

# GREAT WHITE KAOLIN PROJECT

## PROJECT OVERVIEW

*Andromeda Metals is a fast-growing South Australian company with a vision to supply the world with superior quality industrial minerals. The Great White Kaolin Project is owned by Andromeda Metals and includes the Great White Deposit and Hammerhead Deposit, as well as several other exploration targets.*

The Great White Deposit (the Development) is located 50 km east of Streaky Bay, on Poochera – Port Kenny Rd. The Development involves the mining and processing of kaolin ore. Overburden and sand removed will be used to reform the surface and backfill the mined area. Kaolin will be transported to end users.

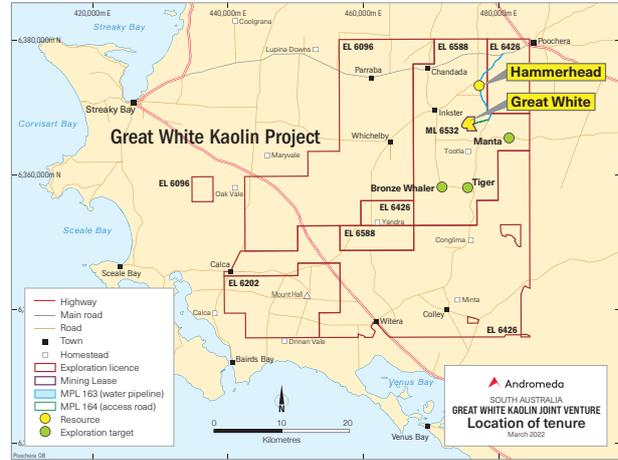
Mining Tenements granted for the Great White Kaolin Project in December 2021 include:

- Mining Lease (ML) 6532 over the Great White Deposit for the mine, processing plant and supporting infrastructure
- Miscellaneous Purposes Licence (MPL) 163 for a pipeline to supply water to the ML
- MPL 164 for an access road from Poochera – Port Kenny Road to the ML.

Kaolin from the Development is a fine white clay typically composed of 50% mineral kaolinite and 50% sand, derived from the weathering of granite. The kaolinite is present in the form of flat microscopic platelets approximately 0.003 mm thick and in a rare tubular form (nanotubes) called halloysite. Kaolinite is chemically inert and non-abrasive.



Kaolin product



Great White Kaolin Project location

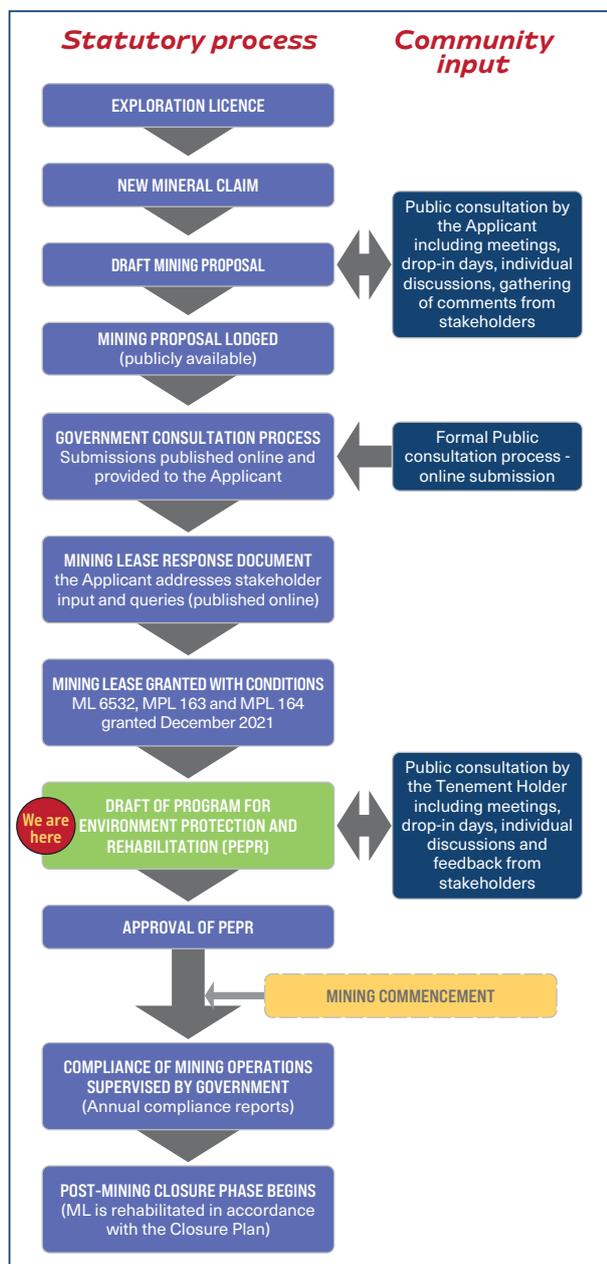
Kaolin has application in a number of industries including:

