Alternative access to the Newell Highway can also be accessed to the north of the Project Area at Peak Hill via Bogan, Taweni, Robertson and Coradgery Roads (refer to **Figure 5.25**). These local roads also provide a small proportion of access to existing NPM operations. A further detailed description of the local road network is provided in **Appendix 12**.

As part of the TIA for the Project, traffic count data was analysed to characterise existing traffic generation patterns in the vicinity of the Project Area. This included the analysis of traffic count data collected from eight sites, including the key intersections relevant to the Project, as shown on **Figure 5.25**. The existing traffic volumes obtained from these traffic count surveys are summarised in **Table 5.21** below.

Table 5.21 – Two Way Traffic Volumes using Local and Regional Roads

Location	Weekday (Five Day Average)		Daily (Seven Day Average)	
	Total Vehicles Movements	% of Heavy Vehicles Movements	Total Vehicles Movements	% of Heavy Vehicles Movements
Taweni Road	114	16.7	95	15.8
Bogan Road (North of Mine Access Road)	176	18.2	156	18.0
Bogan Road (South of Mine Access Road	1128	11.2	891	11.0
Northparkes Lane	846	10.1	653	10.6
McClintocks Lane	26	27.5	23	25.7
Glenara Lane	21	38.2	16	47.3

The existing local road network experiences peak hour flows in the morning between 6.00 am and 7.00 am (morning peak period) and in the afternoon from 4.00 pm to 5.00 pm (afternoon peak period). The TIA also assessed the traffic infrastructure performance of the roads in the area and found that the local road network operates at a high level of service (LOS[3]) (refer to **Appendix 12**).

5.9.1.1 Existing Operations

NPM operates 24 hours a day, seven days a week. The majority of staff travel to and from site via private vehicle due to the nature (and hours) of the work, the location of the site, and the lack of alternative travel options (i.e. public transport). Overall, NPM generates approximately 846 vehicle movements to/from Bogan Road per day, comprising 744 light vehicle movements, 86 heavy vehicle trips and 16 copper concentrate truck movements during standard day-to-day operations. Intermittent shutdown periods are modelled to increase the number of light vehicles accessing site by up to 540 vehicle trips per day, with an increase in heavy vehicle movements by 24 to 30 movements per day and no change to the number of copper concentrate trucks travelling from site to the Goonumbla rail siding.

The traffic counts undertaken as part of the TIA include the current traffic generation associated with existing NPM operations. Completed traffic counts were undertaken during a period of normal day-to-day operations (i.e. when the onsite workforce is approximately 350 FTE). In addition to standard operating conditions, intermittently (generally one to two days per month) NPM undertake shutdowns to service a range of on-site infrastructure.

[3] Level of service is a measure of intersection performance based on vehicle delay.

These shutdowns result in additional contractors coming to site. In order to assess the potential impacts associated with NPM traffic, the TIA considered the operation of the road network surrounding the Project under shutdown conditions when additional contractors may be engaged on-site and the number of staff accessing the site is up to 700 FTE (refer to **Appendix 12**).

5.9.1.2 Principal Intersections and Current Performance

The principal intersections associated with the Project are shown on **Figure 5.25** and include:

- Newell Highway/Bogan Road, located approximately 23 kilometres from Project Area; and
- Bogan Road/Northparkes Lane.

Both principal intersections were modelled/assessed to operate at LOS A or B (good or good with acceptable delays) under both normal operating and shutdown conditions associated with existing NPM operations.

Further detail on these intersections is outlined in the following sections.

Newell Highway/Bogan Road

The intersection of the Newell Highway and Bogan Road has an Austroads Channelised Right Turn (CH) treatment and an Auxiliary Lane (AU) Left Turn treatment layout, with a right turn bay and left turn lane in Newell Highway and a single lane approach in Bogan Road. This intersection currently operates at good LOS (A) in both the morning and afternoon peak periods under standard operating conditions. Under shut down conditions the intersection was modelled to operate at good LOS (A) during the AM peak and good (acceptable delays and spare capacity) LOS B during the PM peak.

Bogan Road/Northparkes Mines Access Road

The intersection of Northparkes Lane and Bogan Road has a seagull treatment arranged with a left turn deceleration in Bogan Road in the approach from the south, with a right turn bay in the approach from the north and a southbound acceleration lane for the right turn out of NPM Access Road to travel towards Parkes. The eastbound through lane merges with the southbound acceleration lane on the southern departure side of the intersection. This intersection currently operates at good LOS (A) in the morning and afternoon peak periods under both standard operating and shutdown conditions.

5.9.2 Construction Traffic Impacts

Construction activities associated with the Project include construction of onsite infrastructure including the proposed amendments to TSF 3, and the amended site access road. As outlined in **Section 2.3**, construction activities are expected to be undertaken over an approximate 12 month period within the first five to eight years of the Project.

During the construction period, site operating staff levels will be supplemented with contractors, whom might have otherwise been employed during periodic shutdowns. On this basis, the total number of staff (operational and construction) onsite during the proposed construction period, and/or during periodic shutdown periods will not exceed the existing approved 700 FTE.

Construction activities will be undertaken over 24 hours, seven days per week, based on the existing shift arrangements, which means the construction workforce will be spread over the day, with normal shift arrival and departure times of 6.30 am and 6.30 pm.

On this basis, traffic impacts during construction will be consistent with existing traffic levels that occur during the weekday AM and PM peak hour periods during shutdown periods. As outlined in **Section 5.9.1.2**, modelling results indicate that the principal intersections of Bogan Road/NPM Access Road (whilst still in use) and Bogan Road/Newell Highway will operate at a LOS A or B operation, which is a good operation for the construction period.

