



# East Guyong Quarry NSW

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## 1. Overview

This report details the proposed relocation of the quarry infrastructure area (also referred to as the “work pad”) for the purposes of forming the basis of the Preferred Project which the proponent is seeking consent for.

### 1.1. Background

In September 2009 the proponent (Hanson Construction Materials Pty Ltd) submitted an Environmental Assessment Report (EAR) to the NSW Department of Planning (DoP) for a proposed hard rock quarry located on lots 110 and 111 of DP852503, and lots 3,4, and 5 of DP854608, off the Mitchell Highway, Guyong NSW.

The EAR was placed on public exhibition from 14 October to 11 November 2009. During this period a number of submissions were received in response to the proposed project. A submission received from an adjoining property owner brought to the proponent’s attention anecdotal evidence of the presence of Naturally Occurring Asbestos (NOA) on the proposed Project site. In response to the concerns raised during the public exhibition period the proponent commissioned Rangott Mineral Exploration Pty Ltd to conduct an examination of the site to determine whether or not NOA is present at the site, and if so, the asbestiform mineral species which are present, and the extent of the asbestos mineralisation. The detailed findings of the report can be found in the *Report on the Occurrence and Distribution of Asbestos Minerals at the Planned Lyndon Quarry Site (2009)*, by Rangott Mineral Exploration Pty Ltd.

The key findings from this report were:

1. The proposed basalt deposit and extraction quarry pit have a negligible risk of encountering asbestiform materials to proposed base of pit (30m depth).
2. There is an area where there is a risk of encountering asbestiform materials only at substantial depths.
3. There is an area where there is a high risk of encountering asbestiform materials with 1-5m of the surface.
4. There is an area where there is a high risk of encountering asbestiform materials within 1m of the surface.
5. The areas 3 and 4 above should be capped with the topsoil/overburden which will be removed from the quarry pit section (area 1 above) to a depth of approximately 5m.

The areas listed above are shown in figure 2 and figure 5.

- Area 1 is shaded in white.
- Area 2 is shaded in green.
- Area 3 is shaded in yellow.
- Area 4 is shaded in orange.

The findings of the Rangott Report meant that the proposed quarry project site layout and design as detailed in the EAR would have some components of the project in areas where there is a high risk of encountering asbestiform materials within 5m of the surface. As shown on figure 5 titled *East Guyong Quarry Initial EAR Project Asbestos Risk*, sections of the infrastructure area (work pad) were located in areas 3 and 4 identified above. These components of the quarry infrastructure in areas 3 and 4 included:

- Site access road.
- Weighbridge and office.
- Workshop and bunded oil storage.
- Stockpile areas.
- Tertiary crusher and screens.
- 3ML sediment dam and 10ML storage dam.
- Woodlot.

## 1.2. East Guyong Quarry Preferred Project Proposal

In light of the developments regarding NOA, the Project as presented in the EAR the proponent will be required to address how the Project will be constructed and operated without increasing the risk to employees, neighbours, and the general public.

### 1.2.1. Risk Management

The risks must be minimised to the lowest reasonably practicable level by taking the following measures in the following order. In most cases a combination of elimination, substitution, engineering controls, administrative controls and PPCE are chosen to effectively control the risks. The widely recognised hierarchy of risk controls is listed in table 1 below.

<b>Elimination</b>	The job is redesigned or the substance is eliminated so as to remove the hazard. However, the alternative method should not lead to a less acceptable product or less effective process.
<b>Substitution</b>	Replace the material or process with a less hazardous one. For example, replace mercury thermometers with spirit thermometers.
<b>Engineering controls</b>	Install or use additional machinery such as local exhaust ventilation to control the risk. Separating the hazard from operators by methods such as enclosing or guarding dangerous items of machinery. For example, use guards on compression testing machines.
<b>Administrative controls</b>	Reduce the time the worker is exposed to the hazard. Prohibit the eating, drinking and smoking in laboratory areas. Provide training. Perform risk assessments. Increase safety awareness signage.
<b>Personal Protective Clothing and Equipment</b>	Only after all the previous measures have been tried and found to be ineffective in controlling the risks to a reasonably practicable level, then Personal Protective Clothing and Equipment must be used. If chosen, PPCE should be selected and fitted to the person who uses it. Workers must be trained in the function and limitation of each item of PPCE. For example, an operator should know how long the compressed supply in a self contained breathing apparatus will last. PPCE may be used as a temporary control measure until other alternatives are installed.

Table 1- Hierarchy of risk controls.

Source: University of NSW.

Table 2 indicates the outcomes of applying the above control measures to the Project to the end effect of minimising the risk associated with the NOA to the lowest reasonably practicable level.

