APPENDIX

E

Aboriginal Cultural Heritage and Archaeological Assessment

PART 2 OF 2

Appendices A to G

NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

APPENDIX

E

Aboriginal Cultural Heritage and Archaeological Assessment

Appendix A Secretary's Environmental Assessment Requirements

NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

Secretary's Environmental Assessment Requirements

Application Number	SSI 18_9371
Proposal	Inland Rail – North Star to NSW/Queensland Border
Location	Generally, within the existing rail corridor between North Star and Whalan Creek, and north of Whalan Creek to the Macintyre River (NSW/Queensland Border)
Proponent	Australian Rail Track Corporation
Date of Issue	8 August 2018

General Standard SEARs

Desired Performance Outcome	Requirement	Current Guidelines[1]
1. Environmental Impact Assessment Process The process for assessment of the proposal is transparent, balanced, well focussed and legal.	1. The Environmental Impact Statement must be prepared in accordance with Part 3 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* (the Regulation). 2. The project will impact matters of national environmental significance (MNES) protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and will be assessed under an Accredited Assessment. The Proponent must assess impacts to MNES protected under the EPBC Act. The assessment must be in accordance with the requirements listed in Attachment A. 3. The onus is on the Proponent to ensure legislative requirements relevant to the project are met.	EPBC Act Environment Assessment Process (SEWPAC, 2010)
2. Environmental Impact Statement The project is described in sufficient detail to enable clear understanding that the project has been developed through an iterative process of impact identification and assessment and project refinement to avoid, minimise or offset impacts so that the project, on balance, has the least adverse environmental, social and economic impact, including its cumulative impacts.	1. The EIS must include, but not necessarily be limited to, the following: (a) executive summary; (b) a description of the project, including all components and activities (including ancillary components and activities, borrow pits, construction camps and rail sidings) required to construct and operate it; (c) a statement of the objective(s) of the project; (d) a summary of the strategic need for the project regarding its State significance and relevant State Government policy; (e) an analysis of any feasible alternatives to the project;[2] (f) a description of feasible options within the project;[3] (g) a description of how alternatives to and options within the project were analysed to inform the selection of the preferred alternative / option. The description must contain sufficient detail to enable an understanding of why the preferred alternative to and options(s) within the project were selected; (h) a concise description of the general biophysical and socio-economic environment that is likely to be impacted by the project (including offsite impacts). Elements of the environment that are not likely to be affected by the project do not need to be described; (i) a demonstration of how the project design has been developed to avoid or minimise likely adverse impacts; (j) the identification and assessment of key issues as provided in the 'Assessment of Key Issues'	

[1] Guidelines listed are the current list of guidelines that may be applicable to a SSI project. It is the Proponents responsibility to identify, and justify, which guidelines have been applied to a specific project.
[2] Alternatives to a project are different projects which would achieve the same project objective(s) including the consequences of not carrying out the project. For example, alternatives to a road project may be a rail project in the same area and alternate routes for the road.
[3] Options within the project are variations of the same project. For example, options within a road project could be design of an intersection; the location or design of a bridge; locations for a vent stack.

Desired Performance Outcome	Requirement	Current Guidelines[1]
	performance outcome; (k) a statement of the outcome(s) the Proponent will achieve for each key issue; (l) measures to avoid, minimise or offset impacts must be linked to the impact(s) they treat, so it is clear which measures will be applied to each impact; (m) consideration of the interactions between measures proposed to avoid or minimise impact(s), between impacts themselves and between measures and impacts; [4] (n) an assessment of the cumulative impacts of the project taking into account other projects that have been approved but where construction has not commenced, projects that have commenced construction, and projects that have recently been completed; (o) statutory context of the project as a whole, including: – how the project meets the provisions of the EP&A Act and EP&A Regulation; and – a list of any approvals that must be obtained under any other Act or law before the project may lawfully be carried out; (p) a chapter that synthesises the environmental impact assessment and provides: – a succinct but full description of the project for which approval is sought; – a description of any uncertainties that still exist around design, construction methodologies and/or operational methodologies and how these will be resolved in the next stages of the project; – a compilation of the impacts of the project that have not been avoided; – a compilation of the proposed measures associated with each impact to avoid or minimise (through design refinements or ongoing management during construction and operation) or offset these impacts; – a compilation of the outcome(s) the Proponent will achieve; and – the reasons justifying carrying out the project as proposed, having regard to the biophysical, economic and social considerations, including ecologically sustainable development and cumulative impacts; and (q) relevant project plans, drawings, diagrams in an electronic format that enables integration with mapping and other technical software. 2. The EIS must only include data and analysis that is reasonably needed to make a decision on the proposal. Relevant information must be succinctly summarised in the EIS and included in full in appendices. Irrelevant, conflicting or duplicated information must be avoided.	

[4] Measures proposed to avoid or minimise one impact may cause an unintended impact on another issue. Therefore, these impacts and their interactions need to be analysed and resolved where possible.

Desired Performance Outcome	Requirement	Current Guidelines[1]
3. Assessment of Key Issues* Key issue impacts are assessed objectively and thoroughly to provide confidence that the project will be constructed and operated within acceptable levels of impact. * Key issues are nominated by the Proponent in the SSI project application and by the Department in the SEARs. Key issues need to be reviewed throughout the preparation of the EIS to ensure any new key issues that emerge are captured. The key issues identified in this document are not exhaustive but are key issues common to most SSI projects.	1. The level of assessment of likely impacts must be proportionate to the significance of, or degree of impact on, the issue, within the context of the proposal location and the surrounding environment. The level of assessment must be commensurate to the degree of impact and sufficient to ensure that the Department and other government agencies are able to understand and assess impacts. 2. For each key issue the Proponent must: (a) describe the biophysical and socio-economic environment, as far as it is relevant to that issue; (b) describe the legislative and policy context, as far as it is relevant to the issue; (c) identify, describe and quantify (if possible) the impacts associated with the issue, including the likelihood and consequence (including worst case scenario) of the impact (comprehensive risk assessment), and the cumulative impacts; (d) demonstrate how potential impacts have been avoided (through design, or construction or operation methodologies); (e) detail how likely impacts that have not been avoided through design will be minimised, and the predicted effectiveness of these measures (against performance criteria where relevant); and (f) detail how any residual impacts will be managed or offset, and the approach and effectiveness of these measures. 3. Where multiple reasonable and feasible options to avoid or minimise impacts are available, they must be identified and considered and the proposed measure justified taking into account the public interest.	
4. Consultation The project is developed with meaningful and effective engagement during project design and delivery.	1. The project must be informed by consultation, including with relevant State (including Queensland) and local government agencies, infrastructure and service providers, special interest and industry groups, affected landowners, businesses and the community. The consultation process must be undertaken in accordance with the current guidelines. 2. The Proponent must document the consultation process, and demonstrate how the project has responded to the inputs received. 3. The Proponent must describe the timing and type of community consultation proposed during the design and delivery of the project, the mechanisms for community feedback, the mechanisms for keeping the community informed, and procedures for complaints handling and resolution. 4. Where the Proponent establishes a Community Consultative Committee (CCC) for the project, the establishment and operation of the CCC must be in accordance with the Department's *Community Consultative Guidelines State Significant Projects (2016)*. The CCC must not be the only or primary method of engagement with the community on the project.	