Other than for the construction of the new intersection in Bogan Road at McClintocks Lane and establishment of the internal roads, which will require short periods of high truck numbers delivering road material, heavy vehicles generated by the construction are expected to be in the order of 12 to 15 per day (i.e. 24 to 30 trips). This is similar to existing levels during major shutdown periods.

In addition to the construction activities to be completed within the Project Area, it is also proposed to upgrade the McClintocks Lane and Bogan Road intersection, as well as a section of McClintocks Lane to provide amended access to NPM. The following works will be undertaken during the construction phase of the Project:

- the upgrading of McClintocks Lane between Bogan Road and a new internal road to provide a two lane seal road pavement with road shoulders, centre line and edge markings to Austroad standards. This route will replace Northparkes Lane as the primary site access;
- the closure of Northparkes Lane;
- a new seagull intersection in Bogan Road at McClintocks Lane designed to Austroads standards, incorporating:
    - a left turn deceleration lane in the southern approach of Bogan Road;
    - a right turn bay in the northern approach of Bogan Road;
    - a right turn acceleration lane for the right turn out of McClintocks Lane together with a southbound through lane;
    - appropriate widening of McClintocks Lane in the approach and departure to accommodate left turn vehicles;
- the construction of a new north-south two lane internal road linking the existing internal road network and onsite infrastructure to the upgraded McClintocks Lane. This road will be constructed to Austroad standards; and
- the provision of an access control point and a sealed visitors car park for 25 cars at/near the intersection of the new internal road/McClintocks Lane.

All construction activities to amend the access configuration as described above will be managed in accordance with a specific Construction Traffic Management Plan to be developed as part of the Project in consultation with PSC and local landholders/neighbours as appropriate.

5.9.3 Operational Traffic Impacts

The Project is not proposing an increase or change in staff levels, hours of operation, frequency of shutdowns, or the copper concentrate haulage arrangements currently undertaken as part of existing approved NPM operations. Other than the extension to the existing mining life from 2025 to 2032 and road network changes to the proposed NPM site access road (as detailed in **Section 5.9.2**), the operational traffic impacts of the Project are consistent with the existing approved operations.

As a result of changes to the location of onsite infrastructure, Northparkes Lane which currently serves as site's access to Bogan Road will be closed and replaced with an internal access road to McClintocks Lane, which will then in turn connect to Bogan Road. This amended access configuration has been modelled to maintain existing performance, with the intersection to perform at LOS A for both AM and PM peaks under both predicted standard operating and shutdown conditions throughout the lifetime of the Project.

5.9.4 Road Safety

The TIA examined the road safety of the current local traffic network, specifically by referring to the RMS crash data for the key roads and intersections. For the period between 2006 and 2010, the RMS road crash data indicates there were a total of eight crashes on the road network, including on Bogan Road six, Northparkes Lane (i.e. NPM Access Road) one and at the intersection of Bogan Road/Newell Highway one. Five of the accidents were single vehicle accidents.

The review of the road crash history for the five year period between 2006 and 2010 does not indicate any particular deficiencies with the existing road network that serves NPM.

The continued operation of NPM associated with the Project is not expected to lead to deterioration in road safety on the adjacent road network. There will be no increase in the traffic generation of NPM from existing levels over the life of the Project, including heavy vehicles.

The construction impacts will be of the same order as the existing traffic impacts during shutdown periods. During the 12 month period of construction, while there will be more days of higher traffic levels, the assessment indicates that traffic conditions on the road network will remain satisfactory.

5.9.5 Road Traffic Management Commitments

As outlined above, there are not predicted to be any significant impacts on traffic flows or traffic infrastructure performance as a result of the construction and operation of the Project. Regardless, NPM proposes to implement the following mitigation measures to maximise the safety and efficiency of the sub-regional traffic network:

- The proposed road upgrades, including the development of a new internal access road, upgrades to McClintocks Lane and its intersection with Bogan Road and the development of a new visitors car park, will each be designed in accordance with appropriate guidelines and standards and finalised in consultation with PSC and local landholders/neighbours as appropriate.

- NPM will continue to encourage and promote driving safely with its workforce, as well as working closely with PSC about road safety, including contributing to road maintenance and reconstruction works in Bogan Road.

- NPM will maintain current arrangements for financial contribution for the purpose of road maintenance as agreed with PSC and DP&I.

- Prior to construction, NPM will prepare a detailed Construction Traffic Management Plan for the construction period of the Project, which will include details of:

  - any staging works;
  - construction routes;
  - heavy vehicles including oversize vehicles; and
  - traffic management during the construction of the upgraded intersection in Bogan Road and McClintocks Lane.

5.10 Aboriginal Cultural Heritage

The DGR's for the Project identify Aboriginal culture heritage as a key issue for assessment. Specifically the DGR's require the preparation of an Aboriginal Cultural Heritage Assessment (ACHA) (including consideration of both cultural and archaeological significance) which must:

- demonstrate effective consultation with Aboriginal communities in determining and assessing impacts, and developing and selecting mitigation options and measures; and

- outline any proposed impact mitigation and management measures (including an evaluation of the effectiveness and reliability of the measures).

Central Queensland Cultural Heritage Management (CQCHM) prepared the Aboriginal ACHA in consultation with the local Aboriginal community (refer to **Appendix 13**). An overview of the outcomes of the ACHA is provided in this section.

