NSW Trade and Investment - Crown Lands

Remediation of the Former Antimony Processing Plant- Urunga NSW

Environmental Impact Statement

November 2014

Submission of an Environmental Impact Statement (EIS)

Prepared under the *Environmental Planning and Assessment Act 1979* Section 78A(8)

EIS Prepared by

Name:	Ben Luffman
Qualifications:	Bachelor of Applied Science (Hons)
Address:	230 Harbour Drive, Coffs Harbour, 2450
In Respect of	GHD Pty Ltd

Development Application

Applicant Name:	NSW Trade and Investment – Crown Lands
Applicant address:	45 Wingewarra St, Dubbo, 2830
Lot No. DP No. and Address of Land to be Developed:	Lot 1 and Lot 2, DP 874874 and Lot 253, DP 46013, Hillside Drive, Urunga

Environmental Impact Statement

Section 5 of the Environmental Impact Statement (EIS) assesses the potential environmental impact of the proposed development.

Certificate

I certify that I have prepared the contents of this Statement and to the best of my knowledge:

- It has been prepared in accordance with Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*
- It contains all available information that is relevant to the environmental assessment of the development to which the statement relates
- The information contained in this Statement is neither false nor misleading.

Signature: 

Name	Ben Luffman
Date:	3 November 2014

Executive summary

Introduction

This Environmental Impact Statement (EIS) has been prepared to assess the potential impacts of the proposed remediation of a former antimony processing facility located at Hillside Drive, Urunga, NSW (the Site), hereafter referred to as the 'Proposal'.

The Site was a former antimony processing plant, which operated between 1969 and 1974, and was abandoned in 1974 without clean up or remedial work. Tailings and mill waste water were discharged onto the wetland foreshore area during the plant operations. A tailings deposit approximately 1 hectare in area fans out into the adjoining wetland, and contamination from the tailings has impacted soils, sediments and surface water surrounding the tailings area. Previous investigations have identified significant contamination levels at the Site.

The Environment Protection Authority (EPA) has placed a Management Order (No. 20111405) on the Site under the provisions of the *Contaminated Land Management Act 1997*.

Recent investigations by GHD delineated the extent of contamination and were used to prepare a Remedial Action Plan (RAP) (GHD 2014). The RAP was developed to:

- Achieve compliance with the Management Order 20111405.
- Provide details necessary to remediate the contamination at the Site so that any further impact on the adjacent wetland and receiving environment is minimised, and to allow the Site to be opened to public access without unacceptable risk to human health.

This EIS presents details of the Proposal, assesses the existing natural and social environment, describes the potential impacts on the environment and presents mitigation measures to minimise and/or avoid these identified impacts.

Proposal

Various onsite and offsite options were considered. The preferred option, selected by the stakeholders including Bellingen Shire Council (BSC), Crown Lands, EPA and the Soil Conservation Service (SCS), was onsite disposal of contaminated material in a containment cell, with treatment to reduce contaminant mobility. The Proposal will generally involve:

- Vegetation clearing
- Construction of an engineered containment cell for secure long-term storage of contaminated material
- Excavation of contaminated material within the wetland, treatment to reduce contaminant mobility and placement of the treated material in the constructed containment cell
- Landform modification earthworks
- Revegetation of disturbed areas.

Statutory position

Key issues relating to the statutory position include:

- The Proposal falls under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act), through the application of Clause 9 of State Environmental Planning Policy No 55 (Remediation of Land) and as such development consent is required.
- The Proposal is considered to be a State Significant Development under Section 78A(8A) of the EP&A Act. Accordingly NSW Catchment and Lands - Crown Lands (Crown Lands)

has been issued Director Generals Requirements (DGRs) under a State Significant Development application.

