

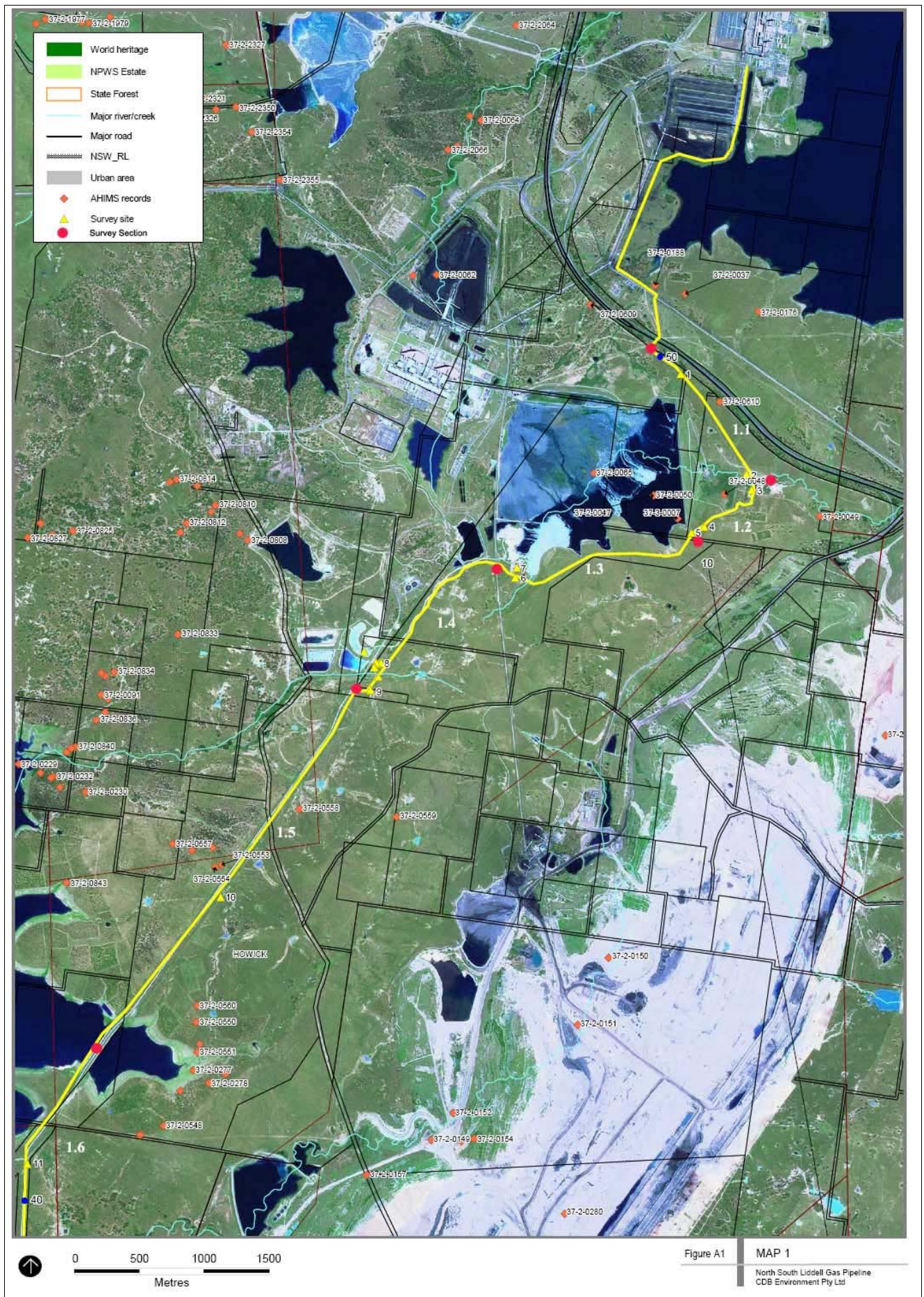


Figure 11 Survey sections and identified sites Map 1

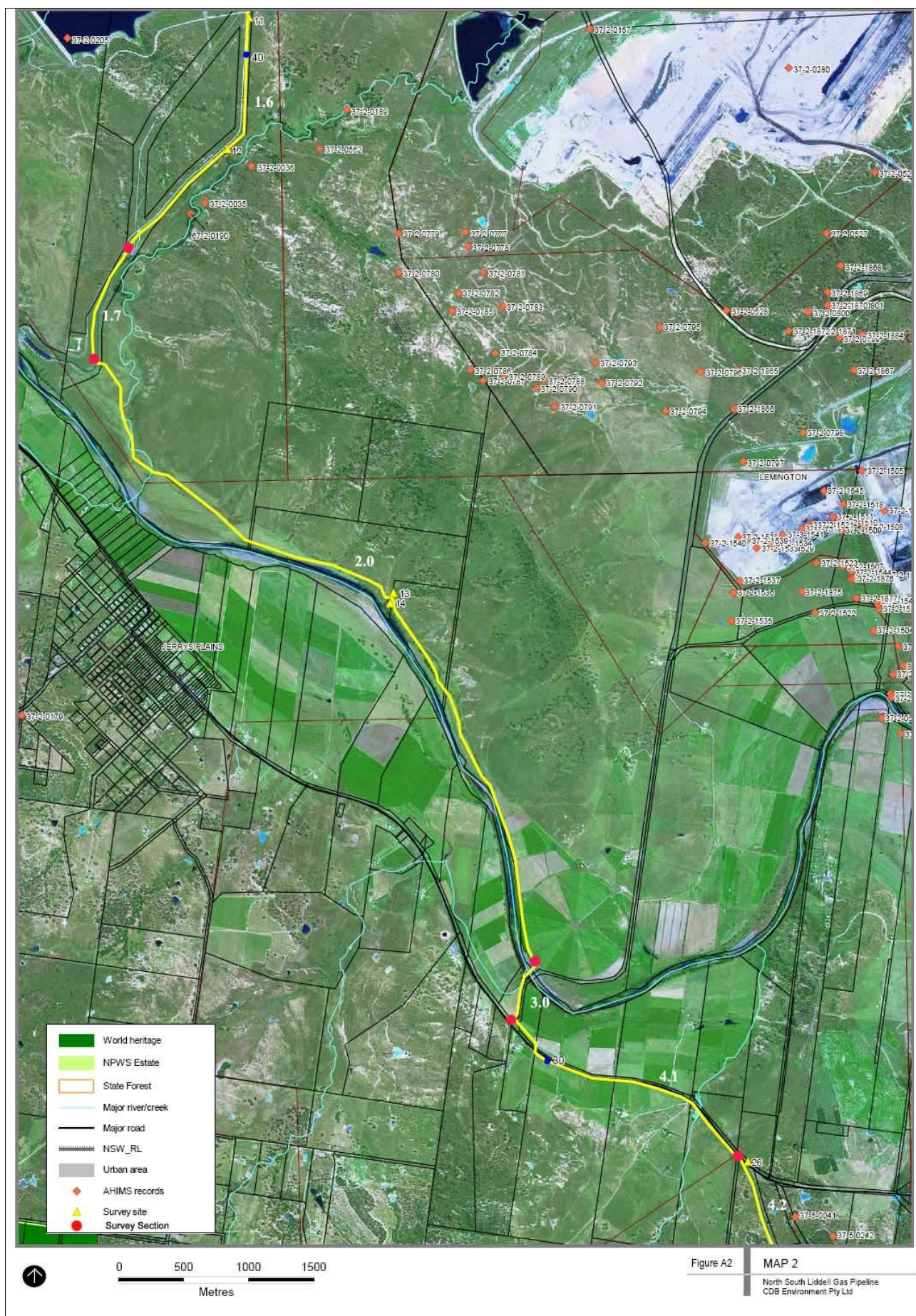


Figure 12 Survey sections and identified sites Map 1

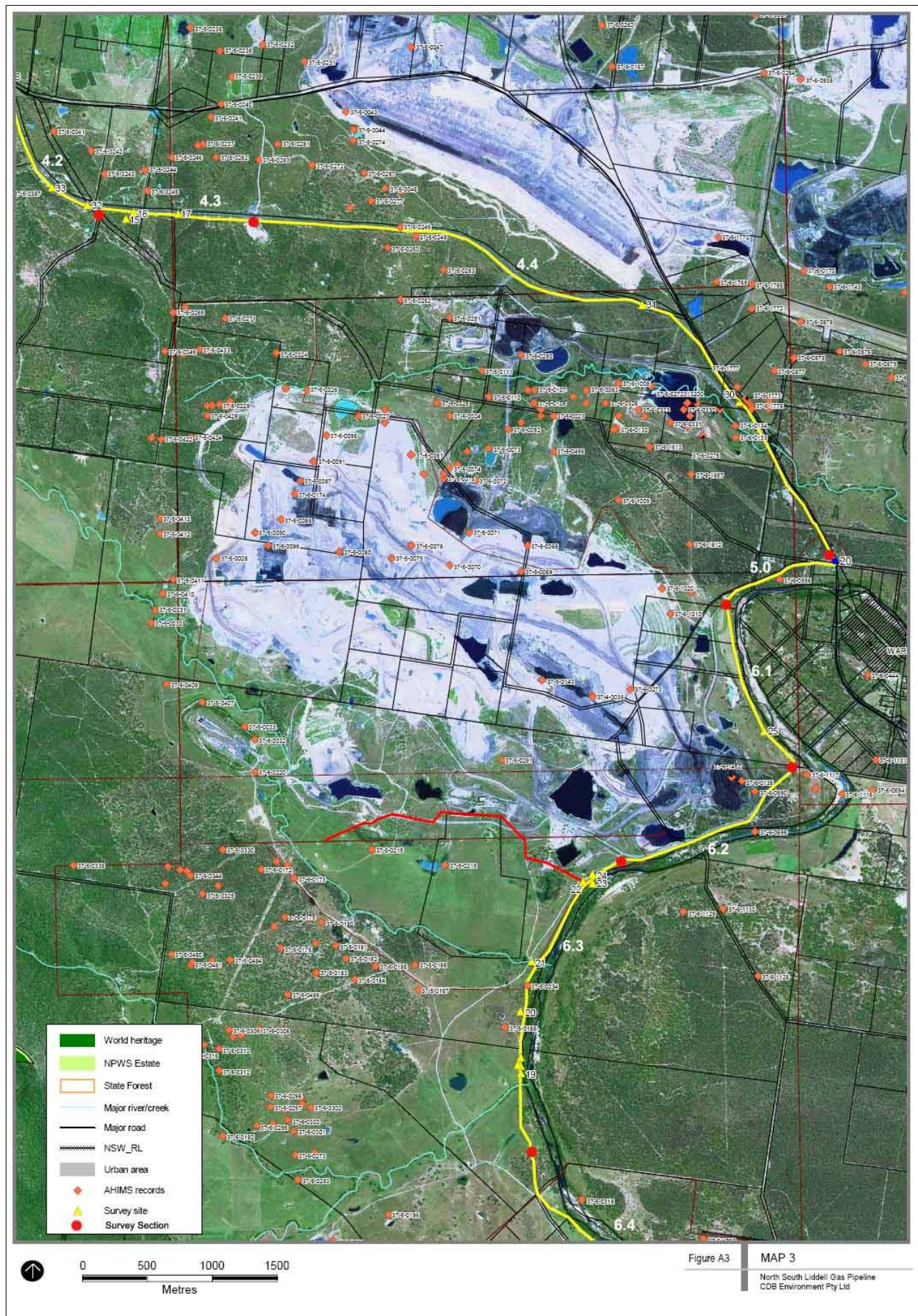
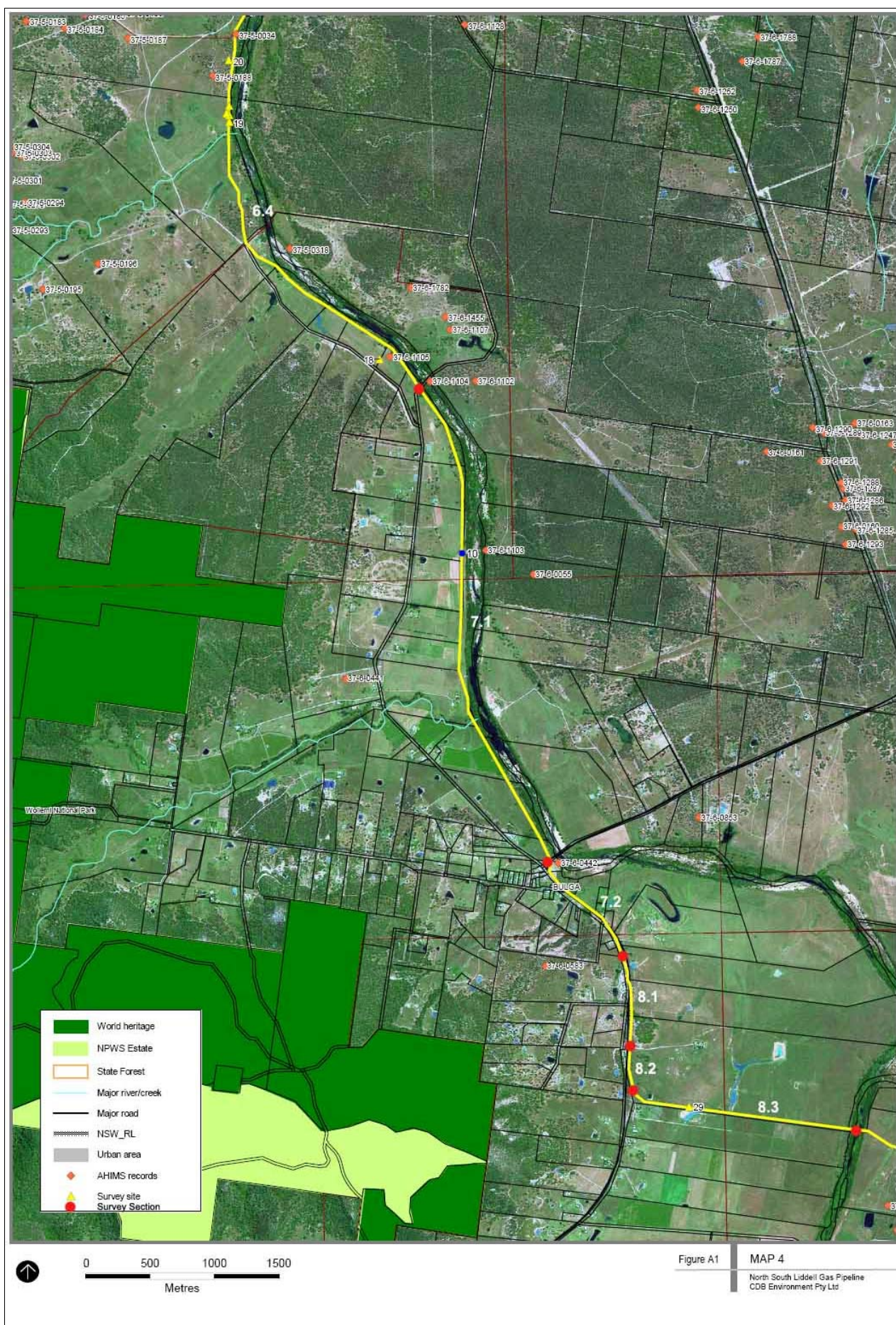


Figure 13 Survey sections and identified sites Map 1



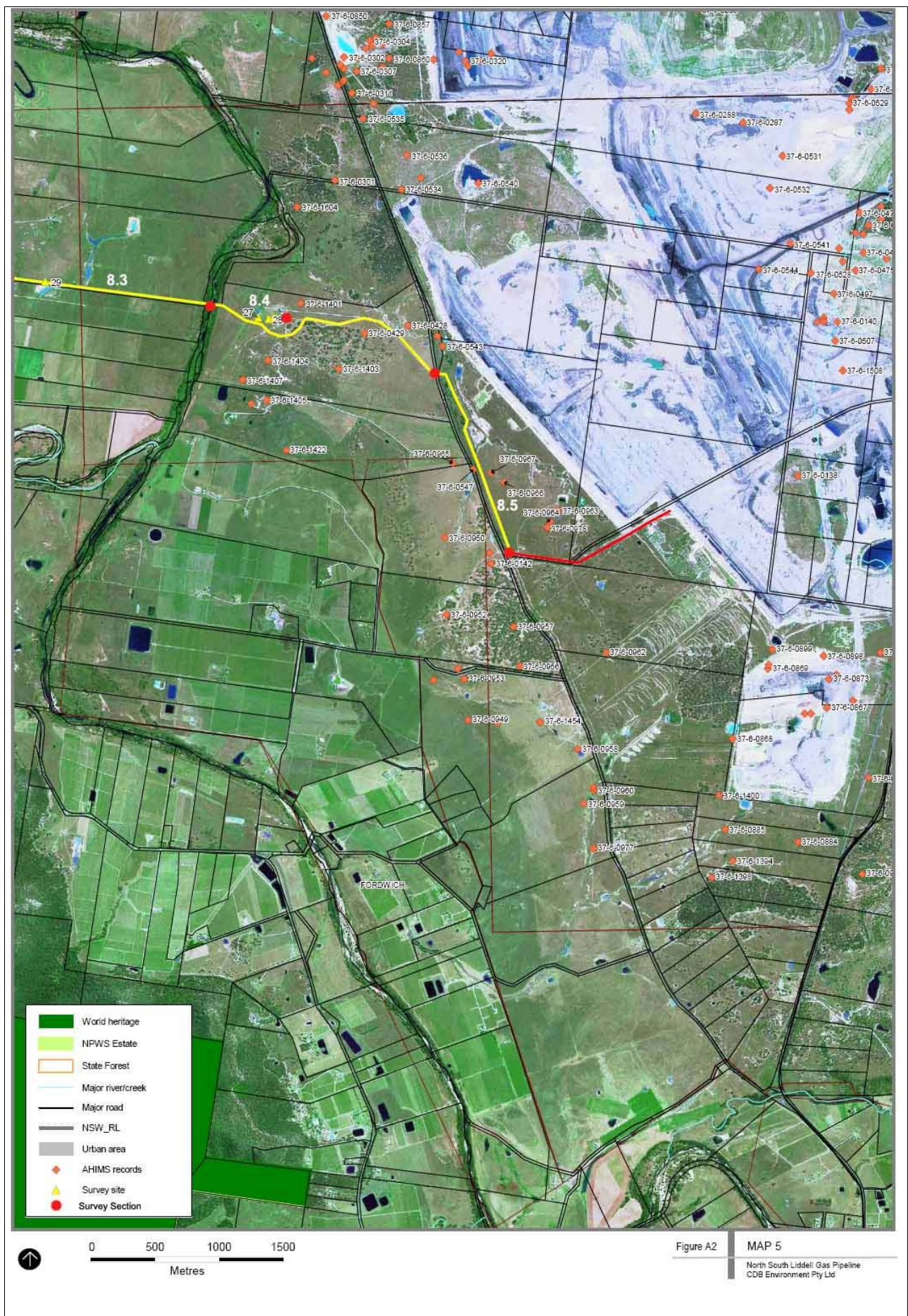


Figure 15 Survey sections and identified sites Map 5

3.3 Survey Results

The survey identified 32 locations of Aboriginal artefacts and one scarred tree (refer to Figures 11-15). The majority of recorded sites were low density artefact scatters and isolated finds. The majority of sites identified were located in disturbed contexts, Disturbances affecting site integrity included erosion and weathering, land clearing and grazing or disturbed by earthworks.