<b>Elimination</b>	<b>Action-</b> Relocation of infrastructure components of the quarry outside of areas 3 and 4.	<b>Outcome-</b> Quarry processes within the NOA hazard are removed. Alternative method does not lead to a less acceptable product or less effective process.
<b>Substitution</b>	<b>Action-</b> Capping of areas 3 and 4 with topsoil/overburden.	<b>Outcome-</b> Quarry processes occur on topsoil/overburden capping and not NOA soils.
<b>Engineering controls</b>	<b>Action-</b> Fence off areas 3 and 4 to prohibit unauthorised access.	<b>Outcome-</b> Separates the hazard from employees, visitors, general public.
<b>Administrative controls</b>	<p><b>Action-</b> Install signage, provide training and develop appropriate SWMs, JSAs, community consultation plans, and site protocols to make employees, visitors, and the community aware. Develop contingency and emergency response plans.</p> <p><b>Action-</b> Develop a NOA monitoring plan.</p>	<p><b>Outcome-</b> Stakeholders have a greater understanding of the hazard and are aware of the correct procedures and actions required to minimise the risk.</p> <p><b>Outcome-</b> A better understanding of the existing background levels prior to Project commencement. Ability to detect any changes to background levels and take action accordingly.</p>
<b>Personal Protective Clothing and Equipment</b>	<b>Action-</b> At all times keep adequate stocks on the premises the required PPCE in the event that the likelihood of exposure is detected.	<b>Outcome-</b> Stakeholders have access to the required PPCE in the event where exposure to the risk is unavoidable.

Table 2- Risk assessment of the proposed Preferred Project Actions.

## 2. DEVELOPMENT ESTABLISHMENT

### 2.1. General

The total area of the site is 147.28 ha; 15 hectares will be occupied by the quarry for extraction stages 1 to stage 7; 9.5 hectares for additional reserve to the west; 6.8 hectares for the plant and stockpile area; and 3.4 hectares for the access road. The first stage of the development involves the construction of the haul road to the



quarry face, construction of sedimentation dams, preparation of the plant site, establishment of the quarry face (including the removal of some vegetation), construction of the quarry facilities (i.e. buildings, crushers, etc.) and the quarry access road.

## 2.2. Access Road

The road from the Mitchell Highway will have access and passing lanes, allowing for trucks and other vehicles to turn safely into the quarry. Where practicable, the access road will be asphalt sealed and extended to internally installed shaker grids at the boundary of the weighbridge and stockpile area. The Preferred Project site access road will adopt a route deviating away from NOA affected areas following the proposed corridor as shown on figure 1.

The sealed entry road will have grades of less than 15% and will be constructed with adequate erosion and drainage control measures. A minimal amount of vegetation will be cleared during the road construction and will be used as mulch or seed beds in any re-vegetation works. The recommended driveway geometric design shown in annexure B of the Traffic Impact Assessment for Proposed Hard Rock Quarry at Mitchell Highway, Guyong.

## 2.3. Plant Site

A sloping area in the northern section of the site has been selected as a topographically suitable location for the processing plant. The area bounded by the orange line in figure 1 shows the proposed Preferred Project location of the quarry infrastructure area (also referred to as the "work pad"). This area is located away from the areas identified in the *Report on the Occurrence and Distribution of Asbestos Minerals at the Planned Lyndon Quarry Site* report by Rangott Mineral Exploration Pty Ltd, as being:

- Area where there is a high risk of encountering asbestiform materials within 1-5m of the surface. (The area shaded in yellow on figure 2)
- Area where there is a high risk of encountering asbestiform materials with 1m of the surface. (The area shaded in orange on figure 2)

Further investigation to confirm the absence of NOA within the Preferred Project infrastructure area is proposed prior to commencement of construction. This investigation will be conducted under the supervision of a suitably qualified person, and the proposed methodology will be similar to that detailed in the 2009 Rangott Report.

Trees will be planted to screen the plant area, as it has been previously cleared for grazing. The topsoil from this area will be stockpiled for use around the site and will be used in the rehabilitation of worked-out areas. The proposed base level for the plant site is at 924 m AHD, shown on the plant layout plan (Figure 1).

The level of the plant site may vary slightly depending on the volume of cut to fill exposed during the construction of the pad.

## 2.4. Sedimentation Dams

Sedimentation dams will be constructed to collect all runoff from disturbed areas. Drainage mounds and spoon drains will also be constructed to divert runoff away from disturbed areas into the 3ML sediment dam. The location of the sedimentation dam is shown on the Figure 1. This sediment dam will overflow into the larger 10ML

storage dam which will provide the required water to meet the quarry's water demand. Any surplus water which exceeds the storage capacity will overflow from the 10ML dam into the existing drainage line as shown on figure 1.

