GER

Greencoast Environmental Rehabilitation

CRESCENT HEAD ILMENITE STOCKPILE ECONOMIC REHABILITATION PROJECT

State Significant Development - Environmental Impact Statement

June 2022

PANDANUS ENVIRONMENTAL

NORTH STRADBROKE ISLAND

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1. EXECUTIVE SUMMARY

The Crescent Head Ilmenite Stockpile Rehabilitation Project (The "Project") is proposed to be undertaken by GreenCoast Environmental Rehabilitation (GER), a 100% Australian owned and operated company, located in South Australia.

GER have a successful business, locating abandoned minerals, often regarded as waste by former operators and removing them for sale and rehabilitating the land. GER plans to undertake an economic restoration of an abandoned ilmenite mineral processing stockpile. The Crescent Head ilmenite dump economic restoration project has two specific goals:

- It seeks to recover an abandoned waste resource for sale into the export market, and
- Achieve site rehabilitation by removing invasive weeds, dumped rubbish and the waste ilmenite pile, and establishing a vegetation cover that will allow natural development of a coastal hind-dune forest typical of the region

The project involves the removal and rehabilitation of an abandoned ilmenite stockpile near the township of Crescent Head to the Port of Newcastle. The stockpile site is located on Crown Land on the eastern side of Point Plomer Road, on Lot 2281 Deposited Plan 1153793.

The stockpile covers an area of approximately two hectares on the site of a former mineral separation plant or 'dry mill' that ceased operation in 1985. Ilmenite is an iron-titanium mineral that was a common by-product of former mineral sand mining and processing operations along much of coastal NSW and Queensland.

Raw Ilmenite is typically processed offshore to become a titanium-based product, including flux core welding wire and rods and of titanium sponge, used in a wide variety of applications including aerospace industries, high grade electronics, sunscreen, and high gloss paints.

GER has drawn upon a variety of experts in coastal ecology and the Australian mineral sand mining industry to form a comprehensive project management team.

GER is well placed to successfully remove the Ilmenite stockpile and rehabilitate the site in accordance with best practice guidelines (**referring to best practice guides for mining operations, https://www.industry.gov.au/data-and-publications/leading-practice-handbooks-for-sustainable-mining**).

The Crescent Head project is a short-term, one-off project to control the invasive plant species currently colonising the stockpile, remove the former sand mining waste stockpile to natural ground level and then rehabilitate the site to natural bushland.

The restoration of the site is also important for the local indigenous people of the area with the Dhungutti Elders Aboriginal Corporation keen to see the area rehabilitated as it holds cultural significance to them.

Importantly, the project will **not** involve the quarrying of any new material or minerals that require further processing, nor the removal of any of the underlying silica sand.

GER follows a business philosophy of economic rehabilitation of past mining activities where the income from the sale of a former waste product can achieve enhanced rehabilitation of past mining legacy sites.

This Environmental Impact Statement (EIS) is provided as the first step in the regulatory approvals process and the final step in the restoration of this area following previous sand mining.

2. INTRODUCTION

The Crescent Head Ilmenite Stockpile Rehabilitation Project (The "Project") is proposed to be undertaken by GreenCoast Environmental Rehabilitation (GER), a 100% Australian owned and operated company, located at 100 William Street, Norwood South Australia 5067 (ABN60 125 784 189).

The project involves the removal and rehabilitation of an abandoned ilmenite stockpile near the township of Crescent Head to the Port of Newcastle. The stockpile site is located on Crown Land on the eastern side of Point Plomer Road, on Lot 2281 Deposited Plan 1153793.

The stockpile covers an area of approximately two hectares on the site of a former mineral separation plant or 'dry mill' that ceased operation in 1985. Ilmenite is an iron-titanium mineral that was a common by-product of former mineral sand mining and processing operations along much of coastal NSW and Queensland.

The Crescent Head project is a short-term, one-off project to control the invasive plant species currently colonising the stockpile, remove the former sand mining waste stockpile to natural ground level and then rehabilitate the site to natural bushland.

Importantly, the project will **not** involve the quarrying of any new material or minerals that require further processing, nor the removal of any of the underlying silica sand. The underlaying land surface will not be disturbed.

The project will not disturb any remnant vegetation community with minimal clearing restricted to the weed covered stockpile and access road. Project disturbance will not remove any habitat trees and all existing natural vegetation will be retained.

The project will involve a simple fleet of machinery, namely an excavator and front-end loader, as well as a small fleet of three truck and dog trailers.

Disturbance will be limited to truck and shovel operations for an estimated 130 days, with rehabilitation activities occurring immediately after the stockpile is removed.

This Environmental Impact Statement (EIS) is provided as the first step in the regulatory approvals process.

2.1.1.Location

The Project Site is on Crown Land, approximately 1km from the town centre of Crescent Head. Crescent Head is located on the mid north coast of NSW, within the local government area of Kempsey Shire.

The project is located in a small corner of crown land parcel Lot 2281/DP 115793.

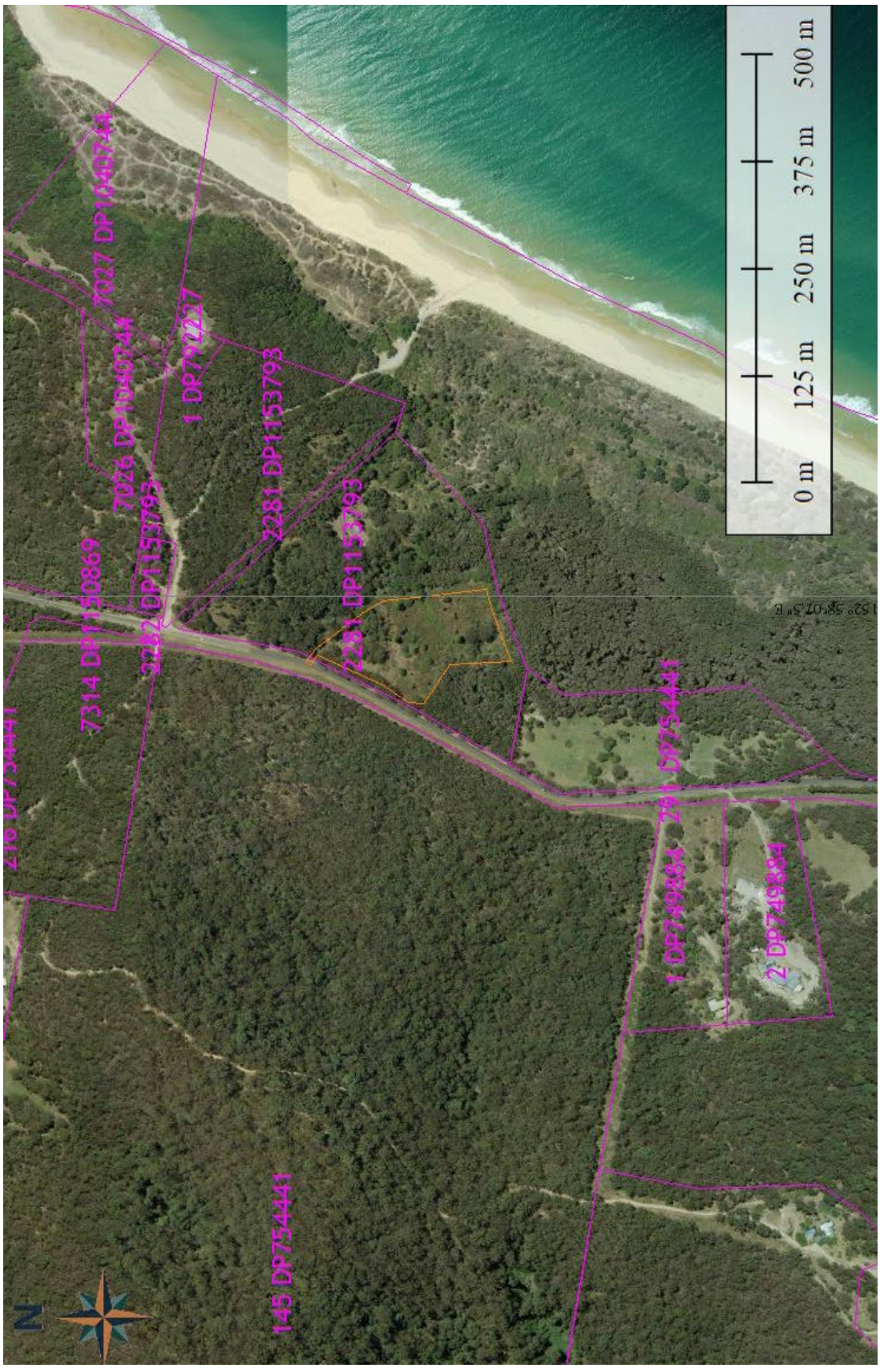
The Project Site is bounded by:

- Goolawah National Park to the east (Lot 7302 / DP 1130597),

- Crown Land to the north (Lot 2281/DP 115793),
- Freehold land to the south (Lot 291/DP 754441) and,
- Point Plomer Road to the west

The location is represented in **FIGURE ONE**.

FIGURE ONE. PROJECT LOCATION AND TENURE



2.1.2.Past Site History

Sand mining around the township of Crescent Head commenced in 1957 by Mineral Deposits Ltd (MDL). The Crescent Head mining operation was comprised of three simple dredges in ponds and a separating plant using land based spiral units and magnetic separators, with the concentrates treated at a dry mill next to the existing ilmenite stockpile (**PLATE ONE, TWO and THREE**), Morely, (1981).
The concrete foundations of the dry mill are still present on the eastern side of the stockpile.

The Crescent Head dry mill (**FIGURE TWO**) was one of two dry mills owned by MDL in NSW which produced approximately 75,000 tonnes of rutile, zircon and monazite concentrates annually, from up to eight different mineral sand mining operations. Mineral sand from MDL's mining leases up and down the coast is believed to have been processed at the Crescent Head dry mill, as processing is understood to have continued for many years after dredge mining in the immediate vicinity of Crescent Head itself had ceased. According to the recollections of a former MDL employee, the Crescent Head stockpile site was finally vacated by MDL in or around 1985.

FIGURE THREE shows the site in 1981, close to closure date.

In more recent years, illegal rubbish dumping has taken place at the stockpile site, including dumping of domestic waste and burnt-out cars (**PLATE FOUR**). GER has also noted the illegal removal of ilmenite from the northern end of the stockpile, apparently by local building contractors. GER has reported any apparently Illegal activity to the landowner (Crown Lands) as soon as it was noted.

PLATE ONE - HISTORICAL BEACH MINING AT CRESCENT HEAD

PLATE TWO - HISTORICAL MINERAL PROCESSING ON EXISTING SITE

PLATE THREE - HISTORICAL MINERAL PROCESSING ON EXISTING SITE

PLATE FOUR – RECENT DUMPING OF RUBBISH ON SITE

FIGURE TWO - HISTORICAL MINERAL PROCESSING ON EXISTING SITE (1956)

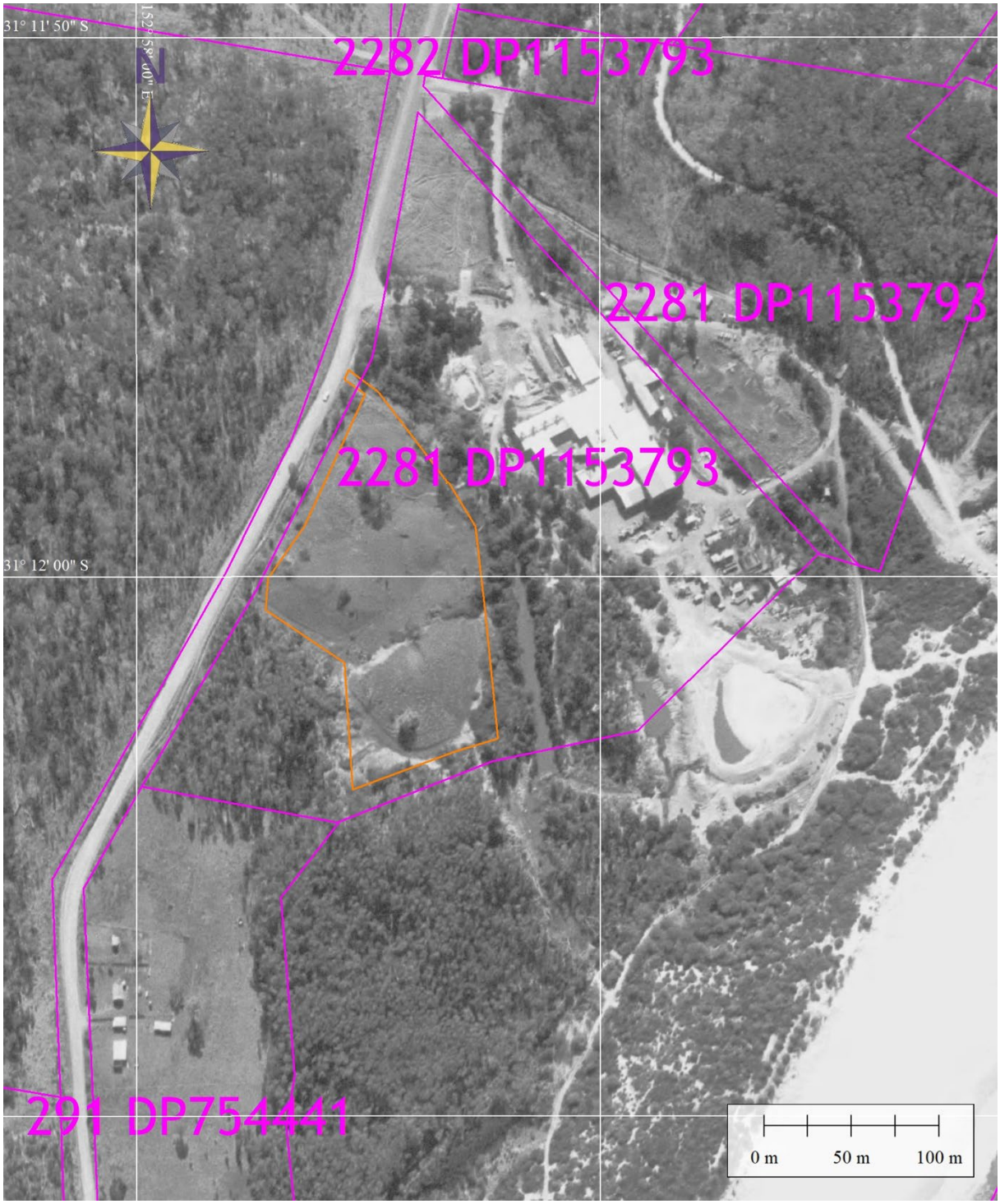
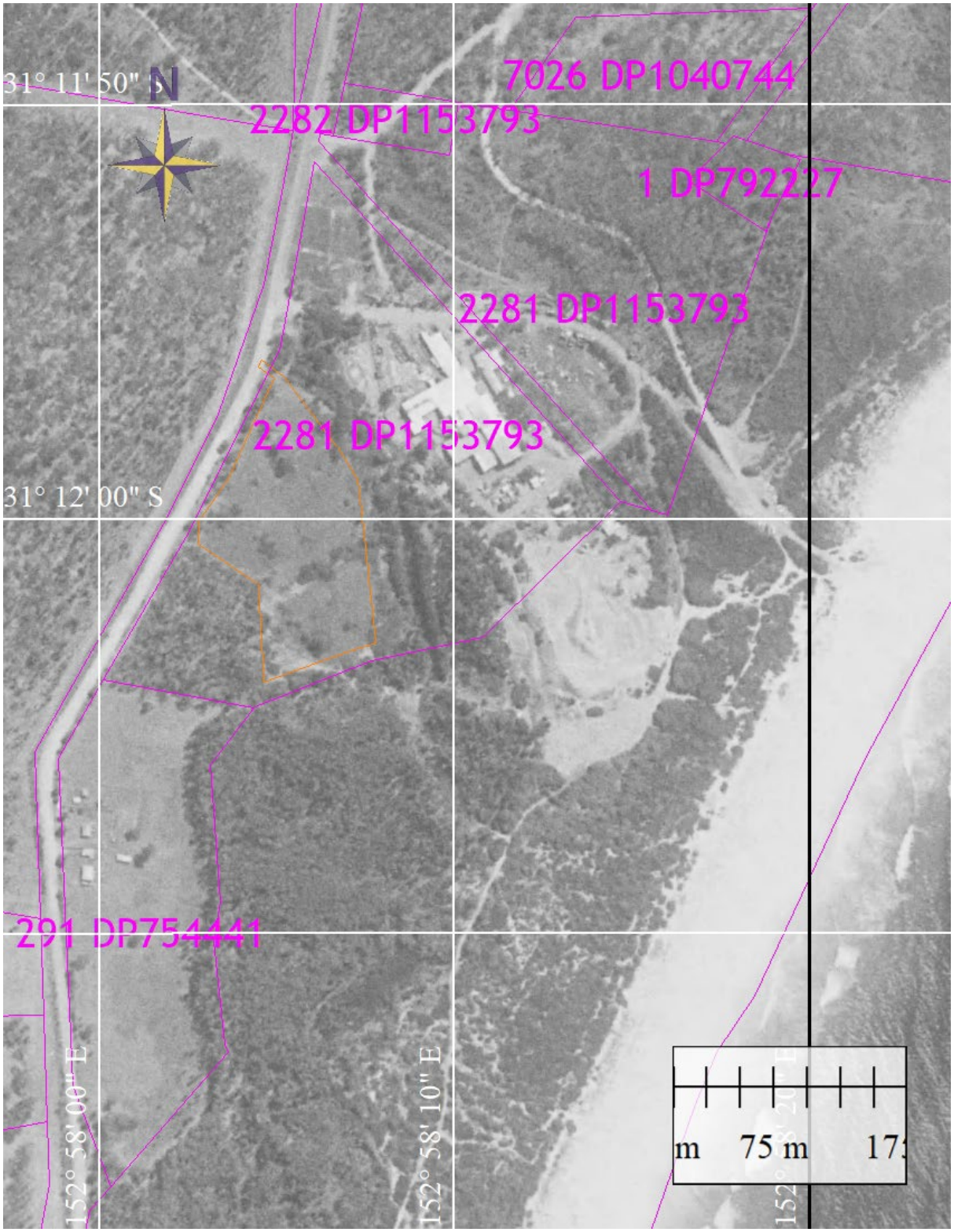


FIGURE THREE - HISTORICAL MINERAL PROCESSING ON EXISTING SITE (1981)



2.1.3.Ilmenite as a product

Ilmenite (FeTiO3) is a dense, black, weakly magnetic mineral with a high resistance to weathering. Ilmenite is a common accessory mineral present in the beach sands of Eastern Australia, believed to be ultimately derived from the erosion of Tertiary Volcanic rocks from the New England Fold Belt.

Australia's east coast beaches formerly contained substantial deposits of ilmenite that were concentrated in strandlines by wave action. Economic concentrations of mineral sands were extensively mined from beaches and dunes from the Central Coast of NSW north to Fraser Island in Queensland.

At the time of beach mining, which is no longer practiced on the east coast of Australia, ilmenite was a low-value by product which was typically dumped as 'tailings' after the separation of more valuable minerals - predominantly rutile and zircon. These "dumps" or stockpiles of Ilmenite were often left un-rehabilitated for the bush to reclaim or flattened out and buried as part of coastal residential development.

However, in more recent years, ilmenite has become a primary source of titanium, allowing for the removal and rehabilitation of many former ilmenite dumps. Notable recent ilmenite stockpile removals include a large dump from within the Bundjalung National Park in NSW and stockpiles at Rainbow Beach, Noosa North Shore, and North Stradbroke Island in QLD.

2.1.4. Product Radioactivity

A potential misconception of waste ilmenite piles is the mistaken belief that they are all 'radioactive' and may therefore pose a health risk. Notable instances of this fear can be found at many coastal towns (i.e., Rainbow Beach in Queensland) and often old stockpiles may cause local community concern.

To accurately assess the issue and allay potential public fears, GER undertook a series of tests of the stockpile as part of both the exploration and EIS processes. These tests were thorough and involved analysis of physical samples by an independent expert and third part analytical laboratory, as well as surface sample collection and analysis by another third party to the proponent.

These results are discussed further in **Section Twenty-three** and **APPENDIX ONE,** but all testing concluded low to very low levels of radiation, typically lower than within the township of Crescent Head itself.

The primary conclusion is the Crescent Head Ilmenite pile is not classified to be radioactive in NSW, nor is it considered a health risk requiring any protection measures to be put in place during its removal.

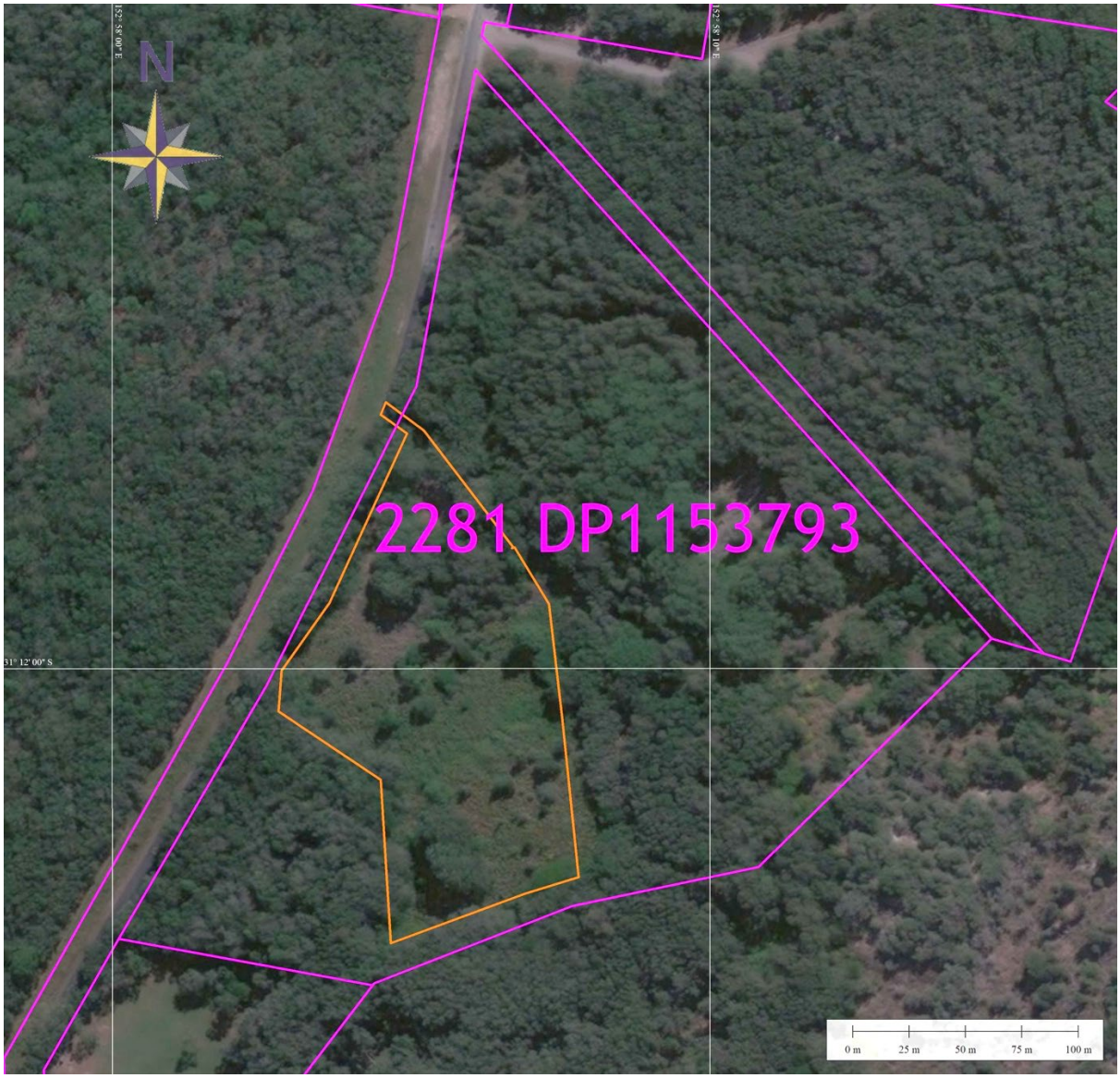
As a precaution, and to allay public perception fears, GER also proposed specific control measures in the advent of any product spillage during transport.