The ACHA was prepared in consultation with RAPs in accordance with relevant OEH guidelines. In addition, NPM have an established Relationship Agreement with various Wiradjuri interests (notably the Wiradjuri Council of Elders and the Peak Hill Local Aboriginal Land Council). Accordingly, NPM adopted a strategy of consultation that both met all conditions of OEH's consultation requirements as well as meeting the terms of its existing Relationship Agreement (refer to **Section 5.10.1**). The RAPs were involved in all facets of the assessment including a presentation and open forum discussion for the development of the Terms of Reference for the CHA, participation in field survey, site identification and recording, provision of information regarding cultural heritage values and review and comment on the draft report. Further details of the consultation process with RAPs are provided in **Section 5.10.3**.

5.10.1 Existing Cultural Heritage Management Mechanisms

NPM have an established system for the management and governance of onsite Aboriginal cultural heritage. The principal mechanisms for management of cultural heritage include the existing Aboriginal Heritage Management Plan (AHMP) and Aboriginal Heritage Working Group (AHWG), which is governed under the Wiradjuri Relationship Agreement. Further detail on these mechanisms is provided below.

Aboriginal Heritage Management Plan

The AHMP addresses specific issues associated with the management of the Aboriginal cultural heritage classified as being of significance to the local Wiradjuri people. The AHMP provides information and actions required to protect Aboriginal cultural heritage (both identified and unidentified) form damage/harm and to ensure that when heritage cannot be protected, appropriate management mechanisms are in place and to ensure than effective and open consultation with the Wiradjuri people is maintained. The existing AHMP applies to the current project approval area under PA06_0026, which is largely contained with the Project Area.

Wiradjuri Relationship Agreement

The Northparkes Wiradjuri Executive Committee (NWEC) includes two members from the Wiradjuri Council of Elders, two from Peak Hill Local Aboriginal Land Council and two from Northparkes. The committee meets quarterly to provide NPM staff ongoing guidance on the practical management of Aboriginal heritage and improvement opportunities. In August 2011, a relationship agreement was signed by the three parties to the executive. This relationship agreement focuses on the shared objectives of Aboriginal cultural heritage management, community and health, employment and small business creation.

5.10.2 Previous Archaeological Studies

The Project Area has been the subject to a number of cultural heritage assessments as described in detail in **Appendix 13** and summarized in **Table 5.22** below. This body of previous research, which has included specific assessment of the Project Area for previous development works undertaken by NPM, has provided a broad understanding of archaeological site patterning at the local and regional levels.

Table 5.22 – Previous Archaeological Research, Project Area

Author	Date	Locality	Recorded Sites		
			Type	#	Type
Stone	1986	Northparkes Mining Lease	Survey	16	Artefact scatters
Nicholson	1990	Northparkes Mining Lease (additional area)	Survey	0	N/A
Appleton	1996	Northparkes Mining Lease (E48 area)	Survey	4	Three isolated finds, one scar tree
Paton	2006	Northparkes Mining Lease (E48 area)	Survey	3	One open camp, two isolated finds
OzArk	2008	Northparkes Mining Lease (Goonumbla Creek) & Estcourt area	Test excavation/ salvage program	16	Eight artefacts (27 test pits), seven artefacts (one spoil heap), one scar tree

The archaeological assessment completed by Paton (2006) developed a small-scale predictive model based on results of earlier surveys of the mine and from work undertaken elsewhere in the region. This predictive model suggested that the most common site type would be stone artefact scatters, that these would be of small extent and that they would most likely be found on raised areas in the immediate vicinity of significant watercourses or waterholes.

As part of this assessment, Paton (2006) identified a number of landform units within the Project Area being:

- Goonumbla Creek: medium archaeological potential with artefact scatters near the creek. These would be small and there was limited potential for sub-surface cultural material.

- Limestone National (State) Forest: low archaeological potential with possible isolated finds and small artefact scatters. There was little likelihood of any major sites or any sub-surface deposits although scarred trees might be found if they had not been logged.

- Flat, waterless terrain: very low archaeological potential with perhaps some isolated finds but little else to be found, which is effectively the majority of areas located outside of the above landform units.

- Mined areas and infrastructure: assessed as of nil archaeological potential due to high development impact and near complete removal of topsoil.

On the basis of the previous archaeological studies within the Project Area and region, the ACHA (refer to **Appendix 13**) concludes that the greater majority of sites will be artefact scatters that are very small and with little or no sub-surface material or stratigraphy. Typically, they will consist of 50 or fewer artefacts. The lack of sub-surface sites within the Project Area has been demonstrated by results from a 2008 salvage program.

From a regional perspective, the ACHA assesses the landform unit associated with Bogan River as having the highest potential for cultural material and significance.

The general area of the Project Area was the subject of a search on the Aboriginal site register maintained by OEH (AHIMS). This identified 16 registered sites either on or in close vicinity of the Project Area. The locations of these sites are included in **Figure 5.26**.