- Paints and coatings
- Ceramics
- Concrete
- Paper and paperboard
- Rubber and plastics
- Pharmaceuticals and medical
- Cosmetics
- Fiberglass
- Agriculture and horticulture.

A number of these sectors are experiencing an increase in demand for kaolin.

The Development is among the world's largest resources of halloysite-kaolin. The naturally occurring blend of kaolinite plates and halloysite tubes makes it well suited to high-end porcelain applications within the ceramics industry. The kaolinite present in the deposit is also ideal for the paints and coatings industries due to its purity and high brightness.

*Andromeda is committed to open, transparent and engaging dialogue with all stakeholders and communities during all phases of the Development including construction, operation and closure. We are also actively engaged with The Wirangu who have connection to the country associated with the Development. We acknowledge the history of both Traditional Owners and European settlers in the region.*



In South Australia, the Department for Energy and Mining (DEM) administers the process for the approval of mining projects.

Applications for a ML and two MPLs, supported by a Mining Proposal describing the Development, were submitted to DEM in February 2021. The Minister for Energy and Mining granted ML 6532, MPL 163 and MPL 164 (the Mining Tenements) in December 2021, subject to various conditions.

Andromeda's focus is now on the compilation of the Program for Environment Protection and Rehabilitation (PEPR) which details how Andromeda will show and measure compliance with the conditions of the Mining Tenements.

The PEPR demonstrates that:

- all potential environmental impacts (including ecology, soils, heritage, air quality, noise, traffic, groundwater and surface water) of the Development have been identified.
- the control strategies proposed for each stage of the Development will reduce all potential impacts to a risk level of as low as reasonably practicable.
- Andromeda will ensure regulatory requirements and commitments to the community are met at all stages of the Development, including construction, operation and closure.

## COMMUNITY ENGAGEMENT

Andromeda recognises that engagement with the community and stakeholders is an ongoing and continuous process. Understanding the views of our stakeholders is a priority. We are committed to working and communicating with all stakeholders in an open and transparent manner.

Feedback on the Development can be provided by visiting [www.andromet.com.au](http://www.andromet.com.au)

# GREAT WHITE KAOLIN PROJECT

## MINING LEASE CONDITIONS AND OUTCOME CRITERIA

### OUTCOMES (INCLUDING MINING LEASE CONDITIONS)

Andromeda will demonstrate in its PEPR submission that the outcomes are, and will continue to be, achievable throughout the construction, operation and completion of mining operations. These outcomes include those specified in the schedules of the Mining Lease (and the supporting Miscellaneous Purposes Licences) and referred to as the Mining Lease Conditions (MLC).

### CONTROL AND MANAGEMENT STRATEGIES

The Mining Regulations require that Andromeda set out the planned strategies to minimise or avoid impacts on the environment to achieve the required environmental and rehabilitation outcomes.

Control and Management Strategies should:

- be proportionate to the consequence of the impacts on environmental receptors
- be technically and economically achievable
- implement best practice in mining and environmental management. Best practice control strategies are accepted or prescribed as being correct or most effective depending on the specific environmental setting and the results of the environmental impact assessment.

### MEASUREMENT CRITERIA

Measurement Criteria are how Andromeda will demonstrate that it complies with the *Mining Act (1971)* and that the environmental outcomes (MLC) have been achieved.

Measurement Criteria include:

- what is to be measured and the form of the measurements
- locations where relevant measurements will be taken, or how such locations will be determined
- a proposal of what will constitute achievement of the relevant outcomes, with consideration given to any inherent errors of measurement
- frequency of measuring or monitoring
- background or control data to be used and how such data will be acquired
- set out Leading Indicator Criteria, if there is a high level of reliance on control strategies to reduce risk to the environment.