- Under Section 14 of the Contaminated Land Management Act 1997, the Environmental Protection Authority has issued a Management Order 20111405 for the remediation of the Site.
- As the Proposal includes clearing, drainage and potentially filling in a State Environmental Planning Policy (SEPP) No 14 - Coastal Wetlands listed wetland, development consent is required.
- Part of the area, requiring clearing of native vegetation, is within land zoned E2 (Environmental Conservation) and E3 (Environmental Management) where the Native Vegetation Act 2003 applies and therefore would require consent from the Minister.

Consultation

Consultation with the community has been undertaken at various phases throughout the site investigation and EIS process including multiple public meetings, media releases and direct liaison. In general, community feedback indicated there was little opposition to the Proposal as a remediation project is considered to offer significant benefits to the community through reduced potential health risks, improved environmental and ecological conditions, short term employment opportunities and restored recreational and visual amenity. Community engagement and consultation will be ongoing throughout the Proposal.

Consultation has also been undertaken with relevant government agencies to determine their requirements for any subsequent environmental impact assessment.

Soil, sediment and water

Localised, short-term impact on soils, sediment and water quality are likely, however provided stabilisation strategies are effectively implemented, medium to long-term impacts would be low. As the Proposal is a remediation project, the long term impacts on soil, sediment and water quality are positive including:

- Reduced erosion and sedimentation
- Removal of contaminated soil and sediment that have a detrimental effect on the environment
- Reduced contaminant levels in the surface water and groundwater due to the reduction/containment of the contaminant source.

The most significant, potential negative impacts relating to soil and water quality include:

- Short term erosion and sedimentation
- Mobilisation of contaminants through soil and sediment disturbance, flooding or potential failure of the containment cell
- Exposure of workers to contamination
- Acidification of surface and groundwater through the exposure of acid sulfate soils
- Groundwater infiltrating or moving through an on-site containment structure and releasing contaminated leachate.

Mitigation measures identified to minimise the above negative impacts, include but are not limited to:

- Implementing the RAP and construction of an engineered containment cell.

- Preparing and implementing a Soil and Water Management Plan in accordance with *Urban Stormwater Manual Volume 1 7 2 (Blue Book)* and IECA Guidelines.

Air

Although there is a potential impact of the Proposal on air quality, implementation of the mitigation measures, to be incorporated into a Dust Management Plan, would minimise these impacts. Monitoring would also be used to assess impacts to air quality and guide the implementation of mitigation measures. If the monitoring detects dust being transported offsite, works would cease and additional controls be implemented.

Potential impacts of the Proposal on air quality in the short term include:

- Dust generation from excavation, earthworks, construction vehicles, treatment and containment of the contaminated soil and exposed stockpiles
- Transportation and inhalation of contaminants (particularly antimony and arsenic) via dust
- Odour from the excavation of contaminated soil and sediment
- Exhaust emissions from construction machinery.

The nearest human receptors to dust and other potential air impacts would be residents on Hillside Drive and the Pacific Highway, adjacent to the Site.

The long term impact of the Proposal on air quality would be positive due to the removal of the exposed tailings deposit, remediation of exposed soil areas and revegetation. This would, in turn, reduce the potential for the mobilisation and inhalation of contaminants via dust.

Human Health Risk

Several contaminant sources have been identified at the site through past investigations including the tailings deposits, ore stockpiles, incidental contaminants, fill material, excavated sediments and exposed acid sulfate soils. Based on an assessment of the known chemicals used in the processing, the possible contaminants include arsenic, antimony, lead, copper, chromium, aluminium, mercury, cyanide, sulfur, sodium and nitrates.

Based on the identified receptors and the release, fate and transport characteristics of the contaminants, pathways through which human receptors may become exposed to contamination include inhalation, ingestion and dermal absorption of the contaminated material or affected sediments, surface water, groundwater or air.

Mitigation measures during site activities will be undertaken to eliminate (or minimise) the release mechanism, thereby cutting off transport of contamination to the potential receptors and minimising health risk.