The main artefact types recorded at the sites were broken flakes and flakes, with some cores/broken cores. The main raw material types identified were mudstone and silcrete with minor chert. The majority of sites were located in proximity to drainage lines and water courses, or at the confluence of, and on slopes, as per the predictive model of archaeological potential.

The details of the recorded sites are shown in Table6 below.

Table 6 Recorded Sites

Site Name	GPS Location GDA 94 (Easting, Northing)	Site Type	Notes	Artefact Type	Raw Material	Dimensions (LxWxTcm)
Liddell NS 1	6413916, 309096	Isolated Artefact	Located in vehicle track, site, disturbed pugged by hooves, track approx. 5m wide	Broken Flake	Mudstone	1.5x0.8x0.2
Liddell NS 2	6413142, 309604	Artefact Scatter	Located adjacent to creek line/swamp/spillway area of Pikes Creek. Site approx 30m x 45m. Two main loci of artefacts. Plastic fragments, imported gravels, conduit frags also noted. SE end of site more disturbed also decrease in concentration of artefacts. In a 1m ² in area of highest artefact concentration, 10 artefacts were recorded. Also on constructed mound to E at 6413158, 309593 in 3m x 3m exposure mudstone flake 4.4x1.8x8.6 also located.	Broken Flake Broken Flake Broken Flake Flake Broken Flake Flake Broken Flake Flake Flake Flake	Mudstone Mudstone Mudstone Mudstone Silcrete Mudstone Mudstone Mudstone Mudstone Silcrete	1.2x0.3x1.2 1.8x2.2x0.3 1.0x0.6x0.1 4.0x2.0x0.5 2.0x0.6x0.2 2.0x1.8x0.3 1.5x0.4x0.1 4.0x1.6x0.4 2.0x1.8x0.3 2.5x1.0x0.4
Liddell NS 3	6413019, 309645	Artefact Scatter	Located on ants nest west side of dirt road. SW side of Pikes Creek One silcrete and tuff flake located in ants nest in exposure 2 x 5m wide, one mudstone broken flake located in exposure approx. 10m to the S	Flake Flake Flake	Silcrete Mudstone Tuff	5.0 x 2.3 x 1.0 3.0 x 2.0 x 0.3 1.5 x 1.5 x 0.3
Liddell NS 4	6412733, 309279	Isolated Artefact	Located in exposure under tree vis 60-70%, exposure approx. 6 x 5m.	Flake	Mudstone	3.0 x 2.4 x 0.4
Liddell NS 5	6412687, 309179	Isolated Artefact	At SE end of Bayswater Ash Dam embankment, on E slope facing W in ants nest exposure approx. 1.5 x 0.5m.	Flake	Silcrete	0.5 x 0.5 x 0.1
Liddell NS 6	6412342, 307818	Isolated Artefact	Located in large dozed exposure SW corner of Bayswater Ash Dam. SV 100%, AV 20% due to disturbance. Exposure size approx 15 x 20m.	Flake	Mudstone	2.6 x 0.1 x 0.8
Liddell NS 7	6412420 307831	Artefact Scatter	Low density scatter 20-10m NE of fence, site length approx. 12m. Break of slope approx. 5m SE of fence line.	Broken Core Angular Frag Flake	Mudstone Quartz Mudstone	3.5 x 2.3 x 3.0 1.2 x 2.3 x 1.0 2.6 x 1.0 x 0.3
Liddell NS 8	6411677	Artefact	Site located at junction of Wisemans Creek and	Flake	Grey Silcrete	2.5 x 2.0 x 1.0

Site Name	GPS Location GDA 94 (Easting, Northing)	Site Type	Notes	Artefact Type	Raw Material	Dimensions (LxWxTcm)
	306764 (E side) 6411648 306733 (W side) 6411574 306761 (S side)	Scatter	two unnamed tributaries. Artefacts located on both E and W banks of N tributary from N and in eroded exposure on S bank of Wisemans Creek. Liddell NS 9 possible extension of site complex. Area disturbed by water pipeline and River Rd to the west, clearing, cattle, erosion. On E side of N trib exposure in ants nest 6m x 1m (6 artefacts identified). Artefacts still located 8m N. On W side of N tributary artefacts located in exposures approx. 45m long but may extend further. On S side of Wisemans Ck artefacts located in eroded exposure on creek bank approx 20-25m long. Actual site size likely to be larger, but encompasses the junction of these tributaries, visibility hindered by ground cover. On W side of creek artifact density approx 3/m ² . On S bank of Wisemans Ck artifact density also approx 3/m ² . Artefacts listed opposite located on ants nest 6 x 1.5m in size,	Flake Broken Flake Pebble Flake Flake	Mudstone Pink Silcrete Mudstone Mudstone	2.0 x 1.5 x .04 3.0 x 2.1 x 0.2 2.5 x 1.5 x 0.6 2.5 x 2.0 x 0.6
Liddell NS 9	6411470 306700	Artefact scatter	In 40m x 12m exposure. On edge of eroded gully on NE side of tributary flowing NNW into Wisemans Creek.	Flake Flake Flake Flake	Mudstone Silcrete Mudstone Mudstone	3.5 x 1.5 x 1.0 1.5 x 1.0 x 0.4 1.6 x 1.5 x 0.3 1.0 x 0.5 x 0.3
Liddell NS 10	6409870 305540	Artefact Scatter	Located in exposure on possible pipeline mound, approx. 200m long and 0.5-2m wide. Site commences just below crest of hill and running down slope. Low density. Artefacts listed opposite located in 1m ² . Other artefacts noted in	Broken Flake (termination missing) Broken Flake (possibly mid section)	Silcrete Quartzite	5.5 x 3.5 x 2.0 Max. Dim. 3.0

Site Name	GPS Location GDA 94 (Easting, Northing)	Site Type	Notes	Artefact Type	Raw Material	Dimensions (LxWxTcm)
			scatter included Mudstone broken core, Mudstone Broken Flake, heat treated fragments of Mudstone.			
Liddell NS 11	6407807 304049	Isolated Artefact	Located at the S end of the causeway embankment for the Plashett Reservoir in exposure 15m x 0.5m. SV 60%, AV 80%.	Flake	FGS (grey)	2.5 x 1.5 x 0.3
Liddell NS 12	6406798 303882	Artefact Scatter	Located in exposure below road embankment on E side adjacent to small tributary of Parnells Creek. Area disturbed by Jerrys Plains water pipeline in exposure approx 30m x 15m	Broken Core Core	Mudstone Silcrete	4.0 x 3.2 x 2.0 3.5 x 2.0 x 1.5
Liddell NS 13	640339 305159	Isolated Artefact	Small artefact scatter (2 x artefacts) in exposure on ants nest adjacent to vehicle track way running mid slope on the E side of Hunter Rive in 'Wondewoi Farm'. Also adjacent to drainage line running down slope. Disturbances from track construction, clearing, rubbish dumping.	Cobble Flake Flake	Mudstone Mudstone	4.5 x 5.0 x 2.0 1.5 x 1.5 x 0.3
Liddell NS 14	6403312 305134	Artefact Scatter	Site comprises of two mudstone flakes located on the W edge of a vehicle track way running NW-SE on mid slope on E side of Hunter River in 'Wondewoi Farm'.	Flake Flake	Mudstone Mudstone	4.8 x 3.2 x 1.2 1.5 x 1.0 x 0.3
Liddell NS 15	6397925 308806	Isolated Artefact	Located in small drainage channel for highway, disturbed by drainage channel and road embankment immediately adjacent. Less disturbed land located on S side of fence line to S. Visibility in exposure up to 50% .	Broken Flake (medial)	Mudstone	1.8 x 1.6 x 0.6
Liddell NS 16	6397973 308865	Artefact Scatter	Small scatter of 2 x artefacts located in eroded exposure approx. 2m N of fence line on top of small rise.	Broken Flake (termination missing) Broken Flake (heat treated)	Mudstone Mudstone	2.9 x 1.8 x 0.4 1.6 x 1.6 x 0.2

Site Name	GPS Location GDA 94 (Easting, Northing)	Site Type	Notes	Artefact Type	Raw Material	Dimensions (LxWxTcm)
Liddell NS 17	6397964 309207	Isolated Artefact	Located in eroded exposure, probably washed down slope from top of slope on the southern side of adjacent fence line. Located in exposure approx 1.5 x 1.5m.	Flake (heat treated)	Silcrete	3.5 x 0.1 x 0.6
Liddell NS 18	6389494 313014	Artefact Scatter	Site in erosion scour on top W terrace of Wollombi Brook. Site located approx. 70m W of brook bank. Approx. 10m x 20m. Artefacts recorded in a 1m ² . Additional artefacts observed included retouched flakes, large mudstone scraper, silcrete pebble tool. Quartz fragments also noted. Artefacts eroding out of orange A1/A2 horizon. Site should not be impacted by proposed development as located approx. 50m W of edge of proposed impact area.	Flake Flake (possible scraper) Flake	Mudstone Mudstone Mudstone	5.5 x 3.0 x 1.0 3.0 x 2.5 x 1.0 2.5 x 1.5 x 0.5
Liddell NS 19	6391325 311847 (Loci 1) 6391379 311846 (Loci 2) 6391388 311823 (Loci 3) 6391448 311846 (Loci 4)	Grinding Grooves Artefact Scatter	Site located on large sandstone exposure adjacent to the Wollombi Brook on the N side of the junction of Wambo Ck and Wollombi Brook. Site located both sides of EW running fence line. Loci 1 – 10 artefacts recorded in exposure on outcrop 5 x 5m. Artefacts in fine grained alluvium concentrated in depressions of sandstone. Loci 2 - 1 grinding groove in sandstone 23cm x 4cm wide, approx. 2cm deep. Loci 3 – 1 silcrete core, 8 negative scars, coarse silcrete. Loci 4 – Approx 50N of Loci 3, 2 artefacts Sandstone outcrop continues to 6391506 311839 Highly probable more artefacts and grinding grooves may be located at site.	Loci 1 Broken Flake (termination missing) Flake (retouch RLM) Broken Core (5 neg. scars) Broken Flake (Proximal end) Broken Flake Broken Flake Broken Flake(Proximal) Broken Flake(Proximal) Broken Flake (medial) Broken Flake Loci 3 Core	Mudstone Mudstone Silcrete Mudstone Mudstone Mudstone Mudstone Mudstone Mudstone Mudstone Silcrete	3.2 x 2.2 x 04. 2.6 x 2.2 x 0.4 4.6 x 3.5 x 1.6 1.5 x 1.2 x 0.3 1.1 x 0.4 x 0.1 2.2 x 2.0 x 0.4 2.6 x 2.4 x 0.5 1.5 x 2.2 x 0.3 1.7 x 0.6 x 0.3 1.6 x 1.1 x 0.2 5.0 x 5.5 x 3.8