2.1.5.Proposed site layout

A significant component of GER's proposal is that it intended to only re-disturb a small fraction of Lot 2281. GER proposes to only remove the above-ground stockpiled material that it has surveyed and tested and ascertained is suitable for export markets. Due to the past activities on the site, the stockpiled material is well defined and easily identified making the stockpile removal straightforward. **FIGURE FOUR** will be the anticipated entire disturbance footprint for the site, which has been confirmed by hand auger drilling results.

No other disturbance will occur in the surrounding vegetation, preserving old growth trees, thereby avoiding any potential issues with wetland species and environments which are present on other parts of the lot.

FIGURE FOUR - STOCKPILE REMOVAL ZONE



3. STRATEGIC CONTEXT

3.1.1.TITLES UNDER THE MINING ACT

The project site occupies a small section of Crown Land on Lot 2281 / DP 1153793 as shown in ***FIGURE 5***. The stockpile lies within Exploration Lease EL8085 (granted on 16th May 2013), and a mining lease application has been made (2nd June 2020) which is pending project approval.

3.1.2.MINERAL RESOURCES AND RESERVES

The stockpile consists of entirely ilmenite ore, originally the magnetic fraction rejected during early sand mining during the 1960-1980's.

Ilmenite ores are now economically mined and stockpiles such as the one present at Crescent Head have been recovered by other entities and sold direct to market as is proposed.

Table ONE presents a Joint Ore Reserve Committee (JORC) compliant Mineral Resource for the Crescent head stockpile, compiled by the company following hand drilling assessment.

TABLE ONE JORC COMPLIANT MINERAL RESOURCE

Classification	Stockpile	Tonnes	Grade (%TiO2)
Probable Reserves	Northern	58,329	42.6
	Southern	47,400	27.6
Total		105,729	35.9

4. PROJECT DESCRIPTION – ILMENITE PILE REMOVAL

4.1.1. Site Access

Access will be via the north-western corner of the stockpile, where the existing site access point on Point Plomer Road is at present. To facilitate access, manage erosion and ensure machinery cannot get bogged, crushed rock will be placed temporarily at the access point and potentially used at any soft points in the truck loading circuit.

4.1.2. Grubbing and raking

Prior to removal of the ilmenite stockpile, the surface of the pile will be mechanically grubbed and raked to remove all weeds and roots. Removal of the weeds, grubbing and raking, and stockpile removal are all relatively simple activities that will be undertaken using either an excavator or front-end loader. The site is too small and compact for a large machine, and it is anticipated that only one excavator will be required to prepare the site. Loading of material into the trucks for transport will be undertaken with a front-end loader (FEL).

Weeds will be mulched and air-dried, with the final decision on the best way to ensure they will not re-sprout being either composted on site for future rehabilitation or transport to the Kempsey green waste facility (dependent on final pile volume).

To ensure no product contamination, the entire stockpile surface will be thoroughly grubbed and raked over a period of three or four days, working slowly and systematically from the northern end of the stockpile to the south. During site clearing activities, a suitably qualified fauna spotter-catcher will be present to relocate any fauna disturbed during weed removal.

It is not intended to remove any mature trees as part of the grubbing and raking process. However, should a tree be determined to pose an unacceptable safety or operational risk, following a risk assessment and approval, it will be removed in the presence of the fauna spotter catcher.

4.1.3. Ilmenite stockpile removal

Removal of the material will involve the use of either a front-end loader (FEL) or similar machine. Material from the north-western corner of the pile will be removed first to establish a working face. Based on the results of the ongoing radiation and grade control sampling, the stockpile will be divided into grade blocks approximately 10m wide and 2m deep.

Use of survey markers graduated at 0.2m intervals and installed in hand auger holes will allow the excavator or loader operator to know the depth to natural ground surface and allow the operator to control bench heights and batter the working face back to a safe angle (See Project Execution Plan - **APPENDIX TWO**).

This method reduces the potential for unstable faces and over digging. Reclaiming the stockpile from the North to South will also provide an ongoing noise barrier for the freehold land to the south.

It should be noted that, being a historical ilmenite stockpile, potential exists for solid wastes, such as steel, concrete, or polyethylene pipe to exist within or at the base of the pile. GER's experience with sites like Crescent Head indicate that this material may exist, and any uncovered as part of operations will be put aside for removal off-site at the most appropriate waste management centre.

4.1.6. Mineral processing

No mineral processing will occur at the Crescent Head site as the pile material is already processed, and the stockpile composition is generally uniform in mineral composition (see **APPENDIX THREE**).

4.1.7. Ilmenite transport

During removal of the ilmenite, product will be transported from site direct to port loading facilities. The original project plan was to transport the product to a yard elsewhere within Kempsey shire (and this option is referenced in **APPENDIX TWO** and **APPENDIX FOUR**). However, following discussion with Council and to avoid any potential zoning issues, the proponent now intends to transport the ilmenite directly to port loading facilities in Newcastle.

Haulage will be undertaken via truck & dog trailers with an average load of 30m^3 per trip – a total of 3,650 laden trips for the project duration.

The haulage contractor will provide three truck and dogs per day resulting in 20 laden trips a day, restricted to weekdays only – or a maximum of 100 laden trips per week (an average of four truck movements an hour).

It is expected that, provided the market conditions for ilmenite remain favourable and a removal rate of an average of 20 laden trips per day for five days a week can be made, stockpile removal will take approximately 36 weeks.

The ilmenite will be trucked to the port of Newcastle (Carrington Precinct) as shipping dictates.

Trucks will operate between daylight hours and travel to and from site by the appropriately zoned state and local road network. The existing access track to the Ilmenite stockpile will be upgraded by GER to a standard suitable for haul trucks and removed to its existing state (or as otherwise agreed) upon completion of the works.

As described above, operations are expected to be conducted during weekdays, avoiding public holidays and school holiday periods where practicable. GER acknowledges the wishes of the local people and council to avoid peak holiday periods if possible and suggest that a calendar of operations be agreed by all parties once the project commences.

4.1.8. Site delineation and security

The existing single entrance to the site off Point Plomer Road will be fitted with a lockable gate that will remain closed and locked at all times, except to allow GER vehicle access to site. High visibility Restricted Area Access signage will be placed at the gate and at 50m intervals along the site boundary with Point Plomer Road.

Access to the work site will be restricted to personnel who have completed a site induction and hold a SafeWork NSW White Card (CIC) or visitors in the company of GER inducted employees.

To further demarcate the site project area, a temporary site boundary barrier will be installed to limit access to site operations. Depending on the identified risk, this barrier may take the form of temporary fencing, portable traffic barriers or, in already inaccessible heavily vegetated areas, barrier tape and signage, with a minimum of 1.8m high portable cyclone fencing along the boundary with Point Plomer Road.

Shade cloth or jute netting will also be installed along the boundary to limit dust and visual impacts of the site works where required.

A trailer mounted mobile toilet and hand disinfectant gel will be available on site with wastes being removed as required by a licensed contractor. All general rubbish will be placed in appropriately marked bins for removal weekly. No food wastes will remain on site and bins will be sealed or weighted, to avoid potential animal entry.

5. PROJECT DESCRIPTION - SITE REHABILITATION

GER takes great care in delivering its rehabilitation outcomes as this component of the project is typically the one of most concern for all stakeholders. Rehabilitation of the Crescent Head site is anticipated to be relatively straightforward.

The rehabilitation strategy is outlined in **APPENDIX FIVE** - Rehabilitation strategy and has been developed by an expert in coastal restoration and sand mining rehabilitation. The main steps in the strategy can be described as follows.

POST STOCKPILE REMOVAL LANDFORM

The stockpile will be removed to the original land surface so no new landform will be created. Existing and remnant contours are illustrated in **FIGURE EIGHT** and **FIGURE NINE** respectively.

SURFACE CONTOURING AND SOIL SURFACE PREPARATION

The condition of the remnant underlaying topsoil will determine to some extent what earthworks and surface preparation may be required.

From the hand auger surveys already performed by GER, a remnant soil profile is present beneath the pile, and it is unlikely that surface contouring and preparation will be required.

However, if surface contouring and preparation is required, all slopes within the removed stockpile area >5% will be contoured and flattened. It is acknowledged that this may not be feasible on the eastern edge of the pile where the natural ground level drains to the southeast and, therefore, in this instance, slope lengths will be minimised to reduce erosion by installing small contour banks in the final land surface.

Final preparation of the soil surface will involve the entire site to be raked and/or ripped, increasing the surface permeability of the site, and reducing compaction.

SURFACE STABILISATION AND SOIL AMELIORATION

Once the ilmenite stockpile has been removed to natural ground level, the remnant soil surface will require treatment to make it a suitable growing medium and avoid erosion.

GER will utilise hydromulch or hydrocompost treatments over the exposed surface once the pile has been completely removed.

Application of this material will be via a specialised hydraulic spray truck, and this will apply a layer of:

- Stabilising soil binder,
- Organic material comprising a mixture of sugar cane, recycled paper, and potentially wood fibre,
- Seed mix of cover crop and native seeds, and
- Specialised fertiliser mix, tailored to suit the sandy soils

GER's rehabilitation expert has found that for small sites and linear disturbances (such as roads, pipelines, and cuttings), hydromulching and / or hydrocomposting has become the preferred method of site rehabilitation. The technique is gaining popularity across a range of industries and provides the following advantages:

- Provides for rapid, one application erosion and sediment control,
- Provides a tailored layer of organic material to each site with resulting water application,
- Can evenly introduce seed, soil binders, soil treatments (clay breakers) and fertilisers to a site without driving on it (spray cannons can reach up to 50m and material can be delivered by hose),
- Lasts for typically 6 to 12 months+ depending on the treatments used, and
- Has been proven to improve the chances of germination and growth of seeded species and those present in the topsoil well above that achieved by seeding alone.

SEEDING AND PREFERRED SEED MIX

Seeding of the site will be undertaken mostly using hydromulch application but will also require some seed to be delivered to the remediated stockpile area by hand seeding. As with all rehabilitation activities, there are a variety of plants in the seed mix which have differing growth habits / germination triggers, and therefore, different seeding methods must be used.

The seed mix for the site has been prepared and can be found in **APPENDIX FIVE** and this outlines the key species GER feels are needed to achieve the target vegetation types. There will be a focus on canopy and pioneer species, as these will be critical to provide rapid establishment and address the weed issue and lack of good soil.

Seeding will be done using the following methods:

- Spread as part of hydromulching activities, through the hydromulch machine and applied along with organic material, binders, and fertilisers, and
- Spread by hand, either using a seed spreading machine (packed in packing material to ensure even coverage or using seed clay "balls". Seed "balls" are essentially coating more delicate or resource intensive seeds in a clay coating by hand. These are then air dried and thrown into existing vegetation (in this case, establishing cover crop and native grasses). The clay balls protect the seed from insects and animals, and only break down once significant rainfalls are received.

Seed will be sourced where possible from a local supplier, collected on site, or purchased from a not-for-profit bush care group.

MAINTENANCE AND ESTABLISHMENT MONITORING:

Selection of maintenance measures will be dependent on a range of environmental factors and will also be dependent on the expectations of the land custodian (Crown Lands).

For this reason, GER will continue to monitor the site post rehabilitation activities are complete and, if any significant issues that may hamper the rehabilitation outcomes are noted, these will then trigger a maintenance activity.

Expected maintenance activities that could be utilised on site include the following:

- Weed Control - As suggested above, it is expected that some weed re-establishment will occur on site forgoing rehabilitation treatments. Should this weed establishment be determined to be prohibiting rehabilitation success, herbicide or heat treatment can be employed to control weed outbreaks
- Supplemental watering - A water tanker will be utilised if required, due to lack of natural rainfall
- Maintenance fertiliser - often when undertaking rehabilitation, initial plant establishment can use up large amounts of nutrients and then the decomposition of the initial cover species can effectively result in Nitrogen deficiency of the remaining plants. This can be effectively treated with the application of a maintenance fertiliser at the 6-12-month phase of rehabilitation
- Supplemental seeding or planting - Studies from all round the world in rehabilitated landscapes have shown that plant establishment from seed is the preferred method for establishing a resilient plant community and certainly a plant community that is expected to establish on a bare site. Tube stock plantings require a very narrow window of conditions to be successful and, for this reason, they were not selected for the rehabilitation program. Should however, some of the plants fail to become established after seeding, some planting of additional tube stock may be undertaken to improve diversity and cover.

REHABILITATION COMPLETION CRITERIA

Success of the rehabilitation will be assessed at three years post establishment. Due to the small size of the disturbance footprint, short project life, and large rehabilitation effort, completion criteria, whilst basic, are relatively high and based on rehabilitation of similar landscapes after sand mining. GER propose to measure their success against the following criteria:

- At least 70% ground cover (litter and vegetation), measured from 1m height,
- A minimum of 300 stems per hectare for native trees and shrubs, consistent with species from any of the three target vegetation communities, and
- No visible signs of significant erosion

6. PROJECT DESCRIPTION – DEVELOPMENT SCHEDULE

The Project would require approximately 120 days for site establishment, and construction. Indicative timings are outlined in **TABLE TWO** below:

TABLE TWO EXPECTED SITE WORKS TIMING

Project Component	Expected timings
Project Establishment: Re-instate short access track to site, no clearing of established trees (some pruning of limbs may be required) Rock rubble will be placed on the existing access track to allow for all weather access Silt traps installed. Install boundary fence and gate, site office (demountable) and portable toilet.	5 days
Clearing: Demarcate works boundary and install flagging tape of trees to be retained Undertake raking of pile vegetation, with supervision of spotter catcher, remove raked weeds offsite or burn with assistance from local fire brigade	5 days
Operations: Remove pile by FEL or equivalent, and truck to port	120 days
Rehabilitation: Once pile is removed, rake and scarify old soil surface Undertake hydro mulching rehabilitation and supplementary planting as per the rehabilitation management plan Maintenance and monitoring	2-3 days, plus inspections / monitoring

7. STATUTORY CONTEXT

7.1.1.PERMISSIBILITY - State Environmental Planning Policy (State and Regional Development) 2011

The Project is classified as a State Significant Development (SSD) under Clause 8 of the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) as it a development that is:

- Permissible with consent under clause 7(1) (b) (i) of the Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP); and
- Specified in clause 5(1) (a) of Schedule 1 of the SRD SEPP because it is for mineral sands mining.

The Mining SEPP (see clause 3) is applicable because it involves:

- the removal of material (ilmenite stockpiles)
- for the purpose of obtaining ilmenite (a prescribed mineral under clause 5 and schedule 1 of the Mining Regulation 2016); and
- the subsequent rehabilitation of the Land.

A range of other State legislation, regulation and policies apply to the Project. The following presents a brief overview of the principal State planning matters relevant to the Project.

7.1.2.State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

This SEPP was gazetted on 17 February 2007 in recognition of the importance to NSW of mining, petroleum production and extractive industries.

The SEPP specifies matters requiring consideration in the assessment of any mining development including:

- compatibility of the proposed mine with other land uses,
- compatibility of the proposed mine with other mining, petroleum, or extractive industries,
- natural resource management and environmental management,
- resource recovery,
- transportation, and
- rehabilitation

These matters have been considered and are addressed in this EIS.

7.1.3.Other Environmental Planning Instruments

Other SEPPs to be addressed in the EIS include the following:

- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy (Rural Lands) 2008
- State Environmental Planning Policy (Koala Habitat Protection) 2019
- State Environmental Planning Policy No. 55 – Remediation of Land
- State Environmental Planning Policy No 33 – Hazardous and Offensive Development
- State Environmental Planning Policy (Coastal Management) 2018
- Kempsey Local Environmental Plan 2013

Where applicable these policies will be addressed in the assessments of impacts section of this EIS, and these are outlined in **TABLE THREE** below.

7.1.4. Kempsey Local Environmental Plan (KLEP)

Lot 2281/DP 115793 is currently zoned by the Kempsey Local Environmental Plan (2013) (KLEP) as Rural Landscape (RU2 - see **FIGURE FIVE**).

Rural Landscape (RU2) is defined under the Kempsey Local Environmental Plan 2013 (Current version for 14 Jul 2021 to date - accessed 1st Nov 2021 at 11:51). GER believes that the project proposal is permissible with consent as per the permitted uses for this zoning.

TABLE THREE - STATE ENVIRONMENTAL PROTECTION POLICIES

NSW State Environmental Protection Policies	Section Where Addressed
State Environmental Planning Policy (Aboriginal Land) 2019	Section Fifteen Appendix Fifteen Appendix Sixteen
State Environmental Planning Policy (Coastal Management) 2018)	N/A
State Environmental Planning Policy (Infrastructure) 2007	N/A
State Environmental Planning Policy (Koala Habitat Protection) 2019	Section Thirteen Appendix Thirteen Appendix Seventeen
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007	Section Three Section Seven
State Environmental Planning Policy No 33—Hazardous and Offensive Development	Section Twenty-Two Appendix One Appendix Two
State Environmental Planning Policy No 55—Remediation of Land	N/A
State Environmental Planning Policy (State and Regional Development) 2011	N/A
State Environmental Planning Policy (Rural Lands) 2008	N/A

7.1.5. NORTH COAST REGIONAL PLAN

The North Coast Regional Plan defines the natural environment of the region as panoramic coastal and rural landscapes, and one of the most biologically diverse regions in Australia, with natural resources that underpin industries, and which are the foundation upon which a significant tourism sector has been built. Key to the region is a desire to direct growth to locations that do not compromise the natural environment and will ensure that the region grows sustainably and in line with community aspirations.

The NSW Government's vision outlined in the North Coast Regional Plan is for the North Coast region to be:

"The best region in Australia to live, work and play thanks to its spectacular environment and vibrant communities."

To achieve this vision, the Government has set four goals for the region:

1. The most stunning environment in NSW
2. A thriving, interconnected economy
3. Vibrant and engaged communities
4. Great housing choice and lifestyle options

The GER resource recovery and remediation project aligns with Goal One of the plan in the following ways:

- Removing an existing waste stockpile
- Removing two hectares of weed growth and replacing it with native vegetation
- Removing accumulated dumped hard waste
- Restoring the natural ground surface and re-establishing the natural amenity of the site
- Preserving the natural environment that has recolonised the area
- Minimising disturbance to the stockpile location only, and
- Minimising the temporary disruption to the amenity of the Crescent Head community

Key to the project is the protection of koalas and their habitat, which is a key foundation of the regional plan. GER propose to increase the Koala habitat in the project location by planting of additional koala favoured species during site rehabilitation.

7.1.6.COMMONWEALTH PLANNING MATTERS

The Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) covers 'matters of national environmental significance', which among other things, includes listed threatened species and communities. The

The project did not require a referral to the Commonwealth Department of the Environment and Energy.

The Project does not trigger the water trigger under the EPBC Act as it is neither a coal seam gas nor a large coal mine.

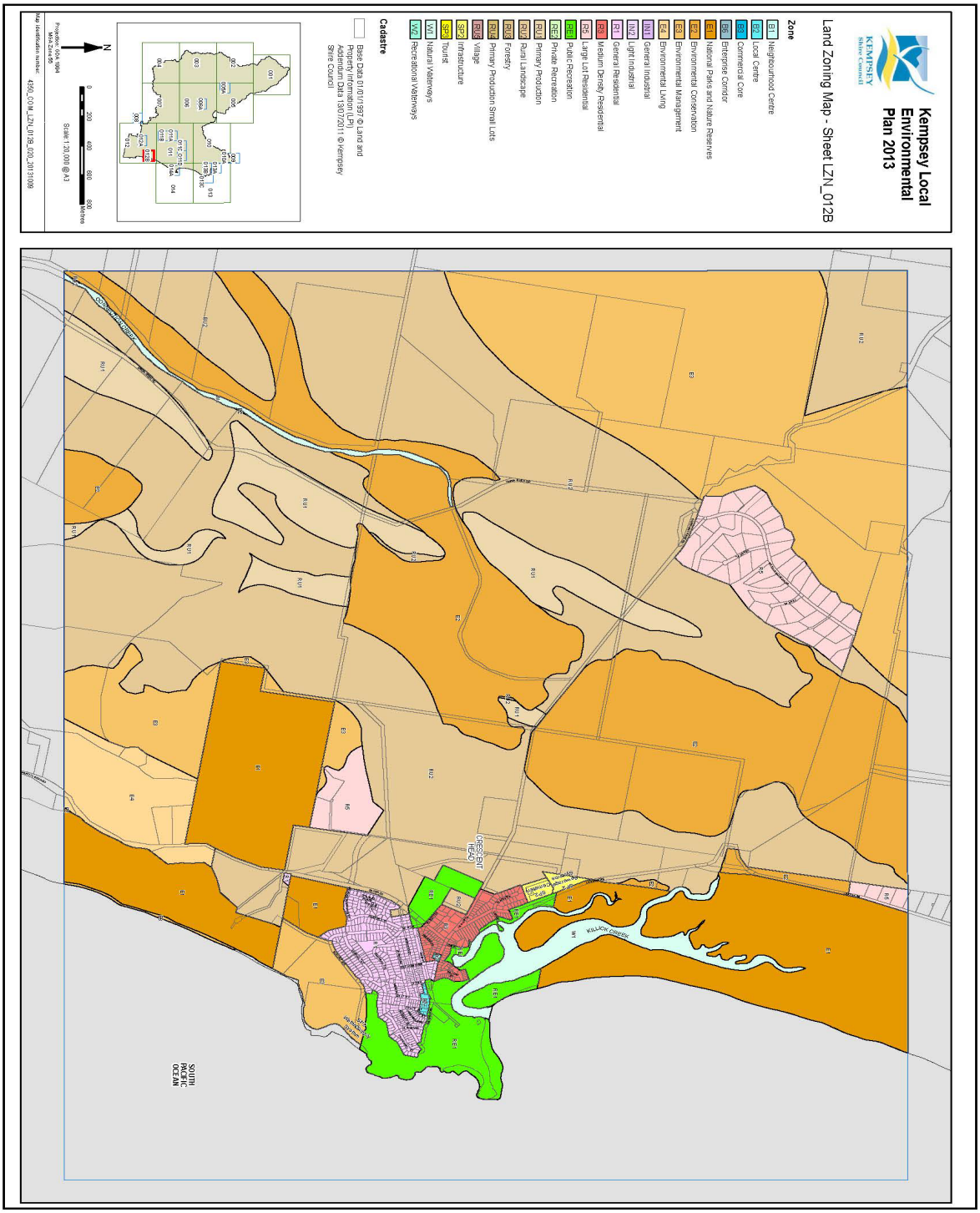
No species or ecological community listed under the EPBC Act was found to be significantly impacted during ecological assessments.