Key Issue Standard SEARs

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
5. Biodiversity The project design considers all feasible measures to avoid and minimise impacts on terrestrial and aquatic biodiversity. Offsets and/or supplementary measures are assured which are equivalent to any remaining impacts of project construction and operation.	1. The Proponent must assess biodiversity impacts in accordance with s7.9 of the *Biodiversity Conservation Act 2016* (BC Act), the Biodiversity Assessment Method (BAM), and be documented in a Biodiversity Development Assessment Report (BDAR). 2. The BDAR must include information in the form detailed in s6.12 of the BC Act, cl6.8 of the *Biodiversity Conservation Regulation 2017* and the BAM. 3. The BDAR must be submitted with all digital spatial data associated with the survey and assessment as per Appendix 10 of the BAM. 4. The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the BC Act. 5. The BDAR must include details of the measures proposed to address offset obligations. *6.* The Proponent must assess any impacts on biodiversity values not covered by the BAM. This includes a threatened aquatic species assessment (Part 7A *Fisheries Management Act 1994*) to address whether there are likely to be any significant impact on listed threatened species, populations or ecological communities listed under the *Fisheries Management Act 1994* (FM Act). 7. The Proponent must identify whether the project , or any component of the project, would be classified as a Key Threatening Process (KTP) in accordance with the listings in the BC Act, FM Act and the *Environmental Protection* and the *Biodiversity Conservation Act 2000* (EPBC Act).	Biodiversity Assessment Method (OEH, 2017) Policy and Guidelines for Fish Habitat Conservation and Management – Update 2013 (DPI, 2013) Threatened Species Survey and Assessment Guidelines Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (NSW Fisheries, 2003) NSW Sustainable Design Guidelines Version 4.0 (TfNSW, 2017) Aquatic Ecology in Environmental Impact Assessment – EIA Guideline (Marcus Lincoln Smith 2003) Freshwater threatened species distribution maps (www.dpi.nsw.gov.au/fishing/species-protection/threatened-species-distributions-in-nsw/freshwater-threatened-species-distribution-maps)
6. Protected and Sensitive Lands The project is designed, constructed and operated to avoid or minimise impacts on	1. The Proponent must assess the impacts of the project on environmentally sensitive land and processes (and the impact of processes on the project) including, but not limited to:	Guidelines for developments adjoining land and water managed by the Department of Environment, Climate Change and Water (DECCW, 2010)

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
protected and sensitive lands. The project is designed, constructed and operated to avoid or minimise future exposure to coastal hazards and processes.	(a) protected areas (including land and water) managed by OEH and/or DPI Fisheries under the *National Parks and Wildlife Act 1974* and the *Marine Estate Management Act 2014*; (b) Key Fish Habitat as mapped and defined in accordance with the FM Act; (c) waterfront land as defined in the *Water Management Act 2000;* (d) land or waters identified as Critical Habitat under the BC Act, FM Act or EPBC Act; and (e) biobank sites, private conservation lands and other lands identified as offsets.	Revocation, Re-categorisation and Road Adjustment Policy (OEH, 2012) Guidelines for controlled activities on waterfront land (DPI 2012) Policy and Guidelines for Fish Habitat Conservation and Management – Update 2013 (DPI, 2013) Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (NSW Fisheries, 2003)
7. Transport and Traffic Network connectivity, safety and efficiency of the transport system in the vicinity of the project are managed to minimise impacts. The safety of transport system customers is maintained. Impacts on network capacity and the level of service are effectively managed. Works are compatible with existing infrastructure and future transport corridors.	1. The Proponent must assess construction transport and traffic (vehicle, pedestrian and cyclists, bus services, and train operations) impacts, including, but not necessarily limited to: (a) a considered approach to route identification and scheduling of transport movements; (b) the number, frequency and size of construction related vehicles (passenger, commercial and heavy vehicles, including spoil management movements and track machines); (c) the nature of existing traffic (types and number of movements) on construction access routes (including consideration of peak traffic times and sensitive road users and parking arrangements) and assessment of traffic impacts on these routes including identifying traffic management measures to mitigate any impacts; (d) the closure, diversion or reconfiguration of elements of the road network associated with the construction of the project; and (e) safe access and egress to/from the classified road network. 2. The Proponent must assess (and model) the operational transport impacts of the project, including: (a) the performance of key level crossings and intersections; (b) wider transport interactions (local and regional roads, cycling, public and freight transport and the broader NSW rail network); and	Guide to Traffic Management – Part 3 Traffic Studies and Analysis (Austroads, 2007) Guide to Traffic Generating Developments Version 2.2 (RTA, 2002) Cycling Aspects of Austroads Guides (Austroads, 2014) NSW Bicycle Guidelines v 1.2 (RTA, 2005) Planning Guidelines for Walking and Cycling (DIPNR, 2004) Construction of New Level Crossing Policy (TfNSW, 201) Future Transport Strategy 2056 (TfNSW, 2018) NSW Draft Freight and Ports Plan (TfNSW, 2018) NSW Sustainable Design Guidelines Version 4.0 (TfNSW, 2017) Australian Level Crossing Assessment Model (ALCAM, 2016) Railway Crossing Safety Series 2011, Plan: Establishing a Railway Crossing Safety Management Plan (RTA, 2011)

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
	(c) identification of traffic and transport measures to mitigate any impacts. 3. The Proponent must assess the feasibility of level crossings (existing and proposed), and justify the safety and operational impacts and/or benefits of the proposed crossing type, taking into account the NSW Government's Construction of New Level Crossings Policy. 4. In the assessment of level crossings, the EIS must take into account: (a) the NSW Government's *Construction of New Level Crossings Policy;* (b) level crossing ALCAM assessments for public crossings and site-specific risk assessments. The Proponent must demonstrate how they reduce risks identified So Far As Is Reasonably Practicable (SFAIRP); (c) consistency with any Interface Agreements and related Safety Management Plans, including draft Interface Agreements and draft Safety Management Plans; (d) the practice of upgrading active public level crossings to boom gates and flashing lights adopted by the NSW Level Crossing Improvement Program (LCIP); (e) the rationalisation of private and public level crossings in line with the NSW Government's *Level Crossing Closures Policy;* and (f) operation of level crossings with regard to road and rail travel speeds, vehicle types, train lengths, train numbers, road and rail traffic volumes, vehicle queuing and sight distance.	
8. Flooding, Hydrology and Geomorphology The project minimises adverse impacts on property, public safety and the environment resulting from alteration of the water flow characteristics of watercourses and overland flowpaths. Where feasible, the project includes remedial	1. The Proponent must: (a) describe the location and size of all existing and proposed pipes, culverts and bridges, and the locations and annual exceedance probabilities (AEPs) of flows that overtop the existing formation and rail; (b) describe the existing and proposed topography in all areas that could be potentially affected by floodwaters. This includes the spatial location, and the horizontal and vertical dimensions of all spoil mounds;	NSW Government's Floodplain Development Manual (Department of Natural Resources, 2005) PS 07-003 New guideline and changes to section 117 direction and EP&A Regulation on flood prone land Practical Consideration of Climate Change - Flood risk management guideline (DECC, 2007)

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
measures to mitigate any adverse water flow impacts, geomorphological impacts or flood safety risks caused by the existing rail infrastructure within the project area. Construction and operation of the project avoids or minimises the risk of, and adverse impacts from, infrastructure flooding, flooding hazards, geomorphological impacts or dam failure.	(c) describe and justify the proposed flood planning level (FPL) for the project including the AEP of the flood which will overtop the formation and rail. The FPL must consider adjacent infrastructure such as road crossings whose flood immunity is determined by the project's FPL; (d) assess the existing hydrology, geomorphology and flooding characteristics of all watercourses within and adjacent to the project area. This includes locating and assessing flowpaths emanating from existing culverts, pipes and bridges under the rail formation, or from overtopping of the existing formation in large storms; (e) develop and justify quantitative design limits on potential adverse flooding, hydrological and geomorphological impacts resulting from the project. These are to consider land use and include afflux, velocity, extent, duration, hazard, scour potential, etc; (f) carry out geotechnical and geomorphological investigations to assess the propensity for scour, erosion and geomorphological changes to occur within any watercourses or overland flowpaths affected by the project; (g) consider the impacts of extreme floods up to the probable maximum flood including consideration of flood risks to people and property resulting from failure of the formation or washouts of ballast; (h) prepare preliminary engineering designs of the velocity dissipation or other mitigation works that are proposed to avoid adverse offsite scouring or geomorphological impacts on the adjoining land downstream of the project area, adjacent to locations where pipes, culverts or bridges are proposed or where the rail formation may be overtopped; (i) at locations along the rail route, identify the width of land between the toe of the formation and the downstream boundary of the project area, that is available for the construction of these mitigation works; and (j) where there is insufficient width of project land available for these works, clearly identify the extent of additional land beyond the project boundary that may be required, including the locations where	Australian Disaster Resilience Handbook 7 – Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia. (AIDR, 2017) AS/NZS 3100:2009 Risk Management – Principles and Guidelines

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
	easements over land or acquisition of land may be required. 2. The Proponent must assess and model the pre-construction, during construction and operational impacts of the project on flood behaviour for a full range of flood events up to and including the probable maximum flood (including consideration of the impacts of climate change and differing storm durations). This will include: (a) utilising hydrologic and hydraulic models that are consistent with current best practice and utilise topographic and infrastructure data that is of sufficient spatial coverage and accuracy to ensure the resultant models can accurately assess existing and proposed water flow characteristics; (b) having these models independently peer-reviewed with the review findings published in the EIS; (c) assessing any detrimental increases in the potential flood affectation, scouring or geomorphological changes to other properties, assets and infrastructure, over a full range of flood durations and flood frequencies; (d) where the existing rail infrastructure has an adverse flood impact on property or people, the flood assessment must consider the extent to which the project alleviates or exacerbates these existing impacts; (e) an assessment of the consistency (or inconsistency) with the applicable Council or OEH floodplain management plans. The requirements of these plans must be discussed with OEH and the Council; (f) assessing whether each component of the project is compatible with the flood hazard of the land and the hydraulic functions of flow conveyance, floodway and flood storage; (g) assessing upstream and downstream flow, level, velocity, hazard and scour potential; (h) assessing changes in upstream and downstream flowpaths (location, discharges and velocities); (i) quantifying and evaluating changes in flood safety risks on private and public land including roads and pathways;	

