and wildlife health and safety	The risks to health and safety of the public and fauna are as low as reasonably practical.	Low
Visual amenity	The external visual amenity of the site is acceptable as determined by the Director of Mines in consultation with relevant interested parties. The landscape will be compatible with surrounding areas so visual amenity will not be diminished.	Low
Rehabilitation management and technique	The amount, distribution and variability of precipitation together with evaporation and temperature patterns, including the incidence of frosts and heat waves, have a marked effect on the nature and success of a rehabilitation program through their effect on vegetation, cropping and on erosion. Specialist rehabilitation expertise will be engaged to ensure quality outcomes, providing advice on timeliness, technique and sustainability issues. Rehabilitation technique is straight forward using a loader and dozer. Where practical, re-establishment of the pre- mining condition and landscape function will be retained. Where practical, pre-mining land use is re- established.	Low
Maintenance	A post operation monitoring and maintenance program for two years will be implemented to address re-sowing, planting, erosion, weed control and land management issues, in conjunction with the stakeholders, will ensure sustainability standards are met.	Low
Land use	There will be no change to land use as it will be returned to similar to which surrounds the operation. The site will be left physically stable within DMITRE and landowner expectations.	Low
Environment impacts	Control measures to manage environmental aspects will be implemented, as outlined in the Management of Environmental Impacts and Risk, to ensure no lasting impacts from the operation on land stability, surface and groundwater, weed control or site contamination occur. Residual risks will be negligible.	Low
Waste	No industrial or domestic waste left on site.	Nil

4.10.3 Completion outcomes and criteria

Outcome	**Criteria**
External visual amenity of the site is acceptable	Inspection records at mine closure to demonstrate that land was rehabilitated as per plan.
Risk to health and safety of the public and fauna is as low as reasonably practical	Inspection record of rehabilitated site at mine closure to demonstrate that the site has been rehabilitated as per the plan.
Site is ecologically stable and sustainable	Inspection records at mine closure to demonstrate that land was rehabilitated as planned. The landowner accepts that soil productivity conditions are similar to those existing prior to mining.
Site is physically stable	The landowner accepts that rehabilitated site is physically stable. Photographs from photo points specified in the plan demonstrate no evidence of erosion, slumping or runoff greater what could be reasonably expected in the area.
Waste and equipment	Inspection and photographs show that no kind of waste, rubbish or equipment is left on site.

5. RESULTS OF CONSULTATION

The need for consultation is minimal as the site is in a secluded location and there are few affected parties. Sand mining has been a common activity in the area for over 30 years.

1) Rex Minerals Ltd

Consultation by Kelly & Co, Lawyers, has resulted in a comprehensive agreement document for the site between all parties involving the proposed sand operations. A copy of this document has already been submitted to DMITRE.

2) Malcolm Gordon Koch (landowner)

The landowner has agreed that the area is to be mined under an approved mining program. A copy of the Notice of Entry, dated 12 March 2010, has already been submitted to DMITRE.

3) Electra Net Pty Ltd (contact: David Manley)

Consultation has finalised regarding the Waiver of Exemption required for mining within 150m of a structure. Meetings and discussions have been undertaken to ascertain the future mining of the area. It is agreed that mining can co-exist without mining over the easement land. The easement will only be used for access. The waiver agreement has been submitted to DMITRE.

4) DMITRE (Approving Department for mining operations)

A full Assessment by DMITRE will be undertaken in conjunction with public and agency consultation.

6. MANAGEMENT OF ENVIRONMENTAL IMPACT AND RISK

Environmental management is based on site specific impacts and receptors which are consequential of ongoing operations. Risk factors are listed below.

Table 1: Definitions of risk factors for the mine operations

Likelihood of occurrence	
Virtually impossible	Never occurred before and not expected to (<5% chance)
Rare	May occur but not likely (<10% chance)
Unlikely	May occur occasionally but not likely to (<25% chance)
Likely	Will occur during the life of a mine (>50% chance)
Virtually certain	Will occur for certain (>80% chance)

Severity of consequence (ABCD or E denotes the degree of impact)	
Negligible	Possible impacts in some form but likely to be insignificant
Minor	Limited occurrence but not significant
Major	High degree of risk or impact but could be overcome
Severe	High risk and concern with environmental damage occurring
Extreme	Disastrous impacts on the environment and loss of habitat/vegetation and long term or permanent pollution issues.

Table 2: Summary of environmental effects over the site

Risk assessment matrix			**Likelihood of consequences**				
Summary Table			**1**	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Noise	Air quality Traffic 3rd Party Protection Aboriginal/ Heritage Groundwater Land stability Waste Public safety	Soil Weeds and pests Visual		
	D	Minor effect					
	C	Major effects					
	B	Severe effects					
	A	Extreme effects					

Outcomes, Criteria and Control Strategies

For monitoring, refer to sect 8. OPERATOR COMPLIANCE MONITORING PLAN

6.1 Noise

Context: It is important to minimise public and neighbourhood impacts of noise from operational activities; fortunately, the site is located in a secluded area and issues will be negligible. There is no close neighbourhood. The slightly increased mine area will pose no greater impacts than those currently existing at the quarry and adjoining quarries.

outcomes	*criteria*	*control strategies*
No public nuisance impacts from noise emanating from the lease.	Records of complaints, investigations and resolutions demonstrate compliance with EPA noise policy.	The operations manager to make site observations to assess noise levels. Activity will be complaint based as issues arise.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.2 Blasting

There will be no blasting. There is no control measures required.

6.3 Air quality

Context: Fugitive dust emanating from operational activity is normal and is part of the overall rural landscape in summer. Dust from the small sand pit is localized and generally occurs on windy days during screening, loading trucks and road use. Dust generation is unavoidable and constantly present in the region due to unsealed local government roads, rural activity and soil exposure on agricultural and grazing lands. Dust issues will be negligible for this operation.

outcomes	*criteria*	*control strategies*
No public health and/or nuisance impacts to local residents from dust generated from mining operations.	Abide by EPA – Environment Protection (Air Quality) Policies.	Keep surface crop cover intact and limit disturbance of the open mine areas. Reduce or avoid site activities and disturbance on severe windy days. Use of tarpaulins on truck loads when required. Water down track if required.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.4 Traffic

Context: There will be no increase from that which already occurs on public roads from current sand mining deliveries. The entry and exit to local roads have a safe visual aspect from both ways and are in general only used by the operations.

The local roads have minimal existing traffic use and there will be negligible or no increase with this expansion to operations.

outcomes	*criteria*	*control strategies*
No traffic accidents involving the public at quarry access points that could have been reasonably prevented by the lessee.	Independent investigation of all recorded accidents resulting from quarry traffic entry or exit demonstrates that the mine operator could not have reasonably prevented the accident through implementation of precautionary measures. Road Traffic Act 1961 version 2-12-2010 and the Regulations.	Traffic entering and departing the site is clearly marked. Ensure tracks and surfaces are maintained to reduce impacts of vibration and noise. Keep access point clear of vegetation and no obstructions. Report to police any major incidents. Maintain complaints sheet.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.5 Protection of third party property

outcomes	*criteria*	*control strategies*
No unauthorised damage (including that caused by fire) to adjacent public or private property and infrastructure.	Operate in accordance with the Occupation Health, Safety and Welfare Act 1986 version 1-2-2010 Operate under CFS Guidelines and radio updates and instructions. Operate within set guidelines issued by the office of the technical regulator for 'working safely near overhead powerlines', and 'Building safely near powerlines' under the Electricity Act 1996. Abide by distances set and agreed by ElectraNet from any infrastructure (poles and wires). Maintain access to infrastructure at all times. Be aware of activities of Rex Minerals exploration on site.	The site is well identified and distances from poles are maintained. Keep operations and work within approved work areas and conditions. Ensure that contractors/operators are aware of fire procedures and equipment is maintained and available for immediate use. Ensure that contractors/operators are aware of the Mining Program and lease conditions. Investigate all recorded incidents resulting from non conformance.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.6 Aboriginal and European Heritage

Context: The preservation of Aboriginal and European heritage is important in the field of mining as relics and artifacts can be discovered. An awareness of such items is important for the heritage and culture of our previous occupation.

The land is freehold and free of Native Title.

Outcomes	*criteria*	*control strategies*
No disturbance to Aboriginal or European artefacts or sites of significance unless prior approval is obtained under relevant legislation.	Aboriginal Heritage Act 1988. Section 23 and Aboriginal Heritage Site protocols. All work stops on discovery and resumes when authority is given.	All employees operating on site will be inducted about their obligations in regard to past occupation issues and site heritage protocols. On discovery contact DMITRE or heritagesites.aard@dpc.sa.gov.au Records demonstrate that work ceased on discovery and appropriate authorities advised. Work recommenced only after authorisation.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.7 Native vegetation

Context: Retention and preservation of native vegetation is paramount for a healthy environment and to provide habitat. This site has already been cleared for farming; no trees or native vegetation exist on the proposed mine area. The planted trees near the dry dam are not in the area to be mined. No control measures are required.

6.8 Weeds and pests (feral animals)

Context: The prevention of spread or introduction of declared weeds, pests or plant pathogens into the operations area is important to maintain the current level of condition of the land. This is a nil risk area for the root fungus Phytophthora and the parasitic exotic broomrape. The land is cropped and farmed.

Weed Management Plan:

outcomes	*criteria*	*control strategies*
No introduction of new species of weeds, plant pathogens or pests (including feral animals), increase in abundance of existing weed or pest species in the lease area compared to adjoining land.	Records demonstrate compliance with approved weed and pest management strategy. Natural Resources Management Act 2004 (under DENR) is consulted.	Operator consults with land owner on weed control issues for the site. Enforcement of good housekeeping standards to eliminate unnecessary disturbance. Chemical spraying (under consultation with farmer/landowner) to target declared weeds only and avoid spray drift off target. Report any new weeds and pathogens at the site to the landowner and NRM.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.9 Land stability/erosion

Context: Erosion is a process of soil removal, with particles transported by wind or water. The loss of topsoil adversely affects re-vegetation while eroded material can reduce water quality. Measures to prevent and manage erosion/runoff will be part of the overall strategy for operations.

The main aspects in with erosion can occur at this site are:

- From the open pit itself – All rainfall runoff to be kept within the pit area.
- Overburden and spoil dumps – Containment/diversion bunds to be installed at the base of developing mounds and covered with topsoil on conclusion.
- Contouring to avoid crop soil runoff from contaminating the sand deposit

outcomes	*criteria*	*control strategies*
No wind or water erosion on site caused or exacerbated by operations.	Annual photo monitoring will show no increase in erosion on the site. Avoidance of external runoff into crop areas.	Workings are kept to the open pit areas. Ensure mounds are covered with appropriate vegetative cover (crop). Progressive rehabilitation takes place as soon as possible with the replacement of topsoil cover and cropping areas.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.10 Soil

Context: Topsoil and subsoil is a critical factor in re-vegetation and its value lies in its structural properties, micro organisms and seed store. It is therefore important to retain any topsoil/sub-layers on site for rehabilitation. Without correct retention and storage of soils there is a risk of rehabilitation being ineffective.

outcomes	*criteria*	*control strategies*
The existing top soil quantity and quality is maintained.	Annual photo monitoring of stockpiles, compared with baseline photos, shows no loss of topsoil.	Reserve soils in low bunding for short term periods only so as not to sterilize the soil biology. Topsoil stockpiles are located outside extraction zones and near areas to be progressively rehabilitated. No topsoil to be buried under overburden/spoil mounds. Maintain regular weed and pest control under the NRM Act 2004 requirements. (DENR) Working areas to be kept to a minimum and within approved areas. Retain topsoil and unworked areas with an adequate vegetative cover. Stormwater and runoff to be captured or directed into low lying areas on site.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.11 Groundwater and hydrology

Context: The main route by which contaminants can escape an operation is in water, as either dissolved or suspended matter. Any water that falls as rain will flow to the depressions that surround the site or be taken up by crop/grass vegetation.

No groundwater exists within the current depth of sand mining on EML 5901.

outcomes	*criteria*	*control strategies*
No intersection of groundwater.	Annual photography and inspections to demonstrate that no groundwater is intersected. Groundwater intersected will be reported to DMITRE.	Keep mining to approved depths. Mining remains within the confined of the known geology.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.12 Waste disposal and hazardous substances

Context: Waste is a by product of human activity in a natural environment and is unavoidable in some cases if there is no recycling component.

Waste will not be generated or remain on site at closure.

outcomes	*criteria*	*control strategies*
No waste (domestic or otherwise) on site.	Waste is managed appropriately according to EPA requirements. Fuel if stored to be bunded in accordance with EPA requirements. Waste (from operations) is disposed of in accordance with relevant legislation.	Incidents such as fuel spills are recorded and investigated to ensure they are managed in compliance with EPA requirements. Records of waste disposal off site are kept. All permanent fuel storage is bunded.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.13 Visual amenity

Context: The visual aspect of operating in a rural setting in as important as being in close proximity to any neighbourhood. This site is located within a low rolling landscape and any disturbance or change of colour or form may bring attention. It is important to blend operations as much as possible.

outcomes	*criteria*	*control strategies*
No visible impacts on the landscape.	Annual photo monitoring (visual analyses) will show no more disturbance as necessary to mine the sand.	Workings are kept to small/restricted areas where possible. Ensure mounds/overburden/spoil heaps are low profile and covered with appropriate vegetative cover (no exposed overburden). Screening mounds are developed as required to reduce public impacts. Planting of local indigenous vegetation (local provenance) as required to enhance the visual aspects. Progressive rehabilitation takes place as soon as possible with the replacement of topsoil cover and cropping.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

6.14 Public safety

Context: Public safety is important for both site activities and off site activities.

outcomes	*criteria*	*control strategies*
No adverse risk to the public which could not be foreseen.	Stay within OH&S guidelines and relevant legislation dealing with safety.	Induction to staff and visitors as required. Awareness of electricity infrastructure is maintained at all time. Maintain complaints and activity sheet for the site.