7.1.7.PREVIOUS SEARS ASSESSMENT

The Crescent Head Ilmenite Stockpile Economic Rehabilitation Project has applied previously for Environmental Assessment Requirements for the preparation of an Environmental Impact Statement (EIS), reference number ID1180.

A full EIS was prepared against SEAR's no. 1180, prior to the company being informed it was indeed State Significant Development. The previous EIS was then rejected by Kempsey Shire Council on the grounds that it was State Significant Development.

FIGURE FIVE. TENURE AND ZONING



7.1.8.Project approvals timeline

The following timeline is a summary of the steps GER has taken to gain access to the site for the purposes of preparing this EIS:

- November 2012 - Exploration Licence application ELA 4711 submitted by GER.
- December 2012 - Public consultation process commences, including publication of Exploration Licence Application (ELA 4711) details published in the Macleay Argus and Sydney Morning Herald newspapers (11 December 2012. **APPENDIX SIX**)
- May 2013 - Grant of EL 8085 to GER (under Mining Act, 1992) (16th May 2013, **APPENDIX SEVEN**)
- November 2013 - Landowner access arrangement signed with Crown Lands (18th of September 2013, **APPENDIX EIGHT**).
- January 2014 - GER completes a low impact exploration program of the ilmenite dump including surface sampling, hand auger drilling, laboratory analyses and a volumetric survey.
- January 2014 - GER establishes potential export market for the Crescent Head ilmenite indicating the project is economically viable.
- April 2017 - Appointment of planning consultants, Blueprint Planning Consultants to investigate requirements for approval and to coordinate SEAR's process
- 12 May 2017 - correspondence from Kempsey Shire Council confirms DA requirement, and initial environmental constraints identified.
- May - November 2017 - discussions with NSW Planning and Environment - Resources and Geosciences on approval pathway and investigations of Section 11A approval pathway (**APPENDIX NINE**). Subsequent advice that a SEARS was required received from NSW Planning and Environment - Resources and Geosciences and SEAR's process commenced
- 24 November 2017 - Receipt of SEARS assessment from NSW Planning and Environment - Resources and Geosciences (**APPENDIX TEN**)
- August 2017 - June 2018 - Undertake a full environmental impact assessment of the site as outlined in the SEARS
- 17 July 2017 – Renewal of EL 8085 under section 114 of the Mining Act 1992 for period of three years (**APPENDIX ELEVEN**)
- 17 August 2018 - GER Meeting with NSW Planning and Environment - Resources and Geosciences to finalise the appropriate approvals pathway for the project
- February 2019 - change of planning consultant from Blueprint Consulting to Pandanus Solutions due to timing issues
- February 2019 - Appointment of Pandanus Solutions to lead the preparation of the EIS based on the previous SEAR's advice, meeting outcomes from the 17th of August 2019 and including the new Biodiversity Assessment Method provisions of the revised Biodiversity Conservation Act (2016) for a Development Application with Kempsey Shire Council

- August 2019 - BAM process commenced
- May 2020 - BAM finalised
- 18 May 2020 - EIS submitted to Kempsey Shire Council
- 31 August 2020 – Comments on Draft EIS received from Kempsey Shire Council (**APPENDIX TWELVE**)
- 26 October 2020 – revised EIS documentation submitted to Kempsey Shire Council
- 15 April 2021- Kempsey Shire Council issued a request for further information, including a revised BDAR assessment.
- 7 May 2021 – GER responded and provided further information including revised BDAR
- 24 May 2021 - Kempsey Shire Council issued further request to assess the project against State Environmental Planning Policy 33 – Hazardous and Offensive Development. Noting GER had previously addressed the policy as the material is well below the levels of radiation indicated in the SEPP 33.
- June / July 2021 - Kempsey Shire Council then subsequently contacted GER during the months of June – July 2021, discussing the approvals pathway issue. Representatives of the Department of Planning, Industry and Environment were also included in that discussion. It was noted by all representatives of government that the original approvals pathway, initially recommended by state government was not supported by the legislation.
- 6 September 2021 - Kempsey Shire Council issued a decision to refuse the current development application as it deemed the proposal to be mining under the Kempsey Local Environment Plan 2013, which is declared to be a State Significant Development, and thus cannot be approved by council.

8. REGIONAL CONTEXT

A summary of the principal local and regional sensitivities / constraints is provided as follows. A full review of the local and regional context and constraints was previously provided in the EIS.

8.1.1.LAND OWNERSHIP

The project impact area and proposed Ilmenite removal operation sits on Crown Lands on Lot 2281 along Point Plomer Road, adjacent to the township of Crescent Head. (**FIGURE TWO**). Pending a successful EIS process, GER will convert the exploration tenure, EL8085 to mining lease tenure.

8.1.2.LAND USE CONSTRAINTS

Kempsey shire council has previously advised, through the previous SEAR's process, that, as minimum, the following site constraints were identified for Lot 2281 / DP 115793:

- Potential endangered ecological community
- Threatened fauna
- Wildlife corridor

- Koala Habitat - Comprehensive Koala plan of management: Class 1, 2A and Unknown
- SEPP 71 (note: repealed, replaced by SEPP Coastal Management 2018)
- SEPP 30 (note: repealed, replaced SEPP (Primary Production and Rural Development) 2019)
- SEPP 33
- Draft Contaminated Land
- Draft Coastal Management SEPP 2016 - Coastal Wetland and Coastal Wetlands 100m buffer

8.1.3.ECONOMIC CONSIDERATIONS

Whilst the project life is relatively short lived, there is potential for the project to contribute to both state and local economies, whilst providing an environmental benefit.

In addition to providing essentially free removal of a 100 000-tonne waste stockpile and invasive weeds on Crown Land, the project is expected to deliver the following economic benefits:

- Employment of 50 FTE for 120 Days, (based on 40 FTE for truck drivers, maintenance, and service staff, 5 FTE at Port and 5 FTE for site supervision) With the exception of Port personnel to be based in Newcastle, GER has committed to sourcing all other project personnel, where possible, from the Crescent Head and Kempsey Shire area.
- Up to $12 690 000 in Operating expenditure broken down as the following:
  - Stockpile recovery and rehabilitation activities - $100 000
  - Road Haulage - $3 500 000
  - Port Operations (preferred port is Newcastle) - $1100 000
  - Shipping - $4 500 000
  - Sales and commissions - $600 000
  - Royalties to NSW government - $590 000
  - Corporate and project expenditure - $1 900 000 and
  - Site administration - $100 000
- Due to the short project life (around 120 days) there is no Capex expenditure expected with all equipment to be hired or provided by local contractors
- An average sale price of USD $104.50 / tonne CFR China
- Total expected project revenue of $14 500 000

Unlike traditional mining projects, this resource recovery project will provide economic rehabilitation of an area that would previously have been the responsibility of the State or Local authority.

The economic rehabilitation model is founded in the genuine goal of economic return from a waste resource **AND** the rehabilitation of land as key parts of the same process.

It is also hoped that the project will potentially provide short term, direct employment to local people who may have experienced job losses and continue to have trouble obtaining work in the local area as a consequence of COVID-19.

8.1.4. PROJECT BENEFITS

Aside from generation of revenue for GER and state government through lease fees, bonds and royalties, the project will generate the following benefits for the local community and NSW in general.

EMPLOYMENT

As mentioned above, it is expected that up to 50 FTE will be required for a period of 120 days. Most of these employees will be contract or subcontract employees and GER has committed to sourcing these persons from the Crescent Head and Kempsey Shire area where possible (aside from Port personnel).

SOCIAL NEEDS

During the current economic climate, sources of employment within the Crescent Head area and the greater Kempsey Shire local government area are reducing due to the current economic recession and the effects of COVID-19 shutdowns and business closures. Of those affected most, casual, contract and part time employees are believed to be the most affected.

This project has the potential benefit of providing a short term, direct employment benefit to the local area and assist with providing more opportunities for local people seeking work.

RESTORATION OF CULTURAL HERITAGE

GER have been contacted by Mr. Reg Wooderson of the Dhungutti Elders by telephone on several occasions since mid-2020 to discuss the merits of the project.

Mr Wooderson on behalf of the elders has been supportive of the project and its objectives and expressed the desire to see the site rehabilitated. The Elders believe the site was once used as a significant women's camping area and they have a desire to rehabilitate the area to natural bushland. GER intend to continue to liaise with Mr Wooderson and involve him and the elders in the rehabilitation phase of the project.

RESTORATION OF ECOSYSTEM SERVICES AND AMENITY

Unlike traditional mining projects, resource recovery projects such as the one proposed have an additional benefit in that they seek to provide economic rehabilitation of an area that would previously be the responsibility of the state or local authority.

The economic rehabilitation model is founded in the genuine goal of economic return from a waste resource AND the rehabilitation of land as key parts of the same process.

The project will restore ecosystem services to the location, improving the overall habitat of the area as well as connectivity of the vegetation. Additionally, it will restore the natural drainage of the site, remove a source of weeds and rubbish, and restore the natural amenity.

8.1.5. CUMULATIVE IMPACTS

GER's proposal for the Crescent Head Ilmenite Stockpile Economic Rehabilitation Project is essentially a temporary land use and, as such, will only result in temporary impacts. The existing stockpile site is an abandoned legacy mining area left with little rehabilitation efforts, an ongoing legacy of the waste stockpile, and over one and a half hectares of ilmenite stockpile.

GER's proposal will clear only the weed covered stockpile, retain all of the significant habitat trees and vegetation on the site, and rehabilitate the stockpile footprint to native vegetation. The removal phase of the project is expected to occur over a six-month period and, once completed, the resulting rehabilitation works will leave the site in an improved condition from that which is existing now. No ongoing impacts will occur as a result of GER's proposal and the site, upon acceptance of the rehabilitation by the underlaying tenure holder (Crown Lands), will return to rehabilitated bushland status, with the stockpiled material, solid waste and weed infestation removed.

With the stockpile removal being a temporary land use, no ongoing impact is anticipated, therefore, no cumulative impact in line with the requirements of the Environmental Planning and Assessment Act (1979) is expected due to GER's project.

There are currently no impacts from construction or development in the adjoining land tenures and the one adjoining residence is established with extensive adjoining bushland and native vegetation. A search of the database of development applications and strategic planning documents for Kempsey Shire Council revealed no anticipated development in the area.

9. ENGAGEMENT STRATEGY

GER has been engaging with local council and stakeholders regarding this project since early 2012.

The project exploration tenure and DA has been advertised in the local paper at least three times with minimal response. The MLA was also advertised both locally and across NSW with no response. The project has a community Facebook page with the only response from to date from an individual asking about employment as a tree planter.

Engagement has been and continues to be undertaken to the extent practicable (with COVID-19 restrictions) in accordance with GER's Community Engagement Strategy. The Strategy is consistent with the engagement in EIA guideline, *Undertaking Engagement Guidelines for State Significant Projects* (DPIE 2021).

All of GER's personnel's responsibilities include stakeholder engagement responsibilities.

The key principles of GER's Community Engagement Strategy are as follows:

- Openness and honesty – GER have at all times sought to provide open and honest information about the Project as it grew from exploration prospect to mineral resource to an SSD Project.
- Approachable – GER has at all times sought to make its personnel available to the local community to answer question or provide information. This has included conversations during site investigations and interactions typical of a small, close-knit community (e.g., local coffee shops).
- Meaningful, relevant, and respectful – GER has at all times sought to provide information in a manner that is meaningful and relevant to the community and respectful of community concerns. This has resulted in the consultation being focused on those aspects that are important to the community (site access, truck operations, potential radiation and jobs, timing of the Project, business opportunities (wider community), as examples) and less on those aspects that are of less concern (biodiversity, groundwater, and air quality, as examples). GER has received support from the local progress association and aboriginal elders, who wish to see the site remediated.

GER identified the following broad groups with particular interest in the Project:

- Landholders along the Haulage route (direct impacts).
- Landholders in the vicinity of the proposed Mine Site and Haulage route (near neighbours).
- Residents of Crescent Head and Point Plomer Road.
- Businesses within Crescent Head and Point Plomer Road.
- Community groups, including clubs, service organisations and special interest groups.
- Local Aboriginal Community.
- Local Council.

- Government regulators and landowner representatives (NSW Parks and Wildlife Service and Crown Lands).

10. ENGAGEMENT

Stakeholder consultation for this project has been ongoing since Exploration Licence applications were made in early 2012. GER has discussed the project extensively with many levels of government to determine the most appropriate process for approvals. Additionally, through the public notification process of the ELA and MLA, as well as the council DA process, there has been limited comment / consultation with the community in general. A summary of this consultation is presented in the following sections.

GER has provided opportunities for community consultation at all stages of the project following the strategy outlined above and further detailed in **APPENDIX FOURTEEN – COMMUNITY ENGAGEMENT PLAN**.

10.1.1. Public Notification - Exploration Licence Application 4711 (Now EPM 8085)

Exploration Licence Application 4711 (ELA 4711, subsequently granted as EPM 8085) was advertised locally (Macleay Argus) and throughout New South Wales (Sydney Morning Herald) in December 2012, in accordance with the Mining Act. Copies of both the advertisements are presented in **APPENDIX SEVEN**.

The company received three telephone enquiries in response to the advertising. Two enquiries were from callers identifying themselves as local residents. In both cases the enquiries related to the potential for 'new mineral sand mining'. The company clarified that the project did not involve mining but rather the removal of former sand mining waste from a site near Crescent Head.

A third query was received by Mr John Jeayes, the Secretary of the North Coast Environment Council. Mr Jeayes was also initially concerned that mineral sand mining could be undertaken near Crescent Head. However, Mr Jeayes concern was allayed once the details of the project were described. Mr Jeayes subsequently discussed the project with a number of local residents, and the stockpile removal was mentioned in an Opinion Piece he wrote for the Macleay Argus in April 2013 (**APPENDIX SIX**).

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ELA 4711 was subsequently granted by NSW Trade & Investment, Resources & Energy as Exploration Permit (EPM) 8085 effective from 16th May 2013. EPM 4711 can be viewed by the public online at https://minview.geoscience.nsw.gov.au/.

10.1.2. Public Notification - Mining Lease Application 588

Mining Lease Application (MLA 588) was advertised locally (Macleay Argus) and throughout New South Wales (The Land) in July 2020 (**APPENDIX SIX**), in accordance with the Mining Act. Copies of both advertisements are attached. No public queries were received. MLA 588 can be viewed by the public online at https://minview.geoscience.nsw.gov.au/

10.1.3. Development Application T6-20-207

The company's Development Application T6-20-207 was placed on the Kempsey Shire Development Application Public Register on 1 June 2020. No public enquiries to date have been received by the company as a result of the DA. One enquiry has been received in relation to the Mining Lease application (discussed in section 5.1.5 below).

10.1.4. Traditional Landowners (KLAC)

The company has been dealing with the Kempsey Local Aboriginal Land Council to provide an Aboriginal Cultural Heritage Assessment. A site investigation was conducted by Mr Tim Hill of Everick Heritage Consultants and Mr Wayne Sines, Site Officer, on 29th January 2018 **(Section fifteen** and **APPENDIX FIFTEEN and SIXTEEN**).

The Assessment Report described the stockpile site to be covered by regrowth trees and invasive weeds. The report stated that no aboriginal artifacts were detected, and none are expected in future, given the nature of the site.

10.1.5. Dhungutti Elders in Council

Separate to the formal inspection of the site by KLAC, GER have been contacted by Mr. Reg Wooderson of the Dhungutti Elders by telephone on several occasions since mid-2020 to discuss the merits of the project.

As mentioned above, Mr Wooderson on behalf of the elders has been supportive of the project and its objectives and expressed the desire to see the site rehabilitated. GER intend to continue to liaise with Mr Wooderson and involve him and the elders in the rehabilitation phase of the project.

10.1.6. Department of Regional NSW- Mining, Exploration & Geoscience

The company has been liaising with Mining, Exploration & Geoscience since 2012, first during the granting of EL 8085 up to the submission of MLA 588, including numerous emails and phone calls, a video conference and face to face meetings in Maitland NSW held on 17th August 2019 and 12th February 2020. The Company has dealt with a number of people from the department over eight years, most recently the company has been liaising with Mr Peter Bower, Acting Senior Assessment Analyst – Resource Assessments in regard to MLA 588.

10.1.7.Crown Lands

GER has conducted ongoing liaison with Crown Lands since 2012. Crown Lands is the owner of the land the ilmenite stockpile sits on (Lot No 2281 DP 1153793)GER has liaised most recently with Mr David Baber, Projects Manager & Regional Projects to negotiate a land access agreement as part of the MLA. Prior to Mr Baber, GER dealt with Mr Terrence Hemmingway, Group Leader Property Management Mid North Coast Area Catchments and Lands, to approve land access to the stockpile during the exploration phase (now completed).
A draft Landowners compensation agreement and site rehabilitation plan has been reached with Crown Lands and NPWS.

10.1.8.National Parks and Wildlife Service

NPWS manage Lot No 2281 DP 1153793 on behalf of Crown Lands. GER has been liaising with Ms Janet Cavanaugh regarding the land access agreement with Crown Lands required as part of the MLA. As stated above, a draft Landowners compensation agreement and site rehabilitation plan has been reached with Crown Lands and NPWS.

10.1.9.Kempsey Shire Council

GER has been liaising with successive planning officers at Kempsey Shire Council since October 2019. Due to delays in completing the BDAR assessment, an extension to the SEAR's was required. This occurred during February 2020 and extensive consultation occurred with council whilst the SEARs was reviewed. Once a new SEARs was issued, submission for adequacy of the draft EIS was made to Kempsey Shire Council on the 19 May 2020.

A formal response was received on the 3rd of June 2020, and DA processing fees were paid at this point in the timeline. Due presumably to COVID-19 lockdown disruptions, no further responses were received from council despite follow up contact being made by GER until the 19th of August 2020, when comments were received on the EIS. A further letter with additional SEAR's concerns was received on the 31st of August 2020.

GER responded to these comments and submitted the revised EIS on the 26th of October 2020.

On the 15th of April 2021, a request for further information was made from Kempsey Shire Council, which was resolved without further submissions being required. Kempsey Shire Council also requested a revised BDAR assessment.

GER responded to these requests on the 7th of May 2021.

On the 24th of May 2021, Kempsey Shire Council contacted GER with additional concerns from the EPA asking for GER to assess the project against State Environmental Planning Policy 33 – Hazardous and Offensive Development. GER had previously addressed the policy as the material is well below the levels of radiation indicated in the SEPP 33.

Kempsey Shire Council then subsequently contacted GER during the months of June – July 2021, discussing the approvals pathway issue. Representatives of the Department of Planning, Industry and Environment were also included in that discussion. It was noted by all representatives of government that the original approvals pathway, initially recommended by state government was not supported by the legislation.

On the 6th of September 2021 Kempsey Shire Council issued a decision to refuse the current development application as it deemed the proposal to be mining under the Kempsey Local Environment Plan 2013, which is declared to be a State Significant Development, and thus cannot be approved by council.

11. ONGOING ENGAGEMENT

11.1.1.Community – Complaint Response

All complaints received will be recorded including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed, and actions taken. These actions are detailed fully in the Community Engagement Plan (**APPENDIX FOURTEEN**).

GER will establish a community feedback process where comments and concerns are relayed back to GER senior management, the site supervisor/superintendent, and the project environmental scientist directly via social media, phone and/or email, depending on their nature.

All complaints received will be logged, tracked, and responded to. The number and type of community concerns are reported on a weekly basis to GER management. The record of calls will include:

- The date and time of the complaint
- The method by which the complaint was made
- Any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect.
- The nature of the complaint
- The action taken by GER in relation to the complaint, including any follow-up contact with the complainant, and
- If no action was taken by GER, the reasons why no action was taken.

All complaints/community concerns will be addressed in accordance with GER's public Comments and Complaints Procedure.

11.1.2. Community – Project Perceptions

For the duration of the project GER will engage in regular community consultation and engagement activities including the following:

- **Onsite community briefings**: GER will hold open briefings with the Community, held on the project site prior to commencement of on-ground works. These meetings, led by GER management, are intended to provide community stakeholders with information about the project, address any community issues or concerns, and provide information on any concerns raised from the Community Concern Hotline.
- **Website and Facebook Links**: Once operational, GER will establish a website and Facebook page to provide updates on progress of the project and any site related issues that may arise. A "project days to completion" counter will be displayed on this page along with regular site photos and site contact numbers for the community concerns process (below).
- **Community Concerns Process**: GER will establish a community feedback process where comments and concerns are relayed back to GER senior management, the site supervisor/superintendent, and the project

environmental scientist directly via phone and/or email; depending on their nature. All calls received will be logged, tracked, and responded to. The number and type of community concerns are reported on a weekly basis to GER management. The record of calls will include:

- The date and time of the complaint.
- The method by which the complaint was made.
- Any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect.
- The nature of the complaint.
- The action taken by GER in relation to the complaint, including any follow-up contact with the complainant.
- If no action was taken by GER, the reasons why no action was taken.