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
	(j) assessing any impacts that the project may have upon existing community emergency management arrangements for flooding. These matters must be discussed with the State Emergency Service and applicable Council; and (k) evaluating any social and economic impacts that the project may have on the community as a consequence of changes to flooding, hydrology and geomorphology.	
9. Water – Hydrology Long term impacts on surface water and groundwater hydrology (including drawdown, flow rates and volumes) are minimised. The environmental values of nearby, connected and affected water sources, groundwater and dependent ecological systems including estuarine and marine water (if applicable) are maintained (where values are achieved) or improved and maintained (where values are not achieved). Sustainable use of water resources.	1. The Proponent must describe (and map) the existing hydrological regime for any surface and groundwater resource (including reliance by users and for ecological purposes) likely to be impacted by the project, including stream orders, as per the BAM. 2. The Proponent must prepare a detailed water balance for ground and surface water including the proposed intake and discharge locations, volume, frequency and duration, sources, security and licensing requirements. 3. The Proponent must assess (and model if appropriate) the impact of the construction and operation of the project and any ancillary facilities (both built elements and discharges) on surface and groundwater hydrology in accordance with the current guidelines, including: (a) natural processes within rivers, wetlands, estuaries, marine waters and floodplains that affect the health of the fluvial, riparian, estuarine or marine system and landscape health (such as modified discharge volumes, durations and velocities), aquatic connectivity and access to habitat for spawning and refuge; (b) impacts from any permanent and temporary interruption of groundwater flow, including the extent of drawdown, barriers to flows, implications for groundwater dependent surface flows, ecosystems and species, groundwater users and the potential for settlement; (c) changes to environmental water availability and flows, both regulated/licensed and unregulated/rules-based sources; (d) direct or indirect increases in erosion, siltation, destruction of riparian	Biodiversity Assessment Method (OEH, 2017) Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D. Main Roads; E. Mines and Quarries) (DECC, 2008) NSW Aquifer Interference Policy (DPI, 2012) NSW Sustainable Design Guidelines Version 4.0 (TfNSW, 2017) Risk assessment Guidelines for Groundwater Dependent Ecosystems (Office of Water, 2012)

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
	vegetation or a reduction in the stability of river banks or watercourses; (e) minimising the effects of proposed stormwater and wastewater management during construction and operation on natural hydrological attributes (such as volumes, flow rates, management methods and re-use options) and on the conveyance capacity of existing stormwater systems where discharges are proposed through such systems; and (f) water take (direct or passive) from all surface and groundwater sources with estimates of annual volumes during construction and operation. 4. The Proponent must identify any requirements for baseline monitoring of hydrological attributes.	
10. Water – Quality The project is designed, constructed and operated to protect the NSW Water Quality Objectives where they are currently being achieved, and contribute towards achievement of the Water Quality Objectives over time where they are currently not being achieved, including downstream of the project to the extent of the project impact including estuarine and marine waters (if applicable).	1. The Proponent must: (a) state the ambient NSW Water Quality Objectives (NSW WQO) and environmental values for the receiving waters relevant to the project, including the indicators and associated trigger values or criteria for the identified environmental values; (b) identify and estimate the quality and quantity of all pollutants that may be introduced into the water cycle by source and discharge point and describe the nature and degree of impact that any discharge(s) may have on the receiving environment, including consideration of all pollutants that pose a risk of non-trivial harm to human health and the environment; (c) identify the rainfall event that the water quality protection measures will be designed to cope with; (d) assess the significance of any identified impacts including consideration of the relevant ambient water quality outcomes; (e) demonstrate how construction and operation of the project will, to the extent that the project can influence, ensure that: – where the NSW WQOs for receiving waters are currently being met they will continue to be protected; and	NSW Water Quality and River Flow Objectives at http://www.environment.nsw.gov.au/ieo/ Using the ANZECC Guidelines and Water Quality Objectives in NSW (DEC, 2006) Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ ARMCANZ, 2000) Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DECC, 2008) Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D. Main Roads; E. Mines and Quarries) (DECC, 2008)

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
	– where the NSW WQOs are not currently being met, activities will work toward their achievement over time; (f) justify, if required, why the WQOs cannot be maintained or achieved over time; (g) demonstrate that all practical measures to avoid or minimise water pollution and protect human health and the environment from harm are investigated and implemented; (h) identify sensitive receiving environments (which may include marine waters downstream) and develop a strategy to avoid or minimise impacts on these environments; and (i) identify proposed monitoring locations, monitoring frequency and indicators of surface and groundwater quality.	
11. Soils The environmental values of land, including soils, subsoils and landforms, are protected. Risks arising from the disturbance and excavation of land and disposal of soil are minimised, including disturbance to acid sulfate soils and site contamination.	1. The Proponent must assess whether the land is likely to be contaminated and identify if remediation of the land is required, having regard to the ecological and human health risks posed by the contamination in the context of past, existing and future land uses. Where assessment and/or remediation is required, the Proponent must document how the assessment and/or remediation would be undertaken in accordance with current guidelines. 2. The Proponent must assess whether salinity is likely to be an issue and if so, determine the presence, extent and severity of soil salinity within the project area. 3. The Proponent must assess the impacts of the project on soil salinity and how it may affect groundwater resources and hydrology. 4. The Proponent must assess the impacts on soil and land resources (including erosion risk or hazard). Particular attention must be given to soil erosion and sediment transport consistent with the practices and principles in the current guidelines.	Managing Land Contamination: Planning Guidelines SEPP 55 –Remediation of Land, (DUAP & EPA, 1998) Guidelines for Consultants Reporting on Contaminated Sites (OEH, reprinted 2011) Guidelines for the NSW Site Auditor Scheme (DEC, 2006) Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (EPA, 2015) Urban and regional salinity – guidance given in the Local Government Salinity Initiative booklets (http://www.environment.nsw.gov.au/salinity/solutions/urban.htm) which includes *Site Investigations for Urban* Salinity (DLWC, 2002) Landslide risk management guidelines presented in Australian Geomechanics Society (2007) Soil and Landscape Issues in Environmental Impact Assessment (DLWC 2000)

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
		Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D. Main Roads; E. Mines and Quarries) (DECC, 2008) Other guidelines made or approved under section 105 of the *Contaminated Land Management Act 1997*
12. Heritage The design, construction and operation of the project facilitates, to the greatest extent possible, the long-term protection, conservation and management of the heritage significance of items of environmental heritage and Aboriginal objects and places. The design, construction and operation of the project avoids or minimises impacts, to the greatest extent possible, on the heritage significance of environmental heritage and Aboriginal objects and places.	1. The Proponent must identify and assess any direct and/or indirect impacts (including cumulative impacts) to the heritage significance of: (a) Aboriginal places and objects, as defined under the *National Parks and Wildlife Act 1974* and in accordance with the principles and methods of assessment identified in the current guidelines; (b) Aboriginal places of heritage significance, as defined in the Standard Instrument – Principal Local Environmental Plan; (c) environmental heritage, as defined under the *Heritage Act 1977*; and (d) items listed on the National and World Heritage lists. 2. Where archaeological investigations of Aboriginal objects are proposed these must be conducted by a suitably qualified archaeologist, in accordance with section 1.6 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010). 3. Impacts to Aboriginal objects and/or places must be assessed and documented in an Aboriginal Cultural Heritage Assessment Report (ACHAR). Consultation must be undertaken with Aboriginal people in accordance with the *Aboriginal Cultural Heritage Consultation requirements for proponents* (DECCW, 2010). The ACHAR must document the outcomes of consultation with Aboriginal people and outline measures proposed to mitigate impacts. The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR. 4. Where impacts to State or locally significant heritage items are identified, the assessment must:	Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) Aboriginal Cultural Heritage Consultation requirements for proponents (DECCW, 2010) Code of practice for archaeological investigation of Aboriginal objects in NSW (DECCW, 2010) NSW Skeletal Remains: Guidelines for Management of Human Remains (Heritage Office, 1998) Aboriginal site recording form Aboriginal site impact recording form Aboriginal Heritage Information Management System site registration form Care agreement application form Criteria for the assessment of excavation directors (NSW Heritage Council, 2011) NSW Heritage Manual (Heritage Office and Department of Urban Affairs and Planning, 1996) Assessing Heritage Significance (NSW Heritage Office, 2001) The Australia ICOMOS Burra Charter