## **2.5. Quarry Site**

The quarry site is located to the west of the plant site on the crest of a hill. A cut will be made into the hill at RL 930, as shown on the works and stage plans in the EAR. The quarry will be developed towards the north of the extraction area and later stages will extend the excavation to the south and south-west. A third bench to RL 910 will be developed in later stages of extraction.

## **2.6. Plant and Facilities**

The proposed general layout for buildings and plant is shown at Figure 1. This processing facility would take approximately six months to construct.

## **2.7. Operator Facilities**

An office for the Quarry Manager, weighbridge operator, and administration staff will be provided at the end of the quarry infrastructure area site access road. A weighbridge will be suitably located for ease of dispatch of aggregate product. A lunchroom and ablution block will also be constructed in this area for employees and visitors. Adequate car parking facilities will be provided adjacent to the office and workshop for quarry personnel, road trucks and visitors. A workshop and store will be constructed for general repairs and maintenance of fixed and mobile plant. The store will contain consumables such as processing plant spares, crusher parts, oils and greases. The workshop will be constructed using materials finished to blend in with the environment.

An above ground fuel storage tank (capacity: approximately 30,000 litres of diesel) will be installed in this area. A further aboveground pre-coat tank containing an oil based product for sealing aggregate (approximately 30,000 litres) will be installed in this area. The locations of these tanks are shown on the plant layout plan (Figure 1). All fuel storage will be conducted in accordance with Australian Standards for storage of fuels (AS 1940-2004 5.8, AS 3780-1994 5.7.2, AS 4452-1997).

## **2.8. Water Supply and Sewerage**

Water is required primarily for dust suppression on the roads and work areas and during quarry operations. It will be drawn from the storage dam shown on Figure 1. There is no reticulated town water supply to the site and supplies for drinking and washing will be drawn from rainwater tanks sited near the office and workshop. Wastewater from showers and toilets will be diverted through a treatment plant that will be designed and operated in accordance with the requirements of the local Authority. On site effluent treatment systems are to comply with Department of Environment and Climate Control and Water (DECCW) standards.

## **2.9. Electricity**

Power for plant and facilities will be drawn from an on site generator or mains. Consumption is expected to be in the order of 600 kW.

## **2.10. Waste**

Refuse will be collected in industrial waste bins and regularly dispatched to Council's waste depot.

## **2.11. Site Clearing and Stripping**

During the operational life of the quarry it is proposed to clear only the minimum area necessary at any one time to conduct current operations. There is little topsoil or overburden on the site; however, all useful soil material will be stockpiled for rehabilitation works.

## **2.12. Processing Plant**

Following removal and stockpiling of the topsoil, the plant site will be levelled. The area will then be covered with gravel to provide a working base for the proposed operations. Figure 1 shows the proposed general plant layout. Variations to this detail may occur during the documentation and implementation stages. The plant will cover an area approximately 200 m x 200 m. Processed stockpiles as indicated on Figure 1 would contain approximately 60,000 tonnes of aggregate.

## **2.13. Road Haulage**

All processed material will be hauled from the site via an access road connecting to the Mitchell Highway. Trucks will typically be truck and dog, carrying 33 tonne payloads and, possibly in the future, B-double payloads (40 tonne) or some other form of transport. These will be loaded by a front-end loader from stockpiles located near the plant site. The haul routes will be either east or west along the Mitchell Highway. According to the McLaren Traffic Engineering report in the EAR, based on 400,000 tonnes of production per year, the estimated daily truck movement (in/out) is 96 movements per day. The estimated peak hourly movements (in/out) is 10 movements per hour.

## **2.14. Quarry Equipment**

The following list indicates the probable mobile equipment that will be used for quarrying, processing and maintenance:

- Haul truck
- Face Front End Loader (FEL)
- Sales FEL
- Sales/ancillary FEL
- Water cart
- Excavator (as required)
- Drill rigs (as required)
- Bulldozer (as required)

This equipment is subject to upgrade or renewal during the life of the operation.

## **2.15. Hours of Operation**

It has been demonstrated in Section 7.10.3 of Volume 1 of the EAR, the site can generally operate over a 24-hour period for production and sales. It is expected that operations will mainly occur during daylight hours, while operations outside these times will be dependent on sales volume and plant capacity. Drilling and blasting will be performed during daylight hours only.

## **2.16. Workforce**

The proposed development is expected to provide full time employment for up to 20 people including a quarry manager, dispatch clerk, operator production foreman, loader drivers, driller, plant maintenance fitters, labourers and transport drivers. In addition, up to 15 sub-contract truck drivers will be required.



## **3. ENVIRONMENTAL MANAGEMENT PROCEDURES**

### **3.1. Water Management**

Drainage controls will consist of diversion mounds, spoon drains, and shallow trenches (gutters) to divert runoff around the infrastructure area. Final details will be designed for a storm return period of one in ten years. As the first flush of runoff from disturbed areas contains the majority of suspended solids, the 3ML sediment dam controls will be designed to contain and treat these parts of the storm.