- **Signage**: GER will erect suitable signs on the site perimeter and entrance to the project site informing the public of the project, the environmental and community benefits, and GER management/project site superintendent/emergency contact details.

12. ASSESSMENT OF IMPACTS - SEAR'S REQUIREMENTS

A Secretary's Environmental Assessment Requirements (SEAR's) was issued by the NSW Government - Planning and Environment, Resource and Energy Assessments section on the 2nd of December 2021.

The SEAR's requirements (SSD-30956841) are reproduced in **TABLE FOUR** below and detailed responses to the key issues are found in **sections Twelve to Twenty-Two**. A Sear's summary table, summarising the responses is found in **section Twenty-Three**.

TABLE FOUR- SEAR'S REQUIREMENTS:

Application Number	SSD-30956841
Project Name	Crescent Head Ilmenite Stockpile Rehabilitation Project
Location	Lot 2281/DP 115793 within Kempsey Shire
Applicant	GREENCOAST ENVIRONMENTAL REHABILITATION PTY LTD
Date of Issue	02/12/2021
General Requirements	The Environmental Impact Statement (EIS) for the development must comply with the requirements in Clauses 6 and 7 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000.* In particular, the EIS must include: • an executive summary; • a full description of the development, including: - a description of the geological setting and mineralogy of the stockpile material; - a site description and history of any previous mining on the site, including a current survey plan; - the layout of the proposed works and components (including any existing infrastructure that would be used for the development); - an assessment of the potential impacts of the development (including cumulative impacts), taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice; - a description of the measure that would be implemented to avoid, mitigate and/or offset these impacts; - a detailed rehabilitation plan for the site; - a list of any other approvals that must be obtained before the development may commence; - the permissibility of the development, including identification of the land use zoning of the site; - identification of sensitive receivers likely to be affected by the development using clear maps/plans, including key landform areas, such as conservation areas and waterways; • the reasons why the development should be approved • an evaluation of the project as a whole having regard to: – the requirements in Section 4.15 of the *Environmental Planning and Assessment Act 1979*, including the principles of ecologically

	sustainable development; – the suitability of the site with respect to potential land use conflicts with existing and future surrounding land uses; and – the strategic need and justification for the development, having regard to the relevant NSW and national policies and guidelines; – feasible alternatives to the development (and its key components), – including the consequences of not carrying out the development; and – the biophysical, economic, and social costs and benefits of the development; – a signed declaration from the author of the EIS, certifying that the information contained within the document is neither false nor misleading. – The EIS must also be accompanied by a report from a suitably qualified person that: – includes an accurate estimate of the capital investment value of the – development (as defined in Clause 3 of the Environmental Planning and Assessment Regulation 2000), including details of all the assumptions and components from which the capital investment value calculation is derived. The report must be prepared on company letterhead and indicate the applicable GST component of the CIV; – an estimate of the number of jobs that will be created during the construction of the development; and – certification that the information provided is accurate at the date of preparation.
Key issues	The level of assessment of likely impacts should be commensurate with the significance or degree or extent of impacts within the context of the proposed location and surrounding environment, and have regard to applicable NSW Government policies and guidelines; In particular, the EIS must address the following matters: • **Biodiversity** – including: - an assessment of the biodiversity values and the likely biodiversity impacts of the development in accordance with the Biodiversity Conservation Act 2016 (NSW), the Biodiversity Conservation Regulation 2017 (NSW) and the Biodiversity Assessment Method (BAM), and must be documented in a Biodiversity Development Assessment Report (BDAR); - the BDAR must document the application of the avoid, minimize and offset framework, including assessing all direct, indirect and prescribed impacts in accordance with the BAM. • **Water** – including: - an assessment of the likely impacts of the development (including flooding) on surface water and groundwater resources (including watercourses), wetlands, riparian land, groundwater dependent ecosystems, related infrastructure, surrounding Crown land, adjacent licensed water users and basic landholder rights; and measures proposed to monitor, reduce and mitigate these impacts;

	- a detailed site water balance for the project and a description of the water demands and identification of a water supply for the life of the project, and any water licensing requirements; and - a description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with Managing Urban Stormwater: Soils & Construction (Landcom 2004); • **Heritage** – including: - an assessment of the likely Aboriginal impacts of the development in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NEW South Wales (DECCW, 2010), including adequate consultation with the local Aboriginal community having regard to the Aboriginal Cultural Heritage Consultation Requirements for Proponents; - an assessment of likely non-Aboriginal heritage impacts of the project • **Land** – including an assessment of potential impacts on the quality and quantity of the soils (including contaminated and acid sulphate soils) and land capability of the site; the proposed mitigation, management and remedial measures (as appropriate); and an assessment of the compatibility of the development with other land uses in the vicinity of the development, in accordance with the requirements of Clause 12 of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007; • **Transport** – including an assessment of the site access route and likely transport impacts of the development on the capacity and condition of roads (including on any Crown land); a description of the measures that would be implemented to mitigate any impacts during construction; and a description of any proposed road upgrades developed in consultation with the relevant road (if required); • **Noise** – including an assessment of noise impacts including traffic noise, in accordance with the Noise Policy for Industry 2017, and a draft noise management plan if the assessment shows noise is likely to exceed applicable criteria; • **Air** – including an assessment of the likely air quality impacts of the development with a particular focus on dust emissions, including PM2.5 and PM10 emissions, and the mitigation measures that would be implemented to minimise dust emissions (including evidence that there are no other mitigation measures available other than those proposed); • **Visual** – including an assessment of the likely visual impacts of the development on private landowners in the vicinity of the development and key vantage points in the public domain, including with respect to any new landforms; and • **Rehabilitation** – including a detailed description of the proposed rehabilitation measures that would be undertaken throughout the development, a detailed rehabilitation strategy, including justification for the proposed final landform and consideration of the objectives of any relevant strategic land use plans or policies; and a description of the

	biosecurity measures to prevent the introduction of weeds and pests. • **Hazards and Radiation** – an assessment of potential radioactivity associated with the ilmenite stockpile against the NSW Radiation Control Action 1990 and Radiation Control Regulation 2013, and the proposed measures for management and handling of any radioactive material •
Plans and Documents	The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Regulation. Provide these as part of the EIS rather than as separate documents. In addition, the EIS must include high quality files of maps and figures of the subject site and proposal.
Engagement	During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. The EIS must detail the engagement undertaken and demonstrate how it was consistent with the Undertaking Engagement Guide: Guidance for State Significant Projects. The EIS must detail how issues raised and feedback provided have been considered and responded to in the project.
Expiry Date	If you do not lodge a Development Application and EIS for the development within 2 years of the issue date of these SEARs, your SEARs will expire. If an extension to these SEARs will be required, please consult with the Planning Secretary 3 months prior to the expiry date.
References	The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. While not exhaustive, the following attachment contains a list of some of the guidelines, policies, and plans that may be relevant to the environmental assessment of this proposal.

The following sections detail GER's response to the Secretary's Environmental Assessment Requirements (SEAR's) for the economic rehabilitation and removal of the Crescent Head ilmenite stockpile.

Each environmental value contains a summary of the existing environment, detailed assessment of the potential impacts and proposed mitigation strategies.

13. ASSESSMENT OF IMPACTS – BIODIVERSITY

13.1.1.Existing Environment – Biodiversity

The site is located within the Kempsey Local Government Area. The shire falls within the NSW North Coast Interim Biodiversity Regionalisation for Australia Region and Macleay-Hastings Subregion. The Impact Area footprint is located on an Alluvial Plain System of Quaternary alluvial and colluvial fan comprising fluvial sand, silt, gravel, and clay, which extends to the south of the site. The soils immediately south of the stockpile have a high probability of occurrence of Acid Sulfate Soils, while the soils under the stockpile itself have not been assessed due to the project not proposing to disturb below the existing soil profile.

The topography of the subject property surrounding the stockpile is flat with a gradual southeast slope towards the beach. The elevation of the stockpile varies from 6m to 13m. Removal of the stockpile is expected to result in a ground profile similar to the surrounding gently undulating topography. The drainage of the stockpile and underlying ground surface (quartz sand) reflects the low runoff and high infiltration capacity of black and quartz sand. A shallow drainage trench on the eastern boundary of the stockpile is likely to be a relic from sand mining operations and tends to contain standing water at the southern end.

Two first order streams occur in close proximity but outside the proposed resource recovery footprint. There are no Important Wetlands within close proximity to the site as defined in "*A Directory of Important Wetlands in Australia*" (Department of Agriculture, Water, and the Environment 2022)

On a broad scale, the subject property falls entirely within the *Northeast NSW Fauna Corridor* and the *Northeast NSW Climate Change Corridor*, is surrounded by NPWS Estate and is adjacent to Fauna Key Habitats. On a local scale, the subject property is primarily vegetated, supporting a mixture of remnant and regenerating native vegetation communities and exotic species. The total extent of native vegetation within a 1500m buffer area extending from, and including the subject property, has been calculated as 62%.

The total area of native vegetation inside the buffer area is contiguous and extends for considerable distances outside the buffer area and forms one patch which exceeds the maximum patch class size of >100ha under the Biodiversity Assessment Method process.

The primary aims of the assessment procedures were to obtain appropriate data for the impact assessment process, and to comply with the *Biodiversity Assessment Method Order 2020* requirements. Integral to the assessment process has been the due consideration of relevant procedures as required under the BAM, whilst also taking into account the limited nature of the proposed resource recovery and specific site attributes.

Thus, there has been a robust desktop assessment process, in conjunction with site-specific surveys, the latter focusing primarily on vegetation community attributes via plot sampling, general and threatened plant species surveys and target threatened fauna species surveys. Specific procedures included small mammal Elliott trapping, spotlighting, harp trapping, microbat call detection, hair tube trapping and Koala SAT Plot sampling.

KEY SURVEY RESULTS - FLORA

Five Plant Community Types (**FIGURE SIX**) have been identified as occurring on the subject property, these are described as the following.

1. PCT 686 - Blackbutt - Pink Bloodwood shrubby open forest of the coastal lowlands of the NSW North Coast Bioregion

2. PCT 1064 - Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion

3. PCT 1230 - Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion

4. PCT 1235 - Swamp Oak swamp forest of the coastal lowlands of the NSW North Coast Bioregion; and

5. PCT 1536 - Tuckeroo - Lilly Pilly - Coast Banksia littoral rainforest.

The remnant and regenerating vegetation with the Impact Area have been assigned to Plant Community Type 1230 and Plant Community Type 1235 based on species occurrence recorded in plot data in 2019/2020.

Importantly, these community identifications are considered as 'best fit' only and should be viewed in the context of recognising that the vegetation occurring on an ilmenite stockpile would not be representative of a natural system. Neither Plant Community Type on the stockpile represents a swampy system.

The surveys yielded 66 native plant species overall, as well as 10 weed species, of which seven were *High Threat Weeds* as listed under the *Biodiversity Conservation Act 2016*.

KEY SURVEY RESULTS - FAUNA

Fauna surveys yielded 20 bird species, 10 mammal species and three reptile species occurring within the subject property, the majority from within habitats occurring on the stockpile. Additional species would be expected to be recorded over time, but the majority of species would be expected to frequent the forest/woodland habitats outside the proposed Impact Area.

KEY SURVEY RESULTS - THREATENED SPECIES

No threatened flora species were recorded during the site surveys, although there is always some potential for threatened species to occur. This would be most likely within the more extensive and higher condition habitats adjoining the stockpile area.

Two threatened mammal species were recorded during field surveys. The Koala (*Phascolarctos cinereus*) was recorded from one pellet sample within the northern forest woodland remnant to be retained within the stockpile footprint. The results indicate the stockpile habitats to be 'low use' habitat for the species. Microbat detection surveys also yielded one record of the Little Bent-winged Bat (*Miniopterus australis*). One threatened bird species, the Little Lorikeet (*Glossopsitta pusilla*), was tentatively identified flying through the subject property. None of these three species would have any reliance on the habitats occurring within the

resource recovery /proposed Impact Area, although they may pass through/over the area. The lorikeet and microbat also could use the habitat for very limited foraging purposes. Two other threatened mammal species, the Brush-tailed Phascogale (*Phascogale tapoatafa*) and the Common Planigale (*Planigale maculata*), were not detected during the field surveys. However, owing to some limitations in the surveys in the context of additional survey requirements under the *Biodiversity Assessment Method Order 2020* and logistical issues with sampling techniques, these species were assumed to be present for the purposes of the assessment process.

CONCLUSIONS

The following conclusions have been made on the basis of the Biodiversity Assessment Method process for the project:

- The subject property forms part of a patch of remnant and regenerating bushland, well connected with other coastal vegetation in the area and represents part of a defined wildlife corridor and key fauna habitat area;
- The total extent of native vegetation within the 1500 m buffer for the subject property has been estimated to be 62%;
- The resource recovery/Impact Area and subject property have been subject to substantial past disturbances associated with sand mining operations in the 1950s to 1980s. The ilmenite stockpile was formed during the course of the sand mining activities;
- The majority of the resource recovery /Impact Area has been cleared previously, these areas supporting varying stages and forms of natural regeneration, as well as some dense Lantana infestations. Only two small patches of remnant forest/woodland remnant and regenerating vegetation remain within the general stockpile area;
- Five Plant Community Types have been identified as occurring on the subject property, with the identification of Plant Community Types occurring on the stockpile considered as 'best fit' only. Vegetation occurring on the ilmenite stockpile would not be representative of a natural system;
- Both Plant Community Types identified within the resource recovery /Impact Area can represent Threatened Ecological Communities but the occurrence of these communities on an elevated ilmenite stockpile renders both communities as not conforming to the definition of the associated Threatened Ecological Communities listed under the Biodiversity Conservation Act 2016,
- No threatened flora species has been detected on the subject property, or within the resource recovery /Impact Area, although there remains minor potential for such species to occur in the main body of vegetation beyond the ilmenite stockpile to be retained;
- One threatened fauna species, the Koala, was detected from one Koala pellet in one of the remnant forest/woodland patches to be retained. The results indicate that the stockpile habitat represents 'low use' Koala habitat;
- There was a tentative record of another threatened fauna species, the Little Lorikeet, flying through the subject property and microbat detection surveys yielded one record of the Little Bent-winged Bat. None of these

three species would have any reliance on the habitats occurring within the resource recovery /Impact Area, although they may pass through/over the area. Two small mammal species, the Brush-tailed Phascogale and Common Planigale have been assumed to be present on the site;

- Development of the site will require the clearing of a total of 1.35 ha of regenerating vegetation, comprising 1.26 ha of low condition Plant Community Type 1230, and 0.09 ha of moderate condition Plant Community Type 1235. No old growth or large mature trees will be removed and the majority of young trees to be removed are less than 20 cm diameter breast height;
- The potential for Serious and Irreversible Impacts associated with the project appears to be minimal;
- The two patches of remnant and regenerating forest/woodland supporting Koala Food Trees will be retained and protected;
- All vegetation beyond the resource recovery /Impact Area, which encompasses some areas of Threatened Ecological Communities, will be retained and protected from disturbance during the course of the resource recovery operations;
- Eleven credits are required to be retired for each of the two threatened fauna species assumed to be present (the Brush-tailed Phascogale and the Common Planigale), and the proposed clearing activities also trigger the requirements for 3 ecosystem credits to be retired;
- The detailed measures required to protect vegetation to be retained, and to rehabilitate and revegetate the ilmenite stockpile post resource recovery operations will be provided in a site-specific Revegetation/Rehabilitation Management Plan prior to the commencement of works on the subject property;
- The project will result in a short-term loss in existing, but limited biodiversity values within the resource recovery /Impact Area, and short term (approximately 36 months) increases in local noise levels. The overall outcome in the long term, however, is expected to be an improvement in biodiversity on the subject property.

The following broad measures are recommended to minimise short term risks of damage to habitat to be protected, or injury to fauna during clearing operations, and to maximise the potential for long term positive biodiversity outcomes from the resource recovery project as a whole:

- All clearing and construction works follow best practice procedure, incorporating the measures provided in Chapter 6 of this BDAR; and
- Habitat regeneration, enhancement processes and weed control measures be detailed in a site-specific Revegetation/Rehabilitation Management Plan for the property.

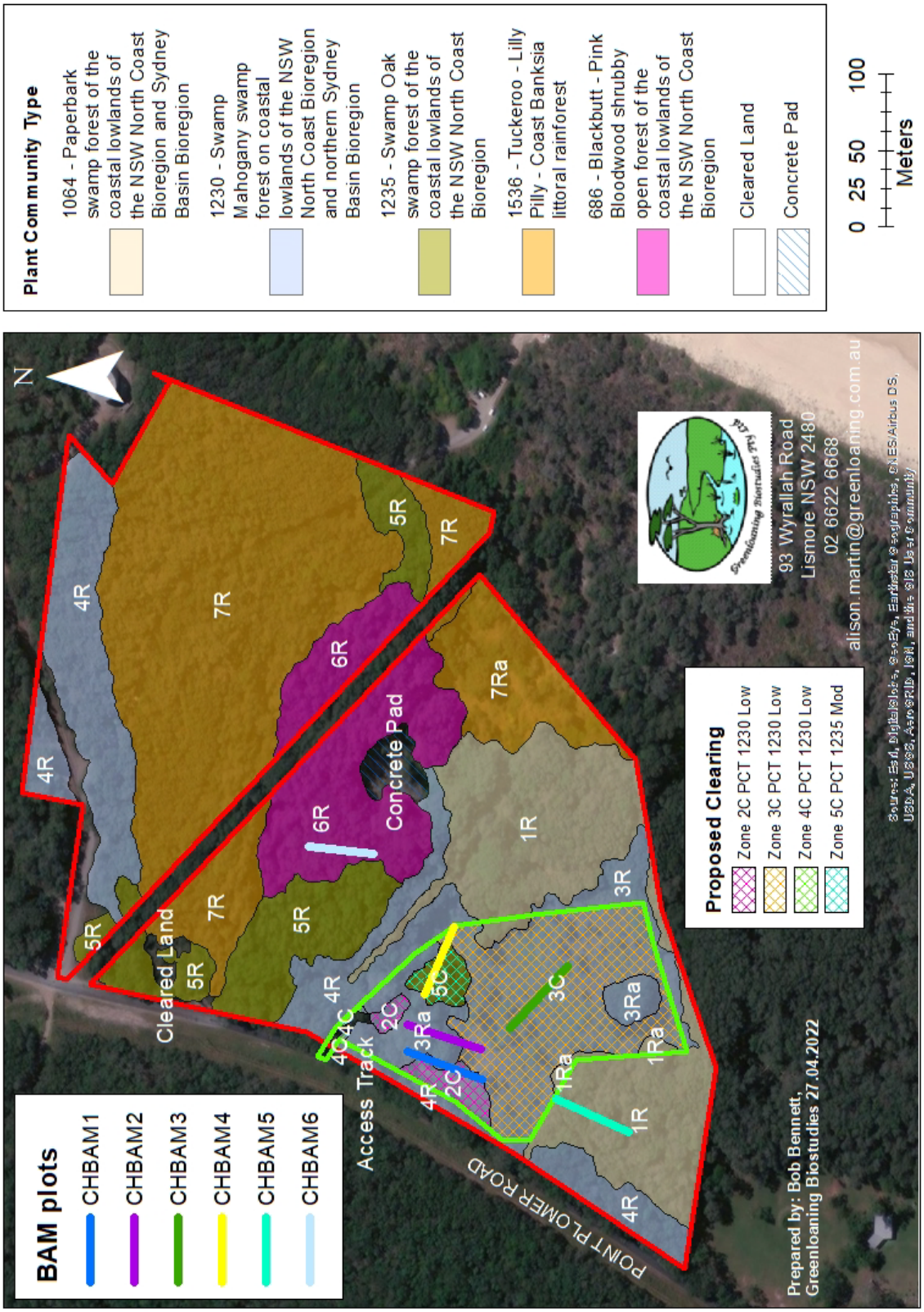
PLATE FIVE - STOCKPILE VEGETATION

PLATE SIX- STOCKPILE VEGETATION

PLATE SEVEN- HABITAT TREES OUTSIDE THE DISTURBANCE AREA

PLATE 8 - HABITAT TREES ON THE POINT PLOMER ROAD VERGE - NOT TO BE DISTURBED

FIGURE SIX - PLANT COMMUNITY TYPES



13.1.2.Potential direct impacts – Biodiversity

Sources of impacts that would have direct effects on potential threatened species' habitats and threatened ecological communities/TECs, comprise the following:

- Proposed clearing activities associated with the resource recovery process
- Increased fragmentation of habitat to be retained within the general stockpile footprint until regeneration/rehabilitation works have progressed sufficiently to provide some cover
- Inadvertent physical damage to habitat features/vegetation from machinery working adjacent to areas to be retained, and
- Injury to ground dwelling fauna or fauna roosting/nesting in trees to be cleared.

CLEARING ACTIVITIES

The extent of proposed clearing of native vegetation is approximately 1.35 ha, with the clearing primarily comprising the removal of 1.26 ha of low condition regenerating vegetation, with an additional 0.09 ha of moderate condition regenerating Swamp Oak forest. The outline of the resource recovery footprint (Impact Area), encompassing all of the vegetation/habitats to be cleared (Zones 2c, 3c, 4c and 5c), is indicated on **FIGURE SIX**. The total Impact Area encompasses the majority of the identified ilmenite stockpile and access track, the latter comprising 0.01 ha, currently with a cover of exotic grasses and encroaching Lantana. The full extent of the stockpile, plus the access track area, is shown on **FIGURE ONE**.

The extent of clearing of trees is restricted to the area of regenerating Swamp Oak forest and isolated trees occurring within Zones 2c and 3c. Occasional small saplings of tree species also may be included in the clearing operations, such as along the edges of the access track. The majority of trees within the plot less than 20 cm diameter at breast height. Two young Forest Red Gum trees (Eucalyptus tereticornis) on the edge of the plot and community and clearing of these trees will be avoided if possible. Scattered small trees or saplings occurring within Zones 2c and 3c also are generally less than 20 cm, two more mature trees recorded within Plot 3 being less than 30cm dbh and less than 50cm dbh respectively.

The removal of the regenerating habitats within Zones 2c, 3c, 4c and 5c is highly unlikely to cause significant adverse effects on any threatened species recorded in the general stockpile area. Key factors influencing this assessment are the general absence of KFTs within the regenerating habitats, in conjunction with a lack of a tree canopy, lack of any potential breeding habitat for the Little Bent-winged Bat and minimal foraging resources for the Little Lorikeet. Thus, the potential for Serious and Irreversible Impacts (SAIIs) associated with the proposed resource recovery operations seems to be minimal.