Site Name	GPS Location GDA 94 (Easting, Northing)	Site Type	Notes	Artefact Type	Raw Material	Dimensions (LxWxTcm)
				Loci 4 Flake Flake (50% cortex)	Chert Mudstone	2.0 x 1.5 x 0.3 1.5 x 2.5 x 0.6
Liddell NS 20	6391802 311843	Artefact Scatter	Located in sandy soil on slight rise adjacent to terrace approx 15m west of proposed route. Exposure approx 10 x 6m. Located at area identified on map supplied by Wambo as an archaeological site, however this site was not located by the AHIMS search.	Flake Flake Flake	Mudstone Mudstone Mudstone	2.6 x 2.0 x 0.5 1.0 x 0.5 x 0.3 0.5 x 0.5 x 0.1
Liddell NS 21	6392186 311930	Scarred Tree	Coolamon scar on felled tree located Nth bank of Nth Wambo Ck. According to accompanying Ecologist tree over 100yrs old at time of felling. Has been felled some time ago. Current scar dimensions 8 x 20 x 5cm.			
Liddell NS 22	6392804 312326	Artefact Scatter	2 silcrete flakes, also fragment of silcrete noted in ants nest exposure 6 x 3m. Located at area identified on map supplied by Wambo as an archaeological site, however this site was not located by the AHIMS search.	Flake Flake	Silcrete Silcrete	1.6 x 0.5 x 0.2 1.9 x 0.7 x 0.2
Liddell NS 23	6392789 312400	Artefact Scatter	Located to the N of L NS 22 in large eroded exposure 15 x 5m. Located at area identified on map supplied by Wambo as being an archaeological site, however this site was not located by the AHIMS search.	Broken Flake Flake (retouch RLS) Flake	Mudstone Mudstone Mudstone	1.5 x 1.0 x 0.3 4.0 x 2.5 x 0.6 1.0 x 0.5 x 0.2
Liddell NS 24	6392861 312398	Artefact Scatter	Located on N bank of small drainage line, in ants nest exposure above erosion scar.	Broken Flake Flake	Mudstone Silcrete	3.0 x 1.2 x 0.5 2.0 x 1.1 x 0.2
Liddell NS 25	6393966 313720	Isolated Artefact	Located approx 20m W of fence running adjacent to Wollombi Brook. Located in yellow-brown sand on terrace. Artefact has retouch on margins, approx 10% cortex.	Core Tool	Mudstone	8.0 x 6.5 x 2.8

Site Name	GPS Location GDA 94 (Easting, Northing)	Site Type	Notes	Artefact Type	Raw Material	Dimensions (LxWxTcm)
Liddell NS 26	6399024 307855	Artefact Scatter	3 artefacts located in eroded exposure on edge of small tributary of Waterfall Ck, approx. 20m from fence line of Wambo Mine land. Artefacts eroding out of A2 horizon	Flake (30% cortex) Flake Pebble Flake (30% cortex)	Mudstone Mudstone Mudstone	3.2 x 3.0 x 2.0 4.5 x 3.3 x 0.5 4.5 x 4.0 x 1.5
Liddell NS 27	6383432 317078	Artefact Scatter	Located in exposure S edge of dam in vehicle track. SV 80-90% AV 90%. Maximum dimension of exposure 11 x 9m. Artefacts recorded in a 1m ² . Site likely to be extension of G1 site recorded by Umwelt which also encompasses Liddell NS 28.	Blade Flake Flake Flake	Chert Mudstone Mudstone Mudstone	3.5 x 1.9 x 0.4 4.4 x 2.0 x 0.4 1.9 x 0.9 x 0.2 2.2 x 1.3 x 0.3
Liddell NS 28	6383425 317161	Artefact Scatter	In exposure adjacent to S side of homestead from track S to low spur. Re location/extension of recorded site G1, approx 50m W of pegged loci of G1. Also probable Liddell NS 27 more W extension of G1. Artefacts identified in track way (approx 25m) and to the area immediately S. SV adjacent to track 30-60%. Artefacts listed located in a 1m ² . FGS Broken flake possible scarper also noted in track @6383438 317200	Broken Flake Angular Frag.	Chert Mudstone	2.3 x 1.9 x 0.5 Max. Dimension 2.0
Liddell NS 29	6383713 315414	Isolated Artefact	Located in animal track way adjacent to fence line approx. 1m wide.	Flake	Mudstone	
Liddell NS 30	6396508 313528	Artefact Scatter	Located just S of RTA Golden Highway sign in road reserve. Site size 3 x 5m. Angular fragments of yellow silcrete also noted.	Core Broken Core Scraper Flake	Silcrete Silcrete Silcrete Silcrete	7.0 x 5.0 x 2.0 Max. D. 4.0 3.5 x 2.0 x 1.5 1.5 x 1.0 x 0.3
Liddell NS 31	6397258 312781	Artefact Scatter	2 x artefacts located in road reserve N of adjacent fence line to United Collieries. Area of exposure 10m x 4m. Large amount of background gravel.	Broken Flake Broken Flake (mid section)	Silcrete Silcrete	4.0 x 2.1 x 0.4 3.5 x 1.5 x 0.3

Site Name	GPS Location GDA 94 (Easting, Northing)	Site Type	Notes	Artefact Type	Raw Material	Dimensions (LxWxTcm)
Liddell NS 32	6398029 308508	Artefact Scatter	Site located on top of small hill N of Pinegrove Rd, cut by Hwy. Site extends for approximately 15m either side of GPS reading. Angular fragments of silcrete and heat treated mudstone also notes. Site also likely to extend S into adjacent property.	Loci 1 Broken Flake (termination missing) Broken Flake (heat treat.) Loci 2 Flake (retouch two lateral margins, 10% cortex) Broken Flake	Mudstone Mudstone Mudstone Mudstone	4.0 x 3.0 x 1.0 2.5 x 3.0 x 0.3 4.1 x 2.7 x 1.1 2.0 x 5.0 x 0.2
Liddell NS 33	6398166 308234	Artefact Scatter	Top of rise above Hwy in 3 x 1.5m exposure. SV80%, AV 80%	Core Flake	Mudstone Mudstone	4.3 x 3.0 x 3.4 2.5 x 3.5 x 0.4

3.4 Discussion

3.4.1 Identification of Previously Recorded Sites

Of the 33 sites 4 of the recorded sites are considered to be re locations of previously recorded sites (refer to Table 7 below).

Table 7 Re located sites

Survey Site Name	AHIMS No.	Comments
Liddell NS 3	37-2-0048	Site located on the southern banks of Pikes Gully. A collection of cores was made at the site.
Liddell NS 2		The site card for 37-2-0048 notes that a separate card was lodged for sites located on the north bank of Pikes Gully, however the sites card/site no. could not be located.
Liddell NS 12	37-2-0190, 37-2-0035	Both these site cards present the same information. The site card states that the site continues along the banks of Parnells Ck north to the Mitchell Line Rd. It is therefore considered that this site is a continuation of this recorded site. The site card states that a collection was made at this site. The area is disturbed by erosion and the Jerrys Plains water pipeline.
Liddell NS 27 & Liddell NS 28	G1	G1 site not registered on AHIMS, but has been recorded. (Refer section 3.2.3 below).

3.4.3 Previously recorded Sites located in the vicinity of the pipeline route

As outlined in Section 2.3 a number of previously recorded sites were highlighted as having potential to be impacted by the proposed pipeline.

Following additional information supplied by Beltana Mine at the time of survey, the following sites were also identified as possibly occurring in the proposed pipeline route which did not appear on the AHIMS site search:

37-6-1840 – Bulga G2 Artefact Scatter recorded by Umwelt Pty Ltd. Co-ordinates E: 317600, N: 6383200.

37-6-1842 – Bulga G3 Artefact Scatter recorded by Umwelt Pty Ltd. Co-ordinates E: 317700 N: 6383200.

37-6-1843 – Bulga G4 Artefact Scatter recorded by Umwelt Pty Ltd. Co-ordinates E: 317775 N: 6383175.

G1 Site – Artefact Scatter recorded by Umwelt Pty Ltd. Located approx. 500m to the north of 37-6-1404, to the west of a vehicle track and to the south of a homestead.

Sites 37-6-1840, 37-6-1842 and 37-6-1843 were not relocated by the survey due to access restraints. These sites however are subject to an Aboriginal Heritage Impact Permit (2998) from DECC issued August 2008 for salvage of these sites (refer to Table 8 below for further details).

G1 site was relocated by the survey, and is not subject to a Permit for salvage. The site is also located within the proposed pipeline corridor.