### **3.2. Runoff Controls**

To prevent clean water runoff (i.e. water from undisturbed areas) from entering the quarry and plant site (of disturbed areas) diversion mounds will be constructed around the infrastructure area. Any runoff from disturbed areas will be diverted to a sedimentation dam as shown in Figure 1. All channels will be constructed to the requirements of the Soil Conservation Service and, where necessary, channels will be protected with riprap and vegetation.

### **3.3. Soil Erosion Controls**

To prevent soil erosion problems, only limited areas will be stripped ahead of the quarry pit development and heavy quarry traffic will be confined to constructed roads and quarry areas. Drainage channels will be constructed for all access roads and any crossings will be designed for the expected flows from upslope areas. All channels will be stabilised to prevent scouring. Rehabilitation will be carried out progressively following extractive operations to ensure a stable landform and to control soil erosion.

### **3.4. Control of Water from Developed Areas**

Runoff from the quarry and work areas will be collected by a system of diversion mounds and drains and directed to sedimentation dams for water clarification as shown in Figure 1. Following settlement, the water will be used for dust suppression or discharged to the streams downhill from the site during high flow periods. There will be no dry weather discharge.

Storage and settlement dams shown on Figure 1 will be constructed prior to quarrying. These dams will be designed to handle storms of duration equal to the time of concentration of the catchments. The design and construction of the sedimentation dams will be completed in accordance with the technical requirements of the Relevant Authority.

As the quarry pit and infrastructure area both drain to the east, it is proposed to establish a licensed discharged point at the junction of the eastern drainage line and the adjoining property. Prior to construction of the processing plant background monitoring of water quality will be undertaken on the eastern drainage line during periods of flow or, alternatively at existing dams located on the drainage line, for the purposes of determine whether there is an existing load of NOA contained within stormwater.

### **3.5. Control of Oil and Grease**

Used oils and greases will be collected and removed by a licensed contractor for disposal off site or on an approved disposal area. Diesel will be stored on site in an above ground fuel storage tank located in a bunded area. All fuel storage will be

conducted in accordance with Australian Standards for storage of fuels (AS 1940-2004 5.8.2, AS 3780-1994 5.7.2, AS 4452-1997).

### **3.6. Dust Controls**

The relocation of the processing plant 150m further west will result in a negligible change in the emissions impact on adjoining neighbours from the predicted outcomes detailed in the Environmental Assessment Report, September 2009. The dust control measures outlined in the EAR are considered suitable to apply to the relocated processing plant infrastructure.

### **3.7. Noise and Vibration Control**

The relocation of the processing plant 150m further west will result in a negligible change in the emissions impact on adjoining neighbours from the predicted outcomes detailed in the Environmental Assessment Report, September 2009. The noise control measures outlined in the EAR are considered suitable to apply to the relocated processing plant infrastructure.

### **3.8. Screening**

The quarry will be located within an intermediate ridgeline for the seven stages of the initial development. The undisturbed ridgeline will also move downslope, exposing the reclaimed eastern faces. The plant site will be screened by a large continuous mound extending right around the infrastructure area and along the eastern side of the site entry road to within of 200m of the Mitchell Highway (as shown on figure 1). This large continuous mound is located adjacent to the quarry infrastructure area and will provide a natural visual screen to the north-west corner near Hartley cottage, and the northern boundary to protect the northern residence. This large natural screen has been purposely located to avoid areas of high risk of encountering asbestiform materials at depths of less than 5m, and away from the boundaries of adjoining neighbours who will benefit from the retention of views of the valley slope.

### **3.9. Rehabilitation**

The proposed quarry operation has an expected life in excess of 25 years. Progressive reclamation of quarried areas will be carried out by completing earthworks and covering the reclaimed area with topsoil and vegetation in accordance with the EAR.