HABITAT FRAGMENTATION

The extent of increased fragmentation of habitat will be relatively minor, given that the overall Impact Area is less than 1.5 ha and both patches of PCT 1230 to be retained are less than 50 m from nearby forest vegetation to be retained. Connectivity similar to the existing level would be expected to be restored within a few years as a result of revegetation/rehabilitation processes.

INADVERTENT PHYSICAL DAMAGE TO HABITAT FEATURES/VEGETATION DURING CONSTRUCTION

Sources of such impacts could include machinery damage to adjoining vegetation, soil compaction around trees to be retained, spillage/placement of fuel/oil on vegetation to be retained or regular movement of resource recovery personnel outside the resource recovery footprint.

INJURY TO FAUNA

Pre-clearing surveys will be undertaken to ensure the risk of any injury to native fauna is minimised. The overall level of risk to fauna is considered to be very low, providing such surveys are undertaken.

13.1.3.Potential indirect impacts – biodiversity

Potential indirect impacts associated with the proposed resource recovery that could potentially adversely affect adjoining TECs and potential threatened species habitat include:

- Edge effects from clearing adjacent vegetation
- Increased noise levels disturbing breeding/nesting activities of fauna species in adjacent habitats
- Alteration of natural hydrology
- Introduction of additional exotic weeds from contaminated machinery or footwear
- Spread of weeds/disease through machinery movements; and
- Temporary increased levels of disturbance and noise associated with the resource recovery operations

EDGE EFFECTS

Vegetation remnants within the Impact Area and subject site as a whole have already been subject to substantial edge effects, and there are heavy weed infestations along most vegetation boundaries, as well as within communities. The resource recovery process will not be clearing into any established remnant vegetation and the potential for increased edge effects is considered to be minor.

ALTERATION OF NATURAL HYDROLOGY

The resource recovery process will not be changing the alignment of any watercourses/drainage lines but will simply be returning the ground level to the original condition. The natural hydrology therefore is more likely to be restored than altered.

INTRODUCTION OF ADDITIONAL EXOTIC WEEDS

There is always the potential for additional weed species to be introduced by way of unclean vehicles, machinery or personnel clothing or footwear. It is recognised that removing all such risk is very difficult, but it will be important to minimise the potential for new weed infestations as much as possible.

SPREAD OF WEEDS/DISEASE

Given the extent of existing weed infestation over most of the Impact Area and adjoining habitats, the potential for spreading of weeds already present is

considered to be low. There are no known disease issues on site , but the provision for routine hygiene measures and general vigilance for such diseases as Myrtle Rust are outlined in the Project Execution Plan.

TEMPORARY INCREASED LEVELS OF DISTURBANCE AND NOISE

There will be some increased on-site noise associated with the machinery to be used to recover the ilmenite resource. Machinery to be used will comprise an excavator and front-end loader (FEL). Although the site is immediately adjacent to a relatively busy road with regular (but not constant) traffic, the machine activity and noise levels on the site are likely to raise the disturbance level to fauna in adjacent habitats to some extent.

13.1.4.Potential for Prescribed Impacts

Prescribed impacts comprise either direct or indirect impacts, described under s 6.1 of the BAM 2020 as impacts:

a. on the habitat of threatened entities including:
    i. karst, caves, crevices, cliffs, rocks and other geological features of significance, or
    ii. human-made structures, or
    iii. non-native vegetation
b. on areas connecting threatened species habitat, such as movement corridors
c. that affect water quality, water bodies and hydrological processes that sustain threatened entities (including from subsidence or upsidence from underground mining)
d. on threatened and protected animals from turbine strikes from a wind farm
e. on threatened species or fauna that are part of a TEC from vehicle strikes.

Of the above matters, the most relevant to the subject site are impacts on non-native vegetation and on areas connecting threatened species habitat There are no karsts, cliffs, geological features of significance, or human-made structures on the site. The project does not entail any new effects on water quality etc. It is not a proposed wind farm and the extent of proposed activity on the site is not likely to increase the risk of vehicle strikes.

Clearing of a total of approximately 1.35 ha of previously cleared and regenerating land, much of which has substantial HTW infestations, is unavoidable if the proposed resource recovery project is to proceed. The extent of clearing has been minimised however, by ensuring the resource recovery operations are to be located within the existing previously cleared area and not impinge on the small remnant forest/woodland areas supporting Koala Food Trees and old growth/large mature trees, nor on the adjoining forested areas representing Threatened Ecological Communities.

The clearing operations trigger the requirement for a total of 3 ecosystem credits to be retired under the Biodiversity Offset Scheme.

There will be some minor increases in habitat fragmentation within the ilmenite stockpile footprint for the duration of the resource recovery process and subsequent early stages of regeneration/rehabilitation of the Impact Area. There also will be some short term (approximately 36 weeks) increase in diurnal noise levels during weekdays. However, no threatened flora or fauna species is

considered likely to be significantly adversely affected by the clearing activities and subsequent works within the resource recovery area. A range of mitigation measures are proposed to minimise any risks of physical damage to Koala Food Trees and habitat to be retained, and injury to fauna species from clearing operations or ongoing resource recovery procedures.

13.1.5.Mitigation – Biodiversity

AVOIDANCE OF IMPACTS

Direct impacts on TECs will be avoided by the restriction of clearing and resource recovery operations to the defined resource recovery Impact Area, as shown on **FIGURE SIX** and the retention and protection of the remainder of the vegetation within the subject property. Although the PCTs defined as occurring within the Impact Area can represent remnant/regenerating forms of TECs, as described in, the representations of these PCTs within the stockpile and Impact Area do not represent TECs.

No threatened flora was detected within these communities but protection of the vegetation zones adjoining the Impact Area and stockpile also will protect potential threatened flora species habitat in these areas. This also will serve to protect habitat considered to have some potential to provide temporary or occasional foraging or roosting habitat for some threatened fauna species which have been tentatively identified or assumed to occur on the subject property for the purpose of this BDAR. The total area of vegetation for which any clearing is to be avoided totals approximately 10.9 ha.

MINIMISING IMPACTS ON BIODIVERSITY

The following procedures are proposed to ensure that all impacts, or potential impacts, are either avoided or minimised as much as possible and any risks to individuals of fauna species that may be present during clearing activities and subsequent resource recovery operations are minimal:

- Maintenance and protection of all vegetation outside the impact area and thus within the designated area for conservation
- Prior to the commencement of any construction works on site, clear marking of any trees to be protected in the immediate vicinity of clearing and distinctive marking of trees to be removed, such that there is no room for confusion regarding tree removal/protection. KFTs will be a priority for this procedure
- Clear delineation of the total Impact Area to avoid any confusion by resource recovery machinery operator/s
- Pre-clearing checks by a suitably qualified ecologist to be undertaken immediately prior to clearing activities to ensure there are no fauna issues, such as small ground fauna sheltering in dense grass/ground cover, nesting birds, roosting microbats, requiring specific remedial actions. In the unlikely scenario of an individual Koala being located in one of the trees within Zones 2c, 3c, or 5c immediately prior to clearing, a buffer of 10m will be established around the tree and the Koala left to move on of its own accord
- Simple management protocols to be prepared to provide standard procedures for on-site workers in the event of any issues with wildlife arising during the resource recovery operations, e.g., inadvertent injury to any fauna,

observation of a Koala or other fauna showing signs of disease, or a bird establishing a nest in one of the few trees to be cleared

- Supervision of clearing operations by a suitably qualified ecologist/fauna spotter/wildlife carer if potential fauna issues are identified
- Ongoing restriction of resource recovery operations to daylight hours, over a maximum of five days a week, for approximately 36 weeks
- Ongoing maintenance of best practice on-site biosecurity hygiene measures for machinery and on-site personnel to minimise the risk of introducing or spreading exotic weeds, pests or diseases, and
- Development and implementation of an approved Rehabilitation Plan (**Appendix FIVE**), which will identify appropriate management zones for remaining vegetation on the Site and for effective rehabilitation of the areas to be cleared. The Plan will prescribe management measures, including planting and weed control procedures and measure to minimise the risk of introducing or spreading plant diseases. KFTs are recommended to be a priority for proposed plantings post resource recovery.

OFFSETS

The outcomes from the Biodiversity Assessment Calculator are summarised in the Calculator reports provided in **Appendix THIRTEEN** and vegetation integrity scores are provided in Table 4.4 of the report. As could be expected, the vegetation integrity score (overall condition) of Zone 3c, encompassing the majority of the resource recovery /impact area, was very low.

The vegetation integrity score of 14.3 thus was below the threshold level requiring further assessment for a non-TEC or threatened species habitat and no offsets would be required for the disturbance to this vegetation community. The retirement of 3 credits, however, is required for the other vegetation zones within the Impact Area.

As no threatened flora was detected within the Impact Area as a whole, no credit requirements were generated for flora 'species credit species.' However, for the two threatened fauna 'species credit species' assumed to be present within the Impact Area, 11 credit requirements were generated for each of these 'species credit species.' The Credit Summary Report generated from the project BAM Calculator assessment is provided in **Appendix THIRTEEN.**

MANAGEMENT ISSUES AND KEY THREATENING PROCESSES

The primary management issues or factors requiring consideration as identified for the subject property, and more particularly the Impact Area to be rehabilitated/revegetated comprise:

- Ongoing weed control and potential for new weed infestations;
- Potential for introduction of plant disease (Myrtle Rust) with revegetation procedures;
- Changed topography and associated changes back to drainage patters more closely aligned with the original drainage patterns in the general environs of the stockpile; and
- Variations in seasonal conditions inhibiting successful outcomes.

Weed species pose the most significant threat to successful site rehabilitation and some species are identified as key threats within the nearby Goolawah National Park. These include Bitou Bush, Lantana and Winter Senna (Senna pendula var. glabrata); exotic grasses such as Broad-leaved Paspalum (Paspalum distichum), and exotic vines such as Coastal Morning Glory (Ipomoea cairica) and Asparagus spp. (DPIE, 2014).

Myrtle Rust is a fungal disease of plants which affects soft, actively growing leaves, shoots and young stems. It is spread by wind, insects, water and animals and can be carried on infected plant material on equipment, vehicles and clothing. It affects species of the Myrtaceae family, including eucalypts, paperbarks (Melaleuca spp.), tea tree species (Leptospermum spp.), Angophora spp. and bloodwoods (Coymbia spp.) (Department of Primary Industries 2022, Soewarto et al, 2019). The disease was not observed in the vicinity of the subject site and impact area but is known from the North Coast in general. Specific measures to minimize the risk of introducing/spreading this disease are incorporated into the Project Execution Plan but will primarily comprise standard best practice hygiene measures with equipment, clothing and vehicles.

14. ASSESSMENT OF IMPACTS – WATER

14.1.1.Existing Environment – Water

GER's proposal is a short-term land remediation project that will not alter the majority of Lot 2281, nor will it change the natural physical landscape.

The end goal of the project will be the complete removal of the ilmenite stockpile to natural ground level and then the rehabilitation of the site to natural bushland. The project will, therefore, have little short-term impact and no long-term impact on the coastal processes and coastal hazards on the lot or on adjacent land.

The proposal is not identified for any management action under either the coastal zone management plan or the floodplain risk management plans.

A flood search (**APPENDIX TWENTY**) was undertaken, and project area is classified as flood prone. GER is not proposing any permanent structures on the site and this, coupled with the very short project time window, is not expected to create a significant risk with regards to removal of the stockpile.

GER commissioned Bravo Resources to investigate potential groundwater and stormwater impacts / erosion hazard of the Lot (**APPENDIX TWENTY-ONE**).

WATER INFLUENCES ON THE PROJECT AREA

The ilmenite stockpile and the underlying quartz sand at the Project Site are both Group-A Soils. Group-A Soils have very low runoff potential and water is expected to move through the soil profile relatively quickly. High infiltration capacity at the Project Site is confirmed by the absence of drainage lines or areas of surface water ponding, even in low lying areas of the ilmenite stockpile.

Infiltration capacity is highest when the sand is dry and declines once it is saturated. Group-A Soils have both very high initial infiltration capacities, typically around 60mm/hour, and long-term infiltration capacities, typically ranging between 180 - 275mm/day.

For a 15-minute TOC and 10% AEP storm, a depth of 30mm is predicted at the Project Site. This indicates that for the design storm event, no runoff is expected at the Project Site, as the estimated initial infiltration capacity (60mm) is double the expected water depth (30mm).

For longer duration rain events, the data in Figure 2 shows only nine days since 1961 where daily rainfall has exceeded the estimated minimum long-term infiltration capacity of 180mm, and only one day in excess of the estimated maximum long-term capacity 275mm. This indicates that the Project Site will not shed runoff except during extreme long-duration rain events.

Hand auger drilling completed by GER (14 holes) suggests that, once the stockpile has been removed, the resulting gently undulating natural ground profile will be similar to surrounding natural topography (**FIGURE SEVEN** existing surface contours and **FIGURE EIGHT** expected surface contours).

Surface water is likely to infiltrate into the sand after rain, with little or no ponding or runoff. Erosion is unlikely to occur in the short term, due to the relatively flat natural topography and lack of runoff, and once the stockpile footprint has been revegetated, raindrop impact on the soil will be minimal.

There are no surface water features on the ilmenite stockpile. The main surface water feature in the vicinity of the Project Site is an existing shallow drainage trench, which is believed to have been cut when MDL operated the site (refer **FIGURES TWO AND THREE**). The drainage trench runs for about 230m on the eastern boundary of the stockpile. The southern end of the trench usually contains standing water, which is likely at a similar elevation as the local water table, while the remainder of the trench is normally dry.

GER's activities are restricted to removing and rehabilitating the stockpile only and will not affect the drainage trench. During removal of the stockpile material (over the 6+ month period), some site activities that could potentially impact on surface water and groundwater include:

- Disturbance resulting in soil erosion and sedimentation; and
- Spills of fuel, oil or chemicals resulting in contamination of surface waters and/or groundwater

Based on the soil type and meteorological data, it is expected that, for rainfall events up to a 1:10 year ARI, rainfall will infiltrate directly through the ground rather than leave the project area as runoff. Surface water runoff is therefore unlikely to leave the site. However, sediment erosion control measures should be installed by GER if required and checked and maintained for duration of the site works and subsequent revegetation.

Surface water related erosion, sediment runoff or off-site water impacts are also considered unlikely to occur, due both to the nature of the project (i.e., site rehabilitation to near-natural conditions) and the high soil infiltration capacity.

The primary potential water issue identified at the project area relates to potential spills impacting groundwater due to the high infiltration capacity of the ilmenite and underlying quartz sand.

EXPECTED IMPACTS OF CLIMATE CHANGE

GER understand that Kempsey, Nambucca, and Bellingen Shire Councils collaborated to plan for climate change. The Draft Climate Change Risk Assessment and Draft Climate Change Adaptation Strategy was exhibited for comment in September 2010 and the reports were finalised in December 2010.

Reviewing both documents in the context of GER's proposal, we identify that the project area is outside of the mapping region for impacts of sea level rise and / or increase in erosion. Other impacts with potential to be caused by climate changes are the same as the remainder of the Kempsey shire.

FIGURE SEVEN- EXISTING SURFACE CONTOURS

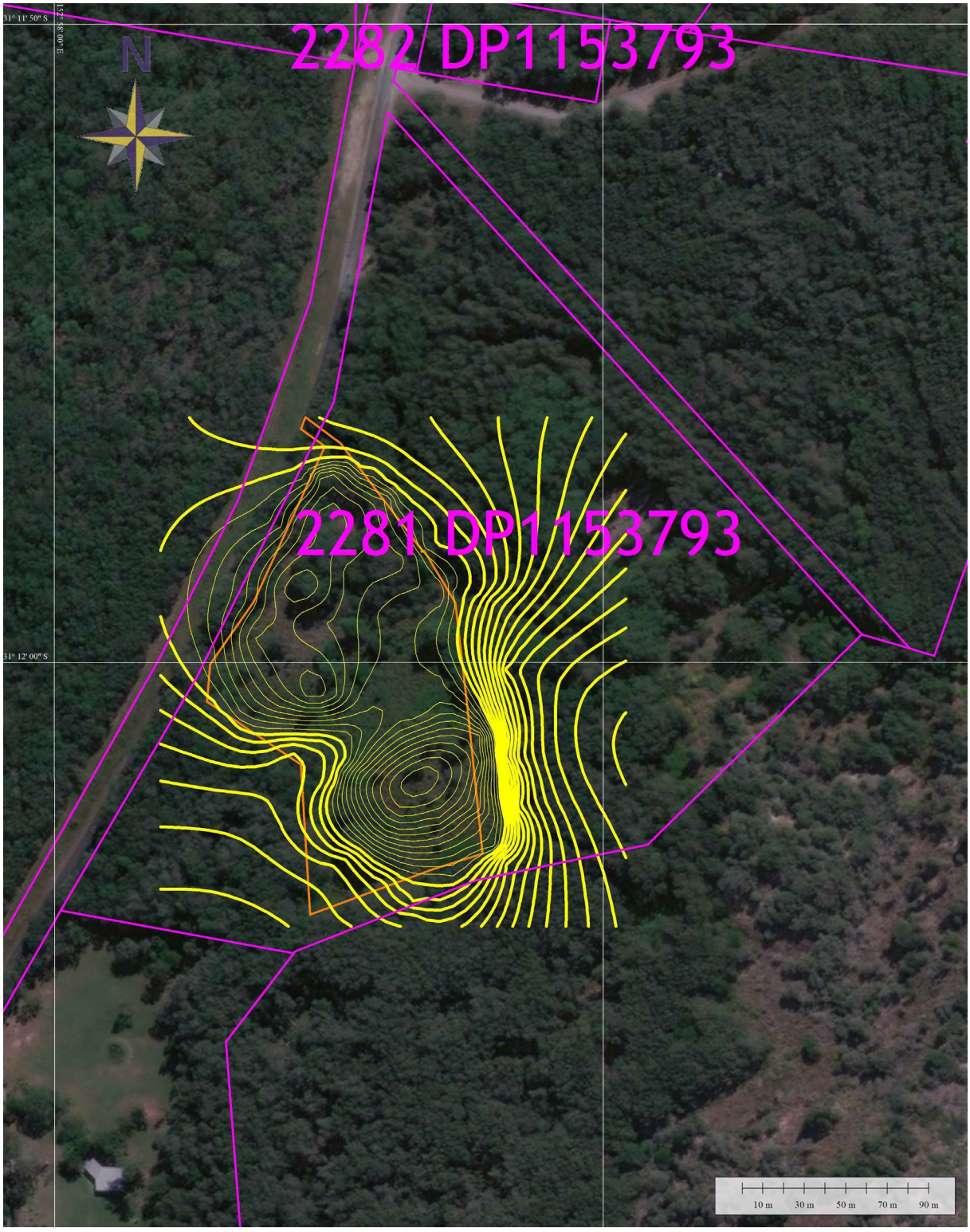
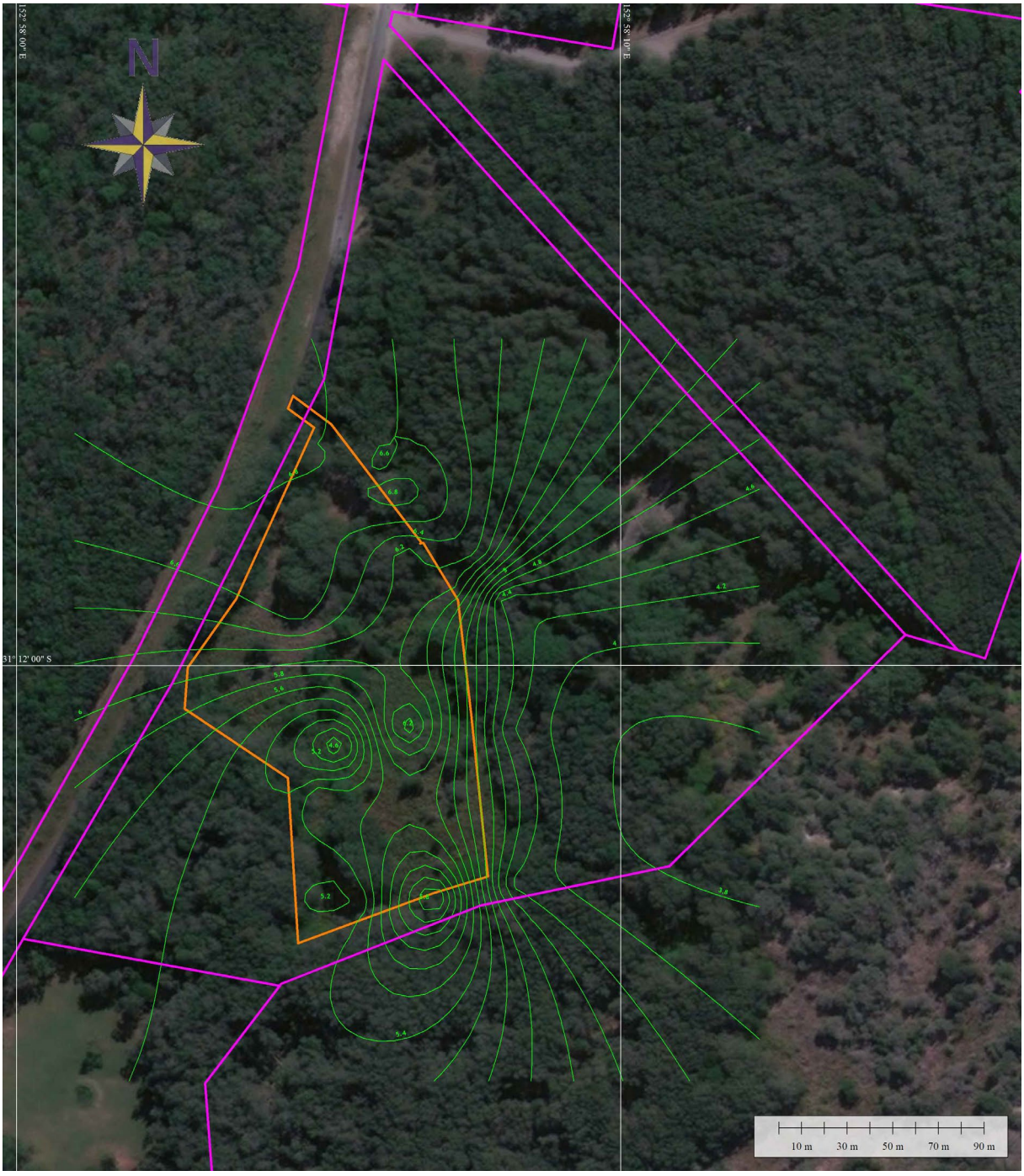


FIGURE EIGHT - EXPECTED SURFACE CONTOURS



14.1.2.Potential Impacts and Mitigation – Water

SURFACE WATER

As mentioned above, due to the high permeability of the stockpile material and the surrounding natural soil surface, GER consider impacts to water a very low risk of occurrence. Even during heavy rainfall events, the surrounding soil is not expected to cause runoff due to its vegetated nature, low clay content and high permeability.