Measurement Criteria will form the basis for DEM's regulation of the operation, and will also form the basis of Andromeda's operational and closure compliance monitoring programs.

### LEADING INDICATOR CRITERIA

Leading Indicator Criteria are required in the environmental outcomes (MLC) where there is a high level of reliance on control strategies to achieve an environmental outcome. These provide early warning that the control strategy may be, or is, failing and that the outcome is potentially at risk of not being achieved, and provides time to respond accordingly. Leading Indicator Criteria relate to the proposed control measures, such as audits of the management system, near misses or trends in environmental data.

Andromeda has developed Leading Indicator Criteria for each environmental outcome that relies significantly on a control strategy to ensure it is achieved. If Leading Indicator Criteria are triggered, Andromeda will undertake immediate management action, intervention and reporting.



Kaolin will be mined using conventional open cut techniques (excavators and trucks), to an average depth of approximately 40 metres, with shallow angled walls.

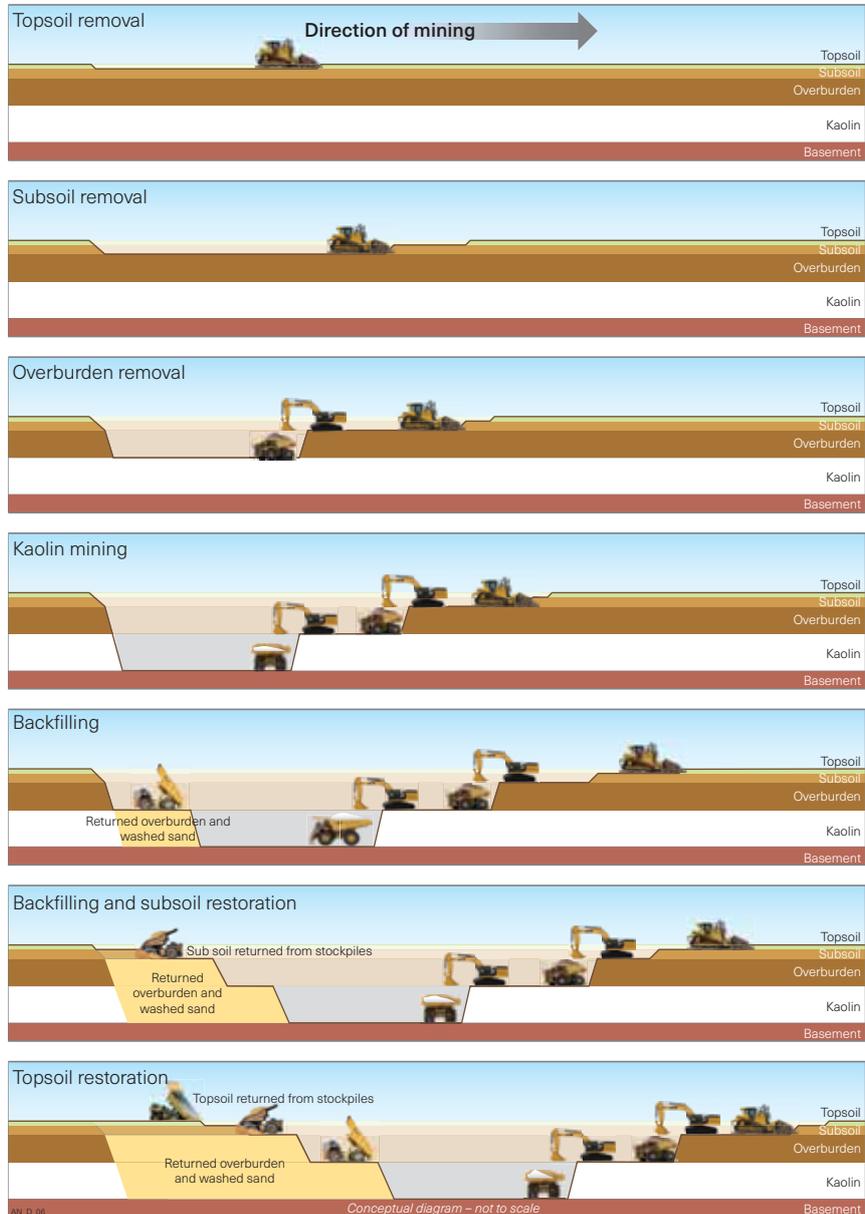
Processing of the kaolin ore uses a physical washing method in which minimal process chemicals are used. A by-product of the process is washed sand. This sand can be used in commercial applications or returned to the mined area as part of the backfill and rehabilitation. There are no tailings or tailings storage facilities planned for the Development.