Risk matrix			**Likelihood of consequences**				
			1	**2**	**3**	**4**	**5**
			Virtually impossible	Rare	Unlikely	Likely	Virtually certain
Severity	E	Negligible effects	Low	Low	Low	Low	Low
	D	Minor effect	Low	Low	Medium	Medium	Medium
	C	Major effects	Medium	Medium	Medium	Medium	High
	B	Severe effects	Medium	Medium	Medium	High	High
	A	Extreme effects	Medium	Medium	High	High	High

7. SOCIAL, ECONOMIC AND ENVIRONMENTAL BENEFITS

7.1 Social

The social benefits of mining for South Australia

Digging deep – the social benefits of mining for South Australia, 40 pp., was launched on 19 November. The brochure is a Social Inclusion Initiative and is available for free download (PDF; 2.4 MB) from their website. The Premier's foreword is reproduced here.

A message from the Premier

South Australia is experiencing an unprecedented expansion in mining exploration and production.

Since 2002, the number of mines in our State has grown from four to 12, and is expected to reach 16 by the end of 2010, with up to 30 more in the pipeline.

A strong mining industry underpins South Australia's economic prosperity, and the State Government is committed to encouraging its continued growth.

That's because the resources industry delivers jobs and prosperity for regional communities, not just only at the mine site, but also in a myriad of related services.

It also generates significant opportunities for our regional and remote Aboriginal communities.

Fundamentally, we want to ensure that the benefits from a strong mining industry are shared among all South Australians, and especially those experiencing disadvantage, many whom live in or near mining communities.

As our mining industry grows, it is important that we start asking questions about what kind of social benefits we want for our communities.

While the individual communities themselves are often best placed to answer these questions, innovative new relationships and ways of working together need to be sought.

The mining industry is already achieving meaningful social benefits for many communities, including successful social ventures such as: pre-employment training programs and local employment opportunities; partnerships with government to contribute to improved community infrastructure (ie schools, housing and health services); and facilitating local business development.

It is clear that the mining industry takes social responsibility seriously.

The Minerals Council of Australia affirms the industry's acceptance of a shared responsibility to work with government and society to assist in the development of strong, sustainable communities.

This, in turn, helps to create and maintain a skilled local workforce, and to secure broad community support. In addition, employees enjoy working for a company that takes seriously its role as a responsible corporate citizen.

This publication showcases just some of the current social benefits being derived from mining in South Australia.

It is inspiring to see the range of different ways that social benefits can be delivered, and the differences they can make.

I hope that these stories help to encourage even more widespread and greater social benefits in the years to come, as our mining expansion continues.

I congratulate the mining sector on these initiatives and look forward to developing new ways of working together in the future.

I am keen to highlight how this industry's growth and prosperity is helping not just our State as a whole, but also our most disadvantaged citizens.

Mike Rann
Premier of South Australia
Minister for Economic Development
Minister for Social Inclusion

www.socialinclusion.sa.gov.au

7.2 Economic

The proposed operation makes economic sense as it provides the mining company, landholder and South Australian Government with a continued income and therefore benefiting the welfare of all stakeholders. It provides employment for local haulers, contractors etc which is needed in this rural area of the state. The site will also undergo exploration by Rex Minerals for long-term economic viability.

7.3 Environmental

The location is close to the required market which makes the carbon footprint low, instead of carting long distances which increase diesel use; wear on trucks and public roads. The environmental benefits to the farmer/landholder are not perceived at this stage as the long term use of the land can not be determined. It is likely that the land could be returned to a wetland situation with the re-instatement of indigenous vegetation and habitat, so lacking in the northern part of Yorke Peninsula. This will not be known until around 2100 and the plans of Rex Minerals and other explorers to the area.

8. OPERATOR COMPLIANCE MONITORING PLAN

(See also Section 6 - Management of Environmental Impact and Risk) Record issues on 'Site Activity Sheet' app 7

Aspect	***Outcome***	***Measurement Criteria***	***Criteria***					
			What will be measured	Locations	Target value	Frequency	Control data	Responsibility
Visual Amenity	Integrate and harmonise final landforms and vegetation with surrounding landscapes	Aerial and ground photography	The degree of disturbance of working area configuration and rehabilitation	Existing pit spoil dumps Topsoil Rehabilitation sites	Final gradients of 1 in 3 or shallower at final rehabilitation	Annually and when required	Photography and plans Mining program	Quarry manager and Tenement holder Landowner outside mine areas
Public Safety	The risk to health and safety of the public and fauna are as low as reasonably practical	Induction of contractors and visitors	Performance of awareness	Entire operations area and roads	As per OH&S guidelines	Annually or as required	Company policy and procedures	Quarry manager and Tenement holder
Physical Stability	The site is physical stable	Slope analyses and surface cover	Angle of repose on dumps	Rehabilitation and dumps	1 in 2 to final batters	Annually or as required	Mining program	Quarry manager and Tenement holder
Ecological and landscape function/Stability	Where practical, re-establishment of the pre-existing and landscape function	Cropping regime	Quality and density of crop	On all rehabilitated areas	As per existing crop	As required on rehabilitation	Mining program	Quarry manager and Tenement holder. Landowner
Native vegetation	Does not apply to this site unless for screening	n/a	n/a	n/a	n/a	n/a	n/a	If required: TFL contact. Consultant
Waste	No industrial or domestic waste left on site	Photography and records		The site		Annually and as required	Mining program	Quarry manager and Tenement holder
Ground water	No intersection of ground water	Photos and survey data	Depth and extent of intersection	As identified	Not known	As require on intersection	Mining program	Tenement holder
Surface Water	No surface run off leaving the site	Photography and records	Degree of runoff and erosion	Mine and disturbed areas	Based on minimal erosion achieved	As required and after heavy rain events	Aerial photos and records	Quarry manager and Tenement holder

Noise	No noise emanating from the site which is beyond quarrying expectations	Records and complaints	Evidence of complaint, data etc	The site	EPA noise abatement criteria	As required	As per records and EPA data	Quarry manager and Tenement holder
Air quality	No dust created beyond rural and mining expectations	Records and complaints	Evidence of complaint, data etc	The site	EPA dust criteria	As required	As per records and EPA and metrological data	Quarry manager and Tenement holder
Infrastructure ElectraNet)	Abide by exempt land under ElectraNet and agreement distances form poles	Aerial photo and survey flagging near poles	Distance from poles of mine operations	As per plan in mining program	As indicated 20 metre radius from poles	As indicated	Mining program and waiver agreement	Quarry manager and Tenement holder
Property	No damage to farm infrastructure	Aerial photos and mapping	Damage to fencing, farm buildings and crops	As per plans	Aerial photos and plans	As required	Mining program and waiver agreement	Quarry manager and Tenement holder
Blasting	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aboriginal and European heritage	No disturbance of artefacts etc	Records	As required	As required	As required	As required	Aboriginal Heritage Act 1988	Quarry manager and Tenement holder
Rehabilitation	Rehabilitation to be undertaken progressively and harmonise with natural surrounding surface areas	Aerial photos and records	Final slopes, contours and return of crops	As indicated on mining program	Final gradients of 1 in 3 or shallower at final rehabilitation	Ongoing as required. Annually once commenced	As per mining program and DMITRE expectations	Quarry manager and Tenement holder. Consultants.
Traffic	No accidents that could be reasonably prevented at access point	Investigate as required	Signs/visual clearance maintained	As required	As required	As required	As required	Tenement holder/quarry manager
Soil	The existing topsoil quantity or quality is maintained	No loss of topsoil, viable topsoil	Topsoil retention and productivity	Stockpiles surrounding workings	All soil remains on site	Annual inspection	Photos	Quarry manager

9. APPLICABLE LEGISLATION AND STANDARDS

Aspect	Legislation	Documents	Contacts
Local planning	Development Act 1993		Yorke Peninsula District Council
Mining	Mining Act 1971 (updates 1/7/11) Works and Inspection Act 1920	Regulatory Guideline No.6 (Extractive operations) July 2010 And general mine occupation procedures/safety documentation.	DMITRE - Greg Marshall PO Box 1671 Adelaide SA 5000 DMITRE Compliance Officer – Glen Orr
Aboriginal	Aboriginal Heritage Act 1988	Version 1-2-2010. Site Protocols	Report to DMITRE
Air quality	Environment Protection Act 1994	Schedule 1 and Air Policy 3-11-2005	Report to DMITRE
Health and safety	Occupational Health, Safety and Welfare Act 1986	Parts 3 & 4 (duties for employees and workers)	Report to DMITRE
Noise	Environment Protection Policy 2007 – 31-3-2008	Part 1,5 Division 1 (sect 21 & 23)	Report to DMITRE
Roads	Road Traffic Act 1961	Part 2 (driver duties and other road users)	Report to Police/Council/DMITRE
Soil and weed control	Natural Resources Management Act 2004	Ch2- Parts 1 & 2 and various documents	Local NRM Board admin. DENR. Council
Native vegetation	Native Vegetation Act 1991	Guidelines for a NV SEB Policy. Sept 2005. A Guide to the Exemptions 1991	Not applicable
Power poles	Electricity Act 1996 and Regulations.	Safe working near powerlines Sect 38 & 40. Table 1 & 2	ElectraNet (David (Manley)
Landowner liaison	DMITRE information/fact sheets	DMITRE website under Landowner Rights	DMITRE or as above

10. REFERENCES

- Guidelines for the preparation of Mining Programs (DMITRE)
- DMITRE website for bulletins and publications
- Aerial photos by Google Earth
- Mining Act 1971 and associated documents
- Mining and Rehabilitation Branch – DMITRE
- Malcolm Heinrich – approved mining program for EML 5901 - PIRSA
- ElectraNet – Powerlines information (David Manly), Electricity Act Regs 2002
- Rex Minerals Ltd – Exploration license holder

11. OPERATOR CAPACITY

The applicant has a long history of working in the mining industry. Based at Clare they have various construction quarries throughout the mid north of South Australia. S.C. Heinrich is a well respected and qualified practicing company and an asset to the mining industry, employing many staff and contractors from rural communities.

12. DECLARATION STATEMENT

I, the Applicant confirm that in accordance with Regulation 30(4) and Regulation 49(4), Mining Act 1971, I have taken reasonable steps to ensure that the information provided in this MLP is accurate.

Applicant ……dated……

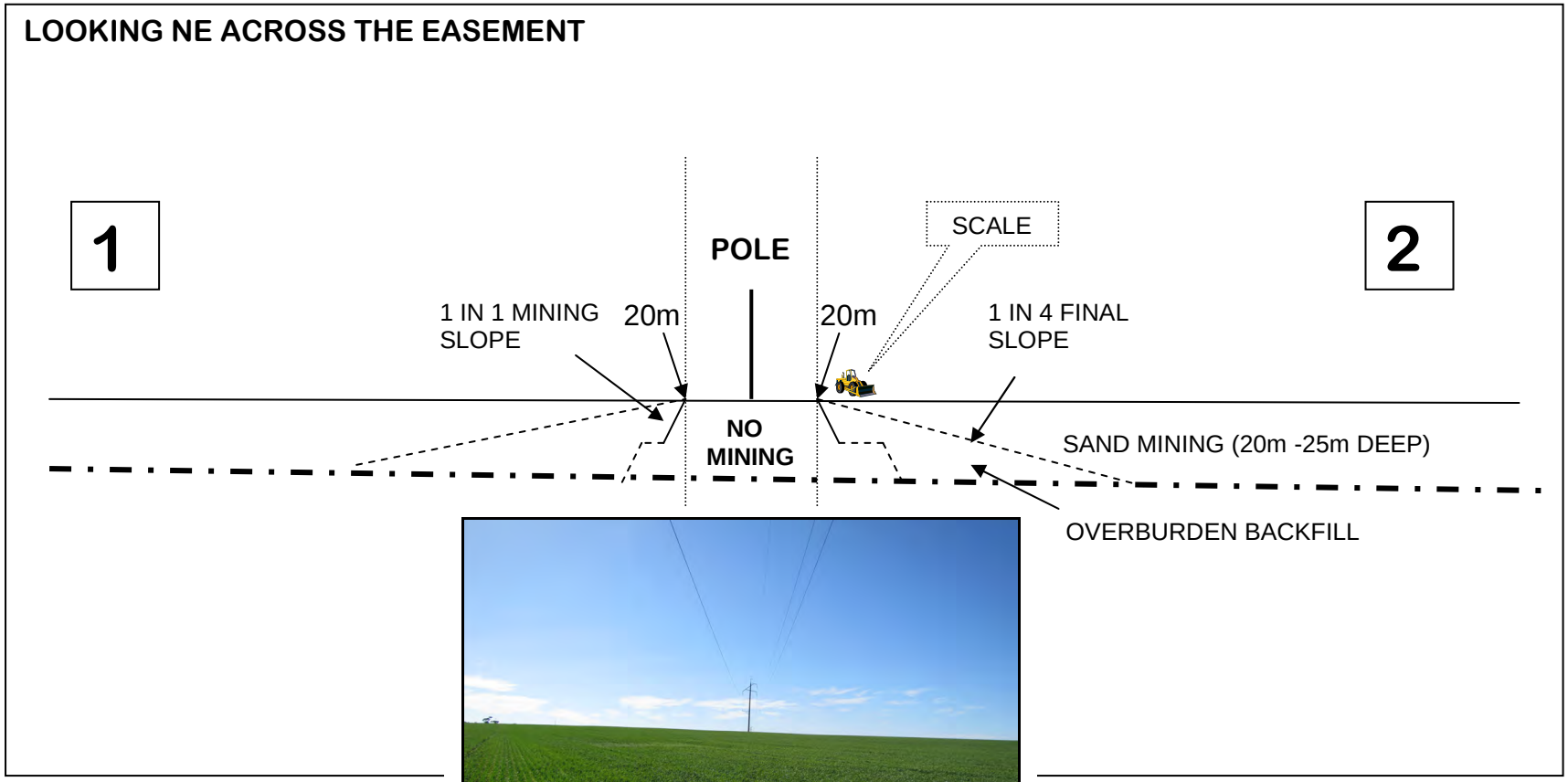
David Keane
Agent for SC Heinrich

Per Malcolm Heinrich
S.C. Heinrich & Co Pty Ltd

13. APPENDICES

- *Appendix 1* - Location map
- *Appendix 2* - Topographical and contour map
- *Appendix 3* - Mineral Claim and lease area plan
- *Appendix 4* - Mining stages plan 1-5
- *Appendix 5* - Cross section of mining alongside easement
- *Appendix 6* – Site photos and photo-guide
- *Appendix 7* - Site activity sheet
- *Appendix 8* - Rainfall charts