As mentioned above and in the project execution plan (**APPENDIX TWO**), the stockpile removal process will occur from the roadside in, creating a working face of stockpile material which will serve as a permeable bund should any storm events occur.

Once the pile is removed, there is some small risk of runoff from the exposed natural surface, but this again has the same permeability of the surrounding area and is not expected to cause runoff. Additionally, surface stabilising with hydromulch / hydrocompost will form a barrier to erosion lasting up to twelve months whilst the vegetation establishes, negating the risks of runoff.

GROUNDWATER

The principal risk identified to water from site activities comes from spills of chemicals or hydrocarbons during the stockpile removal. The project execution plan details how these risks will be managed these are summarised as the following:

- Minimise the volumes of fuel, oil or chemicals used or stored at the Project Site,
- Refuelling most vehicles off-site, and
- When refuelling onsite, parking and refuelling at the same location every time with an impermeable membrane or portable spill containment in place

15. ASSESSMENT OF IMPACTS – HERITAGE

15.1.1.Existing Environment – Heritage

Everick Heritage Consultants (**APPENDIX FIFTEEN**) was commissioned by GER to undertake an assessment of Aboriginal and European cultural heritage. In accordance with the relevant administrative and legislative standards for New South Wales, the methods employed in this assessment included:

- A search of relevant heritage registers including the Aboriginal Heritage Information Management System ('AHIMS').
- A site inspection undertaken by Everick senior archaeologist Tim Hill, and Wayne Sime from Kempsey Local Aboriginal Land Council ('KLALC') on 25 January 2018 (**APPENDIX SIXTEEN** for their separate report).
- Consultation with the Board of KLALC regarding the project and its impact on Aboriginal Land Claims.
- Notification and ongoing consultation of the Dhungutti Elders Aboriginal Corporation; and
- Assessment of the potential for the Project Area to contain significant Aboriginal heritage and the impact on the Project may have on said heritage.

The methods used for this assessment are in compliance with the OEH Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 and all relevant legislation.

As a result of the desktop study, field inspection, Aboriginal community consultation, and archaeological investigation of the Project Area, the following were found:

- No artefacts were observed within the soil stockpile or surrounding sand plain.
- It is considered that the stockpile and sand plain have a low potential to contain Aboriginal sites based on the history of disturbance across the Project Area, and proximity to other natural features that would provide better access to resources. These include the headland and hills to the north and Goolawah Beach.
- Should shell midden material have occurred within the sand dune deposits subjected to sand mining, it is expected that the shell specimens would be highly fragmented because of the mining process. Likewise, it is expected that stone artefacts would be separated and either stockpiled or reused. It is not expected that organic material would survive in such a disturbed environment.
- In consideration of the potential for the sand plain to contain Aboriginal sites, it is noted that the hind dunes would provide better access to beach resources. It is not common to find midden sites within the back-plain environments and it is understood that these areas where typically utilised for hunting and gathering but rarely used for camping and tool production.

- No items or relics of European heritage were identified during the assessment. The old concrete loading facilities are intact; however, these are not listed as being of local heritage significance.

Following the survey by Everick Heritage Consultants, GER was contacted by representatives from the Dhungutti Elders and associated archaeologists to confirm their desire to rehabilitate the site. They have indicated support for GER's proposal to rehabilitate the site and restore at least part of the site to a landform and vegetation type similar to what was present before the mineral processing facility was established.

15.1.2.Potential Impacts and Mitigation – Heritage

CULTURAL HERITAGE MONITORING

The following 'Find Procedure' is considered GER's minimum response in the event of the identification of artefacts within the Development Area:

- Work in the surrounding area is to stop immediately,
- A temporary fence is to be erected around the site, with a buffer zone of at least 10 metres around the known edge of the site,
- In consultation with the local indigenous representative for the project, an appropriately qualified archaeological consultant is to be engaged to identify the material; and,
- Should the material be confirmed as an Aboriginal object or archaeological site, a salvage program put in place

POTENTIAL ABORIGINAL HUMAN REMAINS

Although it is unlikely that human remains will be located at any stage during earthworks within the Project Area, should human remains be found, all works will cease in the immediate area to prevent any further disturbance to the remains.

The Site will be cordoned off to prevent unauthorised entry to the area. The nearest police station (Port Macquarie), the Kempsey Local Aboriginal Land Council, and the OEH Regional Office (Coffs Harbour) will all to be notified as soon as possible.

If the remains are found to be of Aboriginal origin, and the police do not wish to investigate the site for criminal activities, the Aboriginal community and the OEH should be consulted as to how the remains should be dealt with.

Work will only resume after agreement is reached between all notified parties, provided it is in accordance with all parties' statutory obligations. GER will also ensure that all personnel use respectful language, bearing in mind that they are the remains of Aboriginal people rather than scientific specimens.

16. ASSESSMENT OF IMPACTS – LAND

16.1.1.Existing Environment – Land

EXISTING SOILS

A search was undertaken of the SEED database for the existing soil profiles of the project area. The project location is mapped as soil landscape unit 9435xx, namely disturbed terrain. The unit in question relates to the extensive disturbance of the site during sand mining operations.

On a local level and following hand auger sampling of the pile whilst exploration activities were being undertaken, there appears to be an existing soil surface underneath the stockpile. The quality of this soil profile is as yet unknown but from historical photographs of the area, it appears to be relatively intact and typical of the sand soils found in the hind dune environments of the mid north coast.

ACID SULFATE SOILS

As mapped on the SEED database, all soils present on the site have been highly modified by past mining and mineral processing activities. From site inspection, it appears that some attempts had been made to retain soil for rehabilitation activities and this is evidenced by remnant topsoil stockpiles and varying qualities of resulting rehabilitation.

Auger drilling conducted by GER indicates the ilmenite stockpile/dump sits on quartz sand, and that Acid Sulphate Soils (ASS) were not identified within the pile material or the original landform surface (**APPENDIX NINETEEN**).

In addition, Kempsey Shire Council has prepared ASS maps as part of Development Control Plan 30, indicating five classes of land based on the likely depth of ASS and works categories likely to result in disturbance. The map relevant to the project indicates that natural ground beneath the stockpile consists of Class 4 and 5, **FIGURE NINE**.

As GER intend to remove the stockpile back to natural ground level, there is little likelihood of any disturbance of Class 4 or Class 5 soils. Development Controls relating to ASS are therefore not required for the project.

COMPATIBILITY WITH OTHER ADJACENT LAND USES

GER's operations are a temporary land use of a portion of Lot 2281/DP 115793 (**FIGURE FIVE**). The extent of GER's operations are expected to span less than 12 months of operation with a number of years supervising the progress of the rehabilitation.

The adjacent parcels of land to the actual project footprint are crown land managed as National Park.

Taking the extent and nature of GER's activities into account, the risk to Goolawah National Park, specifically Lot 7302 / DP 1130597 is very low to negligible.

Following the suggested guideline issues for developments adjacent to NPWS estate, GER categorises the risks of its proposal in the following ways:

- **Erosion and sediment control, stormwater runoff** - GER have reviewed the risks associated with the project regarding stormwater, erosion, and sediment generation and this is outlined in more detail in **APPENDIX TWENTY-ONE**. The sandy nature of the site and the inert nature of the stockpile material result in negligible risks of erosion and sediment transport off site. During clearing and stockpile removal, any erosion potential will be low, and any potential stormwater runoff will be directed in pit. Once the area has been rehabilitated, erosion potential will be further reduced through the use of hydro mulch as a stabiliser with a working life of up to 12 months, by which time vegetation will be established.
- **Wastewater** - GER will not generate any wastewater as part of any stage of its activities. There will not be any servicing of vehicles or washing facilities established on site. All wastes generated will be collected on site for disposal off-site at the appropriate landfill. No wastewater will be generated by the earthworks component of the proposal as the material contains no clay or water dissolvable fraction.
- **Management of pests, weeds, and edge effects** - A key objective of the proposal will be to remove the weed infestation on the stockpile location and return the disturbance footprint to native vegetation. The proposed activities have no potential to increase or add to the weeds and pests on the site. GER will also conduct the removal of the weed species from around the base of the Koala habitat trees on the completion of the project. Weeds and pests will be monitored and managed for the duration of the rehabilitation phase.
- **Fire and location of asset protection zones** - No permanent structures will be required during site activities, only a relocatable building for use as a site office and crib hut. A portable toilet will also be placed on site for the duration of the stockpile removal, and this will be serviced regularly by an external contractor. No open fires will be permitted during operations and, if burning of the cleared weeds is required, it will be carried out under strict fire permit conditions with full notification to neighbours and appropriate fire suppression equipment in attendance.
- **Boundary encroachments and access through OEH land** - The project footprint is located on the western side of the lot and there is no potential for the project activities to encroach or access the NPWS tenures located to the east of the project site (see **FIGURE ONE**)
- **Visual, odour, noise, vibration, air quality and amenity impacts** - The proposal footprint is located well away from the NPWS estate and will not be visible from any vantage point within the estate at any stage of the project. The project will not generate any odours, with only diesel combustion emissions from the machinery on site. Due to the sand environment, vibration is not expected to be a site issue and certainly not expected to be felt in the NPWS estate. There will be some noise associated with the proposal and this is outlined in the traffic management and noise sections below and in **APPENDIX FOUR and APPENDIX EIGHTEEN.** The proposed control measures outlined **in section Eighteen** are deemed to be more than adequate to ensure no noise impacts from the short duration project will be incurred upon the NPWS estate.
- **Threats to ecological connectivity and groundwater-dependant ecosystems** - The small footprint of the proposed clearing area (**less than 2 hectares**) is not anticipated to act as a barrier to fauna movement or ecological connectivity

of the adjacent NPWS estate. Groundwater is discussed in **section Fourteen** (**TWENTY-ONE**) and is not expected to be impacted by the project.

- **Cultural heritage** - GER has addressed cultural heritage values in **section Fifteen**, as well as the independent assessment found in **APPENDIX FIFTEEN.** No impacts on cultural heritage values is expected of the project footprint or the NPWS estate adjacent.

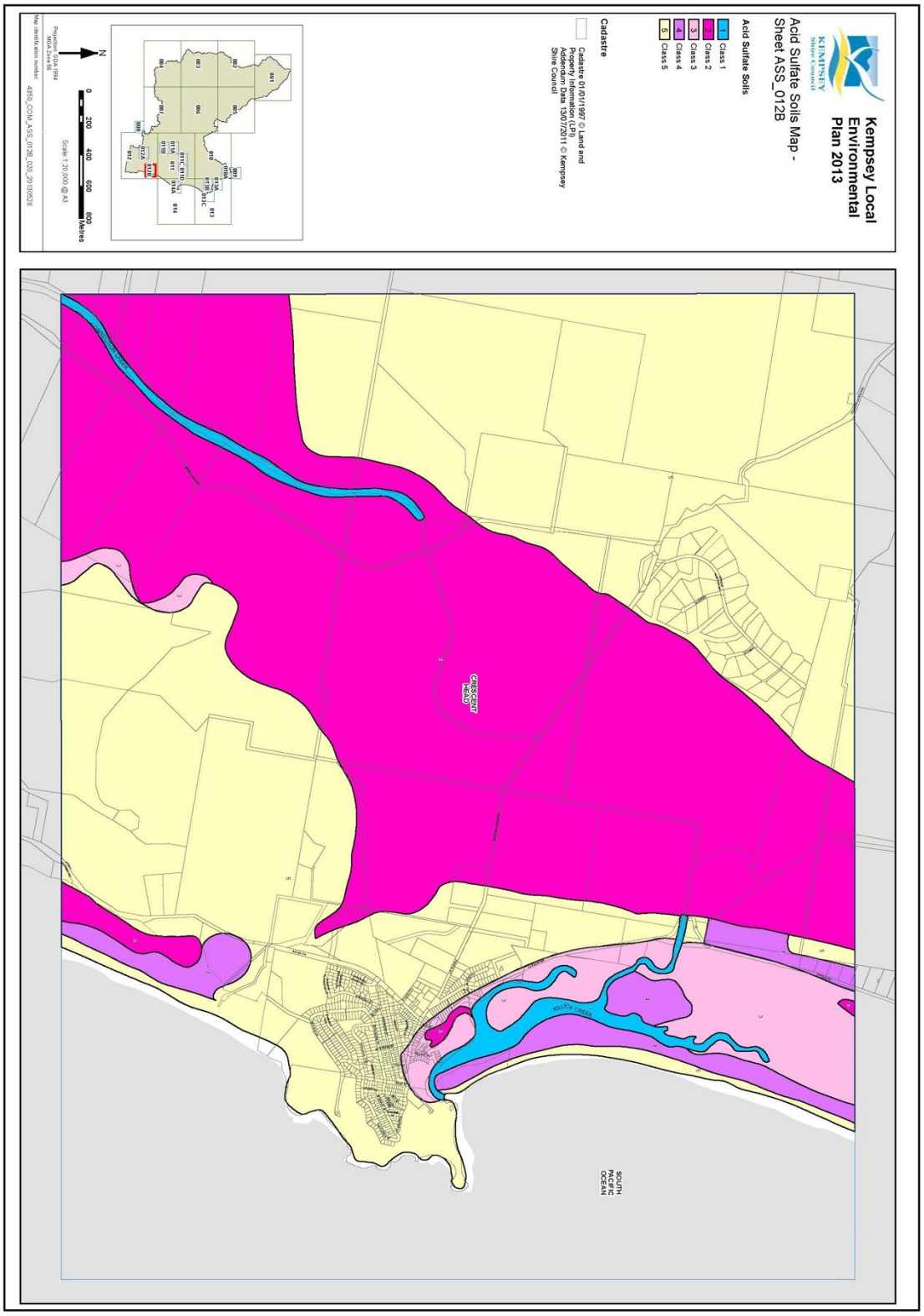
16.1.2.Potential Impacts and Mitigation – Land

As stated in the project description, at no stage of this project will there be any disturbance of the underlaying original soil surface. No excavation of natural ground will occur as part of the project and therefore there is no risk of disturbance of acid sulphate soils and little risk of erosion of exposed soil.

As for water, there will be minimal risk of erosion due to the stockpile material being excavated in a fashion to create a bund and a very small amount of time for the undelaying soil surface to be exposed prior to being stabilised with hydromulch / hydrocompost.

There is one risk to land that GER have considered and it is that the underlying soil may not be conducive to a good rehabilitation outcome. This has been accounted for by the commitment to using hydromulch / hydrocompost for the rehabilitation. Both products effectively create a new A1 soil horizon which is more than capable of sustaining plant growth. GER are confident that the stabiliser, with its inbuilt organics will provide a boost to the re-exposed soil surface and effectively rejuvenate the existing soil horizon.

FIGURE NINE- KEMPSEY LOCAL ENVIRONMENTAL PLAN 2012 ACID SULPHATE SOILS MAP – SHEET ASS_012B



17. ASSESSMENT OF IMPACTS – TRANSPORT

17.1.1.Existing Environment – Transport

Aside from the initial clearing of the weed growth from the surface of the ilmenite stockpile, GER have identified that its primary potential impact on the Crescent Head community would come from the trucking of ilmenite off site for storage and sale.

Trucking impacts can be broken down into three components: noise of trucks, impacts on the road network (pavement), and potential impacts on traffic flow. A full assessment of the impacts of trucking on the road network and community can be found in **APPENDIX FOUR** and is summarised below.

Since the project was first assessed by SteetWise (**APPENDIX FOUR**), ilmenite will no longer be transported to Thurgoods holding yard. To avoid potential zoning issues, ilmenite will be directly transferred to the port of Newcastle via the Pacific Motorway. This eliminates possible zoning issues with a secondary storage location in Kempsey Shire, as all material will be transported direct to ship holding yards at the port.

In this regard, disregard any references to Thurgoods holding yard in **APPENDIX FOUR**. There have been no other changes to the guidance material, road network or the haulage plans since StreetWise concluded their assessment.

EXPECTED TRUCK MOVEMENTS

GER estimates the stockpile to contain approximately 47,500 m^3 of ilmenite. The proposal is to load this material onto truck and dog semi-trailers and transport it from the site, via Point Plomer Road, Baker Drive, Pacific Street, Crescent Head Road, Macleay Valley Way, and the Pacific Motorway direct to the Port of Newcastle.

The haulage will be undertaken via truck & dog trailers with an average load of 30 m^3 per trip – a total of 3,650 laden trips required. The haulage operator is proposing to provide 3 truck & dogs per day which would result in a maximum of 20 laden trips a day on weekdays only – or a maximum of 100 laden trips (or 200 return trips) per week. This equates to an average of 2 laden trips per hour (or 4 return trips).

At an average of 20 laden trips per day for 5 days a week, the relocation of the 47,500 m^3 of ilmenite from Crescent Head should take approximately 36 weeks (note: haulage will not occur on public holidays).

The 17.2 km haulage route is proposed via local roads under the control of Kempsey Shire Council.

EXISTING ROAD NETWORK USAGE AND EXPECTED IMPACTS

Existing traffic volumes on the haulage route are relatively low, with each of the subject roads having adequate capacity to cater for an additional four trips per hour.

The most significant traffic impacts will result from the conflict between the low speed, slow acceleration heavy vehicles from the current ilmenite stockpile site at

Crescent Head, and the existing traffic flows on the local roads. However, given the low number of proposed daily truck and dog movements, the relatively low volumes on the affected local roads, reasonably good road conditions and adequate sight distance at all intersections, the impacts of the ilmenite haulage on the local traffic flows are likely to be minimal.

A Road Safety Check of the proposed haulage route has been undertaken by StreetWise and is presented in **APPENDIX FOUR**. It lists a range of existing and potential hazards along the haul route, and a number of amelioration measures to reduce or negate those hazards which are as follows:

- **Main Roads - Macleay Valley Way / Crescent Head Road:** Macleay Valley Way was previously the Pacific Highway, and was the main Sydney – Brisbane route, catering for a high volume of B-doubles, semi-trailers, and heavy vehicles. The western section of Crescent Head Road passes through an industrial precinct, which currently generates heavy vehicle movements daily. Also, Kempsey Council's waste management centre is located in Tip Road, which generates a significant number of heavy vehicle trips along Crescent Head Road every day. The majority of the proposed haul route therefore:
  - currently experiences a high percentage (approx. 8.6%) of heavy vehicle movements every day
  - the existing roads and intersections can cater safely and efficiently for heavy vehicle movements
  - the additional 4 heavy vehicle movements per hour to be generated by the proposed haulage of ilmenite will not significantly increase the existing volumes of heavy vehicles utilising Crescent Head Road and Macleay Valley Way.
- **Intersections:** The existing intersections along the proposed haulage route have adequate capacity to cater for four additional truck & dog movements per hour. The layouts of the existing intersections also have adequate space to safely cater for the swept path of turning truck & dog trailers.
- **Site access - Point Plomer Road:** Access proposed to and from the current stockpile site at Crescent Head is from a previous access road on the eastern side of the northern sealed section of Point Plomer Road. It is proposed to re-establish the access, which will have adequate sight distance in either direction. The intersection to site will comply with Austroad's Guide to Road Design Part 4: Intersections and Crossings – General (Austroads 2017a). Point Plomer Road currently has low traffic volumes and adequate width to safely accommodate access to & from the site by truck & dog trailers with minimal impacts on existing traffic flows.
- **Local Roads - Pacific Street and Baker Drive / Point Plomer Road:** Along the proposed 17.2 km haulage route, there are 2 current school zones and a day care facility. Crescent Head Public School is located at 44 Pacific Street, just west of the Baker Drive intersection (**PLATE NINE and PLATE TEN**). The school oval, pool and associated community buildings also fronts Baker Drive / Point Plomer Road (**PLATE ELEVEN**), and Kempsey Adventists School is located at 108 Crescent Head Road, Kempsey, at the western end of Crescent Head Road, about 1km east of the intersection with Macleay Valley Road. Both schools include a 40 kmh school zone between 8:00 - 9:30 am in the morning and 2:30 – 4:00 pm each weekday afternoon.

In summary, if the haulage drivers are aware of the potential hazards, drive within the road rules, drive to the road, and weather conditions, and ensure there is flexibility when scheduling haulage movements, the impacts of the proposed haulage trips can be minimised.

The existing hazards, and those relating to the proposed truck & dog movements, discussed above and in **APPENDIX FOUR,** can be removed or minimised by adopting the recommended amelioration methods. Road safety of the proposed haul route will be further increased by adherence to the Drivers Code of Conduct (see below).

This application proposes to relocate an existing ilmenite stockpile site from Crescent Head to the port. It does not involve quarrying of any new material. It is a limited life, once only haulage project, which GER and haulage operators wish to complete as safely and efficiently as possible.

It is also proposed to undertake the haulage works outside of school holiday periods, when traffic volumes within the Crescent Head township, and also Crescent Head Road, are generally high, particularly during the Christmas period. It should also be noted that the local roads included in the haul route safely cater for peak holiday traffic, and the haulage activities will be scheduled during off-peak months, when there are reduced volumes, adequate capacity, and minimal impacts on local traffic.

In addition, two further measures will be adopted to reduce potential traffic risk, these are:

- Additional signage will be installed in collaboration with Kempsey Shire Council along the proposed haulage route to warn motorists of potential truck movements in the vicinity.
- Scheduling of truck movements should include enough flexibility to minimise hauling at peak times, particularly through the 2 school zones along the proposed haul route.

PLATE NINE - SCHOOL ZONE ON PACIFIC STREET

PLATE TEN - SCHOOL ZONE ON BAKER DRIVE - SOUTH

PLATE ELEVEN - SCHOOL ZONE ON BAKER DRIVE – NORTH

17.1.2.Potential Impacts and Mitigation – Transport

As a key component of the trucking projects Drivers Code of Conduct, a spill response procedure will be developed to address and potential product spillage. Spill clean-up equipment will be carried in each truck in the unlikely event that material is lost.

All trucks will have their loads covered, as is the general requirement of the road rules in NSW for such loads.

GER will establish a contact hotline for the operations and encourage all spills to be reported through community information on social media and through signage on the trucks.