Overlying layers of silcrete and calcrete may require limited drilling and blasting, on an as needs basis.

Approved operations at the Development include:

- kaolin being fed into a wet-processing plant. The plant will separate the two main components of kaolin: kaolinite and sand. Washed sand will be returned to the mined area or stockpiled for sale. The stockpiled kaolinite concentrate will be dried and bagged for trucking to port
- kaolin shipped offsite as Direct Shipping Ore (DSO) for processing overseas by customers.

### Mining sequence



D9 dozer



90T excavator



45T dump truck

*The mining schedule is planned to minimise the extent of exposed areas susceptible to wind erosion. Mined areas will be backfilled and rehabilitated to cover exposed ground with vegetation as soon as practicable. The cumulative predicted dust impacts demonstrate compliance at all receptors surrounding the Development, resulting in an expected minimal impact.*

### DUST

Andromeda will undertake ongoing air quality monitoring around the ML. The results of the dispersion modelling assessment undertaken for the Development indicate that the air quality criteria are all predicted to be achieved during construction and operation. The results of the dispersion modelling assessment undertaken for the Development indicate that the air quality criteria are all predicted to be achieved during construction and operation.

Air quality is categorised for measurement and monitoring by the range of particles within the air as a PM level.

- Particles <2.5 micron – PM<sub>2.5</sub>
- Particles <10 micron – PM<sub>10</sub>
- Particles <50 micron – Total Suspended Particulates (TSP).

### DUST SOURCES

A number of likely sources of dust during construction and operation of the Development have been identified:

- Loading, unloading and hauling ore and overburden
- Hauling ore to the run-of-mine (ROM) stockpile
- Construction of the access road
- General vehicle movements
- Wind erosion from exposed surfaces (i.e. overburden and ore stockpiles)
- Drilling and blasting of overburden rock.

### DUST MANAGEMENT

Mitigation strategies will be applied to ensure the Development remains well below the allowable air quality emissions. On-site management and mitigation strategies include:

- Use of water trucks, as necessary
- Maintenance of internal and access roads with use of dust suppressants (biodegradable binder)
- Minimisation of vehicle movements and speed
- Use of covered trucks to transport product
- Minimisation of areas exposed to wind erosion – immediate production area only to be opened to mining
- Rehabilitation of land, as soon as practicable
- Landscaped earth bunds and boundary vegetation surrounding the operating area to provide windbreaks.



Existing landscape

Resonate Consultants completed a Noise Impact Assessment on the Development. The results of the assessment are:

- The area of the Development is characterised as typically quiet, as expected of a remote rural location.
- Existing noise is largely generated by local farming activities (particularly during harvest periods) and distant traffic.

Noise limits are set in accordance with the EPA's Environment Protection (Noise) Policy 2007 (Noise EPP).

### CONSTRUCTION NOISE LIMITS

Construction activities are regulated under the Noise EPP, which requires all reasonable and practicable measures to be taken to minimise noise. Construction activity that is within an average sound level (Leq) of 45dB(A)<sup>1</sup> and a maximum (Lmax) of 60dB(A) at the closest receptor can occur at any time.

If construction activities results in noise that exceeds these limits, the activity:

- must not occur on a Sunday or other public holiday, and
- must not occur on any other day, between 7pm and 7am.

<sup>1</sup> dB(A) means units of the A-weighted sound level. A-weighting means a spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies.

### OPERATIONAL NOISE LIMITS

Mining activities are also regulated under the Noise EPP. The relevant criteria for the Development will be the average of the indicative noise factors for the source and receivers. The following environmental noise criteria is applied for all receivers:

- 57dB(A) during the day, 7am to 10pm
- 50dB(A) at night, 10pm to 7am.

Blasting, which will be conducted on an as needs basis, will be governed by Australia Standard AS 2187.2 – 2006 Explosives – Storage and use – Use of explosives. The relevant criteria is:

- 115dB for 95% of all blasts per year and
- 120dB maximum, unless a higher level is agreed upon.