CROSS SECTION see (1- 2 Mining stages plan 5) MLP MC 4311 -JULY 2012



EASEMENT 40 METRES WIDE

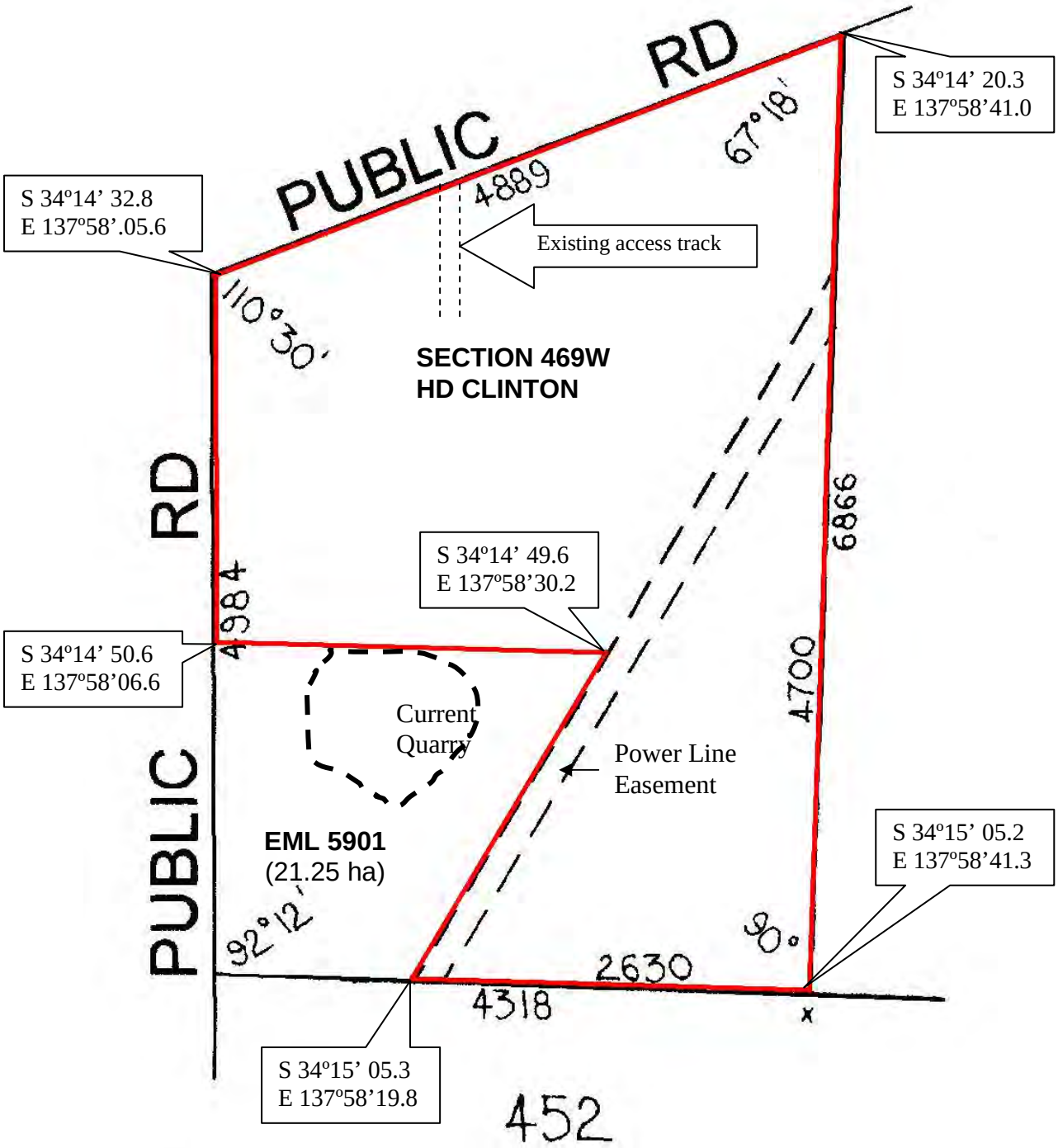
MINING ALONGSIDE THE EASEMENT

APPENDI X 1

LOCATION MAP

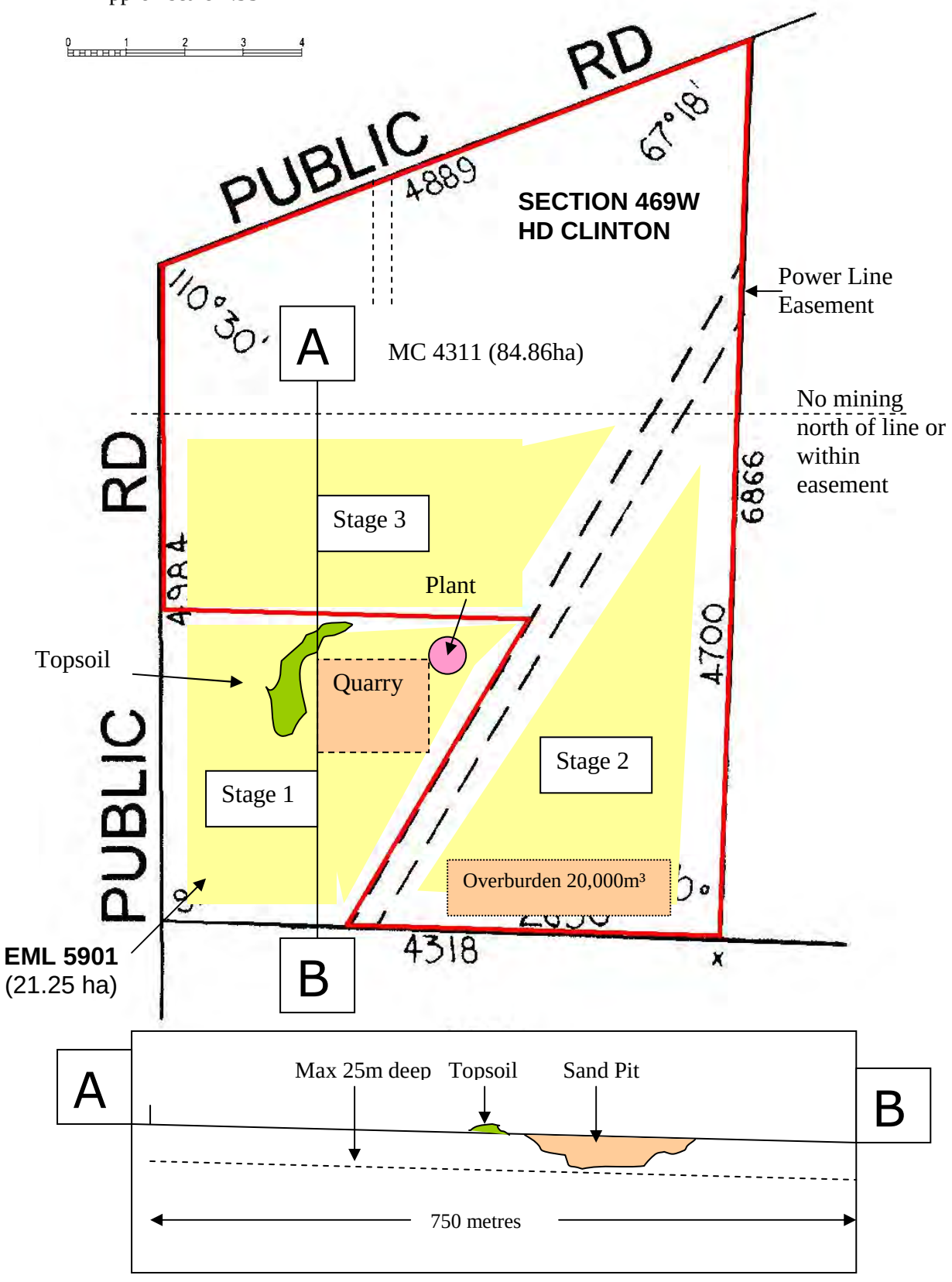
MLP - MC 4311 JULY 2012

MLP JULY 2012 for MINERAL CLAIM 4311 (RED) – 84.86 ha
GPS READINGS ON CORNER POSTS

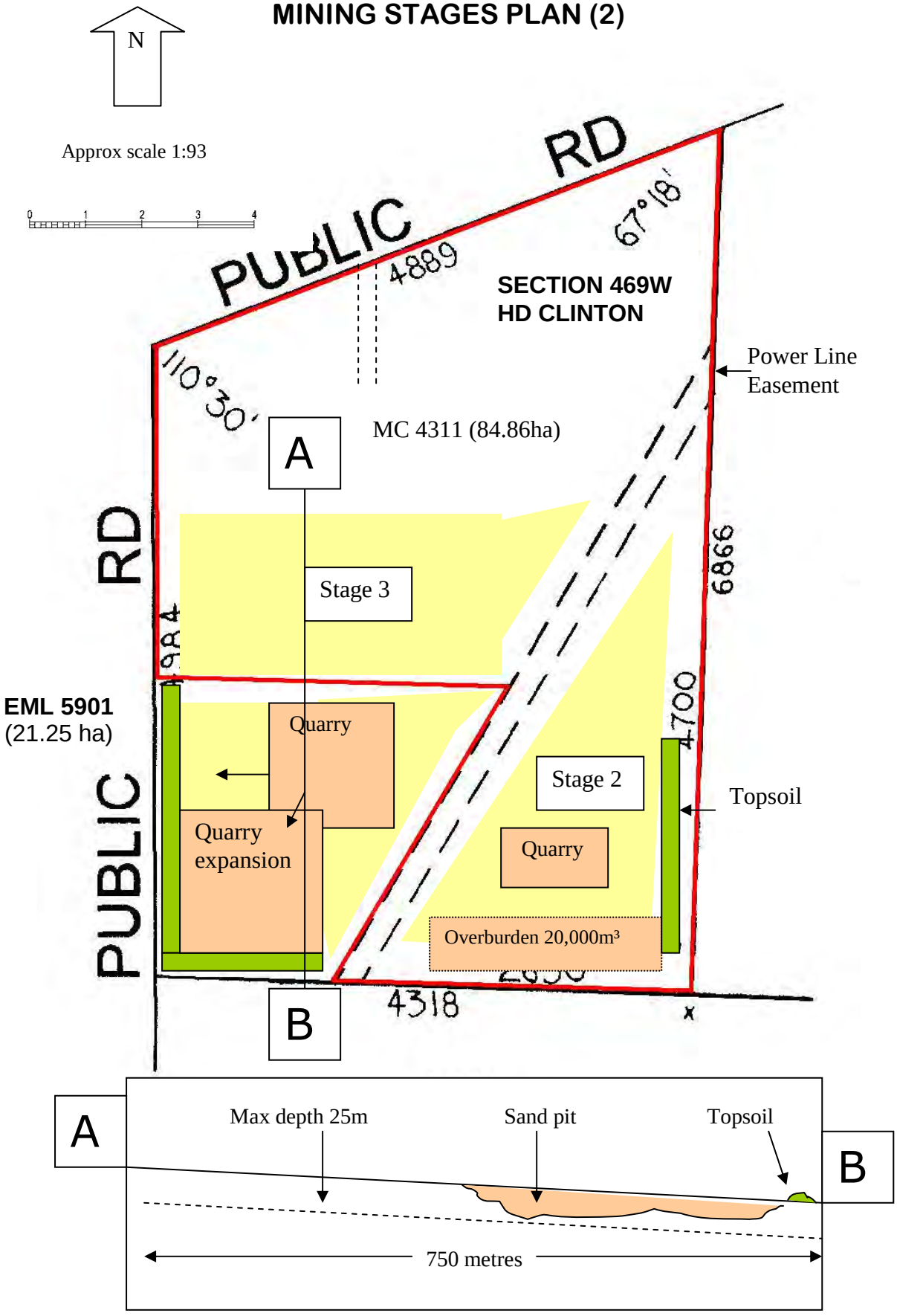


MINING STAGES PLAN (1)
(Present situation)