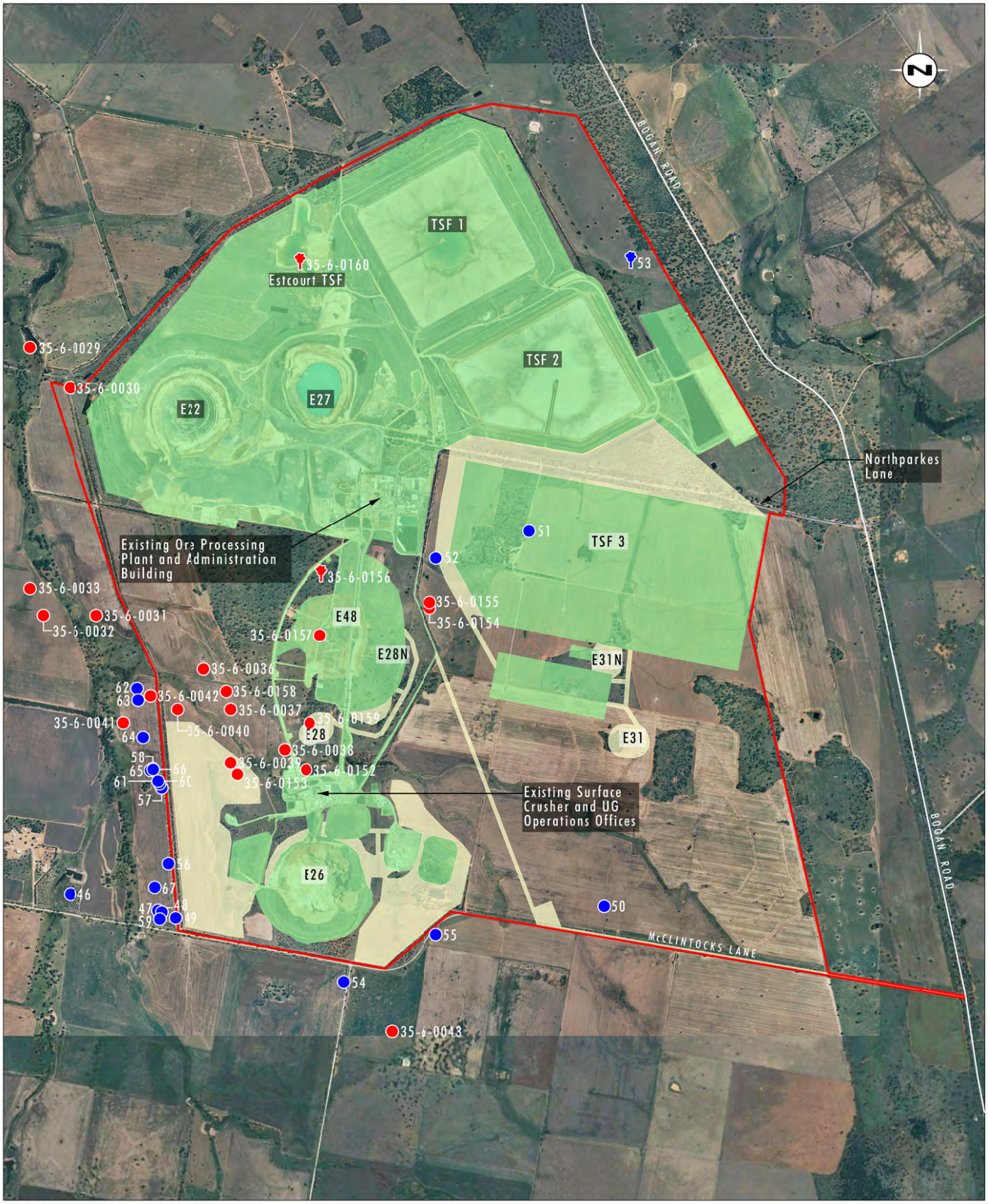
5.10.3 Consultation Process

Aboriginal community involvement is an essential component of the cultural heritage assessment process. There were 12 RAPs that registered an interest in consultation for the Project following the advertisement and notification process.

The RAPs were involved in all stages of the assessment process, including involvement to develop ToR including the survey methodology for the assessment fieldwork was undertaken in accordance with the provisions of the Waradjuri relationship agreement, and was completed in 2012 (refer to **Section 5.10.4**). The fieldwork and assessment informed the development of an Initial Cultural Heritage Assessment (ICHA) report, which was prepared to document the survey and assessment outcomes and document cultural heritage values of the Project Area in consultation with the RAPs.

The draft ICHA report was circulated to all RAPs for review and comment. A meeting of the RAPs was then convened to address any issues relating to the ICHA. This meeting took place on 18 October 2012. An additional two weeks was provided subsequent to the meeting to tender written responses but no written submissions were received. The report was amended subsequent to this meeting. The amended report has been forwarded to the RAPs with a list of the amendments made to the report also provided. It is important to note that this ICHA report was provided prior to confirmation of Project design.

The ACHA report (refer to **Appendix 13**) was presented to the RAPs at a meeting on 29 May 2013 whereby the recommended impact mitigation measures were discussed and agreed. The ACHA was distributed to RAPs for formal comment period at this time, with no specific comments received from RAPs during the consultation period.



Source: NPM (2013), Google Earth (2010)

0 0.5 1 2km
1:40 000

Legend

- Project Area
- Active Operational Area
- Project Disturbance Area

AHIMS Reviously Recorded Sites
- Artefact Scatter
- Modified Tree

Northparkes Heritage Places
- Isolated Stone Artefact/s
- Scarred Tree

FIGURE 5.26

Aboriginal Archaeology Sites within Project Area

5.10.4 Survey Methodology

Field survey was carried out over nine days from 27 March to 4 April 2012 and surveyed a geographic extent larger than the Project Area. The areas surveyed included approximately 1782 hectares (882 hectares of pipeline and 900 hectares within the existing mine site/Project Area). At the time of completing the site survey a number of options were being considered for the location of physical infrastructure. Through the project design process, this refinement has resulted in the removal of 'water pipe line routes' from the Project and restriction of additional infrastructure to areas within or adjacent to the existing mining lease.

As a result of uncertainty at the time of survey regarding the final nature of infrastructure development and the extent of survey which had been completed previously within the existing mine lease, a predictive model was adopted based on Paton's categorisation to guide survey effort.

The survey of the mine area focused on two units: flat waterless terrain and the Bogan River. The Goonumbla landform unit and the Limestone National Forest landform unit were excluded because they did not fall within the previously proposed development area. These areas have, however, been surveyed previously in past archaeological studies for existing approved NPM operations (refer to **Section 5.10.2**). With the Project originally having a much larger survey area, more than 90 per cent of the proposed disturbance area has been subject to survey.