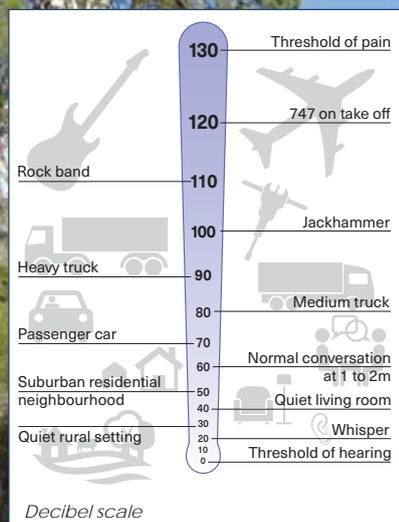
### NOISE SOURCES

- operation of mobile plant (excavator/s and trucks)
- vehicle movements
- blasting (as required)
- operation of wet processing plant
- power generation

### NOISE MANAGEMENT

Noise generation will be managed by:

- selecting low noise producing equipment wherever possible including:
  - gas turbine power generation over diesel alternatives
  - broadband noise reversing alarms (non-beeper type)
  - ensuring appropriate noise attenuation fitted.
- ensuring equipment shut down if not operated
- regular servicing of plant and equipment
- distributing stockpiles to assist with noise shielding
- scheduling particularly noisy activities to commence after 7am where reasonable and practicable to do so.



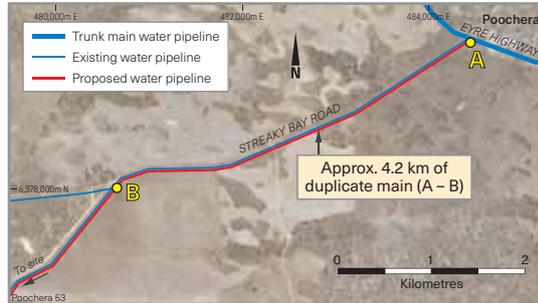
### WATER

Water is required for on-site processing of kaolin ore and dust suppression.

Water will be trucked to site from Poochera as required for potable water and dust suppression using B-double trucks until the Development is connected to the SA Water supply network.

Mains-supplied water is required for wet-processing the kaolin ore to remove the sand and produce a high-value kaolinite product. Water will also be used for dust suppression around the mine and on local roads.

The Development will retain and recycle over 90% of its water. A Reverse Osmosis (RO) plant is planned to be located at site to treat saline water as part of the recycling process.



### DUPLICATING STREAKY BAY ROAD INFRASTRUCTURE

Andromeda proposes to duplicate the existing infrastructure along Streaky Bay Road from the Eyre Highway (A) to Poochera – Port Kenny Road (B). The new pipe will be larger in diameter than the current infrastructure and installed at Andromeda’s cost.

Andromeda is currently working with SA Water to determine infrastructure requirements for water supply. The proposed infrastructure will be designed to supply water to the Development without any adverse impacts to existing water users. This is in line with commitments by both SA Water and Andromeda of no adverse impacts to water supply or pressure of existing users.

### WATER PIPELINE TO SITE

A new water pipeline has been designed to extend water supply from Streaky Bay Road to site, and will be installed in the Poochera – Port Kenny Road reserve and adjacent to the Development’s access road.

### POWER MANAGEMENT

On-site gas turbine generation is proposed for the Development. Other options assessed have included connection to the power grid and diesel generators.

### GROUNDWATER

Groundwater is present in aquifers within the Garford Formation and underlying fractured granite which receive limited recharge from local winter rainfall. Recent water investigation bore installation and pump testing indicate the fractured rock aquifer beneath the Mining Lease is compartmentalised, with fractures not uniformly connected. Water quality is suitable for industrial purposes but marginal for stock use and unsuitable for human consumption.