The potential impact of trucking of the project material from site and, to a lesser extent, the cartage of machinery to and from site may, if not managed appropriately, create traffic related risks. These will be managed by GER and its principle contractor using the following controls:

- **Additional advisory signage:** GER will work with Kempsey Shire Council to install appropriate advisory signage on the local roads within the project haulage route. Some signage already exists, however GER will work with council to install additional truck advisor signs as required.

- **Improve site entrance visibility:** The current line of sight for the entrance to the project area is along a straight section of Point Plomer Road. However, the current entrance is lower than the road and shrouded in a heavy overgrowth of weeds. GER will build up the road access point to the stockpile using rock rubble (free draining) and clear weed undergrowth to improve visibility of truck leaving and entering site. The intersection to site will be re-established to comply with Austroad's Guide to Road Design Part 4: Intersections and Crossings – General (Austroads 2017a).
- **Hours of operation:** GER will work with the selected contractor to ensure haulage is scheduled so that trucks are not utilising the local road network during the school zone times (See **PLATE EIGHT** and **PLATE NINE**). Trucking will be prohibited on weekends and public holidays and minimised and / or stopped during school holiday periods.
- **Create and implement a Drivers Code of Conduct:** GER and the contractor will ensure all drivers are inducted to site, and that this induction includes drivers signing onto a driver's Code of Conduct prior to working on the project. A Code of Conduct sets out the principles and professional standards of conduct for employees of a particular company. The Code is not generally a comprehensive set of rules, but rather a set of principles that form a framework for conduct and behaviour in the workplace. It provides guidance for staff on how to:
  - Carry out their duties in a lawful and ethical way
  - Interact with staff and other road users in a fair and courteous manner

  While a Code of Conduct may vary from workplace to workplace, the key principles should include:
  - Accountability
  - Leadership
  - Openness and objectivity
  - Honesty

  The Code will cover all permanent, temporary, casual, skill-hire and contract staff. The Code of Conduct should be relevant to traffic movements generated by the transporting of ilmenite from Crescent Head to South Kempsey and can't be finalised until the conditions of approval are known.

  GER will develop the drivers code of conduct with the successful contractor based on the sample code provided in **APPENDIX FOUR.**

18. ASSESSMENT OF IMPACTS – NOISE

18.1.1.Existing Environment – Noise

An assessment of the potential noise impacts of the proposal was completed by Bravo Resource Solutions (**APPENDIX EIGHTEEN**). Currently the site is unoccupied, therefore the existing noise environment is dominated by traffic noise on Point Plomer Road.

The land zoning, the subjective assessment of the acoustic environment in the area, and the acquired background noise levels would support a rural residential land use category with reference to Table 2.3 in the Noise Policy for Industry.

The nearest receptor (House 1) is located approximate 205 m to the Southwest of the proposed site boundary (**FIGURE TEN**).

The amenity and intrusiveness noise levels (ANL) were determined for the project site and intrusive noise level was calculated for the project area. The intrusive noise level is determined using the following formula:

Intrusive Noise Level = LAeq,15min RBL +5

Therefore, the project amenity noise level (ANL) is Rural ANL (Table 2.2: Amenity noise levels, Noise Policy for Industry 2017), minus 5dB(A) plus 3 dB(A) to convert from a period level to a 15-minute level
dB(A) RBL.

The project noise trigger is the lower value of the intrusiveness and amenity noise levels. Therefore, the project noise trigger levels are as follows:

Daytime: **LAeq, 15min 45 dB(A)**
Evening: **LAeq, 15min 40 dB(A)**
Night: **LAeq, 15min 35 dB(A)**

GER's primary noise source on site will be a Front-End Loader (FEL) or small excavator. The modelling is based upon a FEL being used 40% of the time at full power (period of highest noise generation).

This is considered worst case scenario for the site, given the long travel times between loading of truck and dog trailers and infrequency of trips per day (estimated to be four fully loaded trips per day).

Previous studies suggest the full power is only used when the loader bucket is entering the stockpile, approximately 20% of the time. Small excavator noise emissions are considered similar to those of a FEL.

Following the above constraints, the predicted noise level for the site loading and unloading activities exceeded the daytime project noise trigger level by 17.9 dB(A) (62.9 dB(A)).

However, based on site location and the layout of the project area, GER believe that a shielding effect of the stockpile itself plus the (+130m) of dense vegetation would reduce noise levels by more than 27 dB(A) at the nearest residential location

(as outlined in **APPENDIX EIGHTEEN**). Consideration of these physical and natural measures already in place were determined to be both reasonable and realistic.

With these measures incorporated, the following revised noise prediction was made:

Daytime: 35.9 LAeq, 15min dB(A)

The predicted noise level is well below the project noise trigger level (45 LAeq 15min dB(A)), and the sites RBL (40LAeq, 15min dB(A)).

Considering the conservative nature of RBL used and hence the conservative nature of the project trigger noise level, the distance from the receiver, daytime operations only, the natural attenuation provided by the stockpile itself, and the surrounding vegetation, noise impacts are not expected and proceed controls of investigations following neighbour complaints are acceptable.

18.1.2.Potential Impacts and Mitigation – Noise

Noise from the Crescent Head Project is not expected to cause an environmental nuisance, at any sensitive or commercial place.

GER will utilise the following noise management strategies to reduce the risk of nuisance:

- Restriction of haulage and site works to the hours between 6 am and 6 pm, during weekdays.
- No haulage will occur on public holidays
- The use of low noise emission machinery (front end loader or equivalent) to load trucks
- Speed limiting of haul trucks within the built-up area of the Crescent Head community to 40 km/hr

GER will conduct noise monitoring in response to complaints from residents (i.e., sensitive places) or following a request from the regulator. Should noise monitoring undertaken in response to a complaint exceed the noise limits as defined in the relevant EPA guideline, GER will implement a risk treatment process which either:

- Addresses the complaint including use of appropriate dispute resolution processes if required; or
- Implements noise abatement measures so that noise emissions from the activity do not result in further environmental nuisance.

19. ASSESSMENT OF IMPACTS – AIR

19.1.1.Existing Environment – Air

An assessment of the potential air quality impacts of the proposal was completed by Bravo Resource Solutions (**APPENDIX TWENTY-TWO**). As above, with the site being currently unoccupied and vegetated, any potential air emissions are a result of activities on Point Plomer Road.

In the absence of a requirement for an EPA licence for removal of the stockpile material, the site has been considered in accordance with the NSW Protection of the Environment Operations (Clean Air) Regulations 2010, and GER believe site activities can be regarded as being an activity, under Division 3, Standards for non-scheduled premises.

Also, as the proposed activity is a subject of a development application made after 1 September 2005, it is classified as a Group C activity (see the NSW Protection of the Environment Operations (Clean Air) Regulations 2002)

GER's expert has recommended that the potential emission associated with the activity is dust generation during the loading of the ilmenite onto semi -trailer trucks.

However, a very small percentage of ultra-fine particles within the ilmenite stockpile would be expected as the stockpile contains already processed material (Ultra fine particles tend to remain suspended during wet separation techniques and would have most likely reported to the tails stream of any processing plant). From the analysis of the stockpile, GER believe that the actual fraction in the pile, as opposed to that calculated, would be significantly less than 6.1% of the total particle size will be in the PM10 Range.

In short, assuming the worst-case estimate of 6.1% of the stockpile is in the PM10 Range, the recommended PM10 emissions factor is:

0.025 x 0.061 = 0.0015 kg/t.
0.0015 kg/t X 1000 = 1.5252 mg/t

Using a bulk density of 2.31 g/cm^3 this equates to a PM10 emission of **3.53 mg/m^3 well below the activity limit of 100 mg/m^3.**

Despite the predicted air emission being well below the activity limit in the guidelines, it would be further reduced by the following site factors:

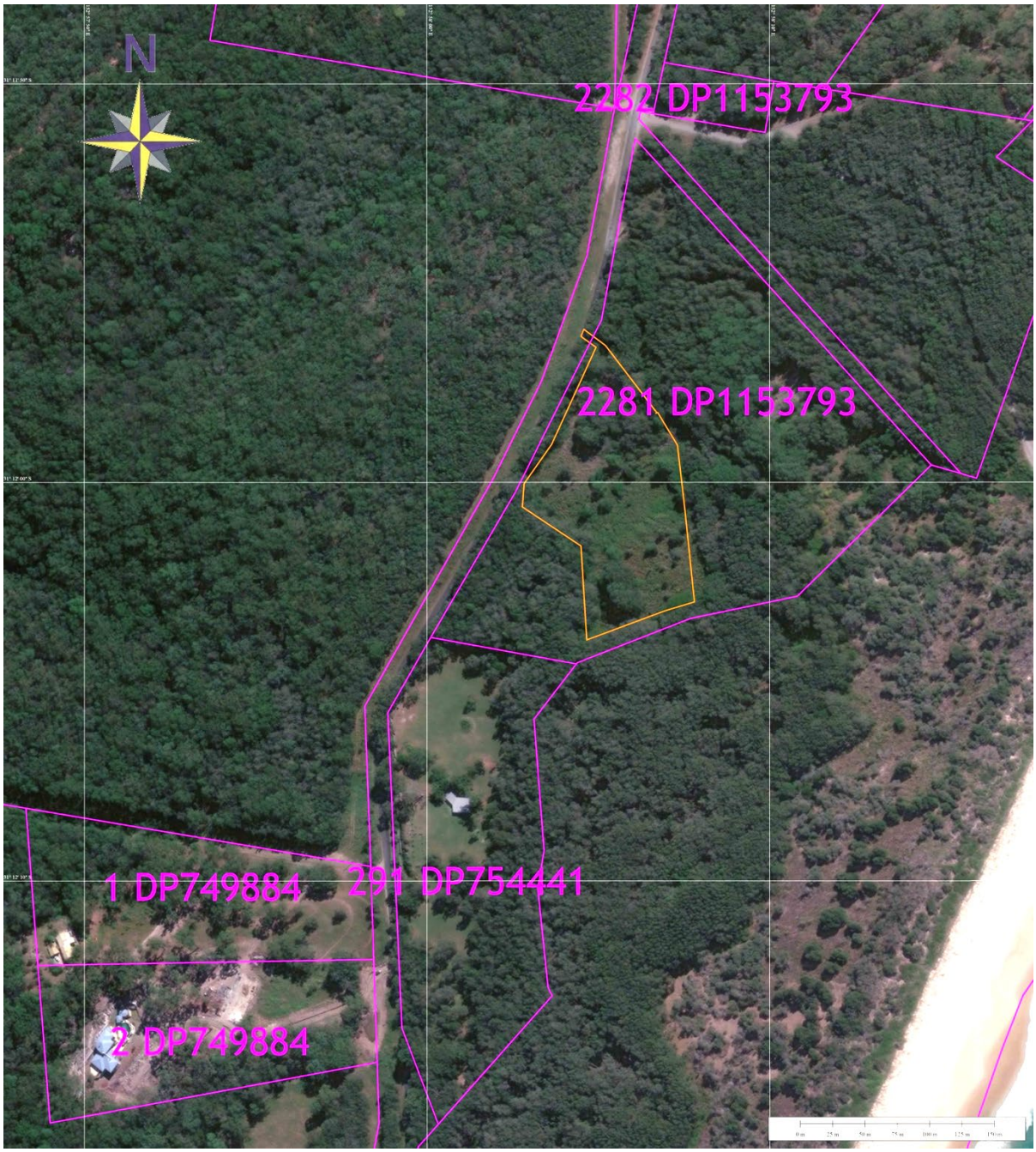
- The site is well shielded by dense surrounding trees providing a windbreak and giving it a high roughness factor (Wind Resistance)
- Based upon Bureau of Meteorology (BOM) data for Port Macquarie, prominent (9am) wind direction in all seasons is from the Southwest (Away from the noise receptor House 1) and the (3pm) afternoon/evening wind direction is from the Northeast (Towards the receptor House 1).
- The project will operate in daylight hours only, therefore, metrological conditions would appear to reduce the air emissions as measured at the nearest residence for the majority of daylight hours.

In conclusion, GER believe the proposed activity will not impact air quality and no specific mitigation methods are recommended.

However, GER have included in its Project Execution Plan a commitment to minimising air emission risks during the proposed activity by undertaking the following:

- A requirement to ensure trucks leaving the activity area are clean of any ilmenite spillage.
- Any air emission or dust complaints be formally recorded and investigated.
- Any dust monitoring conducted (as a result of a complaint or other), be completed as per NSW Protection of the Environment Operations (Clean Air) Regulations 2002.

FIGURE TEN – NEAREST NOISE SENSITIVE RECEPTOR



19.1.2.Potential Impacts and Mitigation – Air

The release of dust or particulate matter, or both, resulting from the ilmenite pile removal will not cause public or environmental nuisance at any sensitive place.

GER will utilise the following dust management strategies to reduce the risk of nuisance:

- Covering of all loads leaving the site
- The use of water suppressions on site access point, and
- Minimising the disturbance footprint.

It is not anticipated that there will be dust issues associated directly with the mineral stockpile due to the high specific gravity of the product and the sheltered nature of the site.

GER will conduct air quality monitoring in response to complaints from residents (i.e., sensitive places) or following a request from the regulator. Should air quality monitoring undertaken in response to a complaint exceed the air quality limits as defined in the relevant EPA guideline, GER will implement a risk treatment process which either:

- Addresses the complaint including use of appropriate dispute resolution processes if required; or
- Implements dust abatement measures so that dust emissions from the activity do not result in further environmental nuisance.

20. ASSESSMENT OF IMPACTS – VISUAL

20.1.1.Existing Environment – Visual

As presented above, the existing environment of the project site can best be described as a vegetated stockpile of ilmenite, surrounded by thick coastal vegetation. The project site is almost completely screened by existing vegetation, including the thin screen of mature trees that line the road. No vegetation outside of the stockpile area is to be removed and all roadside vegetation will be retained as koala habitat.

SIGHTLINES

Visibility of the site is low, with the only true sightline of the project area being from the road verge (**PLATE TWELVE**). With regards to the nearest sensitive receptor, **FIGURE TEN** (above) illustrates the proximity of the project to the nearest sensitive receptor. On the ground, there is no direct or potential direct sightline to the project either from the residence itself (which is also partially fenced (**PLATE THIRTEEN**) nor from the project boundary to the nearest residence (**PLATE FOURTEEN**). **PLATE FIFTEEN** illustrates the nearest sensitive receptor is also not visible from the top of the pile.

PLATE TWELVE - ROAD VERGE TO PROJECT

PLATE THIRTEEEN - NEAREST NEIGHBOUR BOUNDARY FENCE TO PROJECT (NORTH-EAST)

PLATE FOURTEEN - PROJECT BOUNDARY TO NEAREST NEIGHBOR (SOUTH)

PLATE FIFTEEN - TOP OF PILE TO NEAREST NEIGHBOUR (SOUTH)

TOPOGRAPHY

The existing topography of the project area is interrupted by the bulk of the stockpile (as illustrated in **FIGURE SEVEN**, **PLATE SIXTEEN**). Once the stockpile is removed and the area returned to its original contour (**FIGURE EIGHT**) the topography of the site will slope away from the road verge.

This is significant as the visibility of the project area will reduce substantially once the pile is removed. As the site is small, once the site has been rehabilitated (hydromulch / hydrocompost), visibility will decrease even more.

PLATE SIXTEEN - PILE HEIGHT IN REFERENCE TO THE ROAD

20.1.2.Potential Impacts and Mitigation – Visual

GER believe there will be very low to negligible impacts to visual amenity and certainly none that will require any additional controls to those already proposed for other assessed impacts.

Assessment of the potential for impacts on visual amenity have concluded there are none exceeding the short project lifespan.

GER propose that the following actions will serve as appropriate controls on this temporal disruption to the visual amenity of the area:

- Retention of the established Koala food trees alongside the roadside will act as a screen from the road verge
- Retention of the vegetation outside of the stockpile area will serve as a screen for the neighbouring properties
- The duration of the project will be substantially different to most SSD projects in that the major works will last approximately 140 days with some allowance for school holidays and unforeseen interruptions. Once most of the proposed works are complete, the resulting maximum rehabilitated area will be approximately 2 hectares in size. Rehabilitation will be using hydromulch or hydrocompost, effectively creating a continuous mulched surface over the

space of 1 to 2 days. This will affectively remove any temporary visual disruption of the area.

- Dust control measures (boundary fencing and jute / shade cloth screen will reduce the visual impact of the project during removal of the stockpile.

21. REHABILITATION

21.1.1.Existing Environment – Rehabilitation

The main objective behind the economic rehabilitation strategy employed by GER is the company's commitment to rehabilitation of the project area post pile removal. The rehabilitation process and strategy outlined in **section FIVE** and in **APPENDIX FIVE** steps through the rehabilitation process from pile removal, hydromulching, and the establishment of native species from seeds.

The strategy also outlines the importance of ongoing maintenance, especially weed control and supplementary planting to ensure success.

21.1.2.Potential Impacts and Mitigation – Rehabilitation

GER believe that the project site, in its current form, is causing impact by the uncontrolled growth of weed species and the ongoing dumping of rubbish on the site.

Indeed, there are few ongoing risks or potential impacts from rehabilitating the site.

GER propose that rehabilitation of the site will restore ecosystem function back to native bushland, similar to what was there before.

The three vegetation communities that will guide species selection and end rehabilitation community are as follows:

- Paperbark community
- Lowland Redgum, and
- Coastal complex

These forest types are common on the east coast of NSW and QLD and there are good examples of these forest types just north of the Crescent Head township and in undisturbed parts of Lime burners Creek NP to the south of the project area.

The only risks associated with rehabilitation activities will be either:

- the ongoing spread of weeds on the site
- failure of the rehabilitation
- erosion of the young rehab surface

All three risks, albeit small, can be managed by monitoring and maintenance activities described below.

REHABILITATION SUCCESS CRITERIA

Success of the rehabilitation will be assessed at three years post establishment. Due to the small size of the disturbance footprint, short project life, and large rehabilitation effort, completion criteria, whilst basic, are relatively high and based on rehabilitation of similar landscapes after sand mining. GER propose to measure their success against the following criteria:

- At least 70% ground cover (litter and vegetation), measured from 1m height,

- A minimum of 300 stems per hectare for native trees and shrubs, consistent with species from any of the three target vegetation communities, and
- No visible signs of significant erosion

MONITORING

GER will continue to monitor the site post completion of rehabilitation activities. Any significant issues identified as having potential to hamper rehabilitation outcomes will be noted and will trigger subsequent maintenance activity. Monitoring of the site will be at twelve monthly intervals from the cessation of site rehabilitation works, for a period of three years.

MAINTENANCE

Expected maintenance activities that could be utilised on site include the following:

- **Weed Control**: As suggested above, it is expected that some weed re-establishment will occur on site post rehabilitation treatments. Should weed establishment be determined to be prohibiting rehabilitation success, herbicide or heat treatment can be employed to control weed outbreaks,
- **Supplemental watering**: A water tanker will be utilised should expected climatic conditions result in drought conditions,
- **Maintenance fertiliser**: Often when undertaking rehabilitation, initial plant establishment can use up large amounts of nutrients and then the decomposition of the initial cover species can effectively result in Nitrogen deficiency of the remaining plants. This can be effectively treated with the application of a maintenance fertiliser at the 6–12-month phase of rehabilitation,
- **Supplemental seeding or planting**: Studies from all round the world in rehabilitated landscapes have shown that plant establishment from seed is the preferred method for establishing a resilient plant community and certainly a plant community that is expected to establish on a bare site. Tube stock plantings require a very narrow window of conditions to be successful and for this reason were not selected for the rehabilitation program. Should however, some of the plants fail to become established after seeding, some planting of additional tube stock may be undertaken in either Autumn or Spring to improve diversity and cover.

22. ASSESSMENT OF IMPACTS – HAZARDS AND RADIATION

22.1.1.Existing Environment – Hazards and Radiation

GER have commissioned an assessment of the potential radioactivity of the stockpile by Calytrix Consulting PTY LTD (**APPENDIX ONE**). Based on third party laboratory analyses (ALS laboratory services) of surface and drilling samples and a surface gamma radiation survey by Pandanus Solutions (**TABLE FIVE**) the assessment found that the ilmenite stockpile contains very low concentrations of thorium and uranium and is **not** classified as 'radioactive ore' in NSW.

Although no specific radiation measures are required in the process of dealing with the ilmenite during its removal, it was recommended by Calytrix that it not be used in any situations where it came into long term contact with the general public, for example it should not be used as landfill or in other construction activities. In addition, Calytrix recommended a gamma radiation meter should be used by GER to take regular readings during and after removal to establish that all ilmenite has been successfully removed, prior to placement of mulch or topsoil.

TABLE FIVE. GAMMA RADIATION SURVEY SUMMARY RESULTS

Location Description	Number of measurements	Gamma radiation level (µSv/hour)	
		Range	Average
Ilmenite stockpile	55	0.10 – 2.13	0.27±0.30
Background	20	0.08 – 0.26	0.14±0.05
Crescent Head township	2	0.11 – 0.80	0.46±0.49

22.1.2.Potential Impacts and Mitigation – Hazards and Radiation

GER acknowledges that there may be a historical perception by some members of the community that the area may contain "radioactive" material. GER will manage this perception through the community engagement plan, and through physical reduction in potential for stockpile material to leave the site through wind or falling from machinery leaving site.