Further details on the survey methodology are provided in **Appendix 13**.

5.10.5 Survey Results

The results of the surveys are summarised in **Table 5.23** below with details provided in **Appendix 13**. The fieldwork completed resulted in the identification and recording of 22 areas containing Aboriginal cultural heritage.

Table 5.23 – Aboriginal Cultural Heritage Survey Results

Project Element	Scarred Tree	Isolated Stone Artefact/s	Resource Place	Total
Study Area – Existing ML	1	16	-	**17**
Pipeline Alignment through the Study Area – Existing ML	-	5	-	**5**
Total	**1**	**21**		**22**

Items of Aboriginal cultural heritage identified included one tree with a scar identified as being either likely or potentially Aboriginal in origin and 21 areas containing isolated stone artefact/s. Few large sites were found anywhere in the Project Area, with the vast majority of identified items of Aboriginal cultural heritage value being made as isolated finds. In accordance with previous studies (Paton (2006) and Stone (1986)) the greatest concentration of finds was within the Bogan River landform unit, with 15 per cent of finds being located within this terrain unit (despite the unit constituting less than 10 per cent of the Project Area). The sites identified through the survey undertaken as part of this assessment is consistent with the distribution of sites detailed in past Archaeological studies within the Project Area (refer to section **5.10.2**).

The scarred tree recorded within the Project Area was on a fairly immature cypress pine standing in the middle of a cleared/ploughed paddock and therefore there are reasonable prospects that it is not culturally scarred. In applying the precautionary principle the site was recorded, with further assessment in accordance with the provisions of the NPM AHMP to be completed confirm this site. As outlined in **Section 5.10.7**, the potential scarred tree site is not located within the disturbance area for the Project.

5.10.6 Significance Assessment

The significance of Aboriginal archaeological sites is determined from two perspectives: Aboriginal cultural significance, which can only be assessed by Aboriginal people; and archaeological significance, which is assessed by archaeologists based on established ranking criteria. Aboriginal cultural and archaeological significance are often not related, with sites potentially having different Aboriginal cultural and archaeological significance/values.

5.10.6.1 Archaeological Significance

The recorded sites were assessed for their archaeological significance. As outlined in **Appendix 13**, based on relevant criteria it was determined that the significance of the sites was low.

5.10.6.2 Aboriginal Cultural Significance

Aboriginal cultural significance can only be assessed by the relevant Aboriginal community groups. Any comments made by the Aboriginal community members participating in the field survey regarding cultural significance were recorded.

Aboriginal stakeholders are requested to comment on the cultural significance of all Aboriginal archaeological sites recorded within the proposed disturbance area. All comments received will be attached to the final report, and a summary of comments will be inserted here and within **Appendix 13**.

5.10.7 Aboriginal Heritage Impacts

As part of the design of the Project, NPM have sought to implement the Avoidance Principle in relation to Aboriginal cultural heritage. The Avoidance Principle means, in relation to Aboriginal cultural heritage, the avoidance of Harm to Aboriginal cultural heritage and, to the extent where such harm cannot be avoided, to minimise Harm to Aboriginal cultural heritage. The Avoidance Principle is consistent with best practice in cultural heritage management, with environmentally responsible development and with Rio Tinto's cultural heritage standards. The Avoidance Principle does not demand total avoidance of harm. Rather, it states that harm should be avoided to the greatest extent possible or otherwise actions taken to minimize harm.

In relation to the Project Area, NPM have avoided disturbance within the Bogan River landform unit, with the proposed disturbance area located primarily within the flat waterless terrain landform unit and in close proximity to existing mining areas. As outlined in **Appendix 13**, the use of areas within the existing mine development area or in the flat, waterless landform unit will likely avoid harm or give the greatest chance to minimize harm. A small area of the Goonumbla Creek landform unit is located within the proposed disturbance area. The use of the Goonumbla Creek landform unit, whilst not resulting in significant impacts (refer for **Appendix 13**), does increase the risk of harm, which will be managed through the mechanisms of the revised AHMP (refer to **Section 5.10.8**).

The Project will result in the disturbance of up to four identified archaeological sites comprising two isolated artefacts (Site 51 and 52) within the flat waterless terrain unit, and one isolated artefact (Site 35-6-0039) and one artifact scatter (Site 36-5-0153) located within the Goonumbla Creek unit (refer to **Figure 5.26**).

As outlined in **Section 5.10.2**, based on existing extensive studies across the Project Area the areas of disturbance are unlikely to include areas of sub surface archaeological material based on the known use and characteristics of the flat waterless terrain unit, and the results of the previously completed test excavations along Goonumbla Creek in 2008.

As outlined in **Section 5.10.6**, the sites that will be impacted by the Project have been assessed as having low archaeological significance.

5.10.8 Aboriginal Heritage Management Commitments

As outlined in **Section 5.10.1**, NPM currently implement an AHMP, and maintain an AHWG, which provides for the management of cultural heritage across the existing Project Area associated with PA 06_0026. This area is contained within the Project Area, and largely contains the areas of additional disturbance associated with the Project. On this basis and in accordance with the results of the ACHA (refer to **Appendix 13**), NPM will commit to the revision of the existing AHMP to provide for the management of cultural heritage across the Project Area, and specifically implement mitigation measures for identified impacts, prior to the commencement of construction activities.

In addition, NPM has committed to a comprehensive survey of all portions of the proposed disturbance area that have not been subject to 100 per cent survey coverage prior to disturbance. Thus, any and all areas of the development footprint that would be affected will be examined prior to construction commencing, in consultation with the AHWG, and agreed management measures will be implemented. This commitment is consistent with existing management commitments in place at NPM.