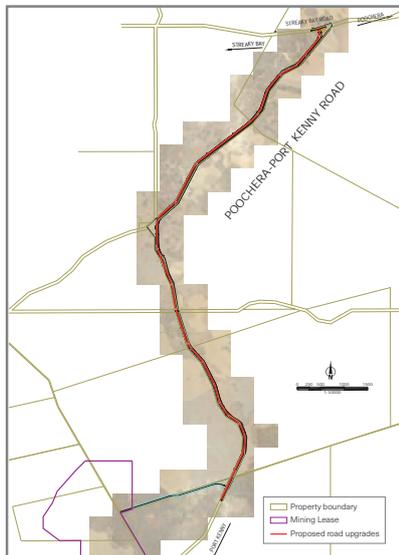
Andromeda has had modelled groundwater beneath and adjacent the ML. Existing bores within the area have been surveyed and the closest groundwater user is located approximately 4 km south of the Development. Over the life of the mine (28 years), modelling has indicated that up to 0.1 m of drawdown is possible within the Garford formation, at 2 km from the pit.

Andromeda will regularly survey the water levels of bores at the Development to monitor for any impact from operations. Any drawdown is not expected to impact identified existing users of groundwater.



*It is expected that up to 10 trucks loaded with bagged product will depart site daily in the initial stages of the Development, with up to 20 proposed when the Development expands.*

*Trucks will be A-triple or quad road trains, which will be determined through a tender process with logistics companies, and in conjunction with the Department for Infrastructure and Transport.*



Engineering designs, Poochera - Port Kenny Road

### PROPOSED TRAFFIC ROUTE

Tonkin Consulting have assessed traffic routes from the Development to three potential port options:

- Thevenard
- Lucky Bay
- Whyalla.

Transport routes will vary dependant on the chosen port location. Andromeda has committed to upgrading Poochera - Port Kenny Road and associated intersections to accommodate haulage trucks from the Development. This commitment extends to ongoing maintenance of the road for the life of the mine. The redesign of the road will benefit all road users.

### STREAKY BAY ROAD INTERSECTION

The intersection of Poochera - Port Kenny Road with Streaky Bay Road will be upgraded to support the Development. Upgrade designs have been provided to both the Department for Infrastructure and Transport and the District Council of Streaky Bay for review and approval. The intersection will be widened to cater to all trucking configurations considered for use at the Development.

An assessment of sight distances for vehicles entering Streaky Bay Road from Poochera - Port Kenny Road has found that the roads exceed the relevant Performance Based Standards (PBS). The existing lane and shoulder widths of Streaky Bay Road to Poochera are also acceptable, based on the PBS.

### ROAD SAFETY AND THE CHANDADA SCHOOL BUS

As part of ongoing community engagement, Andromeda maintains communication with the Karcultaby Area School and Chandada school bus drivers. Andromeda has committed to halting haulage trucks along Poochera - Port Kenny Road during the time of school bus runs.

### ROAD SAFETY AND LOCAL ROADS

As a result of ongoing discussions with the local community, Andromeda will implement a policy directing all mine traffic to use Poochera - Port Kenny Road, in order to minimise the impact to other roads and road users in the area.



Engineering designs, intersection of Streaky Bay and Poochera - Port Kenny Road

# GREAT WHITE KAOLIN PROJECT

## ECONOMIC OPPORTUNITY

### EMPLOYMENT

The Development is anticipated to create approximately 75 jobs (including transport) once fully operational, with most employees to reside in the local area and services to be sourced from the region. These jobs include:

#### TECHNICAL

- engineers
- geologists
- surveyors.

#### OTHER DISCIPLINES

- environmental scientists
- equipment operators
- processing plant controllers
- fixed and mobile plant maintenance personnel
- geological assistants
- drillers
- administration staff.

### SUPPLY CHAIN

It is anticipated that works will be planned and put out for tender, with local and regional businesses able to submit a proposal in response to work requests. Contract and business opportunities likely to go to tender include:

#### CONSTRUCTION

Construction will include:

- road building and intersection upgrades
- office, workshops, ablution block and hard stand area.

The processing facility will require:

- fixed plant delivery/transport
- construction of tanks and bunding
- concreting
- shed building
- plumbing
- electrical reticulation
- crane hire
- mechanical installation
- general construction.