Noise

The Proposal would result in potential noise and vibration impacts from vehicle movements during construction and machinery including excavators, trucks, compacting equipment, chain-saws, generators and hand held tools.

These noise sources would only be present during the civil works period. Upon completion, the works would not result in any additional noise or vibration sources.

A range of controls would be implemented during the civil works to minimise the noise impacts. Consultation would also occur to keep adjacent residents informed about the works.

Biodiversity

Species listed under the NSW Threatened Species Conservation Act assessed as 'likely' to occur or 'may occur' given the available and suitable habitat within the Site include:

- Three endangered or threatened ecological communities
- Two vulnerable or endangered plant species
- One endangered or vulnerable frog species
- Ten vulnerable and one endangered bird species
- Eight vulnerable mammal species
- Six migratory marine species.

Species listed under the Environmental Protection Biodiversity Conservation Act assessed as 'likely' or 'possible' to occur given the available and suitable habitat within the Site include:

- 1 endangered and 2 vulnerable plant species
- 6 migratory marine species
- 2 migratory wetland species.

The most significant potential impacts identified on ecology included:

- Clearing of terrestrial and aquatic vegetation
- Water quality impacts associated with erosion and sedimentation
- Removal of soil
- Impacts from machinery and equipment including direct mortality or injury from collision as well as the impacts of noise, exhaust fumes on air quality and the vibration created by earthmoving equipment
- Spread of weeds
- Increased edge effects on remnant adjacent vegetation.

The extent of habitat that may be removed as part of the proposed action is limited and consists primarily of highly modified and weed infested vegetation, or vegetation in poor condition due to the local site conditions, or both, thus it is not considered likely to provide core habitat for any listed threatened species. It is not considered that the extent of habitat to be removed is significant given the area of adjacent similar ecological community in better condition.

An assessment of the significance of the potential impacts identified on threatened biota was carried out via a 7-part test under Section 5A of the EP&A Act for 24 species. In conclusion, based on this assessment and given the intent of the proposed works to remediate the site, in conjunction with the implementation of an environmental management plan and revegetation during the works phase, it is considered that the proposed remediation works would be unlikely to significantly impact on threatened species, populations or ecological communities.

Aboriginal Heritage

No Aboriginal sites or places have been recorded in or near the Proposal footprint. A potential impact exists for previously unrecorded Aboriginal sites uncovered during the Proposal, especially in the locality of the current dwelling which the Coffs Harbour and District Local Aboriginal Land Council (CHLALC) identified as a potential archaeological deposit (PAD). Measures would be implemented to avoid disturbing the area of the PAD and all workers would be educated what to do if an Aboriginal item is uncovered. Based on these controls, the potential impact on potential Aboriginal sites is deemed to be minimal.

Non-Aboriginal Heritage

No recorded non-Aboriginal heritage sites were identified within 500 metres of the Site hence the potential impact on non-Aboriginal heritage is considered minimal.

Traffic

A Traffic Impact Assessment (TIA) was completed for the Proposal. Vehicles and machinery would access the Site via the Pacific Highway and Hillside Drive. The speed limit on the Pacific Highway at the intersection with Hillside Drive is 50 km/h and a speed camera is located approximately 100 metres south of the intersection. Visibility for vehicles turning from Hillside Drive onto the Pacific Highway is adequate to enable safe passage, with approximately 250 metre lines of site available in each direction.

Two access points off Hillside Drive are proposed, being approximately 40 and 200 metres east of the intersection with the Pacific Highway.

The Proposal would result in a short term increase in truck movements on the Pacific Highway and Hillside Drive. Should significant quantities of clay material be required during construction of the containment cell or backfilling the excavation, it is possible that up to 30 trucks per day may enter the Site for a period of one week on three occasions.

Impacts on the users of the Pacific Highway including public transport and pedestrians are considered to be negligible.

Despite the Proposal not being expected to cause a significant impact, the preparation and implementation of a Traffic Management Plan is recommended.