Table 8 outlines whether these previously recorded sites are likely to be impacted by the proposed route as a result of the survey and further investigations.

Table 8 Previously recorded sites potential for impact

Site Number/Site Name	Comments
37-2-0048 / Liddell NS 3	Likely to be impacted. Collection of site occurred in the 1980s
37-2-0035 & 37-2-0190 / Liddell NS 12	The same details on site card. Collection made at these sites in the 1980s.
37-5-0248 & 37-5-0249	Sites not relocated by survey. Both sites located under power easement. Sites may be impacted if route to impact on the power easement.
37-6-0134 & 37-6-0133	Sites not relocated by the survey but will not be impacted by the proposed route as the sites plot out of the road easement in which the proposed route runs.
37-6-0990	Not to be impacted, located to the west of the proposed route. Site not located by survey.
37-6-0595	Not to be impacted. Located to the south of the proposed route. Site not located by survey.
37-5-0034	The very eastern boundary of this site will be impacted. Site not relocated, but low visibility during survey.
37-5-0188	Site not to be impacted. Site description locates the site to the west of the surveyed route.
37-5-1105	Should not be impacted as site card description places the site on the eastern bank of the Wollombi Brook.
37-6-1404	BCO12. Isolated artefact, likely to be impacted.
37-6-1401	BCO10. Portion of the site located in the proposed route. However from information supplied by Beltana Mine a salvage has been undertaken at this portion of the site under Permit 2998 (Aug 2008). The salvage should collect any artefacts which may be impacted by the proposed pipeline. Salvage of this site includes artefacts located at loci Bulga G6, G7, G8, 7, GIF01F2, GIF-IF3
37-6-1840	Site Bulga G2, salvage of site granted under Permit 2998.
37-6-1842	Site Bulga G3, salvage of site granted under Permit 2998
37-6-1843	Site Bulga G4, salvage of site granted under Permit 2998
37-6-0429	Bulga 7 – Salvage of site undertaken by Beltana Mine (Permit 2998). Bulga 7 considered to be a loci of site BC010 (37-6-1401)
37-6-0965	BMU3 – Located in survey route, however surface salvage of site carried out under Permit 1748 (2003).
37-6-0547	B71 - located in survey route, however surface salvage of site carried out under Permit 1748 (2003).
37-6-0967	Site will not be impacted by current proposed route.
37-6-0142	In proposed route. Site salvaged under Permit 1748 (2003).
37-6-0428	Not impacted by current proposed route
G1	Will be impacted by proposed route. Not salvaged by current/recent Permit work in Beltana land.

4.0 Significance of Identified Sites

4.1 Significance Criteria

The basic processes of assessing significance for items of heritage are outlined by *The Australian ICOMOS Charter for the Conservation of Places of Cultural Significance: the Burra Charter* (amended 1999) and its associated *Guidelines*. Sites may be significant according to several criteria, including scientific or archaeological significance, significance to Aboriginal people, aesthetic value, the degree to which a site is representative of archaeological and/or cultural type, and value as an educational resource. In New South Wales the nature of significance relates to historic, aesthetic, social, scientific, cultural or educational criteria and sites are also assessed on the degree to which they exhibit rare or representative characteristics of their type, or whether they exhibit historic or cultural connections.

SCIENTIFIC SIGNIFICANCE

In order to determine scientific significance it is necessary to first place sites within a local and regional context. This process enables the assessment of any individual site in terms of merit against other sites of similar nature within similar contexts.

PUBLIC SIGNIFICANCE

The sites are assessed in terms of their educational value, to enhance community knowledge and appreciation of cultural heritage.

CULTURAL SIGNIFICANCE

Generally, all sites are of significance to the Aboriginal people. It has been recognised however that with the widespread nature of site distribution, sites will eventually be impacted upon by development. It is however necessary to conserve where possible sites which are of high significance to the community.

REPRESENTATIVE SIGNIFICANCE

Site significance is rated low, medium and high. The significance of individual sites is determined by factors such as representativeness, rarity, and the sites potential to add scientific data to what is known about past human occupation of the Australian continent. Conservation outcomes are determined by comparison of a site's qualities with known sites in the region that have been protected.

4.2 Significance Assessment

The following significance assessment is based on the guidelines listed in the preceding section. The cultural significance of sites has not been presented here as this can only be assessed by the community. For the significance assessment regarding the cultural significance of the sites, please refer to community reports in Appendix C.

Table 9 Significance Assessment

Site Name	Site Type	Scientific Significance	Public Significance	Representative Significance	Comments
Liddell NS 1	Isolated Artefact	Low	Low	Low	
Liddell NS 2	Artefact Scatter	Low	Low	Low	Site disturbed. Highly likely collection made at the site in the 1980s
Liddell NS 3	Artefact Scatter	Low	Low	Low	Only two artefacts. Collection already conducted at the site in the 1980s
Liddell NS 4	Isolated Artefact	Low	Low	Low	
Liddell NS 5	Isolated Artefact	Low	Low	Low	
Liddell NS 6	Isolated Artefacts	Low	Low	Low	Highly disturbed
Liddell NS 7	Artefact Scatter	Low	Low	Low	Eroded context, low density
Liddell NS 8	Artefact Scatter	Moderate	Moderate	Moderate	Visibility hindered further identification of artefacts, site effected by erosion.
Liddell NS 9	Artefact Scatter	Low-Moderate	Low-Moderate	Low-Moderate	Possibly part of Liddell NS 8
Liddell NS 10	Artefact Scatter	Low	Low	Low	Due to disturbed context on top of existing pipeline mound.
Liddell NS 11	Isolated Artefact	Low	Low	Low	
Liddell NS 12	Artefact Scatter	Low	Low	Low	Due to disturbed context – existing water pipeline located adjacent.
Liddell NS 13	Artefact Scatter	Low	Low	Low	2 artefacts identified, area disturbed by rubbish dumping and track way.
Liddell NS 14	Artefact Scatter	Low	Low	Low	2 artefacts in disturbed context.
Liddell NS 15	Isolated Artefact	Low	Low	Low	Disturbed context, less disturbed area likely to contain artefacts located adjacent outside of area of impact
Liddell NS 16	Artefact Scatter	Low	Low	Low	2 artefacts recorded, more artefacts in less disturbed

Site Name	Site Type	Scientific Significance	Public Significance	Representative Significance	Comments
					context likely to be located adjacent outside of area of impact.
Liddell NS 17	Isolated Artefact	Low	Low	Low	2 artefacts recorded, more artefacts in less disturbed context likely to be located adjacent outside of area of impact
Liddell NS 18	Artefact Scatter	Moderate-High	Moderate-High	Moderate-High	Located on high terrace above Wollombi Brook
Liddell NS 19	Artefact Scatter – Grinding Grooves	Moderate-High	Moderate-High	Moderate-High	More artefacts/grinding grooves likely to be located under vegetation
Liddell NS 20	Artefact Scatter	Low - Moderate	Low	Low	
Liddell NS 21	Scarred Tree	Moderate	Moderate	Moderate	Tree has been felled some time ago, more scars may be possible on reverse side
Liddell NS 22	Artefact Scatter	Low	Low	Low	
Liddell NS 23	Artefact Scatter	Low	Low	Low	
Liddell NS 24	Isolated Artefact	Low	Low	Low	
Liddell NS 25	Isolated Artefact	Low-Moderate	Low-Moderate	Low	More artefacts may be located in surrounding sandy soil
Liddell NS 26	Artefact Scatter	Low	Low	Low	Low density, adjacent to Hwy.
Liddell NS 27	Artefact Scatter	Moderate	Moderate	Moderate	Associated with Liddell NS 28/G1
Liddell NS 28	Artefact Scatter	Moderate	Moderate	Moderate	Relocated G1 site. Associated with highly significant sites nearby
Liddell NS 29	Isolated Artefact	Low	Low	Low	
Liddell NS 30	Artefact Scatter	Low	Low	Low	In disturbed Hwy reserve
Liddell NS 31	Artefact Scatter	Low	Low	Low	In disturbed Hwy reserve
Liddell NS 32	Artefact Scatter	Low-Moderate	Low	Low-Moderate	Less disturbed site likely to be located over adjacent fence line out of area of impact.
Liddell NS 33	Artefact Scatter	Low	Low	Low	

5.0 Legislation

THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT (1979)

This project is being assessed by the Department of Planning under *Part 3(a)* of the *EP&A Act 1979*. This Act overrides other State legislation as the project is considered State significant. The guidelines on the preparation of planning instruments specifically state that Aboriginal heritage should be assessed as an integral part of these studies.

Part IV of the Act determines the way in which consent authorities make decisions regarding development applications. Section 79C (b) states that;

“The impact of development on the natural or built environment should be considered before consent is granted; and”

Part V of the EP&A Act points out that State government agencies which act as determining authorities must also conduct reviews of their own or other agencies activities in terms of impact on the environment. Where these impacts are deemed to be minimal a Review of Environmental Factors is required, although where impacts are greater an EIS would be generated. This part of the Act requires that;

‘any impacts on a locality having aesthetic, anthropological, architectural, cultural, historic, scientific, recreational, scenic or social significance or other special value for present or future generations’ (DUAP 1995) be accounted for.

THE NATIONAL PARKS AND WILDLIFE ACT 1974

Whilst this Act is not triggered under Part 3A of the EPA Act, it forms the basis on which DECC provide their recommendations to the Department of Planning upon their review of the project. The *NPW Act 1974* provides statutory protection for all material evidence of Aboriginal occupation of NSW. Aboriginal places which are areas of cultural significance to the Aboriginal community, are also protected by the 1974 Act (section 84) that states:

The Minister may declare lands to be ‘protected archaeological areas’ to preserve Aboriginal places and relics; and

It is an offence to disturb or destroy an Aboriginal place or relic without first obtaining written consent from the Director of National Parks and Wildlife Service NSW.