### **3.10. Safety**

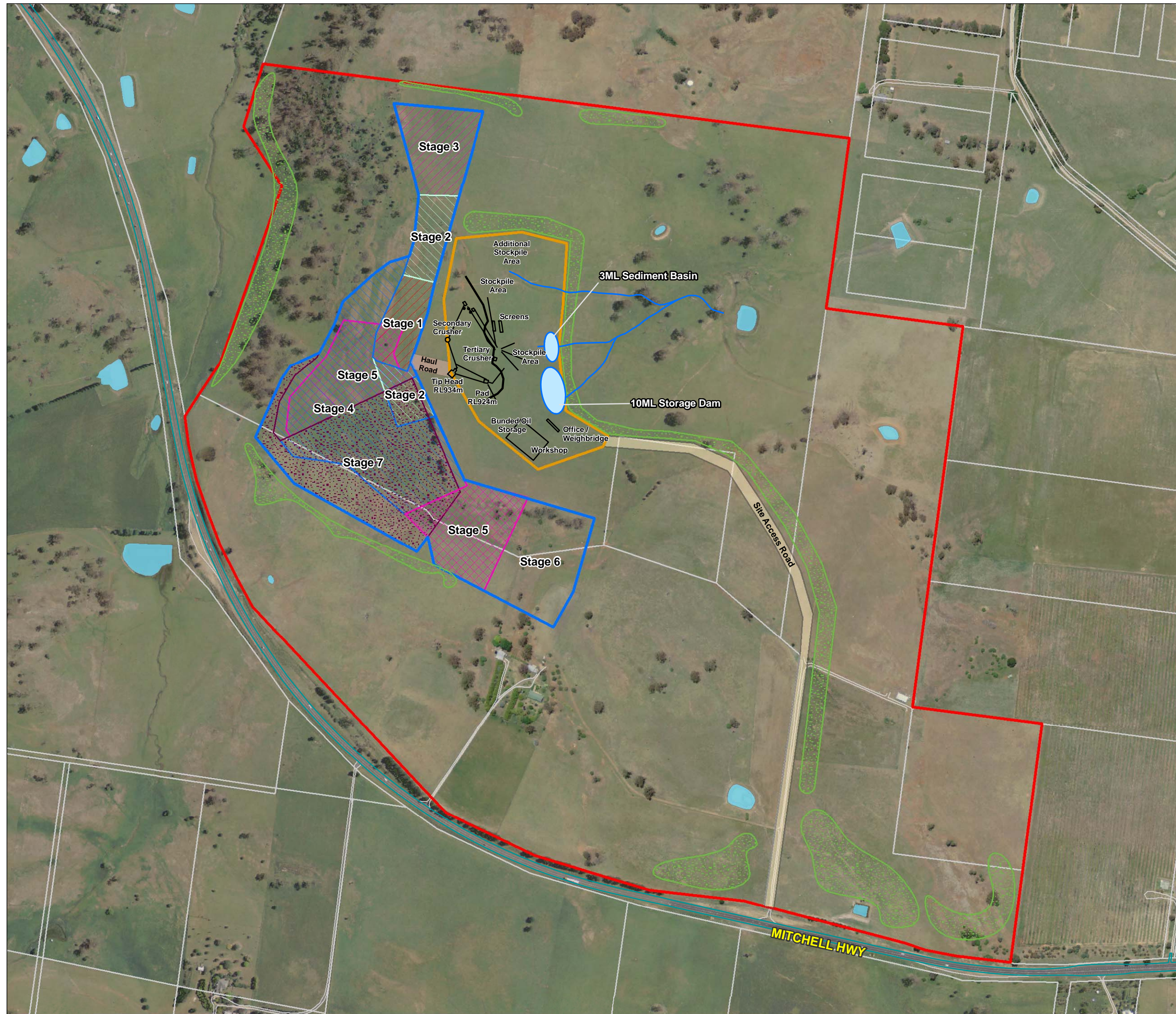
Hanson will operate the site for the health and safety of the employees and the public by:

- Keeping high risk areas fenced off to prevent unauthorised access, and clearly defining areas that prohibit unauthorised access.
- Implementing a NOA monitoring plan.
- Maintaining an induction system and safety management and reporting procedures.
- Maintaining plant and equipment in a safe condition.



**FIGURE: 1  
EAST GUYONG QUARRY  
PREFERRED PROJECT**

**PROJECT MAP**



**Legend**

- Project Boundary
- Quarry Pit
- Haul Road
- Site Access Road
- Infrastructure Area
- Tree Planting & Mound Areas
- Proposed Dam
- Existing Dam
- Drainage Line