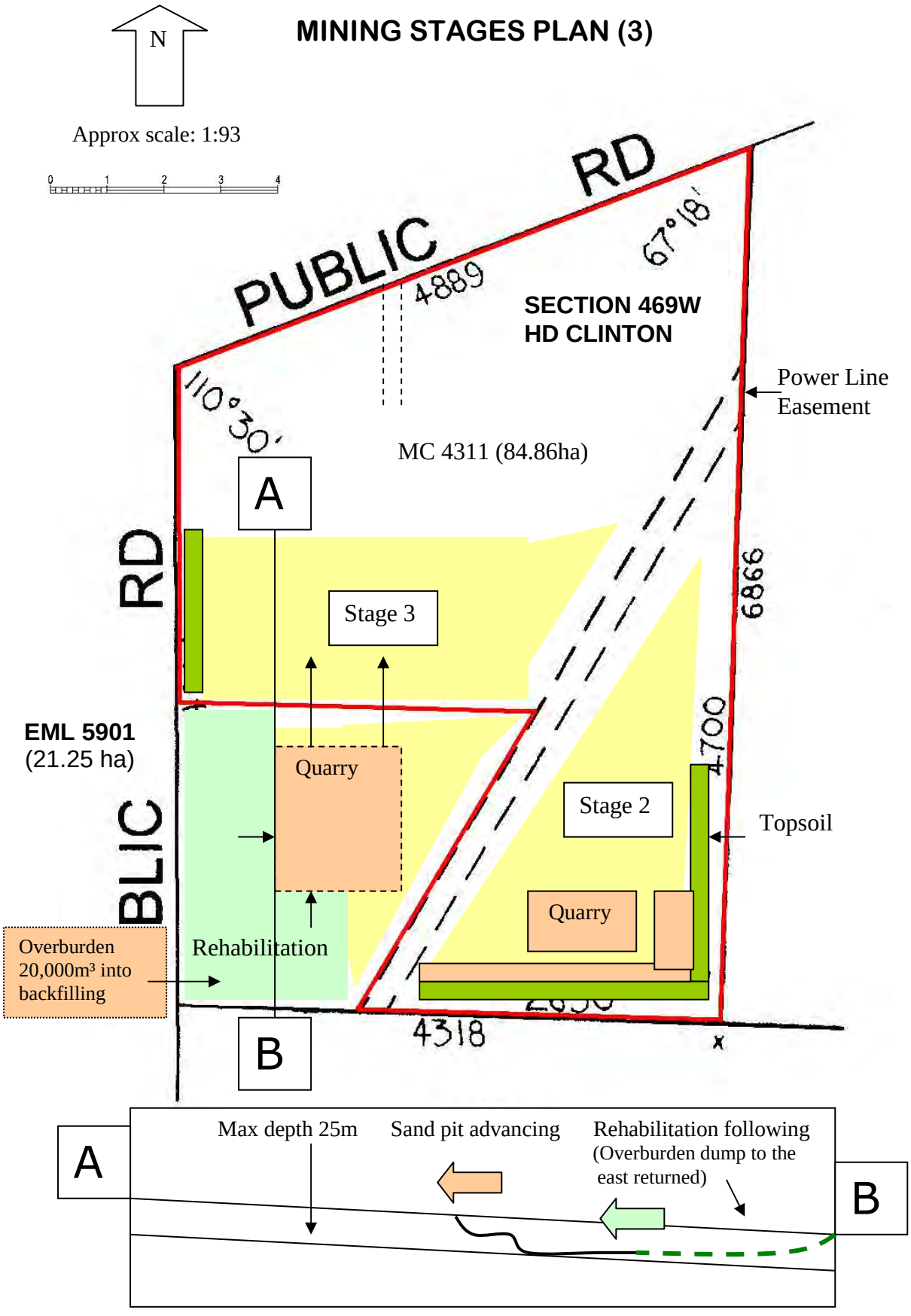
Approx scale 1:93



MINING STAGES PLAN (2)

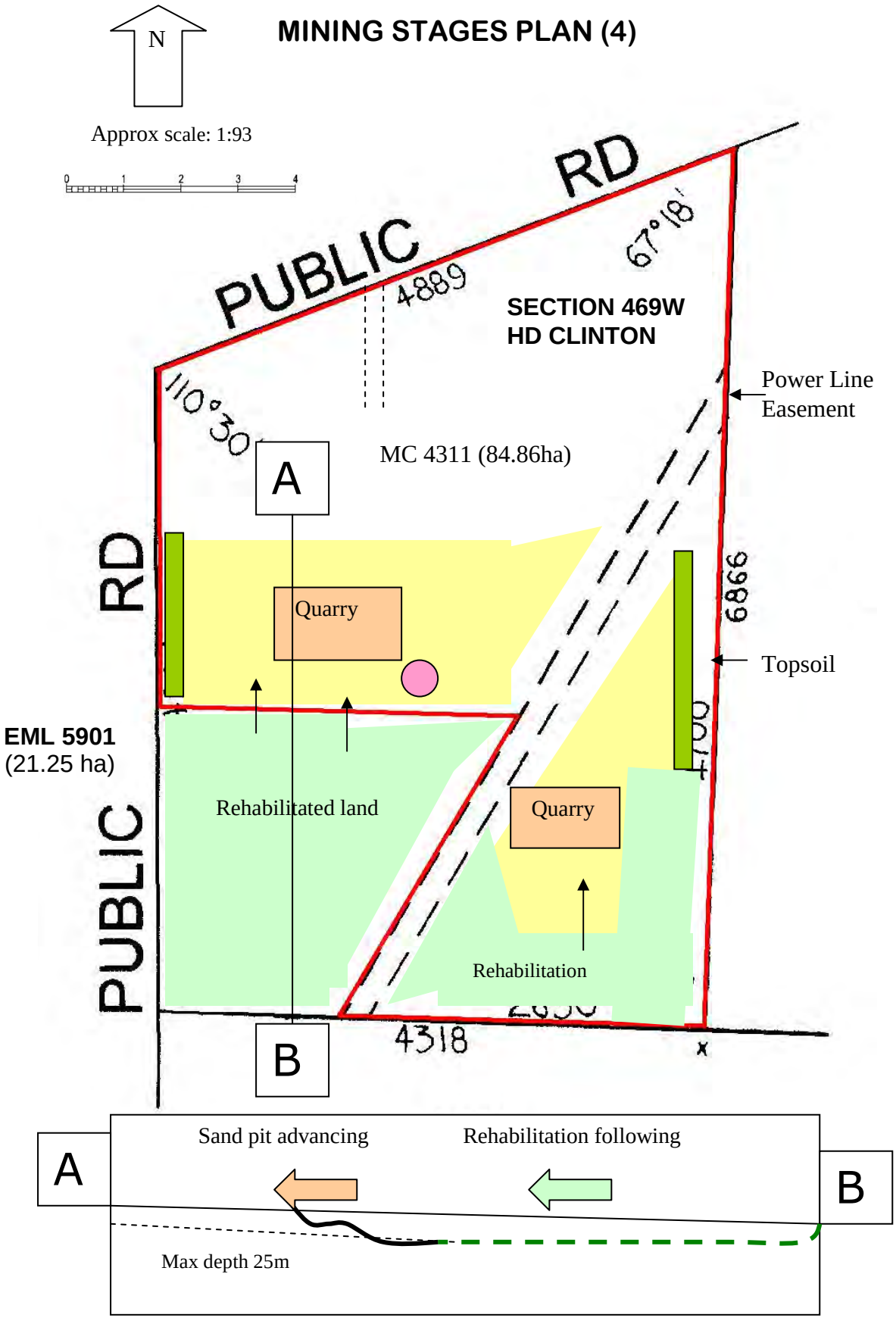


MINING STAGES PLAN (3)



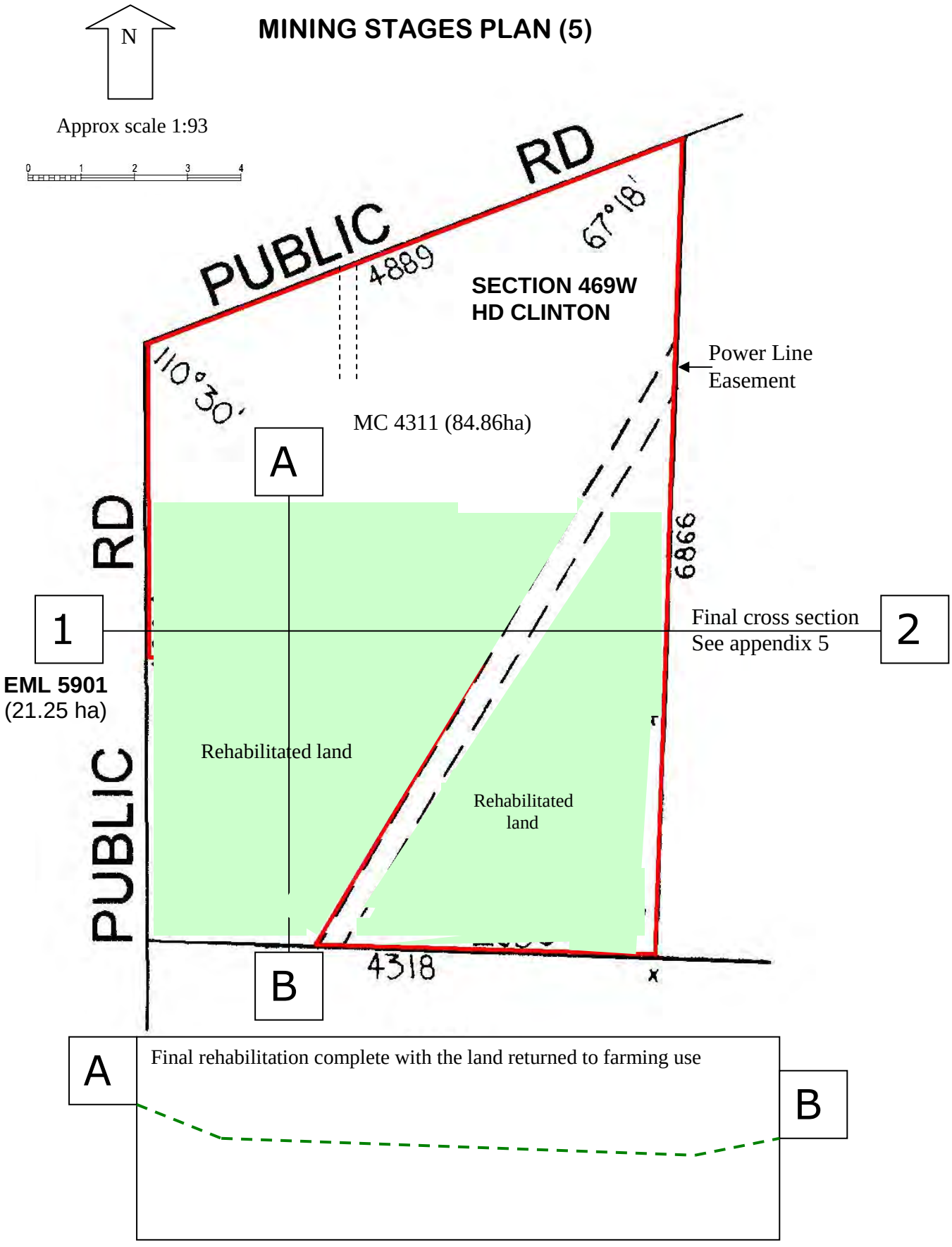
Note: Stage 2 following n a similar method rehabilitating from the southern boundary

MINING STAGES PLAN (4)



Note stage 2 (east) following in similar manner from the south

MINING STAGES PLAN (5)



Additional hand drawn cross sections and a letter of explanation have been included These drawings cover cross sections, volumes and methods of mining.

Included are:

1. West to East cross sections – A.A.
   Showing pit profiles and terminal depths to scale.

2. West to East cross sections – B.B.
   Showing pit profiles and terminal depths to scale

3. North to South cross sections – C.C.
   Showing pit profiles and terminal depths to scale.

4. North to South cross sections – D.D.
   Showing pit profiles and terminal depths to scale.

5. Ming area plan (approximate dimensions)
   Table of volumes and plan of pit 1 and pit 2.
   Showing volumes of overburden produced and the amounts needed for rehabilitation.

6. Mining Plan
   Showing cross-section

7. Typical final batter rehab and mining face cross section.
   Showing sand/overburden profile of benches and batters.

8. Start of rehabilitation and overburden stock pile management.
   Showing the proposed start point of rehabilitation and temporary overburden stock piles.