23. SEARS TABLE

TABLE SIX – SEARS REFERENCE TABLE

SSD-30956841 – Relevant Requirement	Relevant EIS section(s)
General Requirements	
The Environmental Impact Statement (EIS) for the development must comply with the requirements in Clauses 6 and 7 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.	
In particular, the EIS must include: an executive summary;	Section One
a full description of the development, including: • a description of the geological setting and mineralogy of the stockpile material; • a site description and history of any previous mining on the site, • including a current survey plan; • the layout of the proposed works and components (including any existing infrastructure that would be used for the development); • an assessment of the potential impacts of the development (including cumulative impacts), taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice; • a description of the measure that would be implemented to avoid, mitigate and/or offset these impacts; • a detailed rehabilitation plan for the site; • a list of any other approvals that must be obtained before the development may commence; • the permissibility of the development, including identification of the land use zoning of the site; • identification of sensitive receivers likely to be affected by the development using clear maps/plans, including key landform areas, such as conservation areas and waterways;	Section Two Section Four Section Five Section Six
the reasons why the development should be approved	Section Seven
an evaluation of the project as a whole having regard to: • the requirements in Section 4.15 of the *Environmental Planning and Assessment Act 1979*, including the principles of ecologically sustainable development; • the suitability of the site with respect to potential land use conflicts with existing and future surrounding land uses; and • the strategic need and justification for the development, having regard to the relevant NSW and national policies and guidelines; • feasible alternatives to the development (and its key components), • including the consequences of not carrying out the development; and • the biophysical, economic and social costs and benefits of the development; • a signed declaration from the author of the EIS, certifying that the information contained within the document is neither false nor misleading.	Section Three Section Seven Section Eight Appendix Ten Appendix Twenty-Three

	The EIS must also be accompanied by a report from a suitably qualified person that: • includes an accurate estimate of the capital investment value of the • development (as defined in Clause 3 of the Environmental Planning and Assessment Regulation 2000), including details of all the assumptions and components from which the capital investment value calculation is derived. The report must be prepared on company letterhead and indicate the applicable GST component of the CIV; • an estimate of the number of jobs that will be created during the construction of the development; and • certification that the information provided is accurate at the date of preparation.	
	Key issues	
	Biodiversity	
	The EIS must address the following matters: - an assessment of the biodiversity values and the likely biodiversity impacts of the development in accordance with the Biodiversity Conservation Act 2016 (NSW), the Biodiversity Conservation Regulation 2017 (NSW) and the Biodiversity Assessment Method (BAM), and must be documented in a Biodiversity Development Assessment Report (BDAR); - the BDAR must document the application of the avoid, minimize and offset framework, including assessing all direct, indirect and prescribed impacts in accordance with the BAM.	Section Thirteen
	Water	
	the EIS must address the following matters: - an assessment of the likely impacts of the development (including flooding) on surface water and groundwater resources (including watercourses), wetlands, riparian land, groundwater dependent ecosystems, related infrastructure, surrounding Crown land, adjacent licensed water users and basic landholder rights; and measures proposed to monitor, reduce and mitigate these impacts; - a detailed site water balance for the project and a description of the water demands and identification of a water supply for the life of the project, and any water licensing requirements; and - a description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with Managing Urban Stormwater: Soils & Construction (Landcom 2004)	Section Fourteen
	Heritage	
	the EIS must address the following matters: - an assessment of the likely Aboriginal impacts of the development in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NEW South Wales (DECCW, 2010), including adequate consultation with the local Aboriginal community having regard to the Aboriginal Cultural Heritage Consultation Requirements for Proponents; - an assessment of likely non-Aboriginal heritage impacts of the project	Section Fifteen
	Land	
	the EIS must address the following matters: – including an assessment of potential impacts on the quality and quantity of the soils (including contaminated and acid sulphate soils) and land capability of the site; the proposed mitigation, management and remedial measures (as appropriate); and an	Section Sixteen

assessment of the compatibility of the development with other land uses in the vicinity of the development, in accordance with the requirements of Clause 12 of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007;	
Transport	
the EIS must address the following matters: – including an assessment of the site access route and likely transport impacts of the development on the capacity and condition of roads (including on any Crown land); a description of the measures that would be implemented to mitigate any impacts during construction; and a description of any proposed road upgrades developed in consultation with the relevant road (if required);	Section Seventeen
Noise	
the EIS must address the following matters: – including an assessment of noise impacts including traffic noise, in accordance with the Noise Policy for Industry 2017, and a draft noise management plan if the assessment shows noise is likely to exceed applicable criteria;	Section Eighteen
Air	
the EIS must address the following matters: – including an assessment of the likely air quality impacts of the development with a particular focus on dust emissions, including PM2.5 and PM10 emissions, and the mitigation measures that would be implemented to minimise dust emissions (including evidence that there are no other mitigation measures available other than those proposed);	Section Nineteen
Visual	
the EIS must address the following matters: – including an assessment of the likely visual impacts of the development on private landowners in the vicinity of the development and key vantage points in the public domain, including with respect to any new landforms;	Section Twenty
Rehabilitation	
the EIS must address the following matters: – including a detailed description of the proposed rehabilitation measures that would be undertaken throughout the development, a detailed rehabilitation strategy, including justification for the proposed final landform and consideration of the objectives of any relevant strategic land use plans or policies; and a description of the biosecurity measures to prevent the introduction of weeds and pests.	Section Five Section Twenty-One
Hazards and Radiation	
the EIS must address the following matters: – an assessment of potential radioactivity associated with the ilmenite stockpile against the NSW Radiation Control Action 1990 and Radiation Control Regulation 2013, and the proposed measures for management and handling of any radioactive material	Section Twenty-Two
Plans and Documents	
The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Regulation. Provide these as part of the EIS rather than as separate documents.	Various

	In addition, the EIS must include high quality files of maps and figures of the subject site and proposal.	
	Engagement	
	During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. The EIS must detail the engagement undertaken and demonstrate how it was consistent with the Undertaking Engagement Guide: Guidance for State Significant Projects. The EIS must detail how issues raised and feedback provided have been considered and responded to in the project.	Section Nine Section Ten

TABLE SEVEN – SEAR'S APPENDIX REFERENCE TABLE

SSD-30956841 – Relevant Requirements (appendix one) Environmental Planning Instruments, Policies, Guidelines and Plans – Note Environmental Planning Instruments are listed in section ###	Relevant EIS section(s)
Land	
Australian Soil and Land Survey Handbook (CSIRO) Guidelines for Surveying Soil and Land Resources (CSIRO) Managing Urban Stormwater: Soils & Construction (Landcom) Guidelines for developments adjoining land and water managed by the Department of Environment, Climate Change and Water (DECCW, 2010) Soil and Landscape Issues in Environmental Impact Assessment (DPI) Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (ANZECC) Agricultural Land Classification (DPI) Rural Land Capability Mapping (OEH) The land and soil capability assessment scheme: second approximation (OEH)	Section Sixteen Appendix Nineteen Appendix Twenty-One
Water	
NSW Aquifer Interference Policy 2012 (DPI) NSW Guidelines for Controlled Activities (various) (DPI) NSW State Rivers and Estuary Policy (DPI Water) NSW Government Water Quality and River Flow Objectives at http://www.environment.nsw.gov.au/ieo/ Using the ANZECC Guideline and Water Quality Objectives in NSW (DEC, 2006) National Water Quality Management Strategy: Australian Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ) National Water Quality Management Strategy: Australian Guidelines for Water Quality Monitoring and Reporting (ANZECC/ARMCANZ) Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (EPA) Managing Urban Stormwater: Soils & Construction (Landcom) and associated Volume 2E: Mines and Quarries (DECC) Managing Urban Stormwater: Treatment Techniques (EPA) Managing Urban Stormwater: Source Control (EPA)	Section Fourteen Appendix Twenty Appendix Twenty-One

Technical Guidelines: Bunding & Spill Management (EPA) A Rehabilitation Manual for Australian Streams (LWRRDC and CRCCH) NSW Guidelines for Controlled Activities (NOW) Floodplain Management Plan (DPI Water) Floodplain Development Manual (OEH) Floodplain Risk Management Guideline (OEH)	
Biodiversity	
Biodiversity Assessment Method (OEH) Threatened Species Assessment Survey and Guidelines (various - OEH) Biosecurity Act 2015 Developments adjacent to National Parks and Wildlife Service Lands Policy and Guidelines for Fish Habitat Conservation and Management (DPI) NSW State Groundwater Dependent Ecosystem Policy (DPI Water) NSW Biodiversity Offsets Policy for Major Projects, Fact Sheet: Aquatic Biodiversity	Section Thirteen Appendix Thirteen Appendix Seventeen
Heritage	
The Burra Charter (The Australia ICOMOS charter for places of cultural significance) Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW) Code of Practice for Archaeological Investigations of Objects in NSW (DECCW) Guide to investigating, assessing and reporting on aboriginal cultural heritage in NSW (OEH) Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW) Assessing Heritage Significance (NSW Heritage Office, 2001)	Section Fifteen Appendix Fifteen Appendix Sixteen
Noise	
Voluntary Land Acquisition and Mitigation Policy: For State Significant Mining, Petroleum and Extractive Industry Developments (DPE) NSW Noise Policy for Industry (EPA) NSW Road Noise Policy (EPA)	Section Eighteen Appendix Eighteen

Environmental Noise Management – Assessing Vibration: a Technical Guideline (DEC)	
Air Quality	
Voluntary Land Acquisition and Mitigation Policy: For State Significant Mining, Petroleum and Extractive Industry Developments (DPE) Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA, 2016) Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC) National Greenhouse Accounts Factors (Commonwealth)	Section Nineteen Appendix Twenty-Two
Lighting and Visual	
AS4282-1997 Control of the obtrusive effects of outdoor lighting	N/A
Transport	
Guide to Traffic Generating Developments (RTA) Road Design Guide (RMS) & relevant Austroads Standards Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development and RMS Supplements to Austroads	Section Seventeen Appendix Four
Hazards and Risks	
Australian Dangerous Goods Code NSW Radiation Control Action 1990 Radiation Control Regulation 2013 Hazardous and Offensive Development Application Guidelines – Applying SEPP 33 Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis	Section Twenty-Two Appendix One Appendix Two
Socio-Economic	
Social Impact Assessment Guideline: For State Significant Mining, Petroleum Production and Extractive Industry Development (DPE) or SIA new guidelines issued by the Department of Planning, Industry and Environment and applied subject to transitional arrangements.	Section Eight
Resource	
Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2012 (JORC)	Section Three Appendix Three Appendix Nineteen
Waste	
Waste Classification Guidelines (EPA) Protection of the Environment Operations (Waste) Regulation 2014 Environmental Guidelines: Solid Waste Landfills (EPA)	N/A

Tailings Management – Leading Practice Sustainable Development Program for the Mining Industry (Australian Government)	
Rehabilitation	
Mine Rehabilitation – Leading Practice Sustainable Development Program for the Mining Industry (Commonwealth) Mine Closure and Completion – Leading Practice Sustainable Development Program for the Mining Industry (Commonwealth) Strategic Framework for Mine Closure (ANZMEC-MCA) Mine Rehabilitation – Leading Practice Sustainable Development Program for the Mining Industry (Commonwealth) Integrated Mine Closure: Good Practice Guide (ICMM, 2019) Guidelines on Tailings Dams – Planning, Design, Construction, Operation and Closure – Revision 1 (ANCOLD, July 2019)	Section Five Section Twenty-One Appendix Five Appendix Twenty-One

24. STATUTORY COMPLIANCE TABLE

TABLE EIGHT STATUTORY COMPLIANCE TABLE

NSW State Environmental Protection Policies	Section Where Addressed
State Environmental Planning Policy (Aboriginal Land) 2019	Section Fifteen Appendix Fifteen Appendix Sixteen
State Environmental Planning Policy (Coastal Management) 2018)	N/A
State Environmental Planning Policy (Infrastructure) 2007	N/A
State Environmental Planning Policy (Koala Habitat Protection) 2019	Section Thirteen Appendix Thirteen Appendix Seventeen
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007	Section Three Section Seven
State Environmental Planning Policy No 33—Hazardous and Offensive Development	Section Twenty-Two Appendix One Appendix Two
State Environmental Planning Policy No 55—Remediation of Land	N/A
State Environmental Planning Policy (State and Regional Development) 2011	N/A
State Environmental Planning Policy (Rural Lands) 2008	N/A

25. COMMUNITY ENGAGEMENT TABLE

TABLE NINE – COMMUNITY ENGAGEMENT TABLE

Stakeholder Group	Summary of Engagement	Outcomes
General Public - All	Public Notification (local and state newspapers) – Exploration permit	Three responses received, all positive to the project
General Public - All	Public Notification (local and state newspapers) – Mining lease Application	One response, positive to the project (previous responder)
General Public - All	Public Notification (local and state newspapers, notice of development sign) – original development application	No responses to the DA were received despite advertising twice and for extended comment period (one month)
Traditional Owners – Kempsey Land Aboriginal Council	Site visit and Cultural Heritage search with Archaeologist	No CH items found, party positive to the project, commitment given to contact once site works commence
Traditional Owners – Dhungutti Elders in Council	Multiple phone calls to representative, project updates given at 6 monthly intervals	Very positive to the project, commitment to include them in the rehabilitation
Government – representatives of mining, exploration and geoscience, regional NSW gov	Multiple phone calls, emails, video conferences over 8 years with various representatives of the various departments	Neutral, assistance has been given by all involved in this application
Government – Crown Lands	Negotiation of a land access agreement, draft compensation agreement and site rehabilitation plan	Neutral, assistance has been given by all involved in this application
Government – National Parks and Wildlife Service	NPWS manage the underlaying tenure on behalf of crown lands, negotiation of a land access agreement, draft compensation agreement and site rehabilitation plan	Neutral, assistance has been given by all involved in this application
Government – Kempsey Shire Council	4-year liaison over phone, text, email and video conference over original approval of the project and detailed impact assessment including re-assessment of radiation, traffic and noise	Neutral, assistance has been given by all involved in the previous DA application and in this application

26. MITIGATION MEASURES TABLE

TABLE TEN – MITIGATION MEASURES TABLE

Specific matters of relevance to the project	Potential Impacts	Mitigation measures proposed
Traffic and parking, Public roads (local and state)	Potential impacts are interaction with local vehicles and pedestrians, increased traffic volumes and vehicles passing a school zone and residences	The potential impact of trucking of the project material from site and, to a lesser extent, the cartage of machinery to and from site may, if not managed appropriately, create traffic related risks. These will be managed by GER and its principal contractor using the following controls: Additional advisory signage: GER will work with Kempsey Shire Council to install appropriate advisory signage on the local roads within the project haulage route. Some signage already exists, however, GER will work with council to install additional truck advisor signs as required. Improve site entrance visibility: The current line of sight for the entrance to the project area is along a straight section of Point Plomer Road. However, the current entrance is lower than the road and shrouded in a heavy overgrowth of weeds. GER will build up the road access point to the stockpile using rock rubble (free draining) and clear weed undergrowth to improve visibility of truck leaving and entering site. The intersection to site will be re-established to comply with Austroad's Guide to Road Design Part 4: Intersections and Crossings – General (Austroads 2017a). Hours of operation: GER will work with the selected contractor to ensure haulage is scheduled so that trucks are not utilising the local road network during the school zone times. Trucking will be prohibited on weekends and public holidays and minimised and / or stopped during school holiday periods.

		Create and implement a Drivers Code of Conduct: GER and the contractor will ensure all drivers are inducted to site, and that this induction includes drivers signing onto a driver's Code of Conduct prior to working on the project. A Code of Conduct sets out the principles and professional standards of conduct for employees of a particular company. The Code is not generally a comprehensive set of rules, but rather a set of principles that form a framework for conduct and behaviour in the workplace. It provides guidance for staff on how to: • Carry out their duties in a lawful and ethical way, and • Interact with staff and other road users in a fair and courteous manner While a Code of Conduct may vary from workplace to workplace, the key principles should include: • Accountability • Leadership • Openness and objectivity • Honesty The Code will cover all permanent, temporary, casual, skill-hire and contract staff. The Code of Conduct should be relevant to traffic movements generated by the transporting of ilmenite from Crescent Head to South Kempsey and can't be finalised until the conditions of approval are known. GER will develop the drivers code of conduct with the successful contractor based on the sample code provided in **APPENDIX FOUR**.
Noise	There is low potential for additional traffic noise and general noise emissions from the project at sensitive receptors	Noise from the Crescent Head Project is not expected to cause an environmental nuisance, at any sensitive or commercial place. GER will utilise the following noise management strategies to reduce the risk of nuisance: • Restriction of haulage and site works to the hours between 6 am and 6 pm, during weekdays. • No haulage will occur on public holidays • The use of low noise emission machinery (front end loader or equivalent) to load trucks

		• Speed limiting of haul trucks within the built-up area of the Crescent Head community to 40 km/hr GER will conduct noise monitoring in response to complaints from residents (i.e., sensitive places) or following a request from the regulator. Should noise monitoring undertaken in response to a complaint exceed the noise limits as defined in the relevant EPA guideline, GER will implement a risk treatment process which either: • Addresses the complaint including use of appropriate dispute resolution processes if required; or • Implements noise abatement measures so that noise emissions from the activity do not result in further environmental nuisance.
Visual	Removal of the ilmenite pile is expected to create a short-term visual impact. Impact will diminish once revegetation has occurred	Given the distances to surrounding residences, no visual impact is expected on nearby residences. Users of Point Plomer Road will notice some temporal disturbance, however the site will be fenced with security fencing shrouded in shade cloth.
Biodiversity - Terrestrial flora and fauna	The Project may have temporary impacts on native vegetation and threatened species. As no native regrowth is proposed to be disturbed, impacts on biodiversity are expected to be very low. All Koala trees will be retained, some temporary interruption to the movement of Koalas may occur due to site noise	A comprehensive Biodiversity Impact Assessment has been undertaken to identify the presence and status of the EECs and individual species within the area to be disturbed. The disturbance footprint or Impact Area for the project has been kept within the boundaries of the ilmenite pile itself and its existing access track. As outlined in **SECTION THIRTEEN**, the impacts of the project on the biodiversity values of the lot, if kept within the footprint outlined in **FIGURE FOUR** will be extremely low. To ensure all site personnel are kept within this boundary, the following measures will be undertaken: • Maintenance and protection of all vegetation outside the impact area and thus within the designated area for conservation. • Prior to the commencement of any construction works on site, clear marking of any trees to be protected in the immediate vicinity of clearing and distinctive marking of trees to be removed, such that there is no room for confusion regarding tree removal/protection.

		• Clear visual delineation of total Impact Area to avoid any confusion by resource recovery machinery operator/s. • Installation of boundary fencing • Pre-clearing checks by a suitably qualified ecologist to be undertaken immediately prior to clearing activities to ensure there are no fauna issues, such as small ground fauna sheltering in dense grass/ground cover, nesting birds, roosting microbats, requiring specific procedures. In the unlikely scenario of an individual Koala being located in one of the trees adjacent or within the Impact Area immediately prior to clearing, a buffer of 10m will be established around the tree and the Koala left to move on of its own accord. • Supervision of clearing operations by a suitably qualified ecologist/fauna spotter/wildlife carer if potential fauna issues are identified. • Ongoing restriction of resource recovery operations to daylight hours • Ongoing maintenance of best practice on-site biosecurity hygiene measures for machinery and on-site personnel to minimise the risk of introducing or spreading exotic weeds, pests, or diseases, and • Implementation of the approved Rehabilitation Strategy (**APPENDIX FIVE**), which outlines the effective rehabilitation of the areas to be cleared. The strategy will prescribe management measures, including planting and weed control procedures. KFTs are a priority for proposed plantings post resource recovery.
Biodiversity – Conservation area	Impact on the character and values of the conservation area	The company will not cause an environmental impact, which amounts to environmental harm beyond the boundary of the "nominated ilmenite removal area" outlined in **FIGURE FOUR**. GER will implement the control strategies detailed in this EIS to not cause environmental harm beyond the nominated ilmenite removal area. Specific control measures may be implemented following any risk assessments, and monitoring systems may be modified as the likelihood of off-site impacts change.

		As detailed in the Project Execution Plan (**APPENDIX TWO**) and in **SECTION 4**, a temporary site boundary barrier will be installed to limit access to site operations. Depending on the identified risk, this barrier may take the form of temporary fencing, portable traffic barriers or in already inaccessible heavily vegetated areas, barrier tape and signage, with a minimum of 6ft high portable cyclone fencing along the boundary with Point Plomer Road.
Built environment - Public Land	Potential impacts on Crown Land values	The BDAR assessment and proposed rehabilitation of the site has addressed the risk of any potential lessening of crown land values. A rehabilitation management plan has been prepared for the site and the controls proposed are outline in **SECTION FIVE** and **APPENDIX FIVE**
Public infrastructure	Potential impacts are interaction with local vehicles, increased traffic volumes and vehicle passing a school zone	The traffic assessment has concluded that the existing road network is suitable for the proposed project without any requirements to upgrade the public infrastructure. As mentioned above, the mitigation measures proposed in the Traffic section will negate the risk to public infrastructure.
Environmental Hazards	None anticipated as below radiation levels of concern	Radiation assessment has been documented in the EIS and assessed as per SEPP 33 and found not to be at levels that pose a risk to human health nor require additional controls
Water impacts Flooding	Site is included in the local flood mapping, namely due to its predominately paperbark community. There is very low risk of flooding on site	No works to occur in the unlikely event the site is flooded by rising groundwater levels. There is no direct flooding risk of the site
Waste	Emphasis will be placed upon avoiding any impacts of hazardous materials on the workforce and persons living/travelling in the vicinity of the Project Site. All chemicals would be transported, stored, and used in accordance with manufacturers' specifications.	All materials will be managed in accordance with the Project Execution Plan (**APPENDIX TWO**)

Aboriginal Heritage Historic Heritage	The approach to the management of any identified cultural heritage sites would be developed in consultation with RAPs.	A detailed cultural heritage assessment of the proposed disturbance footprint has been undertaken. No items of cultural heritage are deemed to be present in the area. This is outlined in **SECTION FIFTEEN** and **APPENDIX FIFTEEN** and **SIXTEEN**,

27. SPECIALIST ASSESSMENT REPORTS

- APPENDIX ONE – RADIATION ASSESSMENT
- APPENDIX TWO – PROJECT EXECUTION PLAN
- APPENDIX THREE – RESOURCE ESTIMATE (JORC)
- APPENDIX FOUR – TRAFFIC ASSESSMENT
- APPENDIX FIVE – REHABILITATION STRATEGY
- APPENDIX SIX – PUBLIC NOTIFICATION NOTICES
- APPENDIX SEVEN – EXPLORATION LEASE GRANT
- APPENDIX EIGHT – LANDOWNER ACCESS AGREEMENT
- APPENDIX NINE – SECTION 11A APPLICATION
- APPENDIX TEN – CAPITAL INVESTMENT REPORT
- APPENDIX ELEVEN – RENEWAL OF EXPLORATION LICENCE 8085
- APPENDIX TWELVE – KEMPSEY SHIRE COUNCIL DA ADVICE
- APPENDIX THIRTEEN – BIODIVERSITY ASSESSMENT
- APPENDIX FOURTEEN – COMMUNITY ENGAGEMENT PLAN
- APPENDIX FIFTEEN – CULTURAL HERITAGE REPORT
- APPENDIX SIXTEEN – KEMPSEY ABORIGINAL LANDS COUNCIL SITE REPORT
- APPENDIX SEVENTEEN – FLORA AND FAUNA SURVEY
- APPENDIX EIGHTEEN – NOISE ASSESSMENT
- APPENDIX NINETEEN – GEOLOGY AND MINERALOGY ASSESSMENT
- APPENDIX TWENTY – FLOOD SEARCH RESULTS
- APPENDIX TWENTY-ONE – WATER AND SEDIMENT PLAN
- APPENDIX TWENTY-TWO – AIR QUALITY ASSESSMENT
- APPENDIX TWENTY-THREE – EIS DECLARATION