Visual amenity

Due to surrounding vegetation and the low-lying aspect of the Site, visibility of the Site is limited. Apart from the Pacific Highway and Hillside Drive adjacent to the Site, no opportunities exist to view the Site from any public vantage points such as public reserves or open space areas. The most sensitive visual receptors are the residents of 99 Pacific Highway Urunga, and the Westella Motel (107 Pacific Highway).

As the Proposal is a remediation project, most of the potential impacts on visual amenity are positive including debris (dead vegetation, metal, concrete, soil and sediment) removal and revegetation of degraded areas. A potential long term negative impact would be from the modification of the landscape through the construction of the containment cell.

Potential short-term visual impacts would result from presence of construction machinery, compounds, stockpiles, erosion and sediment control structures, discolouration (sedimentation) of the wetland, development of the access track and presence of waste and soil stockpiles.

Following the completion of construction, the Proposal is not expected to result in any significant adverse impacts to visual amenity.

Socio-economic

Most socio-economic impacts of the Proposal are positive including:

- Remediation of the Site leading to potential increased recreational amenity
- Increased visual amenity
- Decreased potential adverse health effects for receptors of contaminants (surface water and dust)
- Short term benefit of the creation of approximately ten to twenty jobs for a period of 6 months during the Proposal.

During the civil works, there would be short-term, potentially negative impacts on traffic and access, noise and vibration, visual amenity and air quality but these would be minimised through implementation of the identified mitigation measures.

Demand on Resources

The Proposal may require clay material for construction of the low permeability lining and capping in the containment cell, geomembrane, geotextile, replacement fill, topsoil, jute mesh, plants, and soil treatment chemicals. The materials would be sourced locally and imported to site. All required materials are readily available and would not adversely affect the abundance of existing energy sources or their supply.

Waste

The overall objectives of the Proposal relate to the remediation of waste generated from the past processing of antimony ore. An assessment of the potential risks (on site and off site) associated with the disturbance, transfer and disposal of the contaminated material has been undertaken and details of mitigation and management measures to minimise human health risks during the handling of the contaminated material have been outlined. The selected remediation option minimises use of municipal landfill facilities and off-site transport of waste.

The waste generated has potential to impact soil and water quality, worker safety and biodiversity, however if the wastes are managed appropriately, the risk of a significant impact as a result of waste is considered low.

Cumulative impacts

The only identified existing approved or proposed operations that may be carried out in the vicinity of the site include upgrade works on the Pacific Highway. If carried out concurrently, these works will have short term, cumulative impacts such as those relating to increased traffic, noise and demand on resources including labour, machinery and accommodation. No long term cumulative impacts are anticipated.

Environmental management

A summary of the mitigation measures is provided as a basis for a Construction Environmental Management Plan (CEMP), which would be prepared to provide an overall framework for the management of environmental impacts that could potentially arise from the Proposal.

Project justification

Alternatives were considered as part of the EIS. The reasons for justifying the final proposal are presented having regard to biophysical, economic and social considerations and the principles of ecologically sustainable development. As a remediation project, the majority of the potential impacts of the Proposal would be positive. It is not anticipated that the Proposal described in this EIS would have any significant adverse environmental impacts. The Proposal does have potential to affect the amenity of nearby residences during construction, however this would be a short-term impact and the residents would be consulted prior to and during the work.

Conclusion

To the fullest extent possible, all matters affecting or likely to affect the environment by reason of the project have been assessed under Section 111 of the EP&A Act. No significant impacts on threatened species as defined by the TSC Act were identified and therefore a Species Impact Statement is not required. The Proposal is unlikely to have a significant impact on matters of National Environmental Significance and therefore a referral under the Commonwealth EPBC Act is not required.