General overview of points 1 to 8;

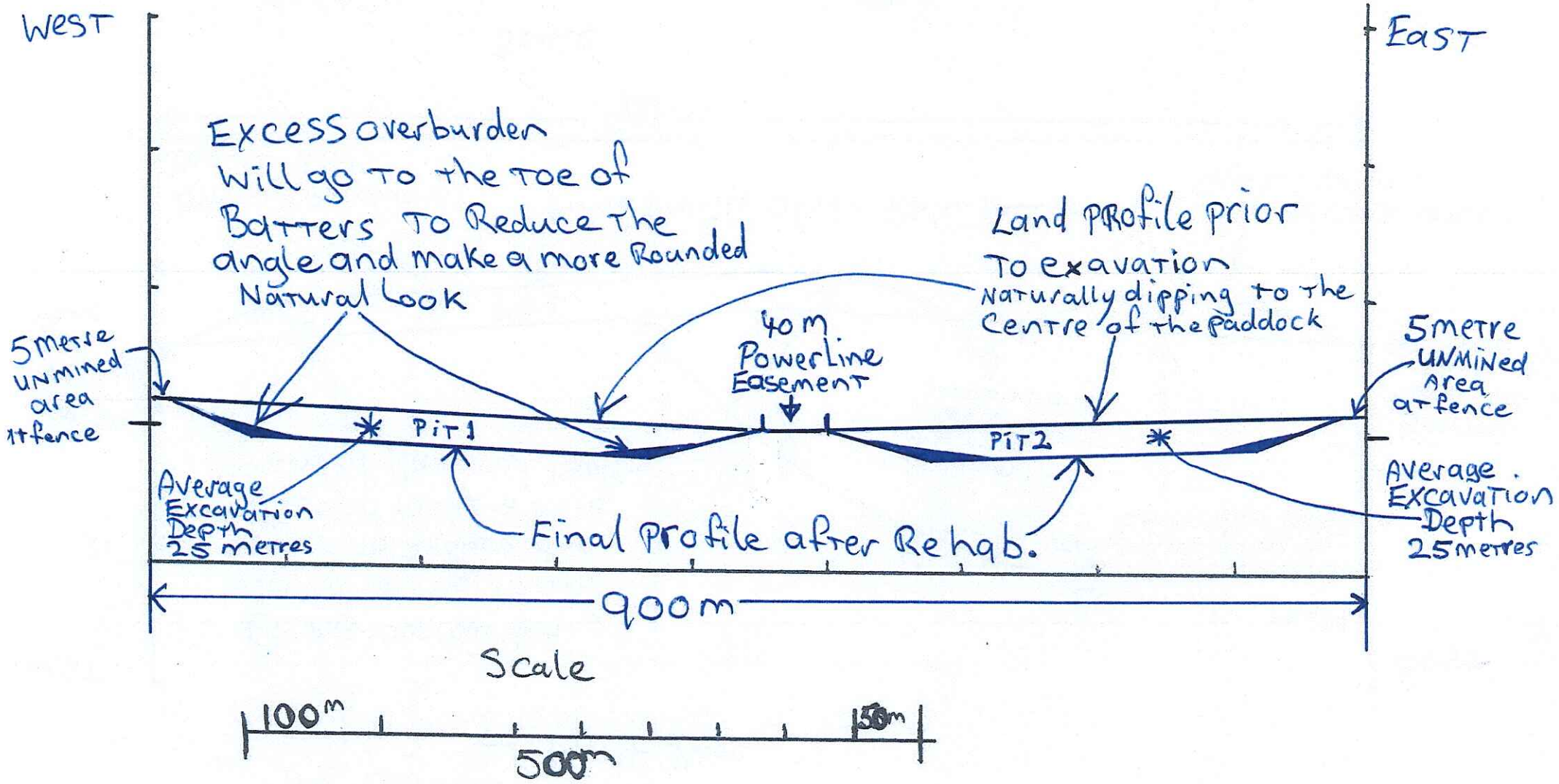
When mining an area there are to be a combination of small benches supported by battered slopes. The benches will merely follow the two different graded types of sand and the overburden layers.

A typical foot print of mining a face and following with rehabilitation would be approximately 3-5 hectares. It is anticipated that rehabilitation would start at the point of 2 hectares being mined. Mining will and has commenced at the shallowest depth of overburden (approximately 2.5 metres deep). Uncovering 2 Ha or 20,000m^2 will generate 50,000m^3 of spoil. We have already started mining in the existing lease and currently have a stockpile of approximately 20,000m^3 of spoil. An additional 30,000m^3 will be added to the Eastern side of this pile which is on the lowest point of the paddock so it will be almost unseen from any direction. At the point of rehabilitation starting we will direct all overburden removal to the rehabilitation batter.

In addition to putting overburden direct to rehab, we will also start bringing the stockpiled spoil into the rehab area as well. After a few years there will be no overburden pile left above natural ground level. There will be some top soil piles remaining after the overburden pile has been removed as the top soil will need to be restored on the rehabilitated areas last.

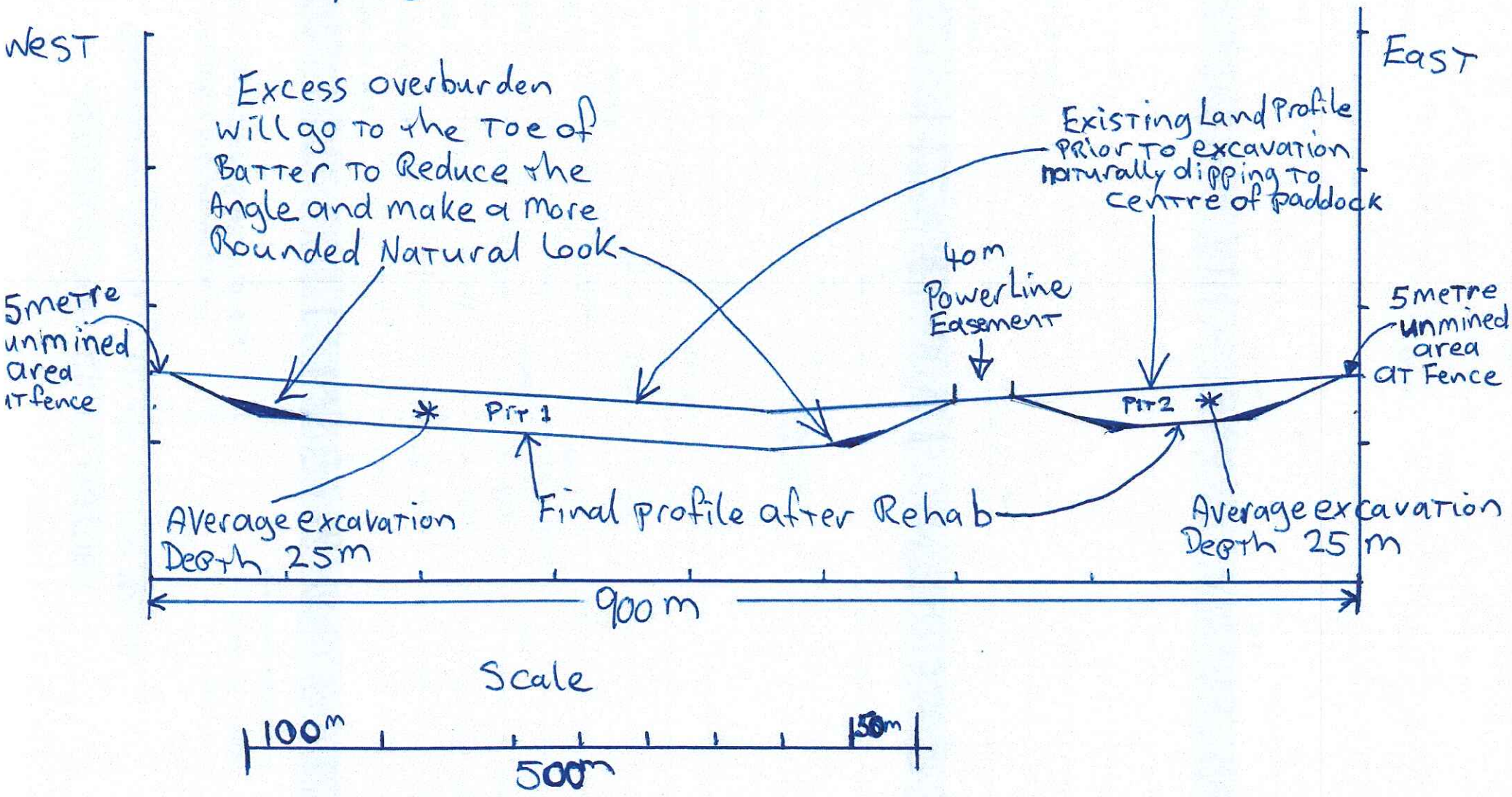
1. West to East Cross Section A.A.

ALL Batters are to be ~~either~~
Between 1 in 3 to 1 in 4. Slope



2. West to East Cross Section B.B.

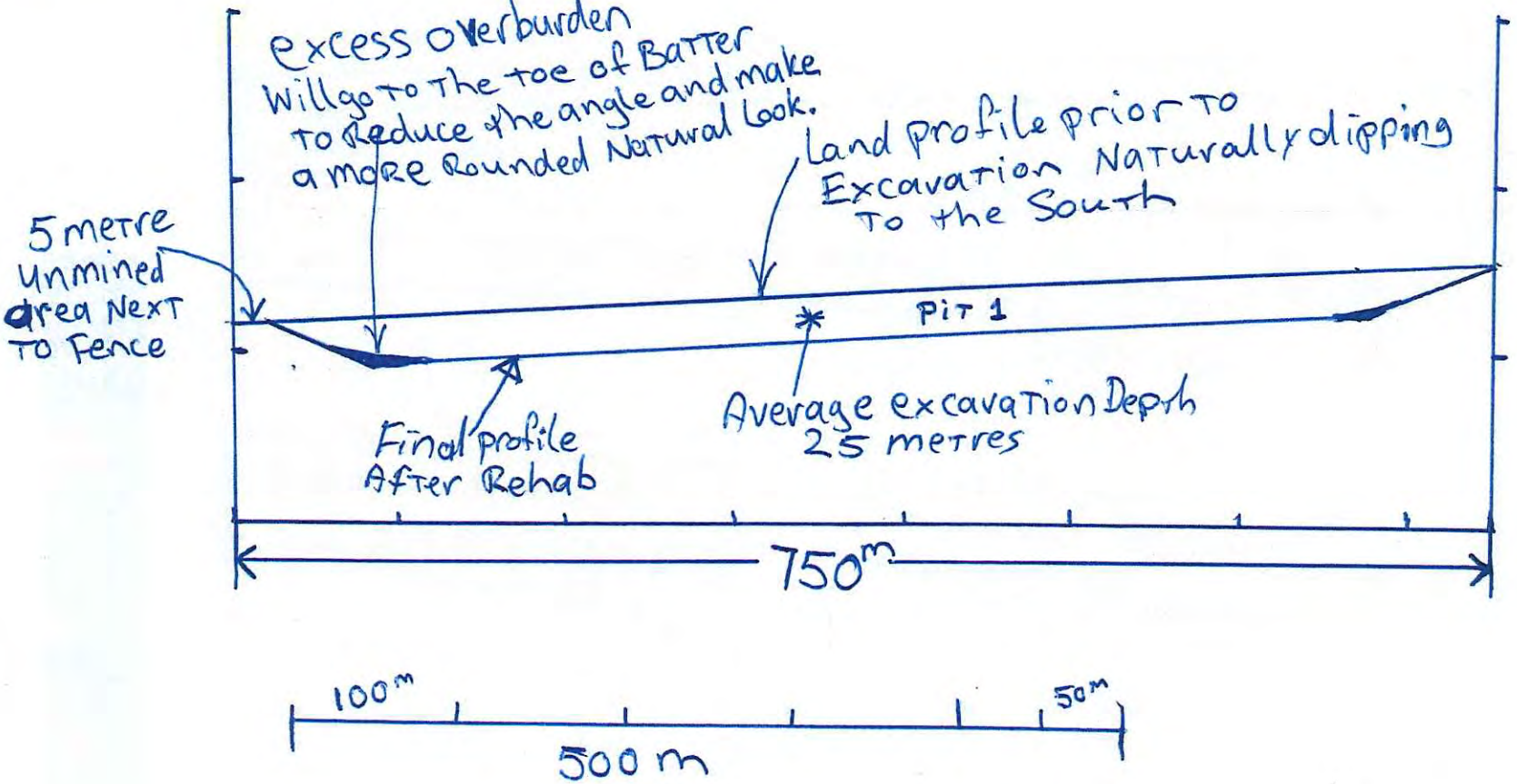
All Batters to be Between 1 in 3 to 1 in 4 Slope