5.11 Historic Heritage

In accordance with the DGR's for the Project (refer to **Section 1.3**), this section comprises the historic heritage assessment. The assessment was undertaken to provide an understanding of any historic heritage values of the Project Area, and to allow identification of any heritage sites and/or items that have the potential to be impacted by the Project and outline the existing mitigation and management measures implemented at NPM in accordance with existing approvals.

5.11.1 Identification of Listed Historic Heritage Items/Sites

As part of the historic heritage assessment, a review of relevant heritage databases was undertaken including:

- the NSW State Heritage Register (SHR) and the State Heritage Inventory maintained by the NSW Heritage Council;
- the Australian Heritage Database (including Commonwealth and National Heritage Lists and the Register of the National Estate (RNE)), which is maintained by the DSEWPC; and
- Parkes LEP 2012.

The database review identified no sites/items subject to any form of statutory heritage listing within or in the immediate vicinity of the Project Area (within 5 kilometres).

As such, the Project will not impact any listed State significant or locally significant historic heritage items.

5.11.2 Historical Context

As part of NSW heritage assessment procedures and in accordance with guidelines set out in the NSW Heritage Manual 1996 (Heritage Office and Department of Urban Affairs & Planning), including Archaeological Assessments, Assessing Heritage Significance, Statements of Heritage Impact and Heritage, it is essential to have a full understanding of an area based on both its historical and physical context. Accordingly, a detailed historical context has been prepared in order to provide an overview and understanding of the potential historical heritage and archaeological resource of the Project Area and surrounds. The Local and Family History section of the Parkes Shire Library provided research material and advice which was utilised in the preparation of the historical context.

5.11.2.1 Settlement

Although the Lachlan plain which includes the areas of Forbes, Bogan Gate, Parkes and Peak Hill was not officially opened up for settlement until the 1840s, the grazing potential of the area was recognised in the early 1800s (Heritage Office 1996:98). When the Lachlan River was discovered in 1815 by Surveyor George Evans, the area west of Eugowra was still unexplored. In 1817 John Oxley, Surveyor General of New South Wales from 1812, further explored the Lachlan Plain. In 1835 and 1836 Thomas Mitchell, Surveyor General from 1828 (following Oxley's death), explored the region including the mapping of the Lachlan River (Heritage Office 1996:98). Mitchell's expedition 'sealed the future of the inland for pastoral occupancy' as his route became the basic supply route for squatting activity (Tindall 1982:6).

Although pastoralists had been bringing their cattle onto the plains since Oxley's early explorations, the first official settlers arrived in the region in the mid 1830s. Thomas Kite is recognised as being the first squatter in the area. Kite followed the expedition tracks of Mitchell and established a station on the Goobang Creek in 1835, a few kilometres north-east of Parkes (PSC nd).

By 1849 there were up to 50 runs in the area with frontages to the Lachlan River. By this time Thomas Kite had land totalling over 60,000 hectares on either side of the Lachlan River (Heritage Office 1996:99). In the 1840s the largest station in the area was Benjamin Boyd's who had 60,000 hectares around present Condobolin to the west of Parkes.

The principal purpose of the early stations was to raise cattle, and the majority of the Lachlan Pastoral District runs had no sheep at all. However, this changed from the late 1850s when Hanbury Clements settled at Eugowra to the south-east of the Project Area. Clements brought sheep with him from Bathurst and by 1878 there were 12,000 sheep at Eugowra. Other landowners soon followed suit and in the 1860s and 1870s the wooden shearing sheds that are now such a feature in the region were being constructed (Heritage Office 1996:100).

5.11.2.2 Discovery of Gold

The discovery of gold in the region signalled a new period of the area's history. The majority of the major towns in the Lachlan plain area were established primarily as a result of gold, including Forbes, Parkes, Peak Hill, Wyalong, West Wyalong and Lake Cargelligo. Only Bogan Gate, Condobolin and Ungarie were established as a result of the needs of farmers for a market and social centre. The earliest gold rush in the area was at present day Forbes in 1861 where approximately 28,000 miners soon formed a tent town, quickly followed by stores, banks and even two theatres, resulting in the establishment of the township of Forbes (Heritage Office 1996:100).

In 1863 and 1864 gold mines opened at Curragong, just north of present day Parkes. In the early 1870s new mines were opened in the area resulting in the township of Bushmans which was renamed Parkes after a visit by Henry Parkes in 1873. Other areas to benefit from the gold rush included Grenfell (1867) to the south, Lake Cargelligo (1873) to the west, Peak Hill (1889) to the north and Wyalong (1893) to the south-west (Heritage Office 1996:101-102).

5.11.2.3 Rural Settlement

The end of the Lachlan Plain goldrushes coincided with important legislative changes regarding land purchases and thus rural settlement and land exploitation in the area. The *Crown Lands Act 1884* introduced conditional leaseholds for land adjoining existing conditional purchases, with limits to the size of the leaseholds encouraging smaller units of mixed farming. Meanwhile, the *Homestead Selection Act* of 1895 encouraged wheat growing and the region began to transform into an area characterised by wheat and wool rather than cattle and gold. The Soldier Settlement Scheme[4] established following the First World War and the further consolidation of properties into more 'economic sizes' in the 1930s further strengthened the area as a major sheep and wheat farming region (Heritage Office 1996:102, NSW Government State Records nd).

In the Parkes area more than a third of the former Goobang Shire had been cleared for agriculture by 1933. The vast cleared areas and the amount of acreage turned over to wheat resulted in the number of sheep in the area declining (Heritage Office 1996:103).