Abbreviations

ASS	Acid Sulfate Soil
ASSMAC	Acid Sulfate Soils Management Advisory Committee
BSC	Bellingen Shire Council
CEMP	Construction Environmental Management Plan
CLM Act	Contaminated Land Management Act
COC	Contaminant of Concern
DECCW	NSW Department of Environment, Climate Change and Water (former, now the OEH)
DLWC	Department of Land and Water Conservation
DPI	NSW Department of Primary Industries
EIL	Environmental Investigation Level
EIS	Environmental impact statement
ENM	Excavated natural material
EPA	NSW Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW).
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPI	Environmental planning instrument
EPL	Environmental Protection Licence
FM Act	Fisheries Management Act 1994 (NSW)
GHD	GHD Pty Ltd
HIL	Health Investigation Level
HSE	Health, Safety and Environment
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
mbgs	Metres below ground surface
MNES	Matters of National Environmental Significance.
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
OCP	Organochlorine Pesticides
OEH	Office of Environment and Heritage

PAHs	Polynuclear Aromatic hydrocarbons
PCBs	Polychlorinated Biphenyls
POEO Act	Protection of the Environment Operations Act 1997
PMF	Probable Maximum Flood
RAP	Remedial Action Plan
RMS	NSW Roads and Maritime Services
SCS	NSW Soil Conservation Service
SEPP	State Environmental Planning Policy
SIS	Species Impact Statement
TCP	Traffic Control Plan
TMP	Traffic Management Plan
TPH	Total petroleum hydrocarbons
TSC Act	Threatened Species Conservation Act 1995 (NSW)
VENM	Virgin excavated natural material
WH&S or OHS	Workplace Health and Safety

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Appendix I Stakeholder Consultation

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1. Introduction

1.1 Overview

This Environmental Impact Statement (EIS) has been prepared to assess the potential impacts of the proposed remediation of the former antimony processing facility located at Hillside Drive, Urunga, NSW (the Site), hereafter referred to as the 'Proposal'.

The Proposal falls under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), through the application of Clause 9 of *State Environmental Planning Policy No 55 (Remediation of Land)* and therefore development consent is required. The Proposal is also considered State Significant Development under Section 89C of the EP&A Act by virtue of Clause 8 of *State Environmental Planning Policy (State and Regional Development) 2011*. Pursuant to Section 78A(8A) of EP&A Act, an EIS is required to accompany a development application to the Minister for Planning and Environment for the Proposal.

Accordingly NSW Catchment and Lands - Crown Lands (Crown Lands) has been issued Director Generals Requirements (DGRs) under State Significant Development application number SSD-5357 issued July 2012.

This EIS presents details of the Proposal, assesses the existing natural and social environment, describes the potential impacts on the environment and presents mitigation measures to minimise and/or avoid these identified impacts.

The EIS includes consideration of State and Federal factors from Clause 228 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The findings of the EIS will be considered when assessing:

- To the fullest extent possible, all matters affecting or likely to affect the environment by reason of the Proposal, under Section 111 of the EP&A Act.
- The significance of any impact on threatened species as defined by the Threatened Species Conservation Act 1995 (TSC Act), in accordance with Section 5A of the EP&A Act and therefore the requirement for a Species Impact Statement (SIS).
- Whether the Proposal is likely to have a significant impact on matters of National Environmental Significance (NES) and therefore require a referral under the Commonwealth EPBC Act.

1.2 EIS requirements

The DGRs state that '*the EIS must meet the form and content requirements of clauses 6 and 7 of Schedule 2 of the EP&A Regulation'* as well as additional requirements outlined in the DGRs. These are addressed in Sections 5.1 and 6.3.1.