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
	(a) include a statement of heritage impact for all heritage items (including significance assessment); (b) consider impacts to the item of significance caused by, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, visual amenity, landscape and vistas, curtilage, subsidence and architectural noise treatment (as relevant); (c) outline measures to avoid and minimise those impacts in accordance with the current guidelines; and (d) be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria).	
13. Noise and Vibration - Amenity Construction noise and vibration (including airborne noise, ground-borne noise and blasting) are effectively managed to minimise adverse impacts on acoustic amenity. Increases in noise emissions and vibration affecting nearby properties and other sensitive receivers during operation of the project are effectively managed to protect the amenity and well-being of the community.	1. The Proponent must assess construction and operational noise and vibration impacts in accordance with relevant NSW noise and vibration guidelines. The assessment must include consideration of impacts to sensitive receivers including small businesses, and include consideration of sleep disturbance and, as relevant, the characteristics of noise and vibration (for example, low frequency noise). 2. The Proponent must demonstrate that blast impacts are capable of complying with the current guidelines, if blasting is required.	Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration (ANZECC, 1990) Assessing Vibration: a technical guideline (DEC, 2006) Interim Construction Noise Guideline (DECCW, 2009) Noise Policy for Industry (EPA, 2017) Construction Noise Strategy (TfNSW, 2012) Rail Infrastructure Noise Guideline (EPA, 2013) NSW Road Noise Policy (DECCW, 2011) Development Near Rail Corridors and Busy Roads – Interim guideline (DoP, 2008) Noise Mitigation Guideline (RMS, 2015) Noise Criteria Guideline (RMS, 2015) NSW Sustainable Design Guidelines Version 4.0 (TfNSW, 2017)

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
14. Noise and Vibration - Structural Construction noise and vibration (including airborne noise, ground-borne noise and blasting) are effectively managed to minimise adverse impacts on the structural integrity of buildings and items including Aboriginal places and environmental heritage. Increases in noise emissions and vibration affecting environmental heritage as defined in the *Heritage Act 1977* during operation of the project are effectively managed.	1. The Proponent must assess construction and operation noise and vibration impacts in accordance with relevant NSW noise and vibration guidelines. The assessment must include consideration of impacts to the structural integrity and heritage significance of items (including Aboriginal places and items of environmental heritage). 2. The Proponent must demonstrate that blast impacts are capable of complying with the current guidelines, if blasting is required.	German Standard DIN 4150-3: Structural Vibration - effects of vibration on structures
15. Socio-economic, Land Use and Property The project minimises adverse social and economic impacts and capitalises on opportunities potentially available to affected communities. The project minimises impacts to property and business and achieves appropriate integration with adjoining land uses, including maintenance of appropriate access to properties and community facilities, and minimisation of displacement of existing land use activities, dwellings and infrastructure.	1. The Proponent must assess social and economic impacts in accordance with the current guidelines. 2. The Proponent must assess agricultural land use impacts in accordance with the current guidelines, including: (a) current and potential Important Agricultural Land within the project and surrounding locality, including land capability and agricultural productivity; (b) division or fragmentation of property and changes to property management which could lead to the loss of viability; (c) property access and the efficient and safe crossing of the rail corridor by machinery and livestock (d) connectivity of property infrastructure severed by the rail corridor; and (e) livestock exclusion/management to minimise harm and losses. 3. The Proponent must undertake an assessment of biosecurity risks and management measures relating to the potential for spread of pests, diseases or weeds along the length of the project alignment, in accordance with the 'general biosecurity duty' under the *Biosecurity Act 2015.*	Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment (RMS, 2013) Social Impact Assessment Guideline for State significant mining, petroleum production and extractive industry development (DPE, 2017) Social Impact Assessment Scoping Tool (DPE, 2017) Infrastructure Proposals on Rural Land Primefact 1063, second edition (DPI, 2013) NSW Invasive Species Plan 2018-202 (DPI, 2018) Land Use Conflict Risk Assessment (LUCRA) Guide (DPI, 2011) New England North West Regional Plan 2036 (DPE, 2017)

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
	4. The Proponent must assess the social and economic impact of temporary accommodation for construction workers (construction camps) on communities near the project site. 5. The Proponent must assess impacts from construction and operation on potentially affected properties, businesses, recreational users and land and water users (for example, recreational and commercial fishers, including property acquisitions/adjustments, access, amenity and relevant statutory rights. 6. Where the project may impact on significant mineral resources, the Proponent must assess the impact of the project on these resources, including: (a) any operating mines, extractive industries or known mineral or petroleum resources; (b) exploration activities in the vicinity of the proposed development; and (c) access for future exploration in the area. 7. The Proponent must identify encroachments into adjoining road reserves, travelling stock routes and Crown land and roads affected by the project.	
16. Visual Amenity The project minimises adverse impacts on the visual amenity of the built and natural environment (including public open space) and capitalises on opportunities to improve visual amenity.	1. The Proponent must assess the visual impact of the project and any ancillary infrastructure on: (a) views and vistas; (b) streetscapes, key sites and buildings; (c) heritage items including Aboriginal places and environmental heritage; and (d) the local community. 2. The Proponent must provide artist impressions and perspective drawings of the project to illustrate how the project has responded to the visual impact through urban design and landscaping.	AS4282-1997 Control of the obtrusive effects of outdoor lighting Bridge Aesthetics: Design guidelines to improve the appearance of bridges in NSW (RMS, 2012) NSW Sustainable Design Guidelines Version 4.0 (TfNSW, 2017) Technical guideline for Urban Green Cover in NSW (OEH, 2015)
17. Waste	1. The Proponent must assess predicted waste generated from the project during construction and operation, including:	NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (EPA 2014)

Key Issue and Desired Performance Outcome	Requirement (specific assessment requirements in addition to the general requirement above)	Current Guidelines
All wastes generated during the construction and operation of the project are effectively stored, handled, treated, reused, recycled and/or disposed of lawfully and in a manner that protects environmental values.	a) classification of the waste in accordance with the current guidelines; b) estimates / details of the quantity of each classification of waste to be generated during the construction of the project, including bulk earthworks and spoil balance; c) handling of waste including measures to facilitate segregation and prevent cross contamination; d) management of waste including estimated location and volume of stockpiles; e) waste minimisation and reuse; f) lawful disposal or recycling locations for each type of waste; and g) contingencies for the above, including managing unexpected waste volumes. 2. The Proponent must assess potential environmental impacts from the excavation, handling, storage on site and transport of the waste particularly with relation to sediment/leachate control, noise and dust.	*Waste Classification Guidelines – Part 1: Classification of Waste* (EPA 2014) NSW Sustainable Design Guidelines Version 4.0 (TfNSW, 2017) Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D. Main Roads; E. Mines and Quarries) (DECC, 2008)
18. Climate Change Risk The project is designed, constructed and operated to be resilient to the future impacts of climate change.	1. The Proponent must assess the risk and vulnerability of the project to climate change in accordance with the current guidelines. 2. The Proponent must quantify specific climate change risks with reference to the NSW Government's climate projections at 10km resolution (or lesser resolution if 10km projections are not available) and incorporate specific adaptation actions in the design.	Australian Government's Climate Change Impacts and Risk Management – A Guide for Business and Government (2006) AS/NZS 3100:2009 Risk Management – Principles and Guidelines Technical Guide for Climate Change Adaptation for the State Road Network (RMS, in draft)
19. Sustainability The project reduces the NSW Government's operating costs and ensures the effective and efficient use of resources. Conservation of natural resources is maximised.	1. The Proponent must assess the sustainability of the project in accordance with the Infrastructure Sustainability Council of Australia (ISCA) *Infrastructure Sustainability Rating Tool* and recommend an appropriate target rating for the project, including targets and strategies to improve Government efficiency in use of water, energy and transport.	NSW Sustainable Design Guidelines Version 4.0 (TfNSW, 2017) Infrastructure Sustainability Rating Tool Scorecard relating to energy and carbon for large infrastructure projects, ISCA NSW Infrastructure Skills Legacy Programs' training and employment targets (DOI, 2017)

Attachment A

EPBC Act Requirements

Inland Rail – North Star to NSW/QLD border (EPBC 2018/8222, SSI 18_9371)

The proposed action is being assessed for the purposes of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) under Part 5 Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This document is intended to assist NSW Department of Planning and Environment (NSW DPE) to manage the environmental impact assessment process. It is not legally binding and does not replace the requirements of the EPBC Act.