5.11.2.4 Development of the Railway

The development of the railway through the region enabled the bulk transportation of wheat and was a major factor in encouraging agricultural expansion through the district as it reduced or eliminated 'the long and costly haul by slow horse transport to distant railheads' (Tindall 1982:28). Parkes and Forbes were linked by rail to Sydney through Molong in 1893. Branch railway lines soon followed to other towns in the area followed with the rail line from Parkes being extended to Bogan Gate and Condobolin in 1898 (Heritage Office 1996:102-103).

The Goonumbla Station on the Parkes-Narromine rail line was first opened as Limestone Plains Station in 1914. It was renamed Goonumbla in 1915 and closed in 1976 (Bozier. nd).

[4] Following the First World War the Commonwealth and State Governments cooperated to initiate programs to enable returned soldiers to settle on their own farms or secure their own homes (under the *War Service Homes Act* of 1918 and soldier settlement schemes). While most land made available to returning soldiers was former Crown land, some freehold land was purchased by the Crown and then made available to returned soldiers.

5.11.2.5 Village of Goonumbla

Goonumbla was proclaimed a village on 5th May 1916. A provisional school operated in the village from September 1905 to June 1910 and a Public School from July 1910 to March 1949 (NSW Department of Education and Communities). The census of 1933 indicates the population of Goonumbla was 225. The census also indicates that fossicking was still being undertaken at neighbouring mine workings.

The first country silo to begin operation in NSW was at Peak Hill in 1918. The Goonumbla Sidings grain silos were built by 1930. Prior to their construction, wheat was loaded directly onto trains from the farmers' wagons (NSW silos nd).

5.11.2.6 Travelling Stock Route

A TSR is located along the eastern boundary of the Project Area, approximately following the line of present Bogan Road. TSRs and reserves in NSW (also known as the Long Paddock in Australian literature) originated from the need to move stock to pastures and markets. To assist with the stock movements the government established a network of watering points and wide corridors for stock routes. Stock routes evolved from the 1830s onwards, the early routes generally following rivers or roads. The *Occupation Act 1861* and the *Pastures and Stock Protection Act 1880* attempted to regulate the use and administration of stock routes. During the 1880s and 1890s improvements were made to administration of the routes, culminating in the *Pastures Protection Act 1902* which established Pastures Protection Districts and Boards (AHMS 2008:39-40). The use and growth of the routes peaked during the two world wars, and continued in the post-war period particularly during the droughts of the late 1950s. The *Rural Lands Protection Acts* of 1989 and 1998 transferred administration of the routes to Rural Lands Protection Boards. The Boards now manage almost 600,000 hectares of traveling stock routes on crown land throughout NSW (AHMS 2008:39-40).

5.11.3 Previous Historic Heritage Assessment

As a part of the European Heritage Assessment completed by Australian Archaeology (2006) to accompany the EA - NPM E48 Project (Corkery 2006) three locally significant items (Blacksmith's Shed, Worker's Hut and 'Rosedale' Shearers Shed) were identified as being impacted as a result of the proposed development of the Rosedale Tailings Facility. These three items were recorded (including archival photographs and drawings) (Jolly 2005) as part of the 2006 Australian Archaeology assessment and are located within the area of Approved TSF 3 (Cell A) 'Rosedale' (refer to **Figure 5.27**).

The Project Site Boundary for the 2006 EA and European Heritage Assessment (encompassing ML1247 and ML1367) is essentially the same as the Project Area for the current Project.

5.11.4 Identified Sites within the Project Area

The previously identified and recorded workman's hut and blacksmith's shed were constructed following the purchase of the property by Thomas Frecklington in the early 1900s. Frecklington owned a number of blocks in the Project Area from the early 1900s. The buildings were built using a rammed earth construction technique. The associated shearing shed was likely constructed between 1920 and 1940 (Australian Archaeological Survey Consultants 2006:8).

Source: NPM (2013), Google Earth (2010)

0 200 400 800m
Inset 1:16 000

0 0.5 1 2km
1:40 000

Legend

- Project Area
- Proposed Additional Disturbance Area
- Approved Tailings Storage Facility (Rosedale)
- Existing Tailings Storage Facility
- New Underground Block Cave Mining Area
- Goonumbla Silos
- Location of Previously Identified Non-Indigenous Heritage Items

FIGURE 5.27

Previously Identified Heritage Items

File Name (A4): R10/2949_274.dgn
20130703 15.50

With the exception of the previously identified workman's hut, blacksmith's shed and shearing shed no other potential historical archaeological or heritage sites/items have been identified within or in the vicinity of the Project Area during the searches of relevant heritage registers, historical research and discussion with the Local and Family History section of the Parkes Shire Library. In addition, as discussed the 2006 heritage assessment for the Northparkes Mine E48 Project which assessed essentially the same area of land as the current Project Area did not identify any addition potential historical archaeological or heritage sites/items.

As such, no site inspection was undertaken as part of this assessment. However, the area was surveyed as part of the ACHA undertaken for the Project by CQCHM 2013 and no additional items of potential historical archaeological or heritage value were identified.

5.11.5 Significance Assessment

The Project Area is typical of an agricultural landscape which has been extensively cleared, farmed and in recent years exploited for mineral resources. This history is reflected in the low potential for any historical archaeological resource or potential historical heritage items to be present within the Project Area, with the exception of the previously identified structures within the Approved FSF 3 (Cell A) 'Rosedale'.