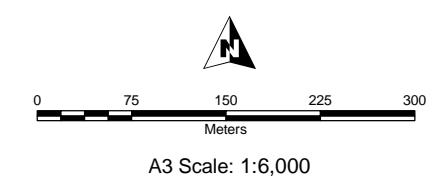
**Quarry Works Stages**

**STAGE**

- Stage 1
- Stage 2
- Stage 3
- Stage 4
- Stage 5
- Stage 6
- Stage 7



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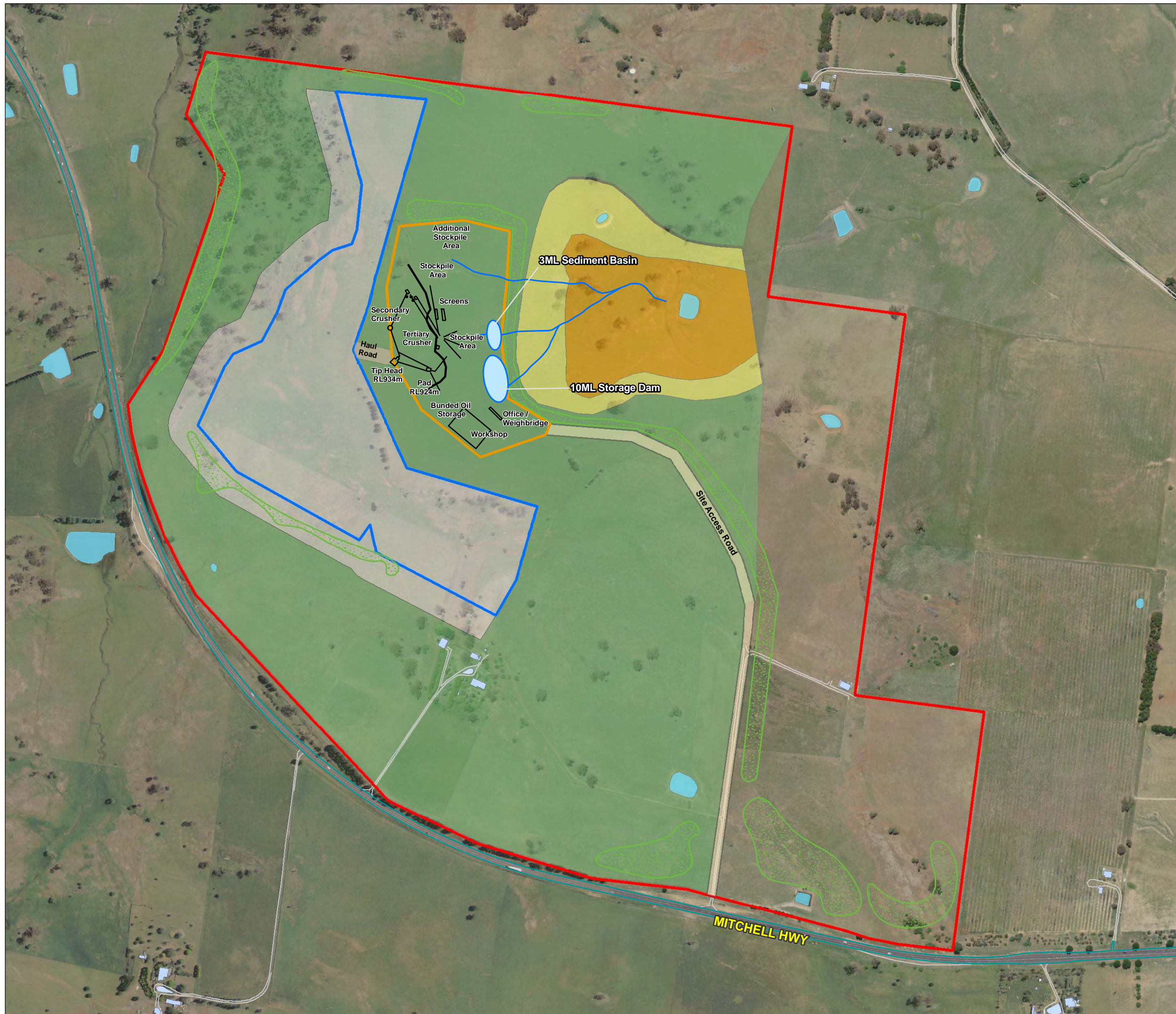


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**FIGURE: 2  
EAST GUYONG QUARRY  
PREFERRED PROJECT  
ASBESTOS RISK**



**Legend**

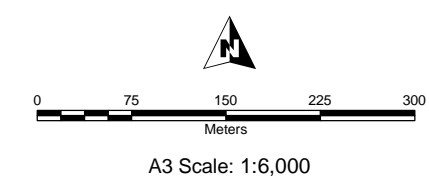
- Project Boundary
- Infrastructure Area
- Haul Road
- Site Access Road
- Quarry Pit outline
- Tree Planting & Mound Areas
- Proposed Dam
- Existing Dam
- Drainage Line

**Asbestos Risk**

- Area where there is a high risk of encountering asbestiform materials within 1m of the surface.
- Area where there is a high risk of encountering asbestiform materials within 1 - 5m of the surface.
- Area where there is a risk of encountering asbestiform materials only at substantial depths.
- Negligible risk of encountering asbestiform materials to proposed base of pit (30m depth)



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**FIGURE: 3  
EAST GUYONG QUARRY  
EAR & PREFERRED  
PROJECT**

**NEIGHBOURING  
RESIDENCES**



**Legend**

- Project Boundary
- Quarry Pit
- Preferred Project Infrastructure Area
- Preferred Site Access Road
- Preferred Haul Road
- Original roads and infrastructure area