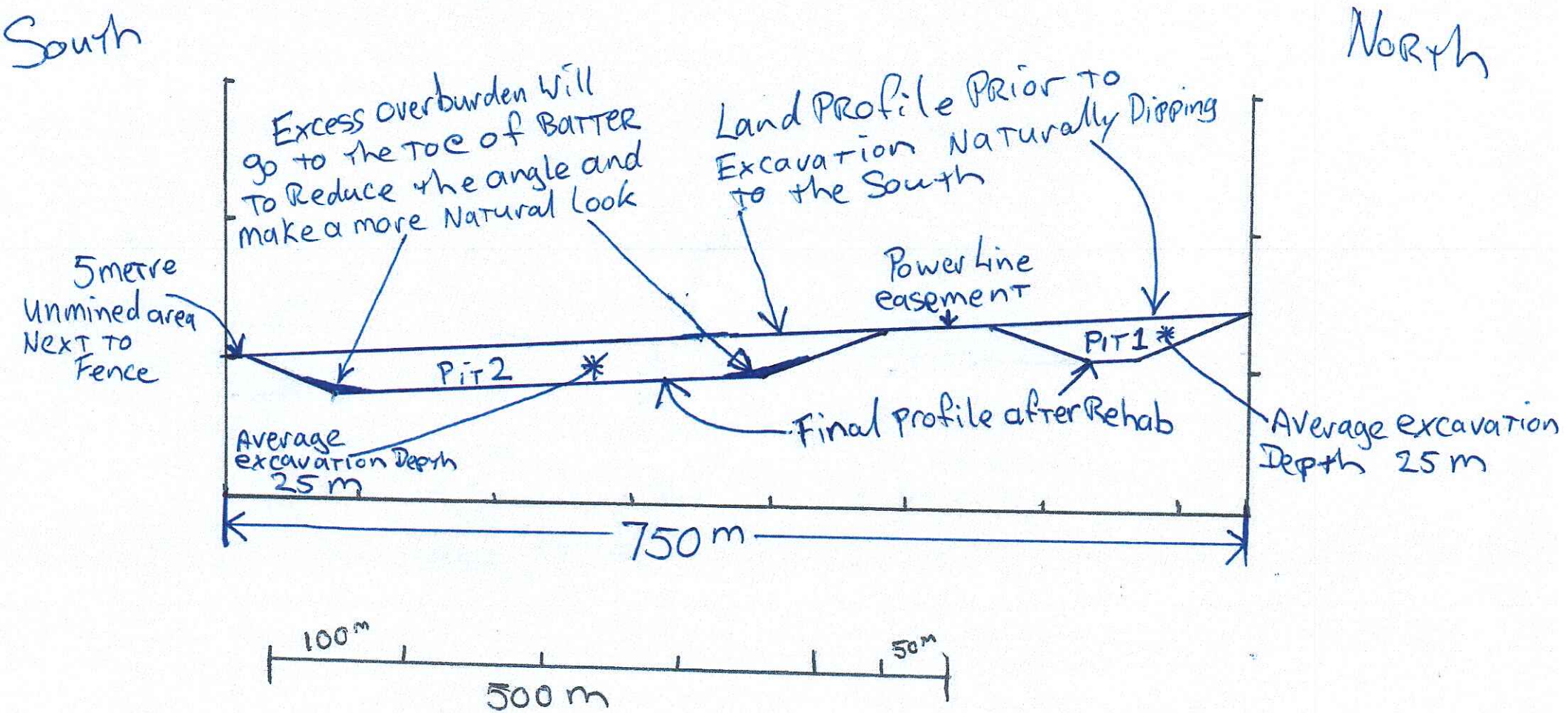
3. North to South Cross Section C.C.

South

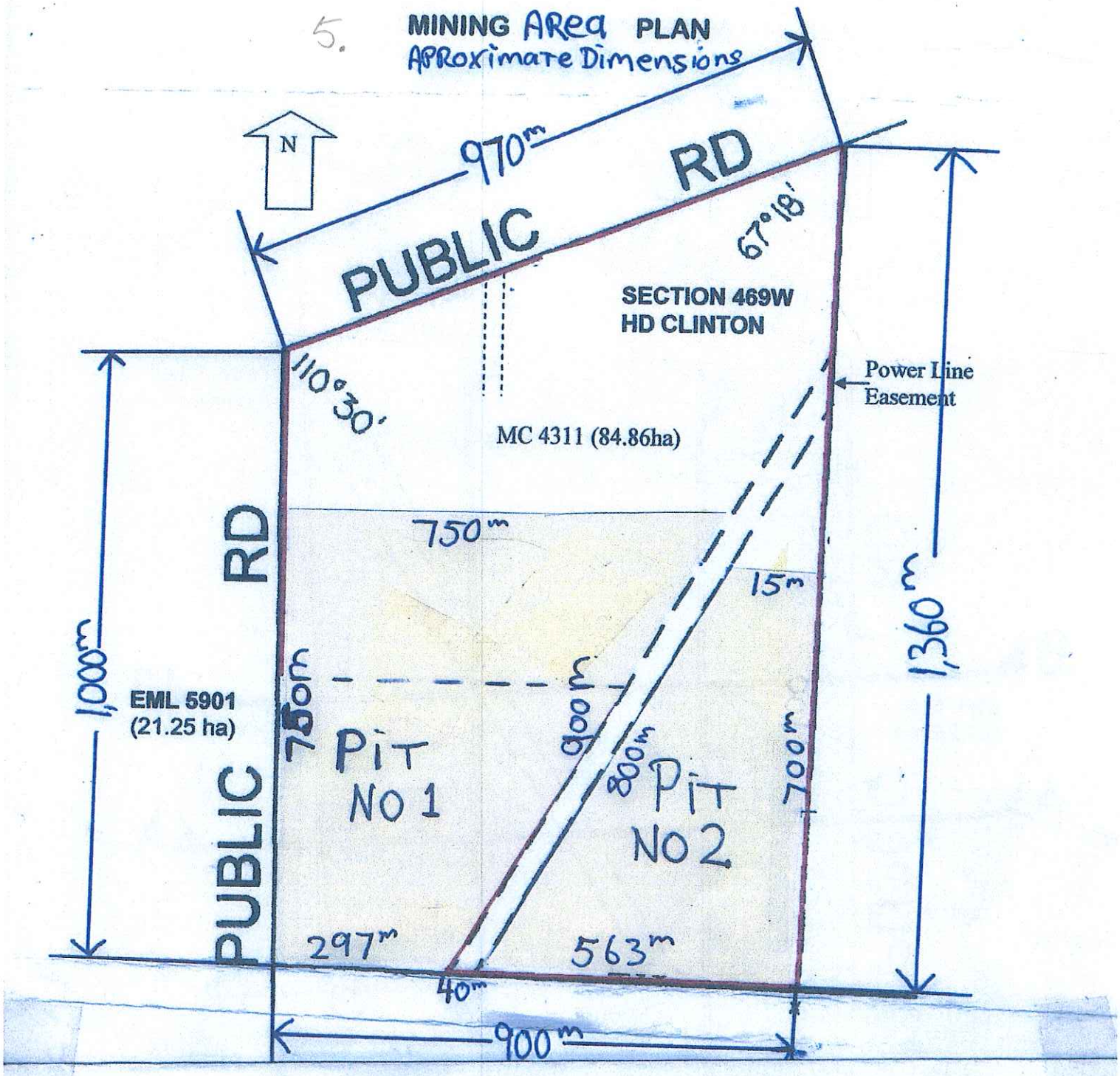
North



4. North to South Cross Section DD



5. MINING AREA PLAN
APPROXIMATE DIMENSIONS



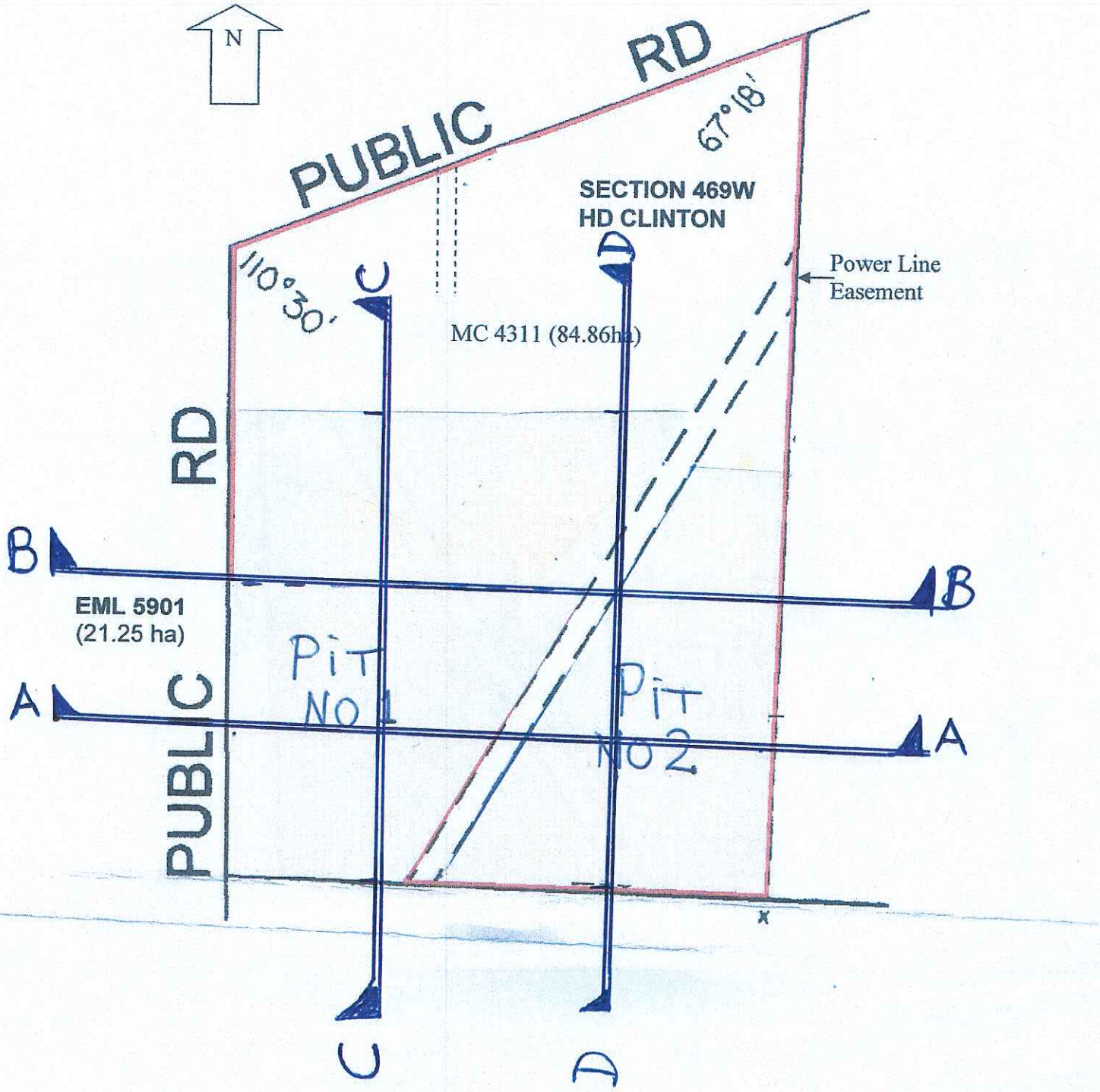
Approximate overburden quantities

Pit 1	
Minable area	337,500m^2
Overburden depth	5m approx.
Total B, C, M overburden	1,687,500m^3
Lineal metres for rehab	2,400Lm
Backfill per Lm	500m^3
Total backfill required	1,200,000
Surplus spoil	487,500m^3

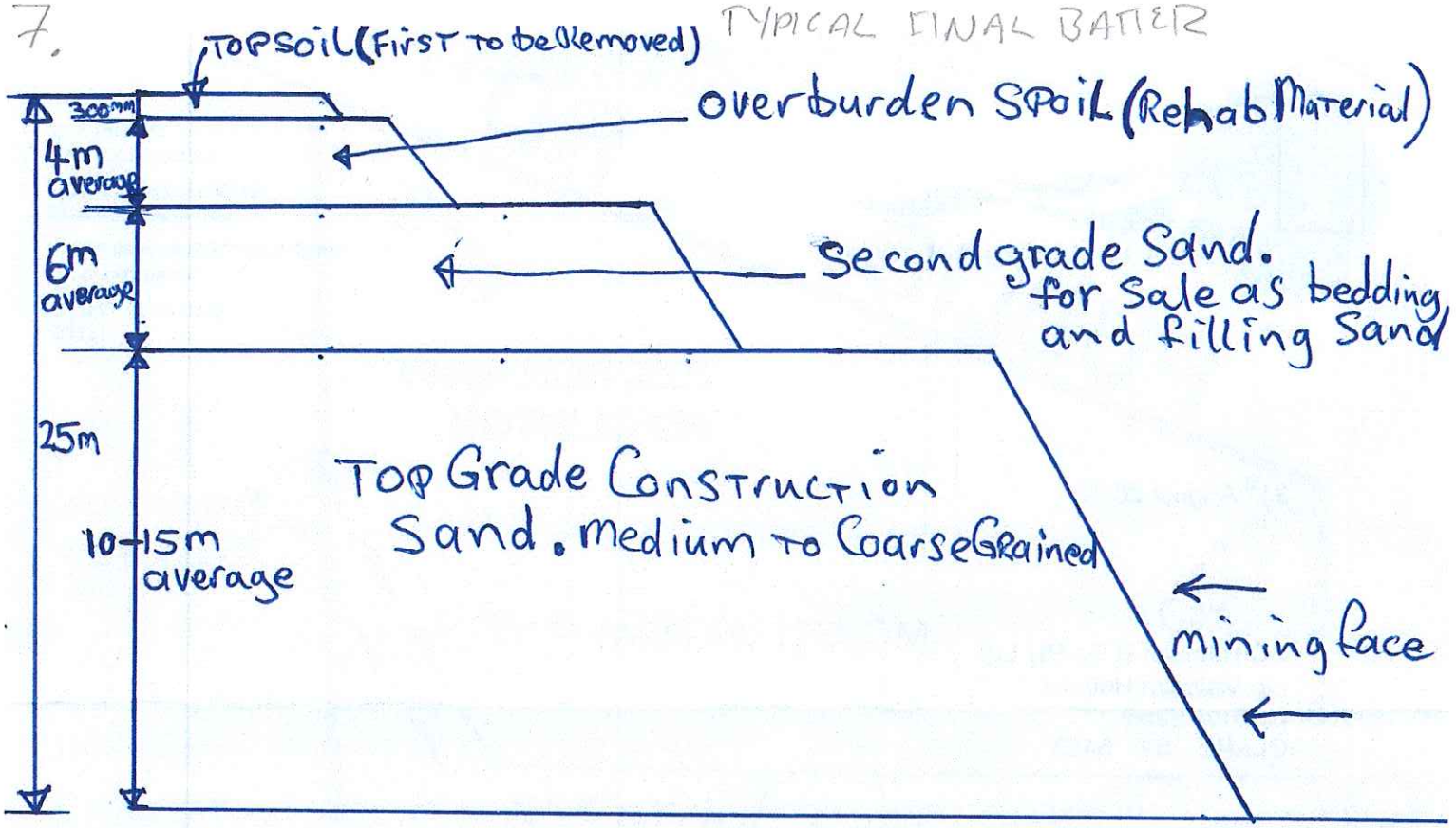
Pit 2	
Minable area	175,000m^2
Overburden depth	4.5m approx.
Total B, C, M overburden	785,000m^3
Lineal metres for rehab	1,700Lm
Backfill per Lm	500m^3
Total backfill required	850,000
Spoil short fall	65,000m^3