1.3 Background

The Site is the former location of any antimony processing plant (Photograph 1-1) that was operated by 'Broken Hill Antimony Pty Ltd' and processed stibnite (antimony sulphide) ore mined from Wild Cattle Creek, Dorrigo from 1969 to 1974. The ore (containing impurities in the form of arsenic and mercury) was crushed and then passed through flotation cells to separate the precious metals from the rock waste. Tailings and mill waste water were discharged onto the wetland foreshore area during the plant operations. A tailings deposit approximately 1 hectare in extent fans out into the adjoining wetland. Chemicals used during the purification process

included copper sulfate, sodium cyanide, lead nitrate, dextrin, sodium ethyl xanthate and crescylic acid. Water mill water was also contaminated with dissolved antimony and arsenic salts during treatment of the crushed ore. A gravel washery was also reported to be onsite, using water from the wetland.

Photograph 1-1 Former Antimony Processing Plant, late 1970s. Source: Urunga Museum

In 1974, operations at the plant ceased due to the closure of mining production at Wild Cattle Creek. No clean-up operations or remedial work were undertaken when the site was abandoned.

In the late 1970s the property and processing plant were purchased by Mr R Tickner. In 1980, 'Australian Antimony N.L.' (owned by Mr Tickner) applied to the Bellingen Shire Council to restart operations. The application was refused.

The company excavated a series of canals to act as storage dams to supply water needed for future milling. The date of the construction of the canals has not been confirmed, although historic photos show that they were absent in 1969 but constructed prior to 1980. Whether they were constructed prior to or during the operation of the plant has not been ascertained. Since then, no further development has occurred.

In 1994 Mr Tickner approached the Bellingen Shire Council to seek Development Approval for residential use of Portions 169 and 138. The application was refused. (DLWC 1997a).

Crown Lands became aware of the contamination issues at the Site in 1995 when Mr Tickner reported the issue following the refusal of a development application. Crown Lands immediately took action to protect the public by erecting fencing and warning signs (SCS 2012).

On 2 August 2002, the Environment Protection Authority (EPA) declared the Site to be a 'Remediation Site' (Declaration No. 21020).

On 7 November 2005, 'Remediation Site' was decreased (Notice No. 22004) to remove an area of approximately 2,000 m^2 adjacent to the abandoned residences following validation sampling by Coffey (2004).

Under the provisions of the *Contaminated Land Management Act 1997* (CLM Act), Management Order (No. 20111405) applies to Lot 253, DP 46013 (NSW EPA 2011) and a declaration of a remediation site (No. 21020, Area 1089) applies to Lot 1 and Lot 2, DP 874874 and Lot 253, DP46013 (NSW EPA 2002). Copies of the Management Order and amendments are presented in Appendix A.

Approximately fifteen investigations have been carried out at the Site to assess the levels of contamination including preliminary and detailed investigations by GHD (GHD, 2012a and 2012b) which included the development of a conceptual site model. The detailed investigation assessments are included in Appendix C and Appendix D and are summarised in Section 2.2.1.

In 2011, a partial clean-up of surface debris and waste materials on the Site was carried out by Entech Industries, however no remediation or management of soil or tailings contamination has occurred.

A Remedial Action Plan (RAP) (GHD 2014) is presented in Appendix E, is summarised in Section 4 and was developed to:

- Achieve compliance with the Management Order 20111405.
- Provide details necessary to remediate the contamination at the Site so that any further impact on the adjacent wetland and receiving environment is minimised, and to allow the Site to be opened to public access without unacceptable risk to human health.

2. Site Description

2.1 Location and description

The Site is located on the southern side of Hillside Drive, adjacent to the Pacific Highway, approximately 1.5 kilometres (km) from the town centre of Urunga, on the mid-north coast of NSW, as presented in Figure 2-1. The Site comprises part of Lot 1 and Lot 2 DP 874874, part Lot 7062 DP 1108434 and part of Lot 253 DP 46013. All lots are Crown land.