The National Parks and Wildlife Act 1974 requires the obtaining of a Section 87 Permit if a person wishes to excavate land to disturb or discover an Aboriginal object (relic) or disturb or move an Aboriginal object.

A Section 90 Heritage Impact Permit is required if an activity will or is likely to destroy, damage, desecrate or deface an Aboriginal object or Aboriginal place.

A relic is defined as any deposit, object or material evidence (not being a handicraft made for sale) relating to indigenous and non-European habitation of the area that comprises NSW, being habitation both prior to and concurrent with the occupation of that area by persons of European extraction, and includes Aboriginal remains (NPW Act s.5(1)).

6.0 Management Recommendations

The following management recommendations are applicable to the route as surveyed at the time. Deviations from the surveyed route would require an additional assessment.

Ideally, it is recommended that all the sites identified along the proposed route area are avoided where possible, by diverting the route around them. This however, will not ensure no impacts on sites due to low surface visibility and the potential for sub-surface deposits particularly on the river terraces. Here some sub surface sampling and salvage will be required.

The management recommendations below are subject to review and approval of the registered community stakeholder groups. These recommendations will be updated following the responses received by the community after close of the review period.

Due to the lack of visibility across parts of the surveyed route, and to assist in the formulation of the management recommendations for areas of the proposed route where archaeological sites were not identified, the proposed route was designated into areas of archaeological sensitivity (refer to Figures 16-20). The classification of the route into areas of low – moderate or moderate – high archaeological sensitivity was based on surface visibility noted during the survey, the level of disturbance, the archaeological potential of landform units, and the site types identified in the area.

The mitigation measures recommended are based upon the perceived archaeological sensitivity of the various sections of the route. Where the sensitivity is low to moderate this generally indicates that the sites are in a disturbed context or shallow A1 soil horizons and are not indicative of intact subsurface deposits. In this case the appropriate mitigation measure is considered to be a combination of artefact collection and community monitoring in a structured program that ensures recording of activities undertaken.

Areas of high sensitivity are mapped on the basis of surface recording of artefacts, the soil landscape characteristics and the potential for in-situ subsurface deposits. These areas include the sensitive Wollombi Brook and Hunter River terraces some of which may be Pleistocene in origin. In these areas mitigation measures considered appropriate are sampling of the route to determine the most sensitive loci of deposits, the salvage of these loci and the monitoring of earthworks. In order to effectively

target these measures the advice of a geomorphologist is required in these sensitive areas.

There are site specific mitigation measures such as Liddell N/S 19 where grinding grooves on a large rock outcrop were located. Here it is essential to under-bore at sufficient depth to ensure that no impact at the time of installation or in the course of pipeline maintenance activities or pipeline removal will occur.

The management recommendations for newly identified or re located, and previously recorded sites are presented separately in Tables 10 and 11 below.

It is recommended that all sites located within the pipeline corridor are pegged prior to commencement of works to protect from inadvertent impact of sites. Protocols for avoiding sites will be included in the cultural awareness training as part of the OH&S for project workers. Pegging of the sites will also aid in determining mitigation methods and assessing impact once the exact pipeline route is determined.

Liddell - Wondewoi Farm

This section of the proposed route was classified as low – moderate archaeological sensitivity given the highly disturbed nature of the area from construction of infrastructure; Bayswater Power Station and fly ash dam and Plashette Reservoir, Jerrys Plains water pipeline, roads, coal conveyors and historical clearing and grazing. The community may wish to conduct monitoring of the construction works in this area in order to relocate/salvage artefacts which may be exposed by earthworks to adjacent undisturbed areas.

Wondewoi Farm

Given the location of the route adjacent to Hunter River, along former terraces and flood plains this area is considered to have a high potential to contain surface and subsurface archaeological material. Mitigation work is recommended in this area in the form of subsurface sampling in order to refine the location and extent of archaeological deposits. Once the extent of archaeological deposits are ascertained it is recommend a programme of salvage be implemented to retrieve/relocate artefacts from the foot print of development. The methodology for sub surface sampling and subsequent salvage will be formulated in consultation with the community stakeholders and a geomorphologist once the final route of the pipeline has been surveyed/pegged in this area.

Golden Highway – Wambo Heavy Vehicle Access Road

The majority of the proposed pipeline route in this section is located in the road reserve land adjacent to the Golden Highway. The community may wish to conduct monitoring of the earthworks.

Wambo Mine – Bulga

The section of the proposed route which is located immediately adjacent to the Mine Entry Rd is considered to have low archaeological potential due to the disturbed nature of the area, and the requirement for the pipeline to run along the edge of the road.

The sections of the route adjacent to the Wollombi Brook are considered to have high potential for archaeological deposits. Further work is recommended in these areas in the form of subsurface sampling in order to identify the location and extent of archaeological deposits. Advice should be sought from a geomorphologist to refine the potential for Pleistocene terraces and to provide further assessment of high potential deposits. Where possible these deposits should be avoided by adjustments to the pipeline route. This should be carried out prior to / in conjunction with the final survey of the route.

Where adjustments to the route are not possible and in other sections of high late Holocene potential, subsurface sampling and salvage would be required. The salvage should be contained within the 1 metre wide excavation required for the trench so that any sites are truncated rather than completely removed. The methodology for sub surface sampling and subsequent salvage will be formulated in consultation with the community stakeholders, taking into account the geomorphologist advice once the final route of the pipeline has been surveyed.

Bulga – Wollombi Brook

The section of the route located adjacent to The Inlet Road is considered to have low-moderate archaeological sensitivity. A programme of monitoring of earthworks may be recommended by the community.

The flood plain and terrace of west of Wollombi Brook is considered to have moderate to high archaeological sensitivity and may require a programme of mitigation involving monitoring and or subsurface salvage.

Wollombi Brook – Charlton Road

The terraces east of Wollombi Brook are considered to have high potential for archaeological material. The western portion of the route traverses floodplain and spur overlooking an old channel of Wollombi Brook. This area is considered high sensitivity. The western portion of the route lies within an area currently undergoing surface salvage under AHIP # 2998 by Umwelt 2008 for Beltana. This area is considered less sensitive and it is recommended to confine the pipeline route to the area of the Consent.

Beltana Mine Charlton Road

The central part of the route along Charlton Road has been subjected to surface salvage (AHIP # 1748 2003 Beltana) as part of the underground mining of the area. Due to the location of highly sensitive sites and the cumulative impacts of the coal operations in the area it is recommended that the pipeline route stay in the area of the salvage operations. Due to the sensitive nature of the area a programme of subsurface monitoring would be an appropriate mitigation measure.

Management Recommendations for Identified Sites

Table 10 Management recommendations for located sites

Site Name	Site Type	Notes
Liddell NS 1	Isolated Artefact	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 2 (37-2-0048)	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 3 (37-2-0048)	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 4	Isolated Artefact	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 5	Isolated Artefact	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 6	Isolated Artefact	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 7	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 8	Artefact Scatter	Impact on the site should be avoided. If unable it is recommended that impact be contained to the eastern portion of the site where artefact densities were lowest. This may involve the relocation of artefacts located in the proposed impact area to areas of the site which will remain

Site Name	Site Type	Notes
		undisturbed and a programme of monitoring with community consent and involvement. If unable to be avoided, surface salvage and recoding of the site should occur.
Liddell NS 9	Artefact scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 10	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 11	Isolated Artefact	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 12 (37-2-0035/ 37-2-0190)	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 13	Isolated Artefact	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 14	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 15	Isolated Artefact	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 16	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 17	Isolated Artefact	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 18	Artefact Scatter	Site should not be impacted by proposed development as located approx. 50m W of edge of proposed impact area. Site should be avoided.
Liddell NS 19	Grinding Grooves Artefact Scatter	This site is located in the direct route of the proposed pipeline. If the pipeline is unable to be avoided due to constraints from adjacent mine, is recommended that the site be under-bored at sufficient depth to ensure no impact on the rock outcrop. The community have recommended that the site be avoided.
Liddell NS 20	Artefact Scatter	The site is located just to the west of the proposed route and should be avoided. Monitoring with community consent and involvement is recommended to ensure the pipeline does not impact the site.
Liddell NS 21	Scarred Tree	It is recommended that the pipeline avoid the site or that the dead tree be moved out of the impact area. The community have also recommended that further investigations be undertaken on the scar .
Liddell NS 22	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 23	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact

Site Name	Site Type	Notes
		unable to be avoided
Liddell NS 24	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 25	Isolated Artefact	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 26	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 27 (G1)	Artefact Scatter	Recommend site be avoided. Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 28 (G1)	Artefact Scatter	Recommend site be avoided. Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 29	Isolated Artefact	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 30	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 31	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 32	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided
Liddell NS 33	Artefact Scatter	Recommend monitoring / collection with community consent and involvement if impact unable to be avoided

Table 11 Management Recommendations for recorded/previously identified sites.