Proposed Action

To upgrade and construct a rail line between North Star in NSW and the NSW/QLD border, spanning approximately 30 km, as part of the Inland Rail Programme.

Matters of National Environmental Significance

The EPBC Act controlling provisions for the proposed action are:

- listed threatened species and communities (sections 18 and 18A)

All matters of national environmental significance (MNES) protected under the triggered controlling provisions are potentially relevant. The Department considers that the proposed action has the potential to significantly impact the following:

- Brigalow (*Acacia harpophylla* dominant and co-dominant) – endangered
- Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions – endangered
- Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland – critically endangered
- Weeping Myall Woodlands – endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – critically endangered
- Squatter Pigeon (southern) (*Geophaps scripta scripta*) – vulnerable
- Painted Honeyeater (*Grantiella picta*) – vulnerable
- Murray Cod (*Maccullochella peelii*) – vulnerable
- Large-eared Pied Bat, Large Pied Bat (*Chalinolobus dwyeri*) – vulnerable
- Corben's Long-eared Bat, South-eastern Long-eared Bat (*Nyctophilus corbeni*) – vulnerable
- Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (*Phascolarctos cinereus*) – vulnerable
- Ooline (*Cadellia pentastylis*) – vulnerable
- Bluegrass (*Dichanthium setosum*) – vulnerable
- Belson's Panic (*Homopholis belsonii*) – vulnerable
- *Tylophora linearis* – endangered
- Five-clawed Worm-skink (*Anomalopus mackayi*) – vulnerable

- Adorned Delma (*Delma torquata*) – vulnerable
- Dunmall's Snake (*Furina dunmalli*) – vulnerable

Note that this may not be a complete list and it is the responsibility of the proponent to ensure any protected matters under this controlling provision are assessed for the Commonwealth decision-maker's consideration.

Key Issues

- The proponent submitted a referral based on preliminary desktop and rapid assessments, and identified the action was a controlled action due to potential significant impacts on the Murray Cod, Squatter Pigeon and Belson's Panic. The Department has identified a longer list of species and communities that may be impacted, for which the referral does not contain sufficient information to determine significance, as no detailed flora and fauna surveys have been completed. Consequently, the Department recommends engagement in Stage 2, before the draft EIS is exhibited, to consider the assessments of significance and determine which species are relevant to assessment of the action for EPBC Act purposes.
- Mapped grasslands have been excluded from remnant vegetation and habitat considerations by the proponent as it considers that field surveys and observations indicate the majority of the mapped grasslands are likely to be non-remnant exotic grasses and weeds and not significant remnant grasslands. The Department considers that all areas of mapped grasslands must be surveyed in accordance with the minimum requirements of the Biodiversity Assessment Methodology (BAM) to identify the full extent of native vegetation in the corridor.

General Assessment Requirements

The EIS must address the matters outlined in Schedule 4 of the EPBC Regulations and the matters outlined below in relation to the controlling provisions.

1. For each of the EPBC Act-listed species and ecological communities impacted by the proposed action, the EIS must provide:
    a. Survey results, including details of the scope, timing and methodology for studies or surveys used and how they are consistent with (or justification for divergence from) published Commonwealth guidelines and policy statements.
    b. A description of the habitat and habits (including identification and mapping of suitable breeding habitat, suitable foraging habitat, important populations and habitat critical for survival), with consideration of, and reference to, any relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plans, threat abatement plans and wildlife conservation plans; and

- Maps displaying the above information (specific to EPBC matters) overlaid with the proposed action

Note - It is acceptable, where possible, to use the mapping and assessment of Plant Community Types (PCTs) and the species surveys prescribed by the BAM as the basis for identifying EPBC Act-listed species and communities. The EIS must clearly identify which PCTs are considered to align with habitat for the relevant EPBC Act-listed species or community, and provided individual maps for each species or community.

2. The EIS must describe the nature, geographic extent, magnitude, timing and duration of any likely direct, indirect and consequential impacts on any relevant EPBC Act-listed species and communities. It must clearly identify the location and quantify the extent of all impact areas to each relevant EPBC Act-listed species or community.

3. For each of the EPBC Act-listed species and communities that are likely to be impacted by the development, the EIS must provide information on proposed avoidance and mitigation measures to deal with the impacts of the action, and a description of the predicted effectiveness and outcomes that the avoidance and mitigation measures will achieve.

4. The EIS must identify each EPBC Act-listed species and community likely to be significantly impacted by the proposed action. Where a significant impact is likely, the EIS must provide information on the proposed offset strategy, including discussion of the conservation benefit, how offsets will be secured, and timing of protection.

Note - A number of offsets options under the NSW *Biodiversity Conservation Act 2016* will be acceptable for EPBC Act approval purposes. It is a requirement that offsets directly contribute to the ongoing viability of the specific protected matter impacted by a proposed action i.e. 'like for like'. Like-for-like includes protection of native vegetation that is the same EEC or habitat being impacted, or funding to provide a direct benefit to the matter being impacted i.e. threat abatement, breeding and propagation programs or other relevant conservation measures.

APPENDIX

E

Aboriginal Cultural Heritage and Archaeological Assessment

Appendix B Agency Letters

NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

Future Freight Joint Venture
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3 August 2018

Gwydir Shire Council
Locked Bag 5
Bingara NSW 2404

To whom it may concern

Information Request Regarding Relevant Aboriginal Persons and Organisations, Inland Rail - North Star to NSW/QLD Border (NS2B) project (the Project)

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It would be greatly appreciated if all written responses to this request could be received by 18 August 2018.

Yours faithfully

Luke Kirkwood
Principal Heritage Specialist
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Future Freight Joint Venture