Site features are presented in Figure 2-2. In general, the Site consists of:

- A disturbed area incorporating various features associated with the former antimony processing facility that is largely devoid of vegetation (Photograph 2-2 to 2-6).
- A tailings area of approximately one hectare that is devoid of vegetation, extending from the former processing area into an adjacent, State Environmental Planning Policy (SEPP) 14 wetland (no. 354) (Photograph 2-7 to 2-11).
- Visually impacted melaleuca trees in the wetland area, adjacent to the tailings deposit.
- A generally forested area adjacent to the SEPP 14 wetland in which endangered fauna species have previously been recorded.
- Surface material (within the disturbed areas) consisting of imported fill and tailings (Photograph 2-12).
- Some remaining infrastructure consisting mainly of foundations of the former processing facility and loading ramps.
- Several abandoned buildings, adjacent to Hillside Drive (Photograph 2-13).
- Several remaining stockpiles of ore, rubbish and bricks.
- An 'L' shaped canal that was apparently excavated from the wetland in approximately 1979, after operation of the processing facility had ceased (Photograph 2-14 and 2-15).
- A series of 'S' shaped canals (possibly constructed for use in tailings settling) (Photograph 2-16 and 2-17).

The Site is located between the footslope of a small ridge to the north and west, and the SEPP 14 wetland to the south and east. Flood waters are shown to periodically inundate the Site (as shown in Figure 2-2) with the Probable Maximum Flood (PMF) level inundating the tailings, former gravel processing area (within the lower part of the former processing area) and the canal systems. The PMF does not cover the full extent of the former processing area.

The wetland drains into Station Creek which is partially tidal. No tidal influence has been recorded at the Site, however tidal influences may periodically inundate portions of the tailings area during different hydrological conditions. Station Creek discharges into Urunga Lagoon which forms part of the Bellinger-Kalang estuarine system.

Neighbouring land uses consist of:

- A SEPP 14 wetland and land owned by the Coffs Harbour and District Local Aboriginal Land Council, to the south and east.
- Hillside Drive and residential land to the north.
- Residential and commercial properties to the west and the Pacific Highway beyond.

501,000 502,000 503,000

6,626,000

6,625,000

KALANG RIVER
FITZROY STREET
COOPERS LANE
ORARA STREET
BONVILLE STREET
MINERVA LANE
MORGO STREET
NEWRY STREET
CRESCENT STREET
PANORAMA PARADE
SOUTH STREET
PILOT STREET
HIGH STREET
PACIFIC HIGHWAY
HILLSIDE DRIVE
RALEIGH
KALANG RIVER
BELLINGER RIVER
MYLESTOM
BELLINGER RIVER
PACIFIC OCEAN
URUNGA
Urunga Lagoon
Wetland
Urunga Antimony Contaminated Site
NORTH COAST RAILWAY
CEMETERY ROAD
HUNGRY HEAD ROAD

1:8,000 (at A3)

0 50 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

- North Coast Railway Line
- Contours
- SEPP14 Wetland
- WaterFeature
- Site Boundary

CLIENTS | PEOPLE | PERFORMANCE

NSW Catchment and Lands- Crown Lands
Former Antimony Processing Plant, Urunga NSW