Total excess spoil 422,500m^3

6 **MINING PLAN**

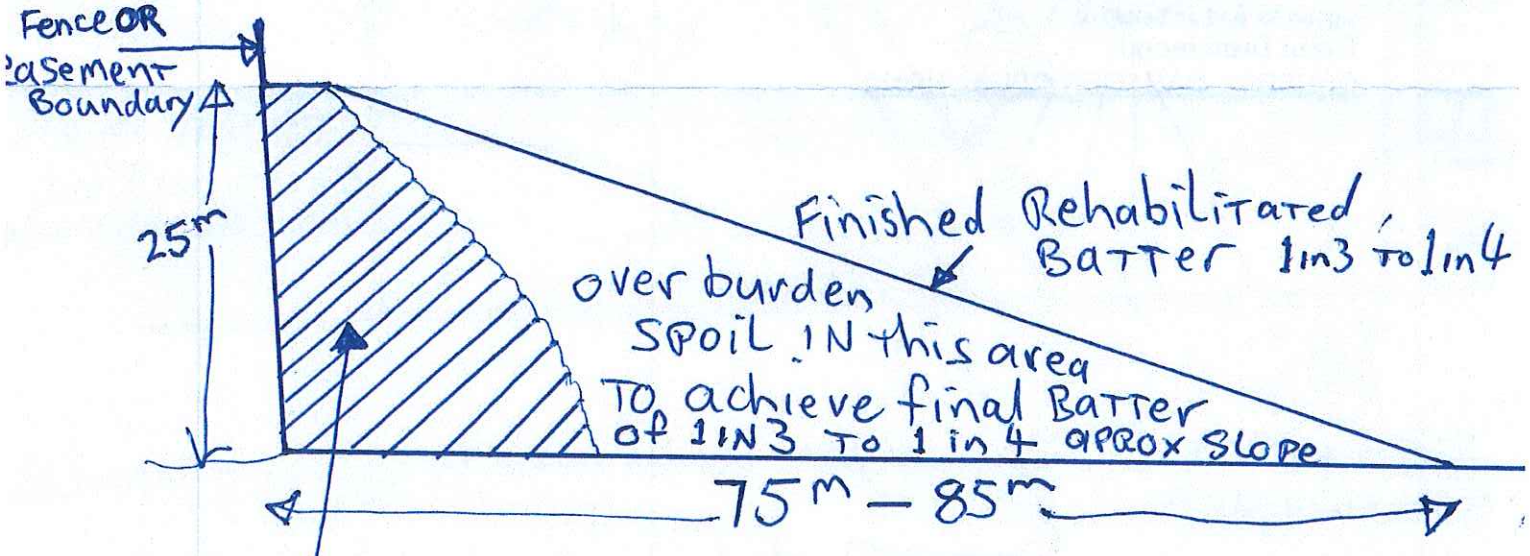


7. TYPICAL FINAL BATTER



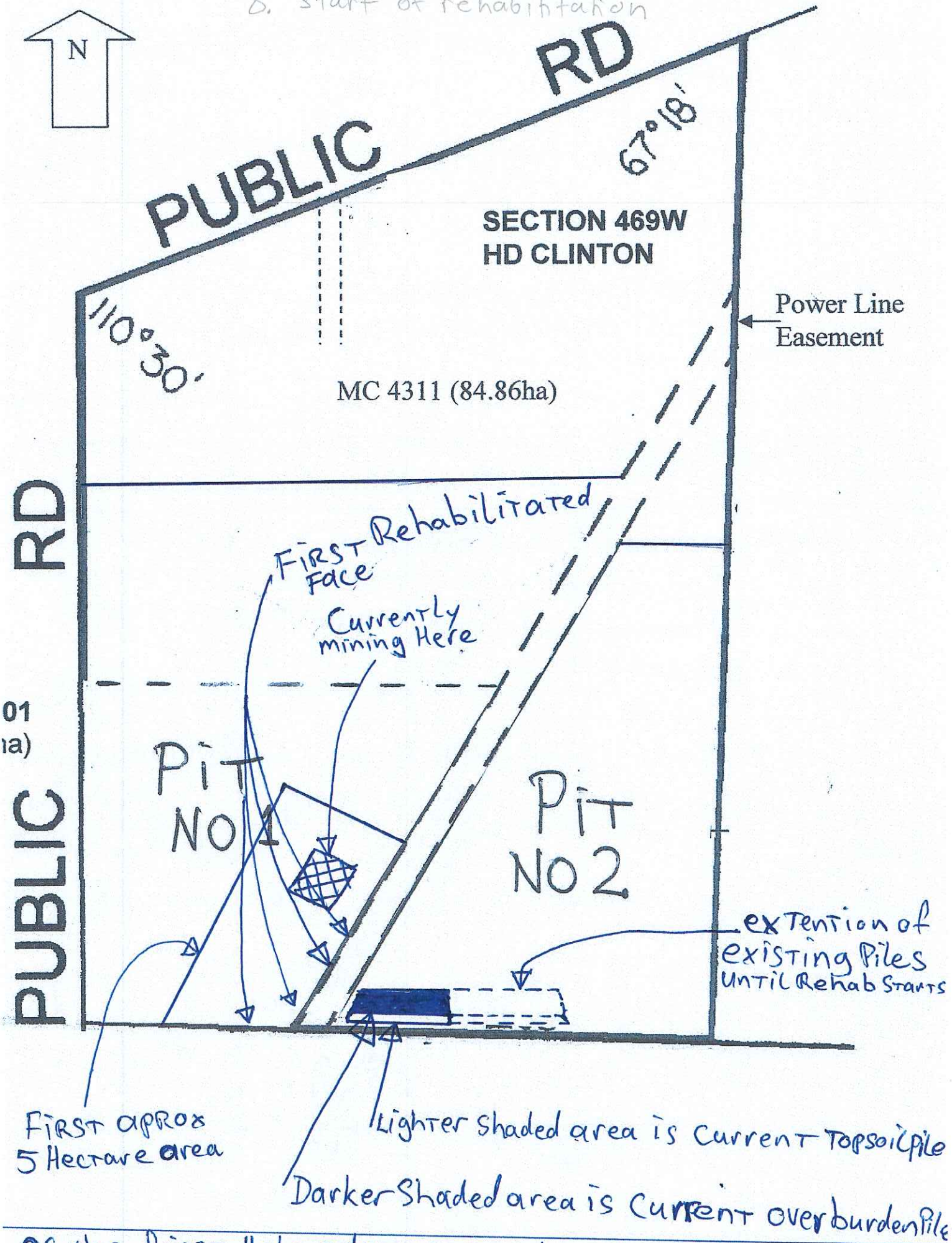
Above typical CROSS Section of any face that will occur during mining Showing different Layer Types and STEEP batters at mine Face.

Mining faces will be Maintained IN a Safe and Battered Condition With NO STEEP OR over hanging face's OR Ledges.



Typical Final Batter Rehabilitation

8. Start of rehabilitation



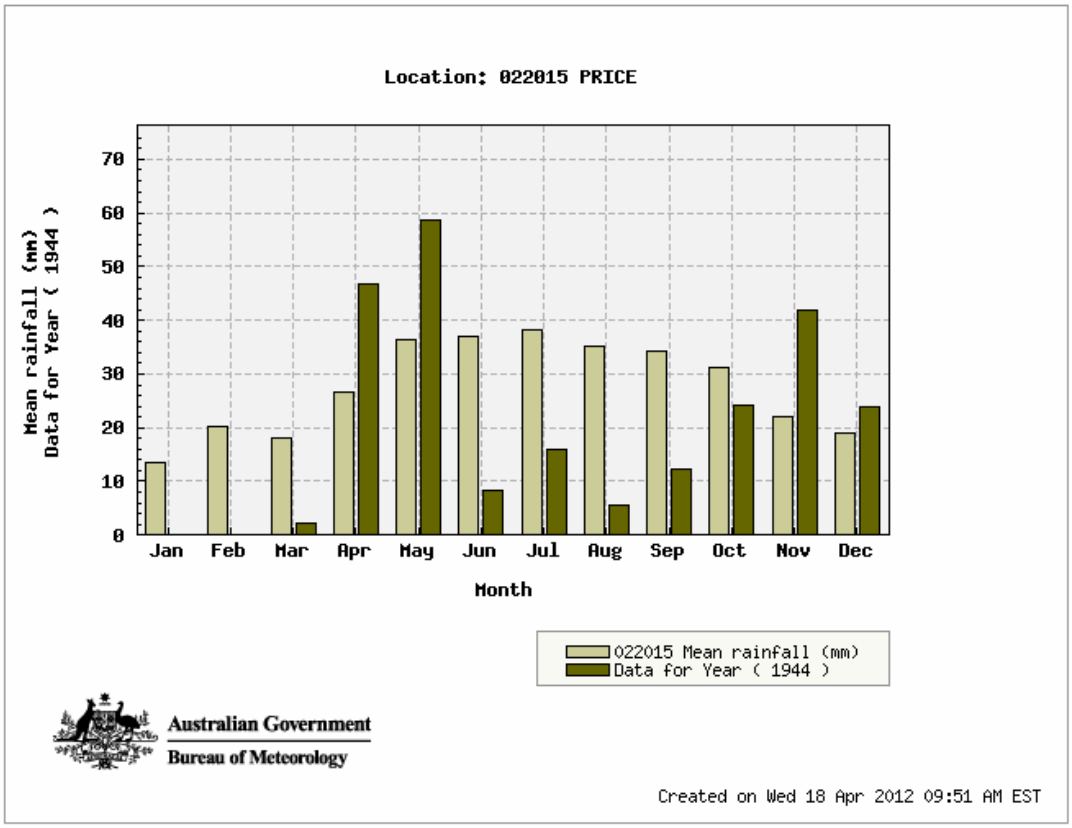
As the first Hole advances to the South and then West the Rehabilitation will follow. mining will be a continuous operation with Rehab constantly following.

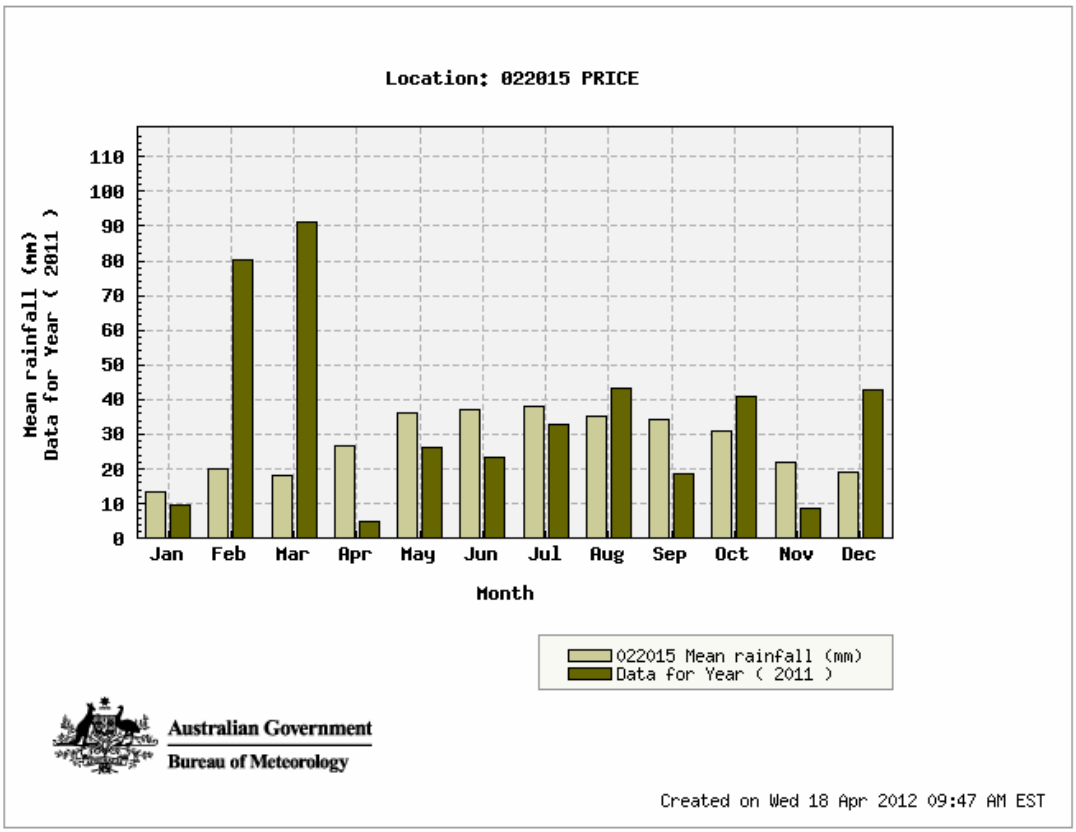
OPERATOR SITE ACTIVITY SHEET

Monitoring plan and complaints record

DATE	TOPIC	ACTION TAKEN	ACTIONER	DATE CLOSED

RAINFALL CHARTS FROM 1944 TO 2011





SEQUENCE OF MINING AND REHABILITATION FOR PLAN 1-4

Mining stages plan 1:

- Showing existing quarry location and overburden dump (20,000m³) from the current operating lease, EML 5901. Topsoil storage around pit. The estimated overburden ration is approx 10% to 15% of excavated material which is sufficient for achieving desired final batters of around 18° 1 in 3 or shallower where possible.