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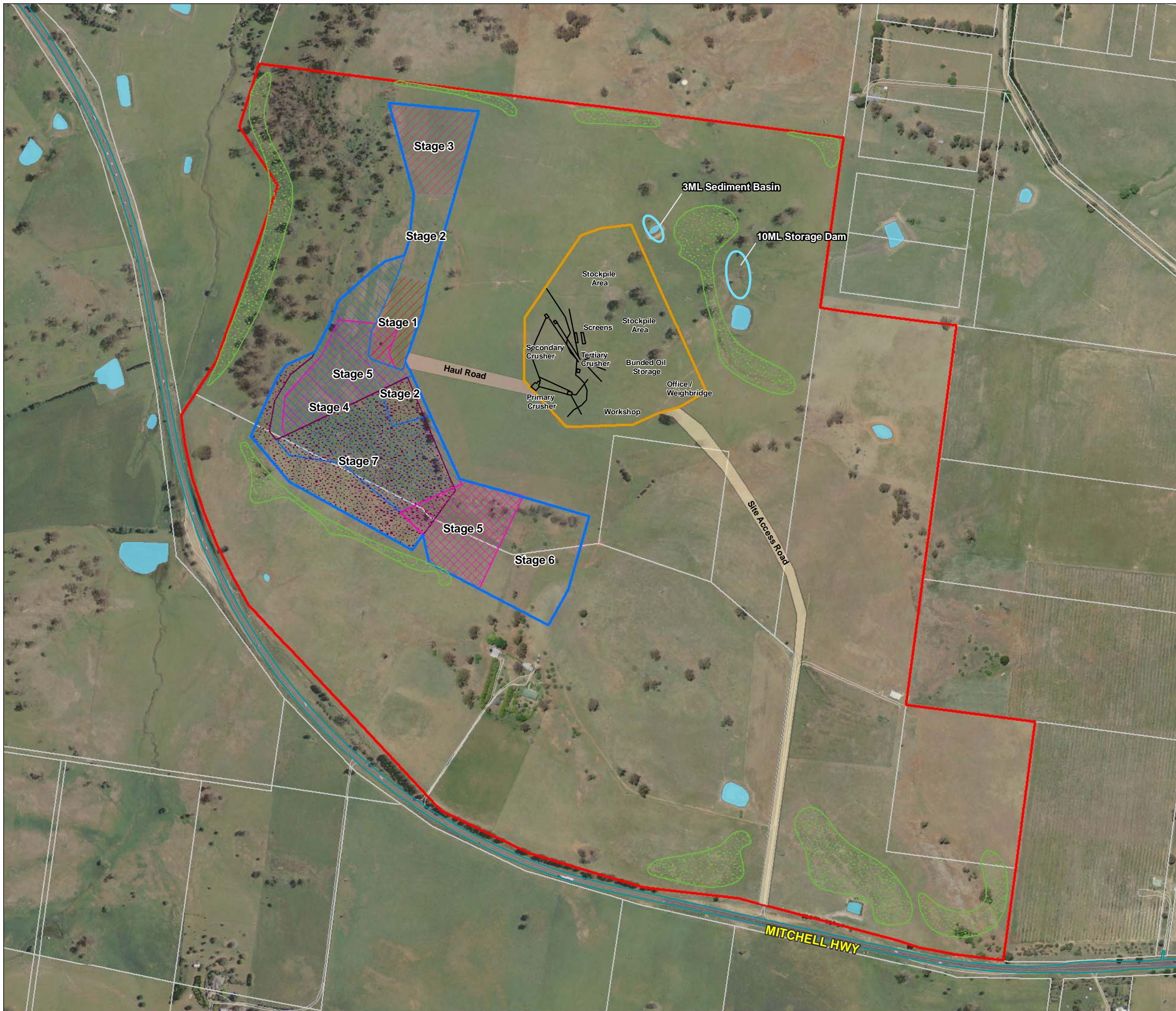


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**FIGURE: 4  
EAST GUYONG QUARRY  
INITIAL EAR PROJECT  
PROJECT MAP**



**Legend**

- Project Boundary
- Quarry Pit
- Haul Road
- Site Access Road
- Infrastructure Area
- Tree Planting & Mound Areas
- Proposed Dam
- Existing Dam