The previously identified workman's hut, blacksmith's shed and shearing shed have been assessed as being:

> ...historic examples of buildings which utilise economically viable materials not commonly used during the related eras, while contributing aesthetically to the surrounding environment. In addition to this, the buildings are representative of the economic situation of the property owners during two distinct periods of rural development in the history of the region (Australian Archaeological Survey Consultants 2006:15).

No other potential items or sites have been identified within the Project Area.

5.11.6 Historic Heritage Impacts

The previously identified workman's hut, blacksmith's shed and shearing shed will be physically impacted (removed) as they are located within the footprint of the approved TSF 3 (Cell A) 'Rosedale'.

No other historical archaeological or heritage impacts associated with the Project have been identified.

As part of the proposed Project the current road haulage of copper concentrate to the existing Goonumbla rail siding will continue in accordance with existing approved operations (refer to **Section 2.3**). No impacts are proposed to the Goonumbla Village area, rail siding or grain silos.

5.11.7 Historical Heritage Management Commitments

5.11.7.1 Previous Recommendations

The 2006 EA (Corkery 2006) recommended the following management to be undertaken in relation to the workman's hut, blacksmith's shed and shearing shed (in addition to the recording included as part of 2006 Archaeology assessment) prior to any works that would impact the three items:

- a site plan of the area be recorded to include:
  - detailed recording of historic landscaping features;
  - location of structures within the Project Site and in relation to one another;
- recorded elevations of:
  - blacksmith's shed; and
  - workman's hut.

Compilation of the above details with the documentation and recordings provided by Jolly (2005).

- Copies of the compiled information would be provided to the:
  - Parkes and District Historic Society; and
  - Parkes Local Council.

The workman's hut, blacksmith's shed and shearing shed remain onsite. As a part of the Project, NPM commit to undertake the management recommendations of existing approvals as described above prior to disturbance of these sites.

5.11.7.2 Additional Historical Heritage Management Commitments

Should any as yet unidentified items of potential historical archaeological or heritage significance be identified during the Project, NPM is committed to implement the Avoidance Principle. The Avoidance Principle means, in relation to historical archaeological and heritage items, the avoidance of impact to historical heritage and, to the extent where such impact cannot be avoided, to minimise and/or mitigate any impact.

NPM reaffirms its commitment to ensure a comprehensive survey is undertaken of any area proposed to be impacted that has not previously been surveyed. Such survey is to be undertaken prior to any potential impacts taking place and agreed management measures will be implemented prior to any impact.

Under the Project no change is proposed to the approved copper concentrate transport and handling and there will be no impacts at the Goonumbla rail siding. Should any impacts be proposed for the Goonumbla Village area, further assessment and site inspection would be required prior to any potential impacts taking place to confirm the potential heritage and archaeological resource of the area.

Should any impacts be proposed to the Goonumbla grain silos, a Statement of Heritage Impact (SOHI) should be prepared prior to any potential impacts taking place.

5.11.7.3 General Preventative Mitigation Measures

Other general historical archaeological and heritage management measures for the Project include:

- In the unlikely event that unexpected archaeological remains or potential heritage items not identified as part of previous investigations are discovered during the Project, all works in the immediate area will cease. The remains and potential impacts will be assessed by a qualified archaeologist or heritage consultant and, if necessary, the Heritage Branch, OEH notified in accordance with Section 146 of the *Heritage Act 1977* (Heritage Act) (NSW).

5.11.7.4 Effectiveness and Reliability of Proposed Mitigation Measures

An evaluation of the effectiveness and reliability of the proposed mitigation measures found that the proposed mitigation measures are deemed to be effective and reliable in managing the potential heritage impacts associated with the Project for the following reasons:

- The additional recording to be undertaken in accordance with existing approvals prior to disturbance to the workman's hut, blacksmith's shed and shearing shed will ensure any surviving physical aspects of the buildings are identified and documented prior to approved disturbance.
- Adherence to Section 146 of the Heritage Act, including the cessation of work and notification of relevant stakeholders, in the event unexpected archaeological remains (including human skeletal material) or potential heritage items not identified as part of this report are discovered during the Project will ensure that any unexpected archaeological remains or potential heritage items are appropriately managed in accordance with relevant statutory controls and protections.
- If potential human remains are located following any surface disturbance, all works will halt in the immediate area to prevent any further impacts to the remains. The NSW Police will be contacted immediately, and no action is to be undertaken until police provide written notification to the NPM.

In addition, the NPM commitment to the avoidance principle and a comprehensive survey being undertaken of any area proposed to be impacted that has not previously been surveyed will ensure any as yet unidentified potential historical archaeological or heritage sites or items will be identified and managed in accordance with Section 146 of the Heritage Act.

5.12 Visual Amenity

Visual impacts have been identified as a key environmental issue in the DGR's for the Project (refer to **Section 1.3**). The specific details of the DGR's in relation to visual impacts include:

- detailed assessment of the:
  - changing landforms on the site during various stages of the Project (refer to **Section 5.12.2**);
  - potential visual impacts of the project on private landowners in the surrounding area as well as key vantage points in the public domain, including lighting impacts (refer to **Section 5.12.4**; and
- detailed description of measures that would be implemented to minimise the visual impacts of the Project (refer to **Section 5.12.5**).

A detailed visual analysis has been undertaken for the changing landforms associated with the Project and is discussed in the following sections.

As outlined in **Section 2.3**, key project components are located within and immediately adjacent to existing and approved mining areas, and largely involve an extension to these existing operational components. In relation to the proposed TSF infrastructure, it is noted that the majority of footprints are either existing or approved as part of existing NPM operations. The key change in potential visual impacts are associated with the modified footprint and proposed increased height of TSF 3, the proposed increase in height of the Estcourt TSF, and the development of additional waste dumps.