Job Number	22-16251
Revision	0
Date	7 Apr 2014

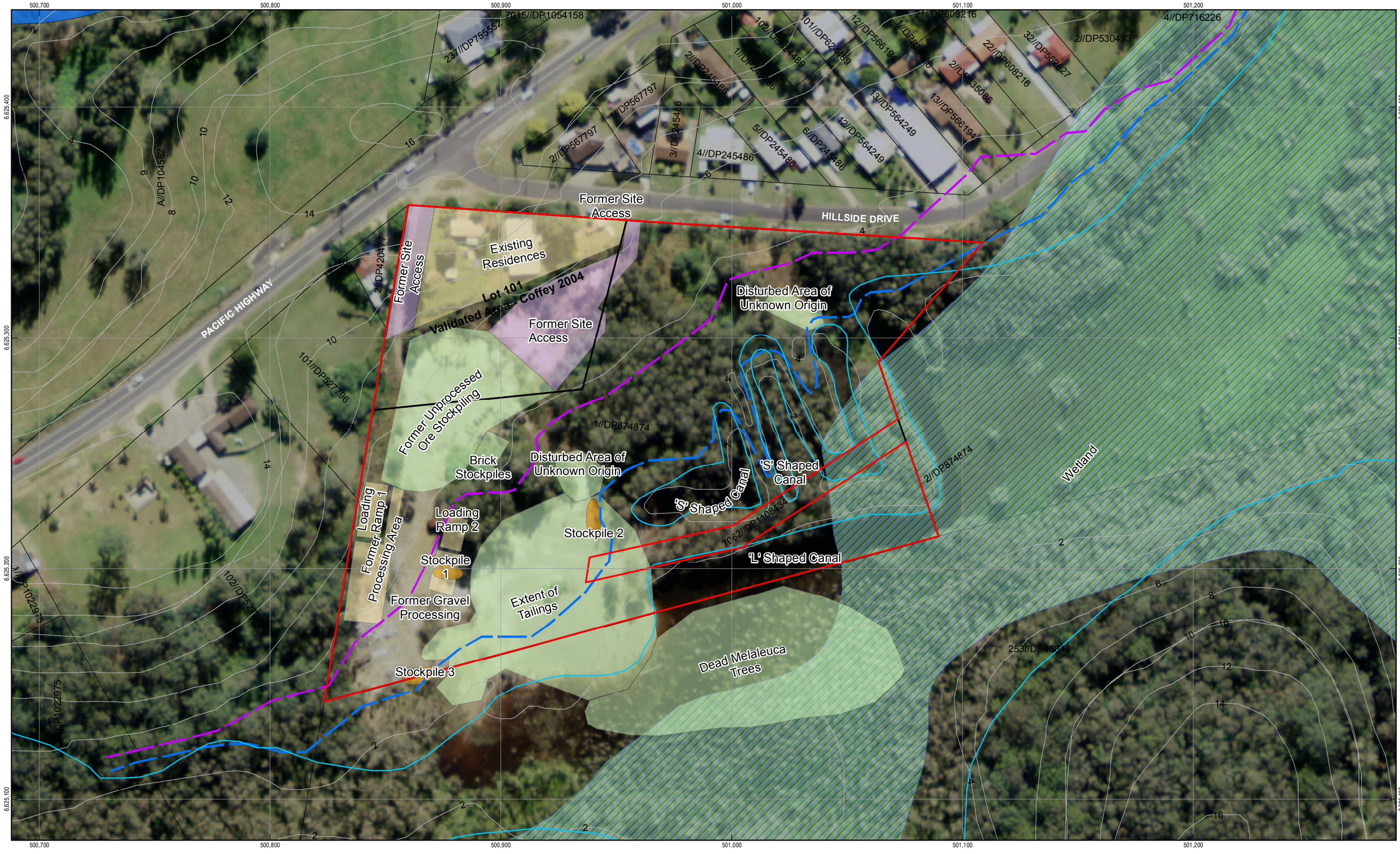
Site Location

Figure 2-1

G:\22\16251\gis\maps\working\22_16251_01_SiteLocationOverview_Rev_A.mxd

Data source: DPI,: Aerials - 2012. Created by Sdouglas

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au



1:1,500 (at A3)

0 10 20 40 60 80

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

Flood Levels - BSC Flood Risk Maps (2008)

- 100 Year
- Probable Maximum Flood (PMF)
- Waters Edge (August 2012)
- Lidar Contours
- Lot
- SEPP14 Wetland
- Site Boundary

CLIENTS | PEOPLE | PERFORMANCE

NSW Catchment and Lands- Crown Lands
Former Antimony Processing Plant, Urunga NSW

Site Details

Job Number	22-16251
Revision	2
Date	7 Apr 2014

Figure 2-2

G:\2\16251\gis\maps\working\22_16251_01_SiteLocationDetailed.mxd

Data source:DPI, Aerials 2012. Created by: Sdouglas

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au