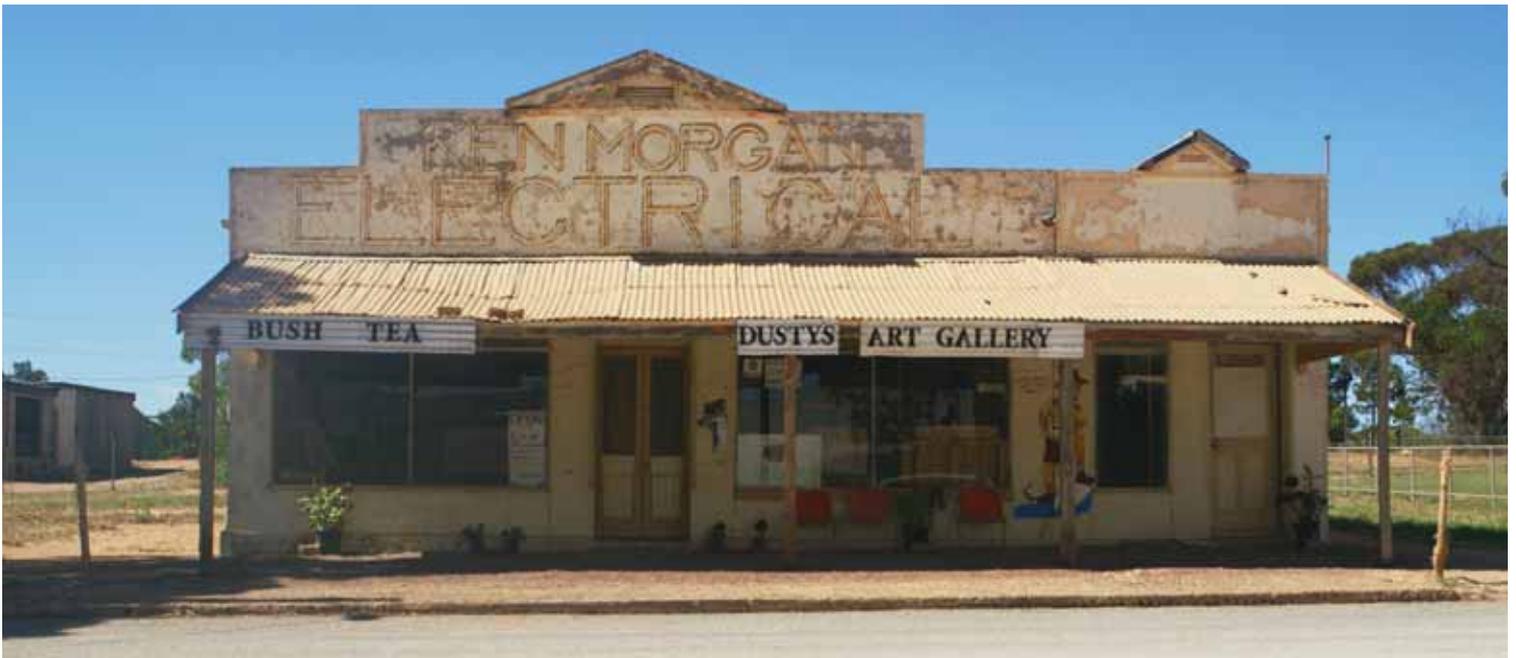
### OPERATIONS

During mining operations, contractors will be required for:

- cleaning
- haulage
- supply of fuels and lubricants
- general consumable supplies
- transport and delivery.

#### SUPPORTING ACTIVITIES

- environmental monitoring
- earth moving/civil works
- uniform suppliers
- safety equipment suppliers
- hardware/auto
- supermarkets
- local hotels/bakery/catering
- accommodation.



*We are committed to building strong partnerships with the community in which we work.*

*The Development is located predominantly within existing freehold agricultural land, used for dryland, broadacre farming and sheep grazing.*

### FLORA AND FAUNA

Environmental Protection and Biodiversity Conservation (EPBC) and Biological Database of South Australia (BDBSA) desktop assessments have been completed for the Development to determine the potential for threatened flora and fauna species. No state or nationally listed flora was recorded by either EBS Ecology or Ecological Horizons during their respective ground surveys. No Threatened Ecological Communities listed under the EPBC Act were identified as being likely to occur within 10 km of the Development area.

Several on ground surveys have been conducted for the Development including:

- Springtime flora and fauna surveys undertaken by BlackOak Environmental and EBS Ecology
- Native Vegetation Assessment undertaken by EBS Ecology
- Springtime survey for Malleefowl, West Coast Mintbush and Dinosaur Ant (*Nothomymecia*) completed by Ecological Horizons.