Mining stages plan 2:

- Plan shows the extension south of current pit to achieve rehabilitation in the shortest timeframe. Once the southern boundary has been reached the overburden dump (20,000m³) will be used to backfill the land to desired slopes. All topsoil will be stored along the boundaries of the property for replacing over the landforms.
- Stage 2 will commence around this time as the sand is of a different specification.

Mining stages plan 3:

- Shows the rehabilitation following the sand mining which will be rehabilitated progressively. All topsoil will be stored along property boundaries.
- Some overburden if encountered on stage 2 will be either stored nearby at the southern boundary or used directly for rehabilitation; keeping in mind that backfill will be required to reshape the land to a 1 in 3 batter at the perimeters of the pit and boundaries.
- Stage 3 will advance north as required with rehabilitation following. Overburden will be replaced as mining advances.

Mining stages plan 4:

- Shows advanced rehabilitation stages being undertaken as the sand mining continues over the land. Topsoil being stored along the boundaries as new areas are developed for mining.

Mining stages plan 5:

- Shows the land at completion with the land fully rehabilitated back to farming and grazing.
- The cross sections show the final levels at a maximum depth of around 25 metres. The areas abutting the easement will also be sloped at 1 in 3 or shallower. There will be no mining over the easement, only access tracks. The final landform will show a lowering of the land acceptable for farming use.

SITE PHOTOS for MLP July 2012 – MC 4311

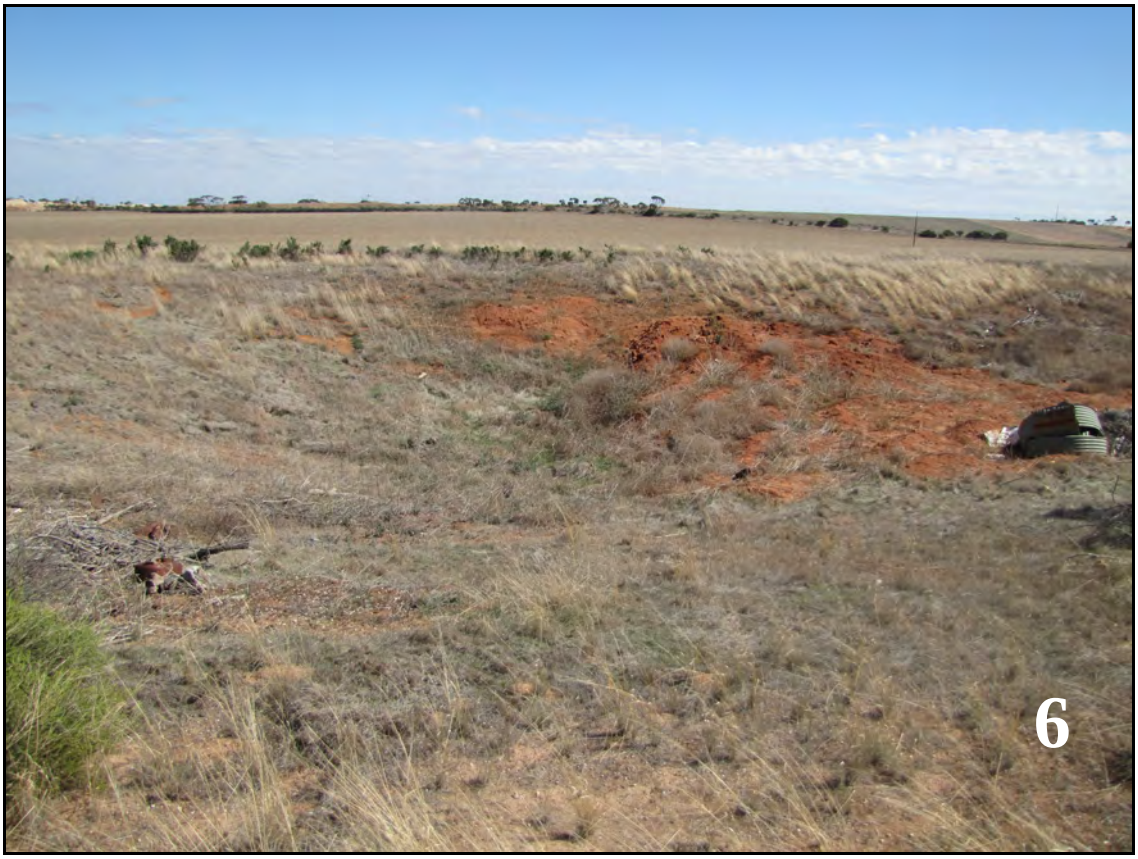
VIEW OF CURRENT OPERATIONS ON EML 5901

VIEW OF ELECTRANET POLE AND LINE

VIEW OF OVERBURDEN DUMP (20,000m³) IN PROGRESS TO BE USED IN BACKFILLING FOR REHABILITATION

VIEW OF SAND PIT AREA, PLANT AND PRODUCT STOCKPILES

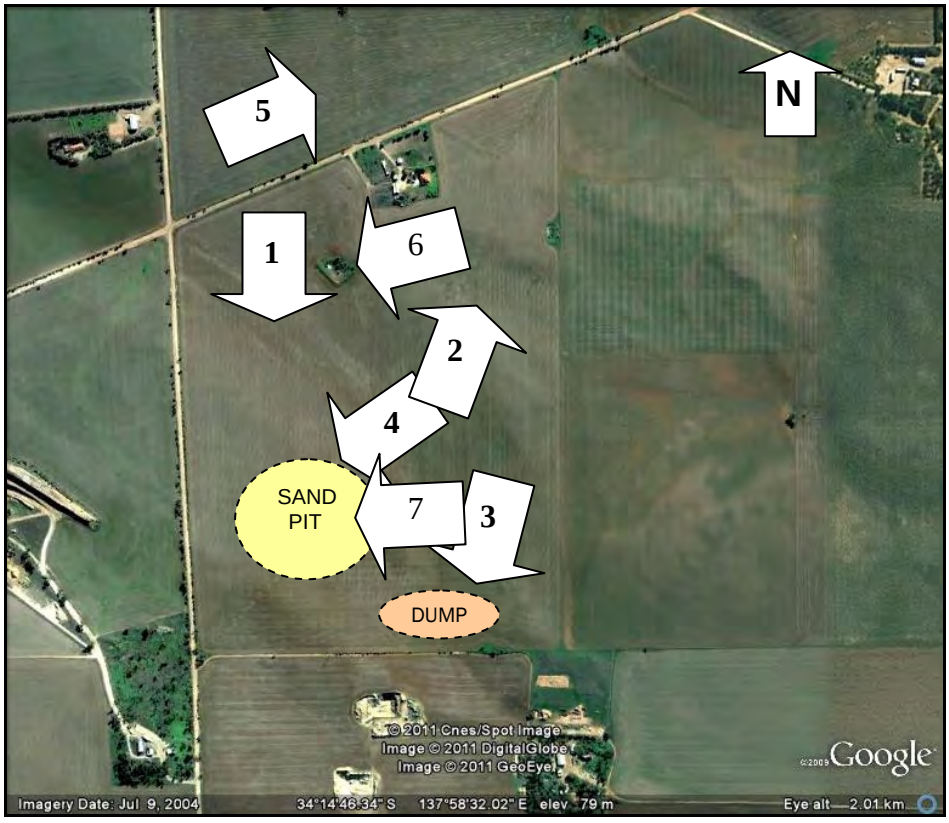
VIEW ALONG THE CLINTON ROAD



VIEW INTO DRY DAM, NOW USED BEING BACKFILLED BY LANDOWNER

VIEW OF CURRENT SAND PIT

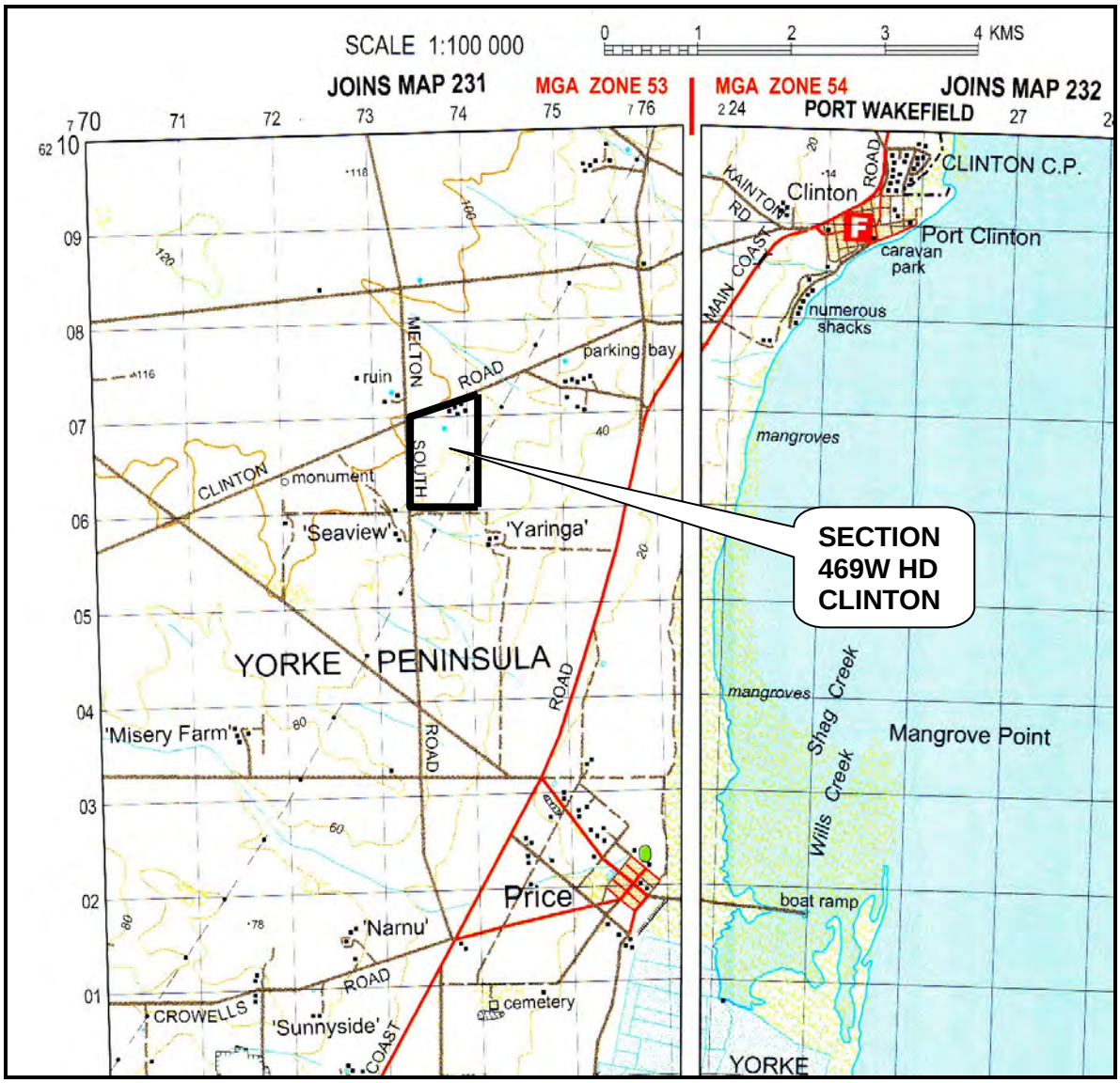
PHOTOGUIDE (aerial 2004)



TOPOGRAPHICAL MAP

MLP MC 4311 – JULY 2012

Location of Section 469W Hundred of Clinton



Ref: CFS Map Book 'Yorke Peninsula & Mid North' 2003

TOPOGRAPHICAL – CONTOURS
MLP MC 4311 – JULY 2012

The land is relatively flat with slight undulations
and draining to the south east

Scale: 1000m grids