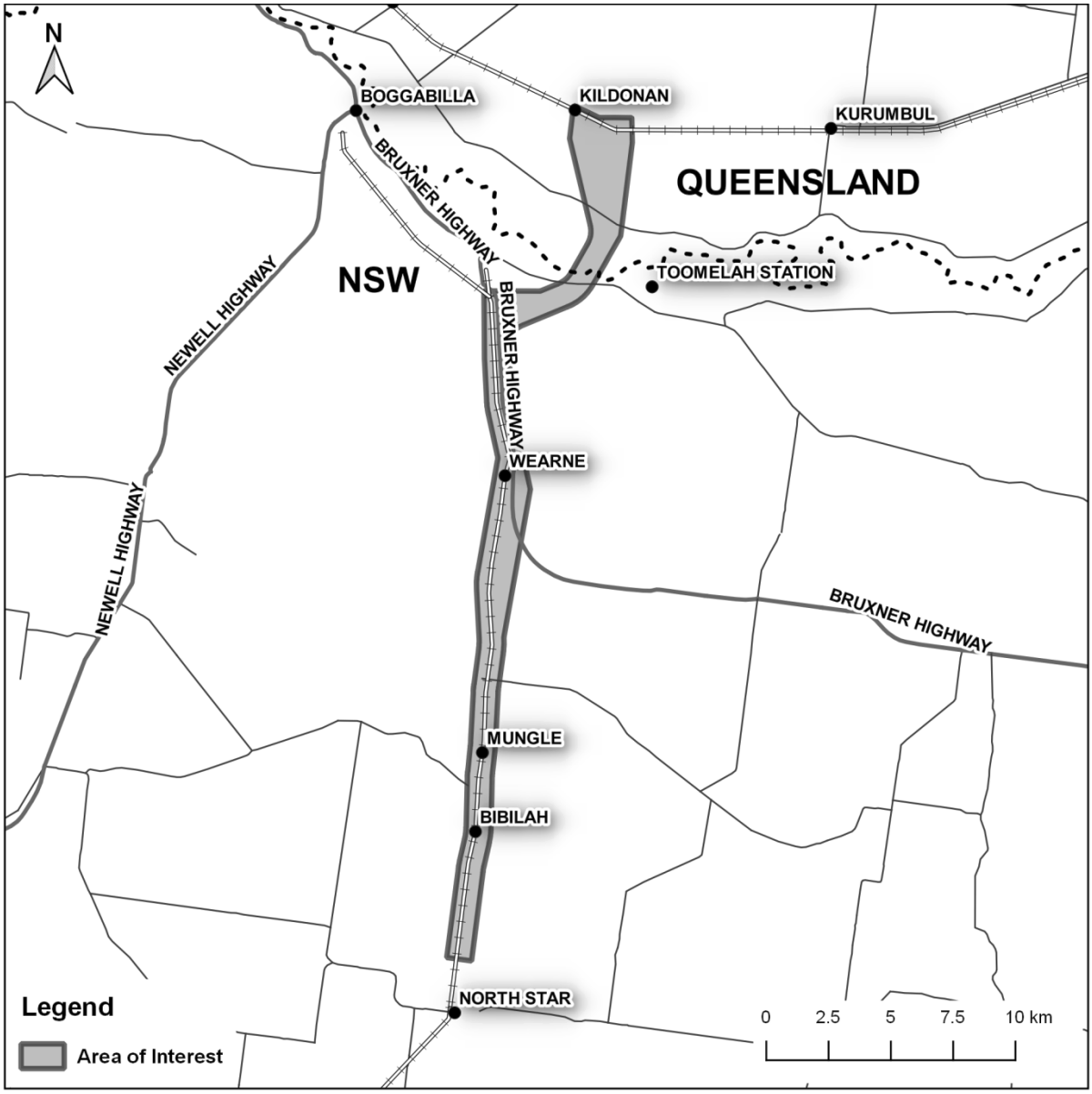

Figure 1 Proposed Study Area

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3 August 2018

Moree Plains Shire Council
PO Box 420
Moree NSW 2400

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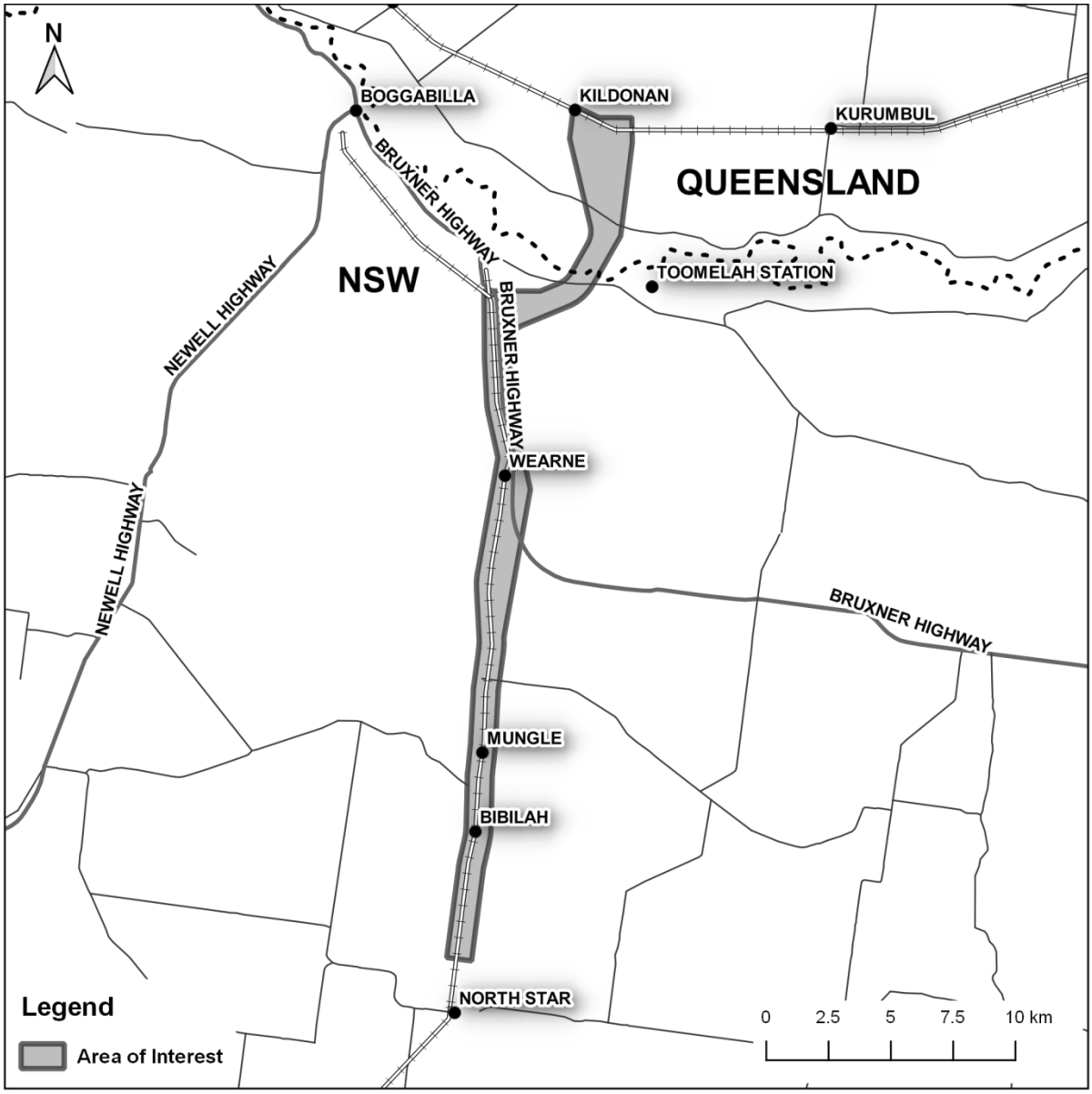

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3 August 2018

Native Title Services Corporation (NTSCorp)
PO Box 2105
Strawberry Hills NSW 2012

To whom it may concern

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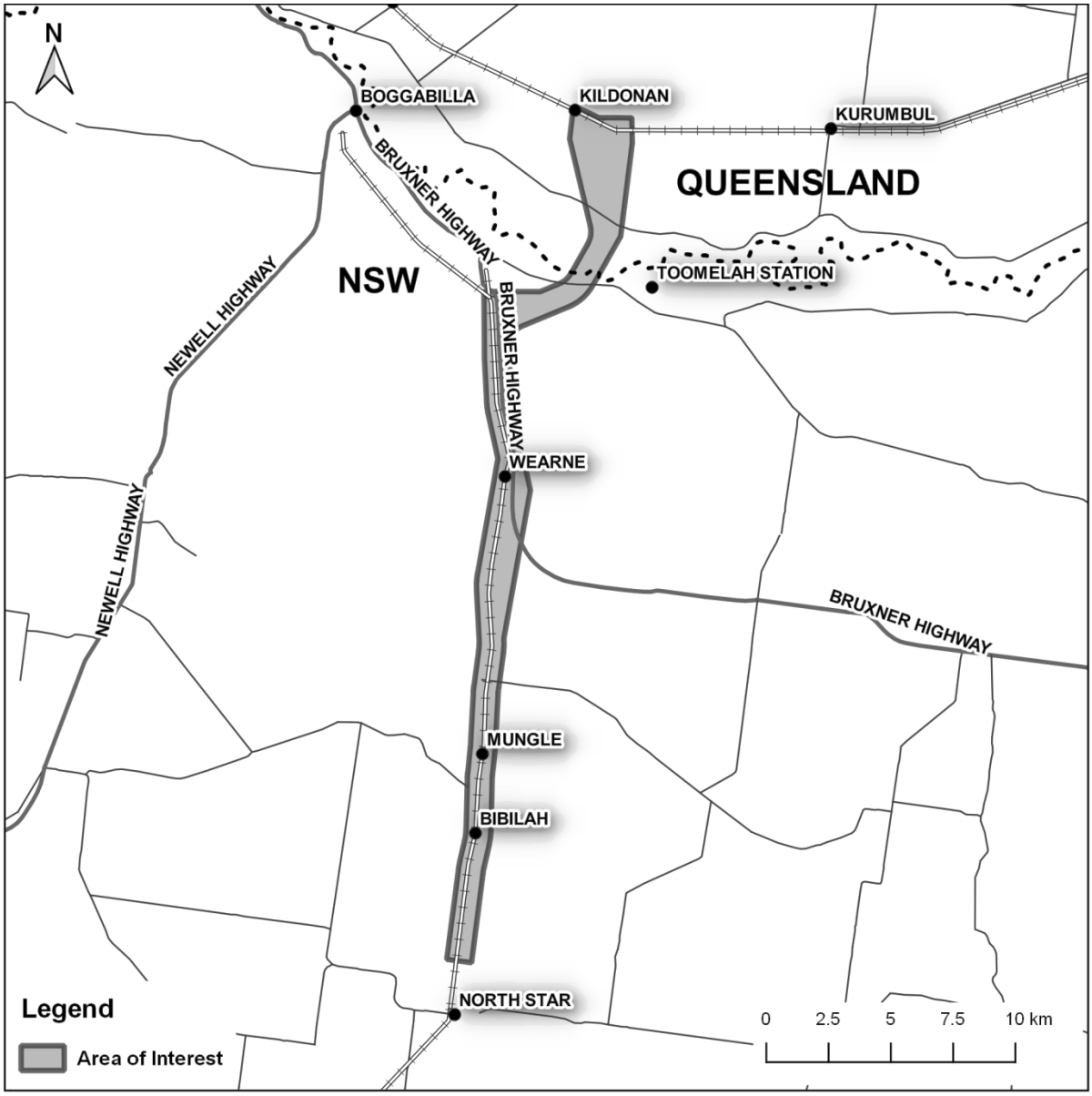