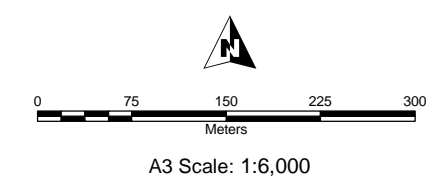
**Quarry Works Stages**

**STAGE**

- Stage 1
- Stage 2
- Stage 3
- Stage 4
- Stage 5
- Stage 6
- Stage 7



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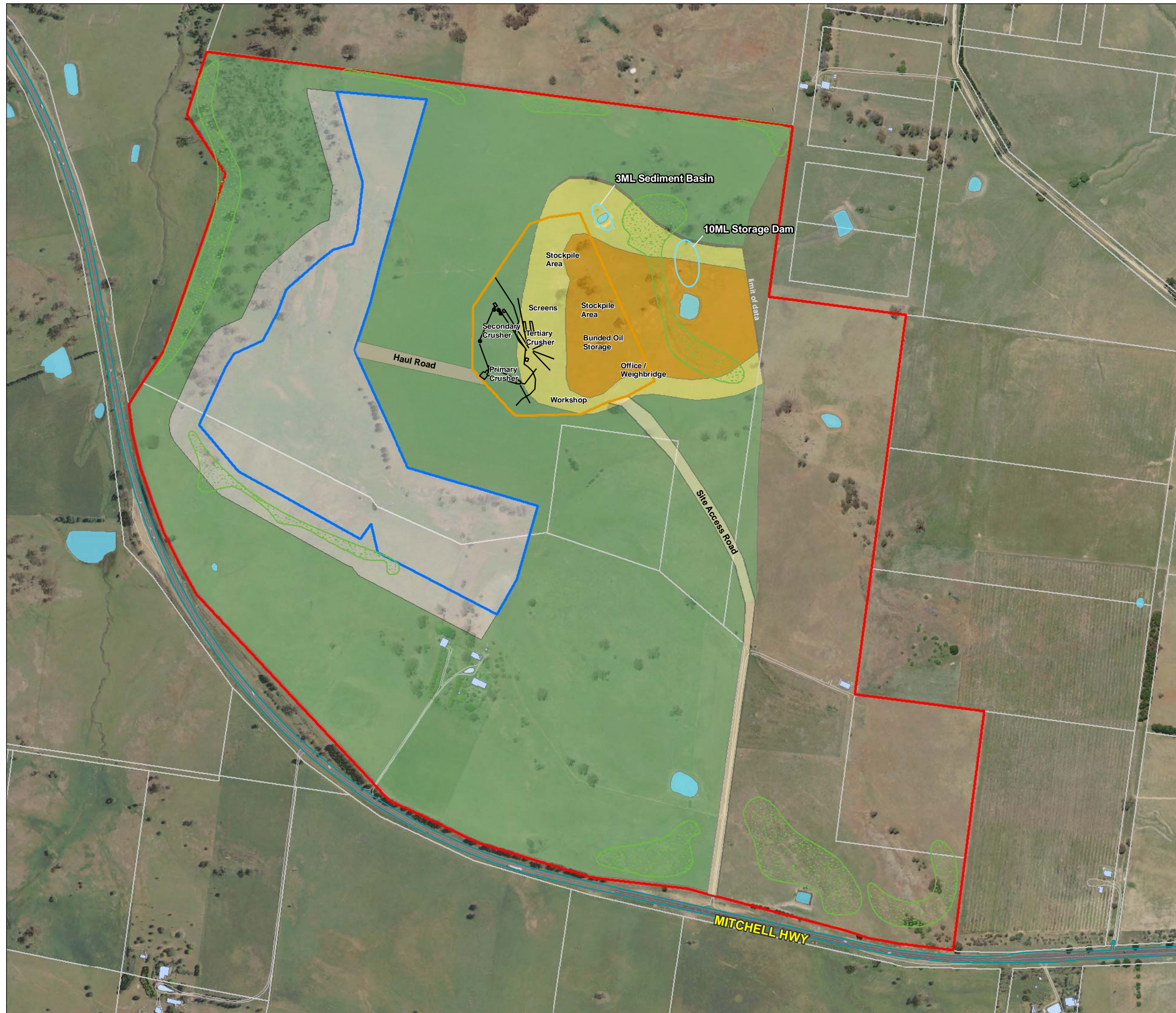
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**FIGURE: 5  
EAST GUYONG QUARRY  
INITIAL EAR PROJECT  
ASBESTOS RISK**



**Legend**

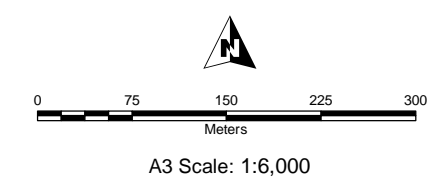
- Project Boundary
- Infrastructure Area
- Haul Road
- Site Access Road
- Quarry Pit outline
- Tree Planting & Mound Areas
- Dam
- Proposed Dam

**Asbestos Risk**

- Area where there is a high risk of encountering asbestiform materials within 1m of the surface.
- Area where there is a high risk of encountering asbestiform materials within 1 - 5m of the surface.
- Area where there is a risk of encountering asbestiform materials only at substantial depths.
- Negligible risk of encountering asbestiform materials to proposed base of pit (30m depth)



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