### NATIVE VEGETATION HERITAGE AGREEMENT (HA 511)

MPL 164 (access road) includes a portion of Crown land covered by Native Vegetation Heritage Agreement (HA 511) impacted by historic quarrying. The access road has been designed to minimise impacts on cropping land and native vegetation.

### OFFSETS

An environmental offset – called a Significant Environmental Benefit (SEB) – will be required for any native vegetation cleared as part of the Development. Offset strategies include:

- payment to the Native Vegetation Fund
- protecting an area of land (separate from the Development) for conservation that provides environmental gains over and above any impact to native vegetation.

Further studies are currently underway to determine a strategy for environmental offsets, including:

- identification and detailed surveys of potential offset areas
- SEB calculations to determine the offset value and suitability of proposed areas.

### LAND REHABILITATION

Rehabilitation will involve the backfilling of the pit where possible and reforming the land profile to a stable form prior to the reinstatement of soils. Investigations of the soil profile indicate it is naturally high in boron and may not be suitable for cropping following mining. Andromeda is committed to reinstating the land to a safe and stable condition which includes re-vegetation. As the mine progresses and overburden is backfilled in the mined area, the rehabilitated landform surface may be lowered due to the removal of kaolin ore with changes to the resulting landform slopes.



# GREAT WHITE KAOLIN PROJECT

## MINE CLOSURE

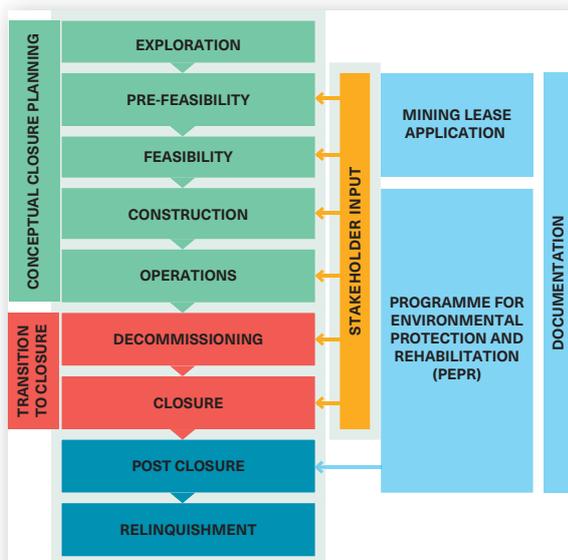
*A mine closure plan will be approved by the Department for Energy and Mining as part of the PEPR before any construction works or mining start.*

The closure plan will prevent or minimise adverse long term environmental, physical, social and economic impacts, and create a stable, non-polluting landform. It requires significant proof and ongoing environmental monitoring to ensure that a mine site is left suitable for other uses.

Refining of the kaolin ore uses a physical washing method in which minimal process chemicals are used. A by-product of the process is washed sand. This sand can be used in commercial applications or returned to the mined area as part of the backfill and rehabilitation. There are no tailings or tailings storage facilities in the Development.

The closure plan will cover:

- Potential land use options
- Final landform
- Proposed vegetation covers (including native vegetation that will not be disturbed due to proposed mining operations)
- Any infrastructure that will remain on-site and will become the responsibility of the future landowner or land user, including sheds or dams
- Location of rehabilitated areas showing surface contours and native vegetation
- Predicted final groundwater levels.



### CLOSURE OUTCOMES

- Land is progressively and finally rehabilitated to support the future land use
- Existing (pre-mining) soil quality and quantity is maintained
- No contamination of land and soils either on or off site after mine completion occurs as a result of mining operations
- No impacts to agricultural productivity for third party land users on or off the Land as a result of dust generated from mining operations, other than those agreed between the Tenement Holder and the affected user
- The risks to the health and safety of the public so far as it may be affected by mining operations are as low as reasonably practicable
- No public health impacts from air emissions and/or dust generated by mining / ancillary operations
- The form, contrasting aspects and reflective aspects of mining operations are visually softened to blend in with the surrounding landscape
- Noise emanating from operations is in accordance with the current amenity as defined by the Environment Protection (Noise) Policy 2007 and the relevant land use zoning as defined by the Planning, Development and Infrastructure Act 2016 at the date the Mining Lease was granted
- No damage, disturbance or interference to Aboriginal and non-Aboriginal heritage sites, objects or remains unless it is authorised under the relevant legislation.