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6 September 2018

Native Title Services Corporation (NTSCorp)
PO Box 2105
Strawberry Hills NSW 2012

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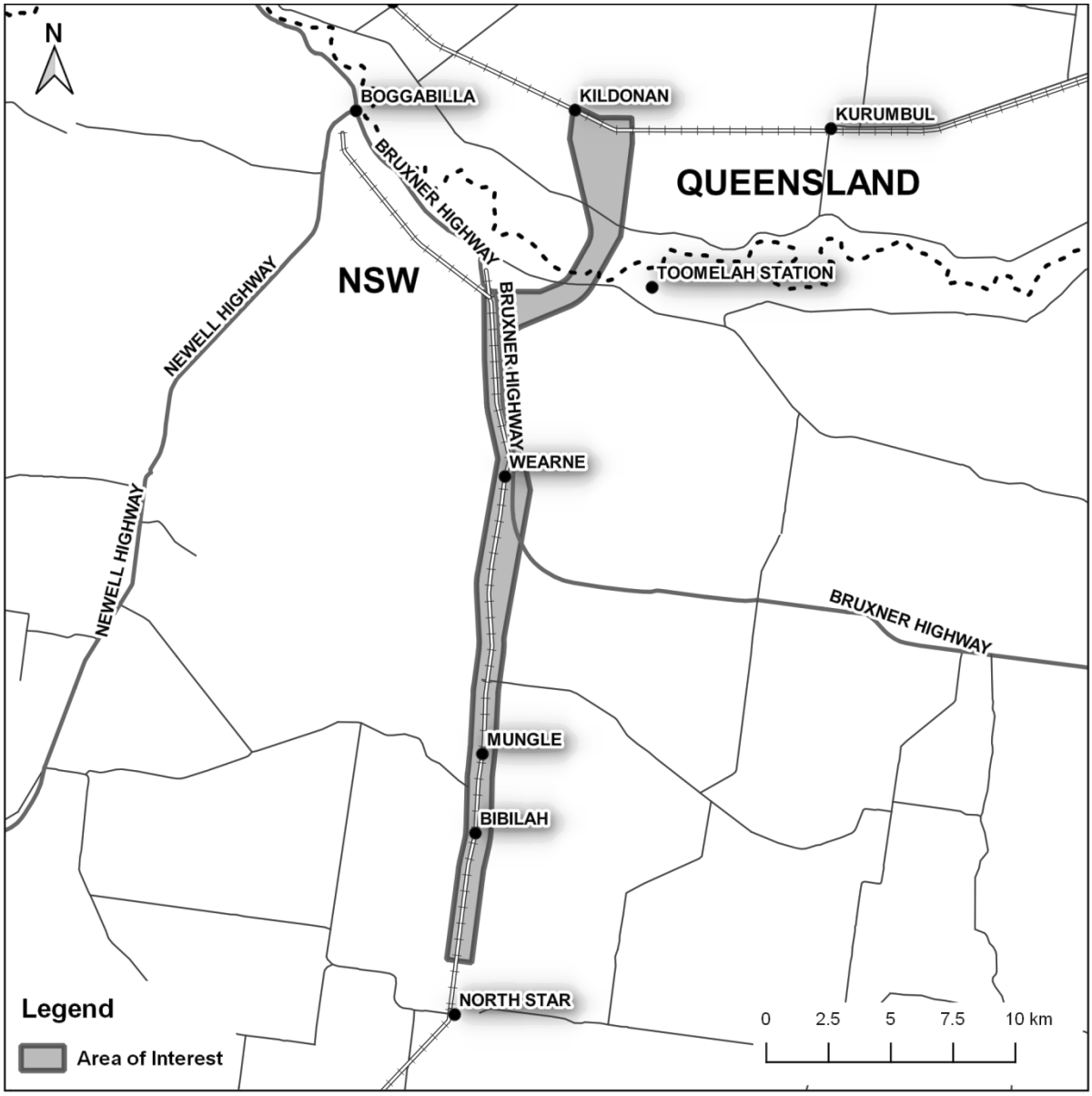

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3 August 2018

National Native Title Tribunal
GPO Box 9973
Sydney NSW 2001

To whom it may concern

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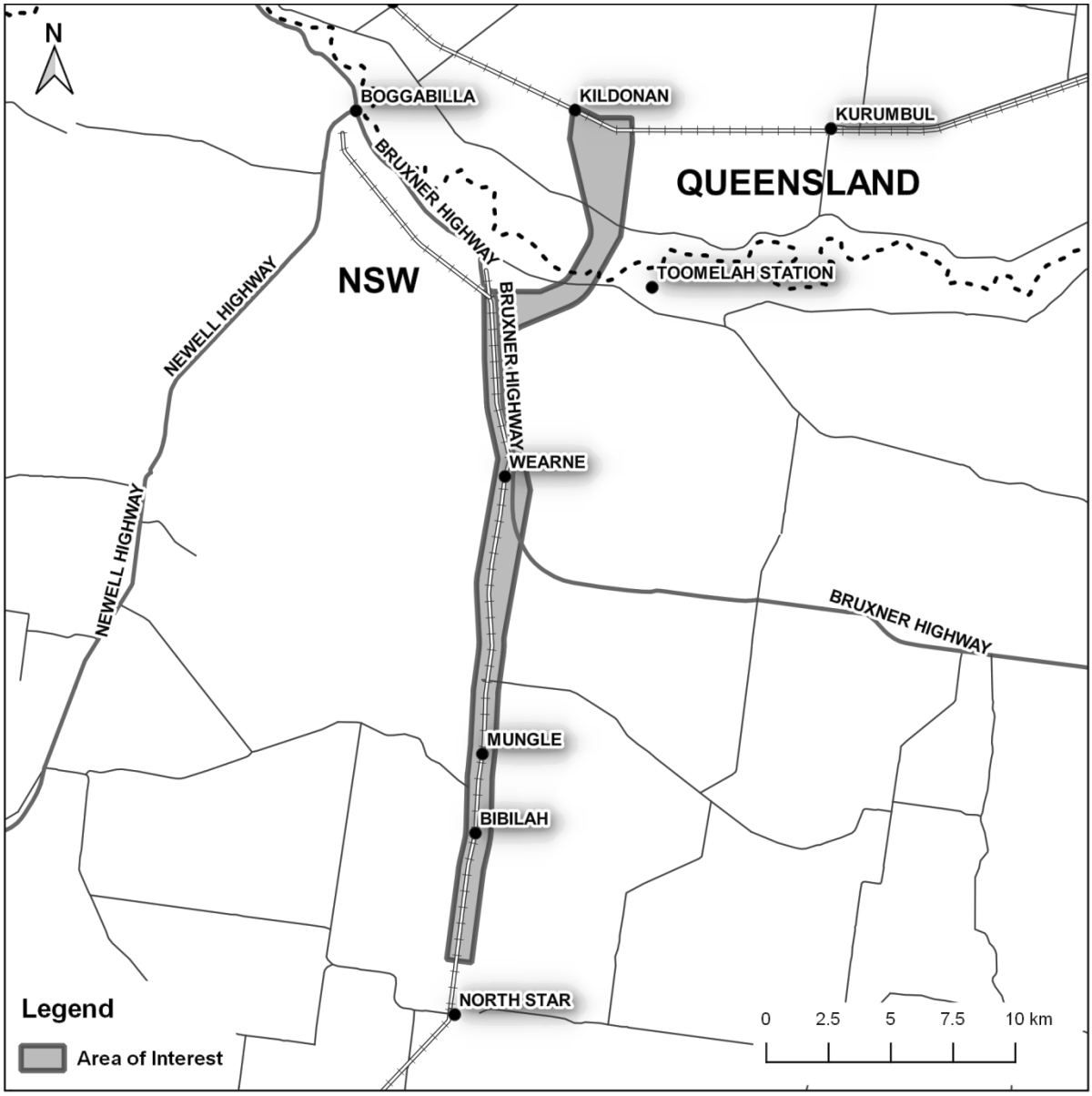