Site Number/Site Name	Site Type	Notes
37-2-0048 / Liddell NS 3	Artefact Scatter	Collection / monitoring with community consent and involvement if impact unable to be avoided
37-2-0035 & 37-2-0190 / Liddell NS 12	Artefact Scatter	Monitoring / collection as mitigation with community consent and involvement if impact unable to be avoided
37-5-0248 & 37-5-0249	Artefact Scatter	Monitoring / collection as mitigation with community consent and involvement if impact unable to be avoided
37-5-0034	Artefact Scatter	The very eastern boundary of this site will be impacted. Subsurface testing and investigation by geomorphologist with community consent and involvement if impact unable to be avoided.
37-6-1404	Isolated Artefact	Isolated artefact. Monitoring / collection as mitigation with community consent and involvement if impact unable to be avoided
G1/ Liddell NS 27 & 28	Artefact Scatter	Recommend site be avoided. Monitoring / collection as mitigation with community consent and involvement if impact unable to be avoided

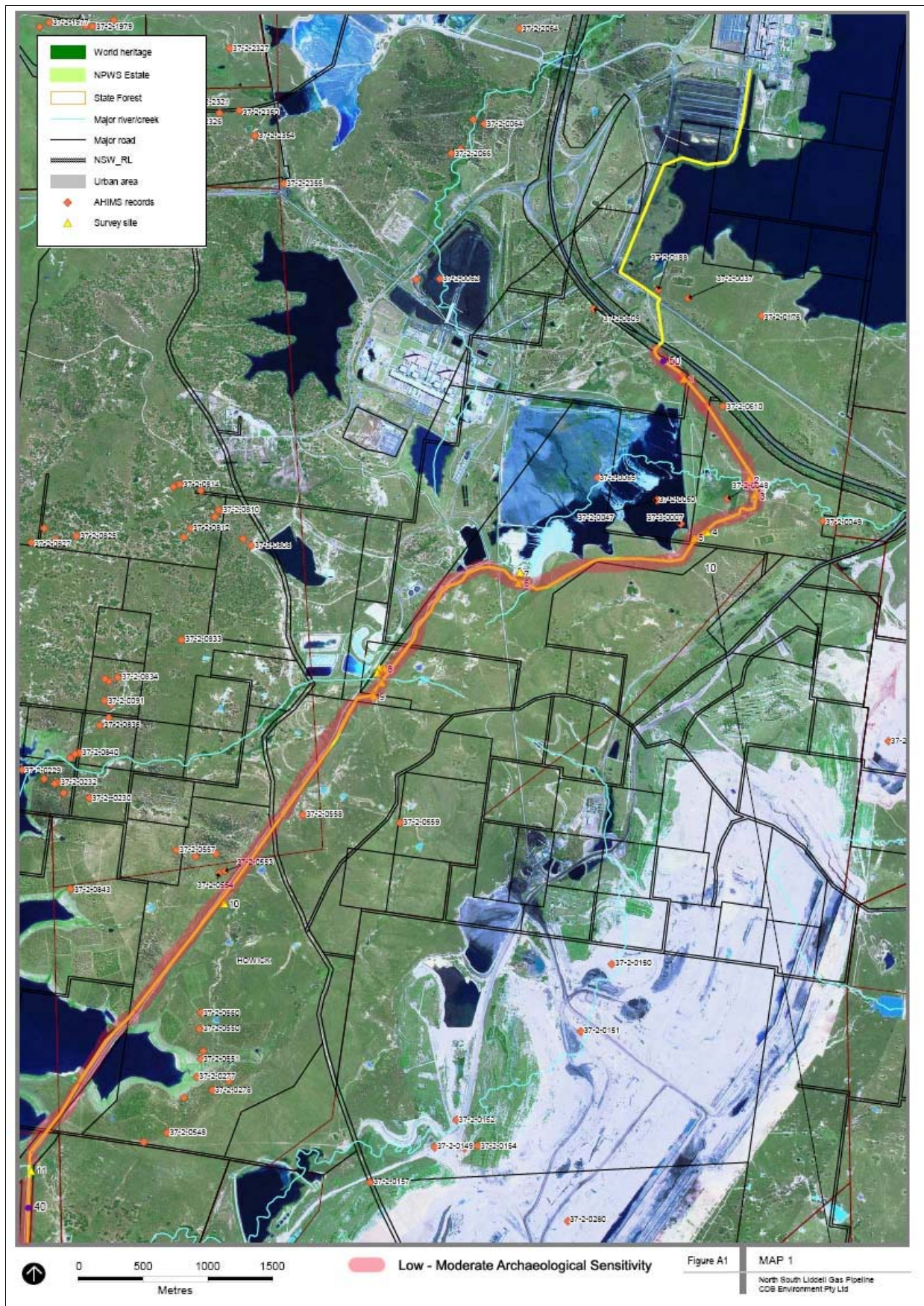


Figure 16 Archaeological sensitivity Map 1

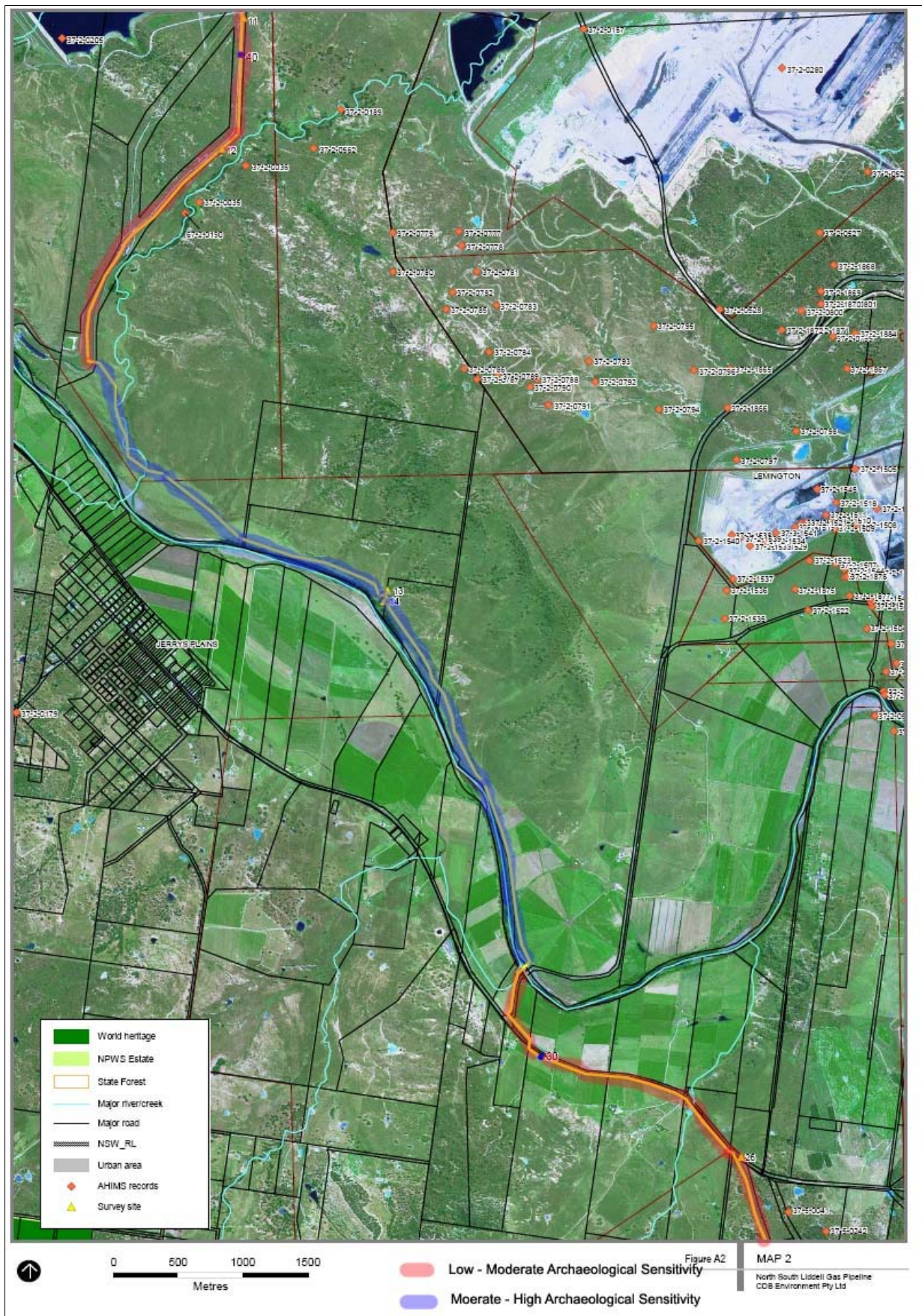


Figure 17 Archaeological sensitivity Map 2

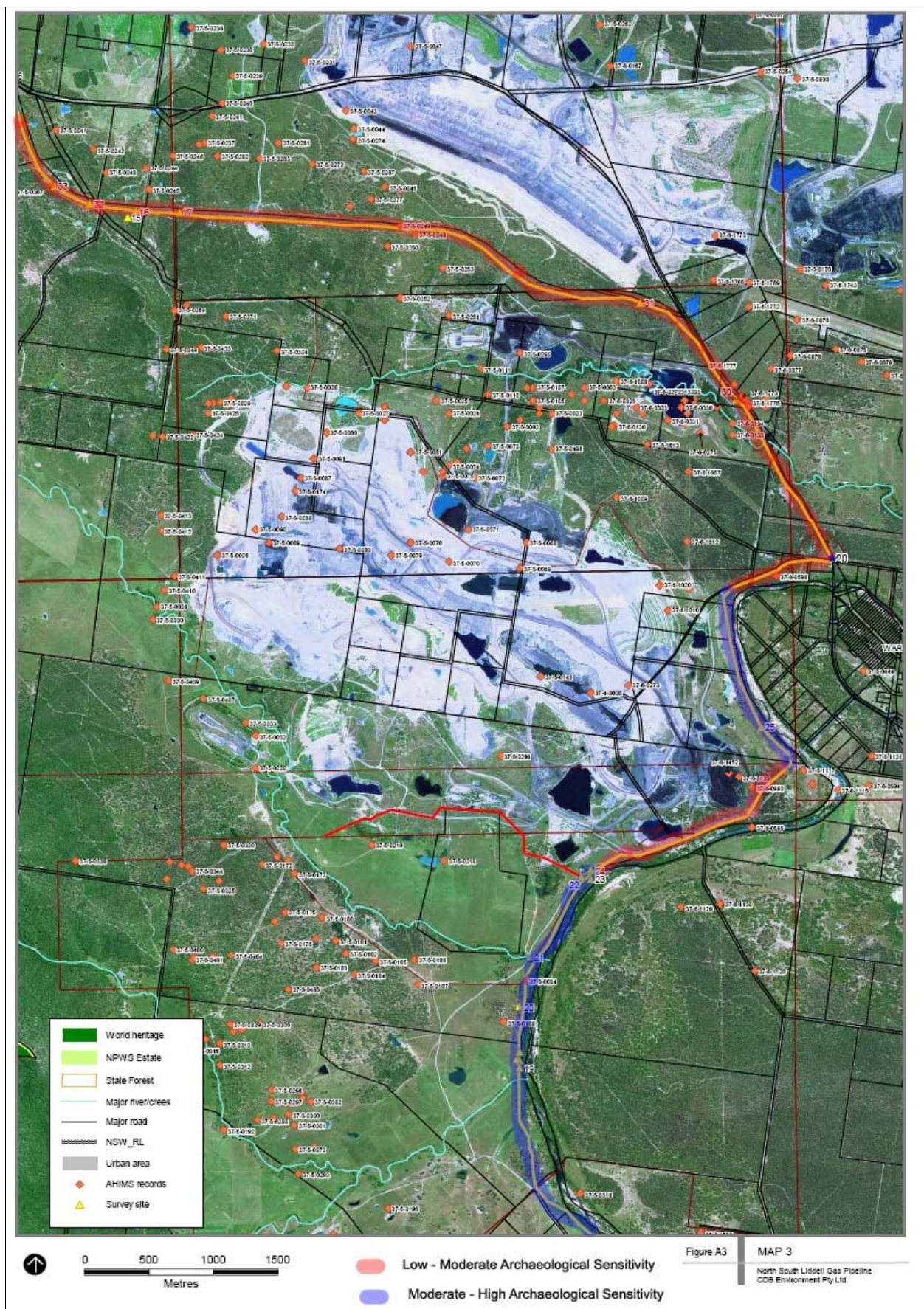


Figure 18 Archaeological sensitivity Map3

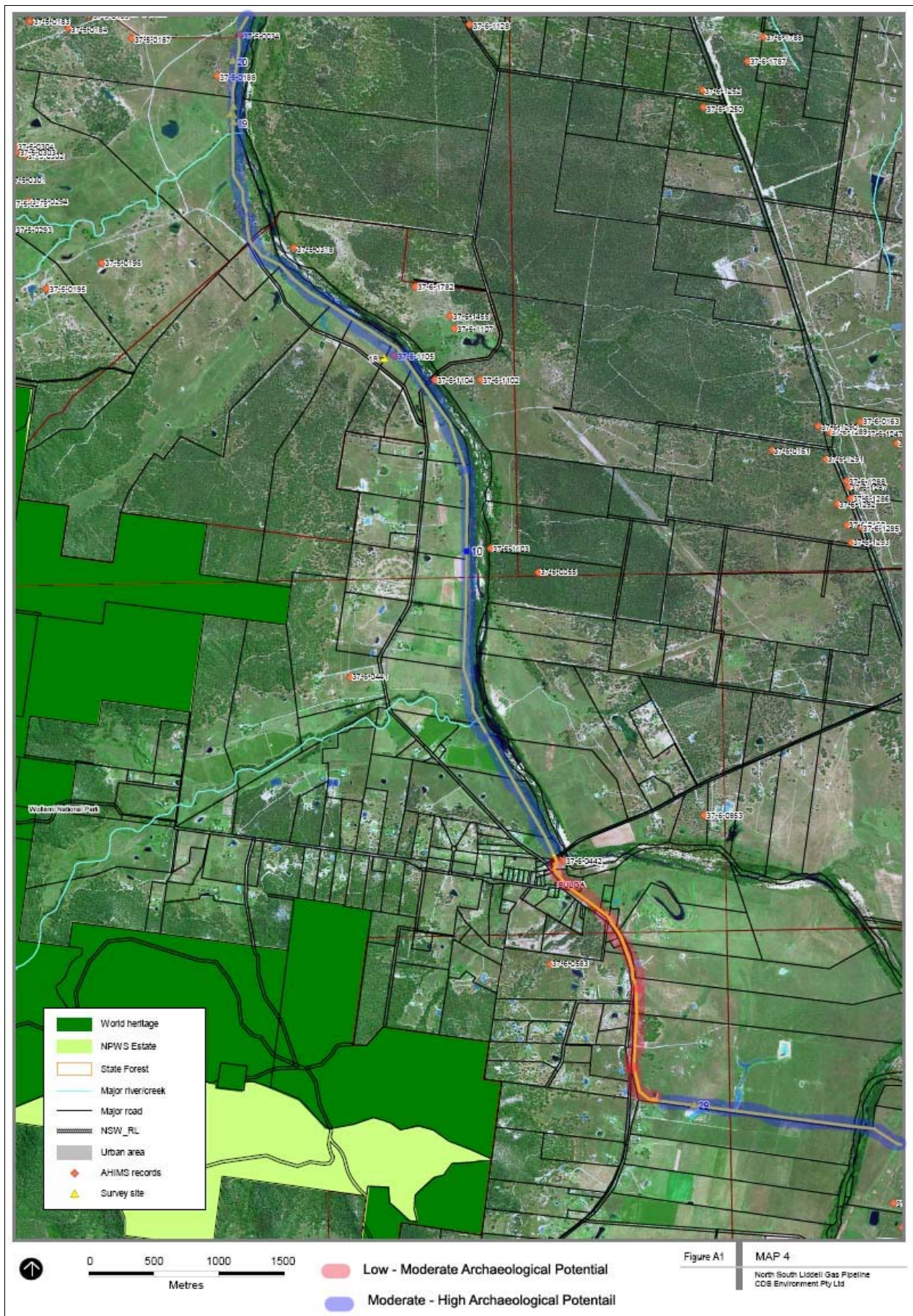


Figure 19 Archaeological sensitivity Map4

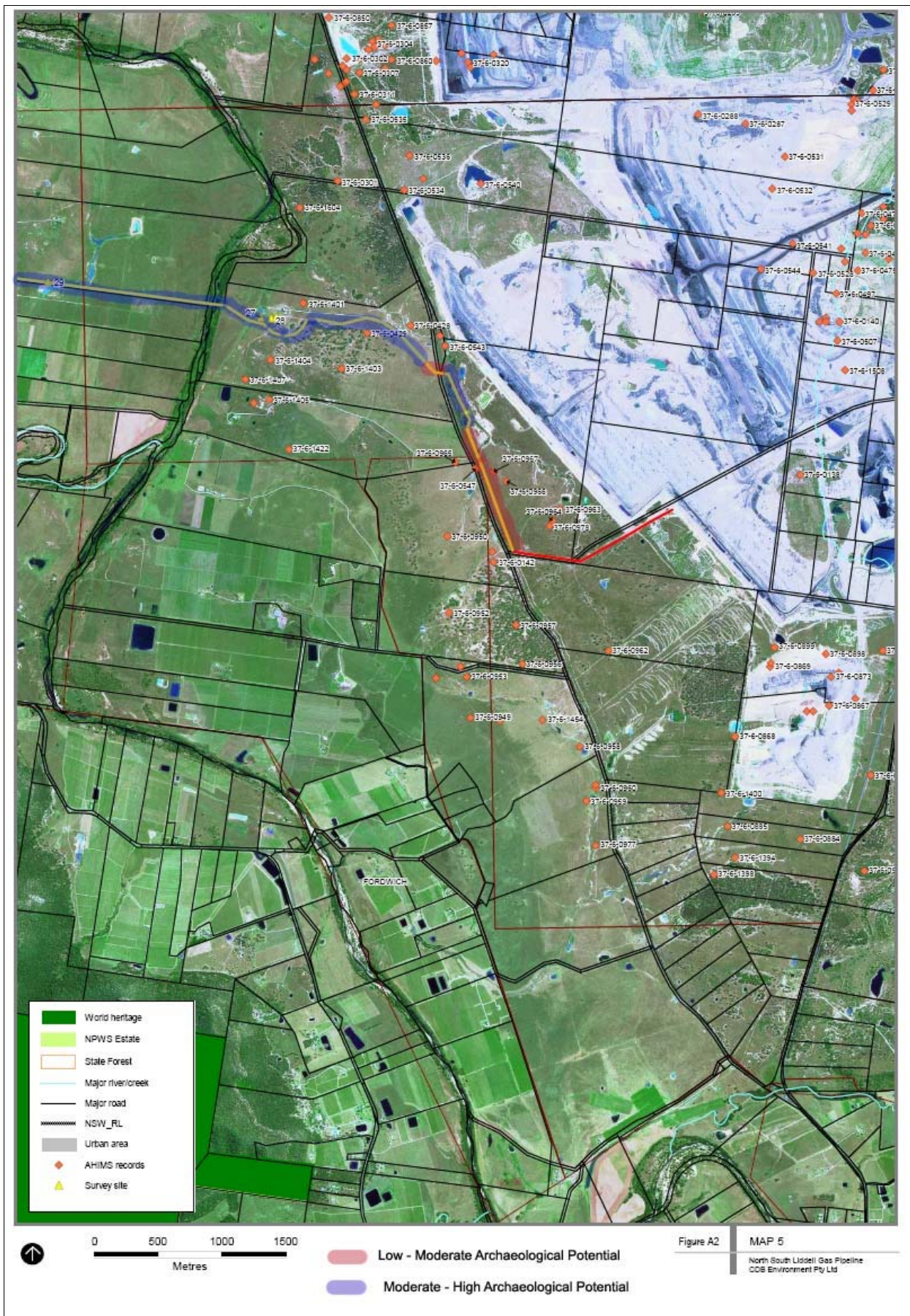


Figure 20 Archaeological sensitivity Map