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3 August 2018

North West Local Land Services
PO Box 253
Moree NSW 2400

To whom it may concern

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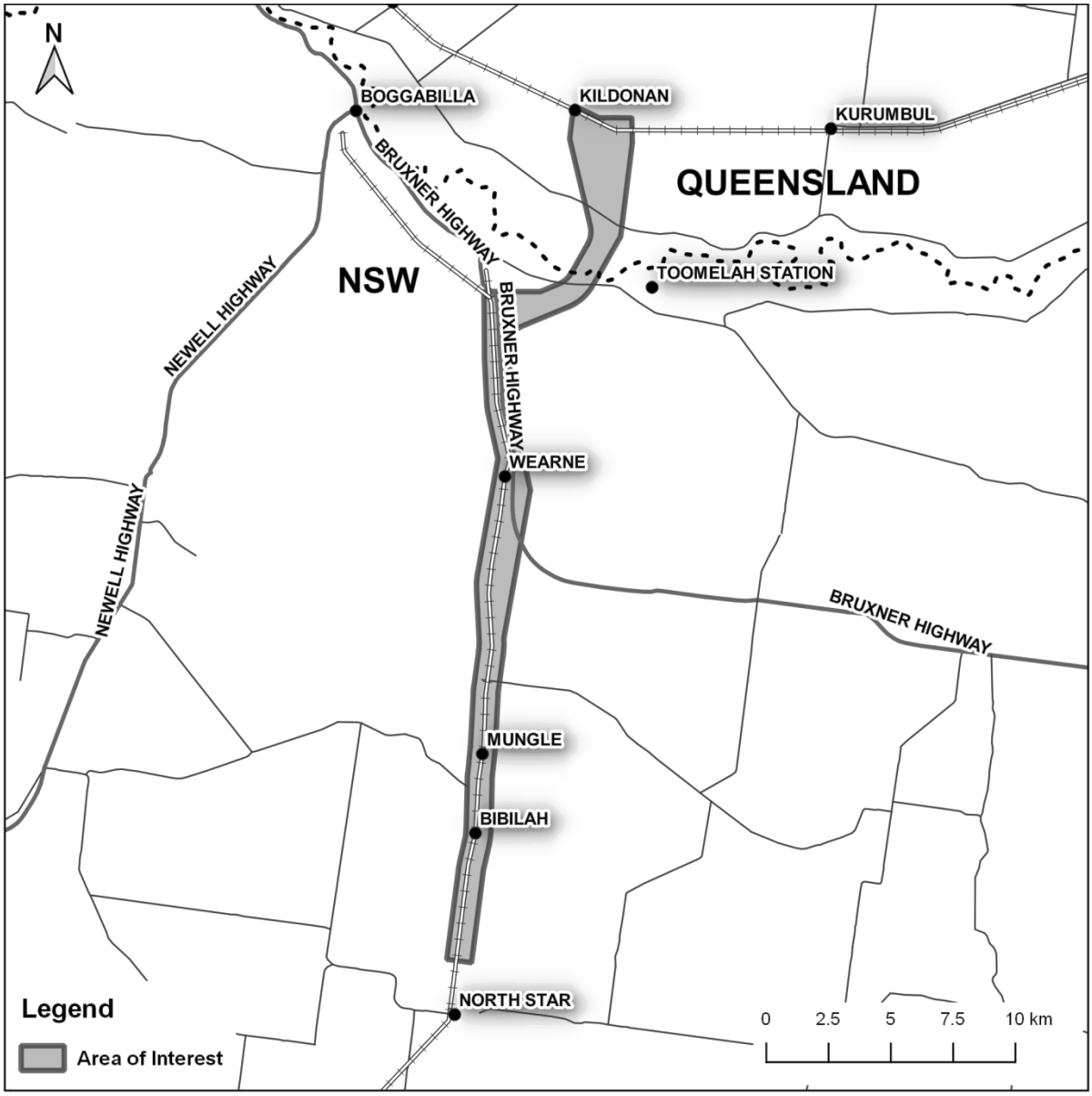

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3 August 2018

Office of Environment and Heritage
PO Box A290
Sydney South, NSW 1232

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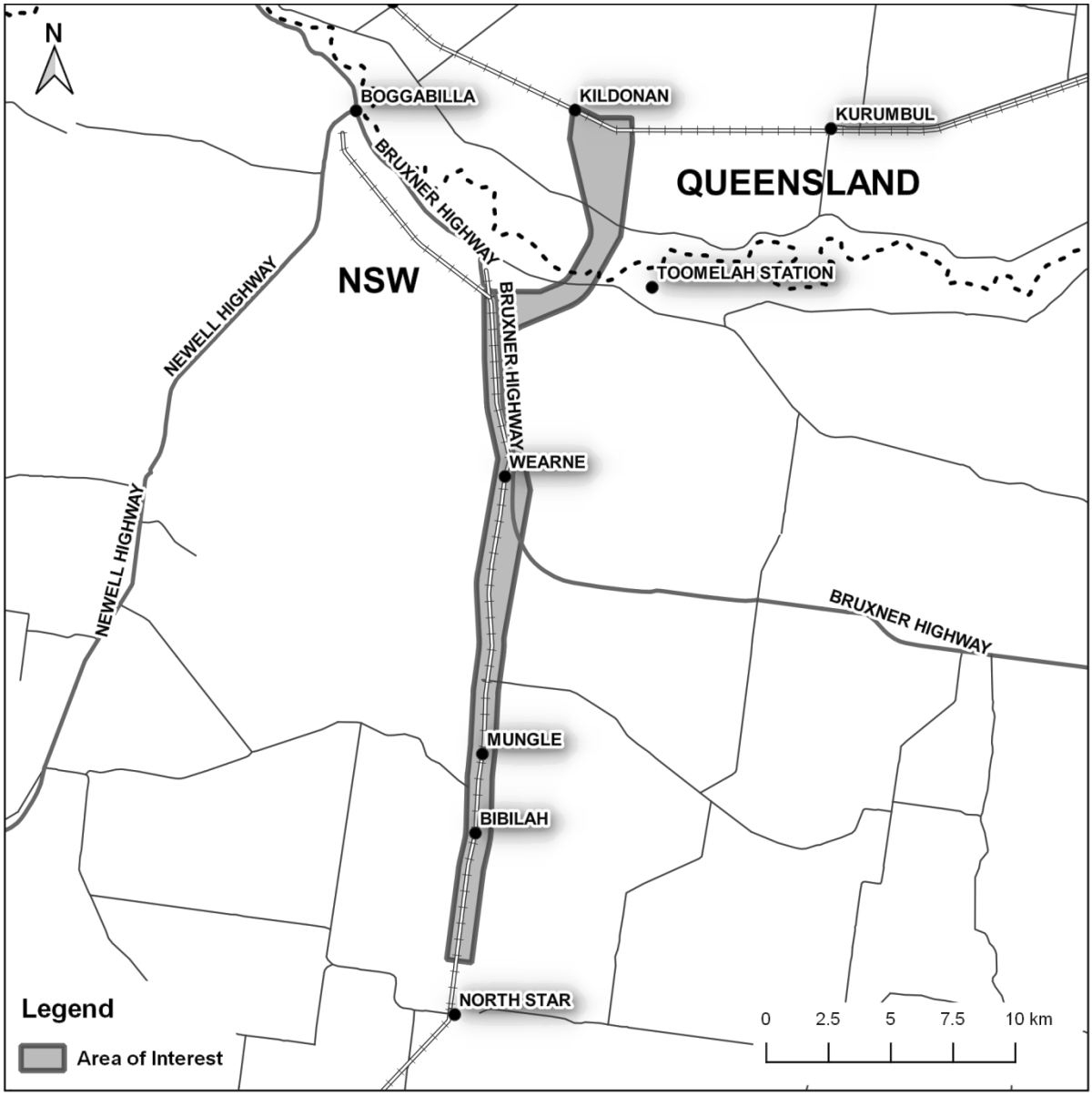

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3 August 2018

Office of Registrar
Aboriginal Land Rights Act 1983 (NSW)
PO Box 5068
Parramatta NSW 2124

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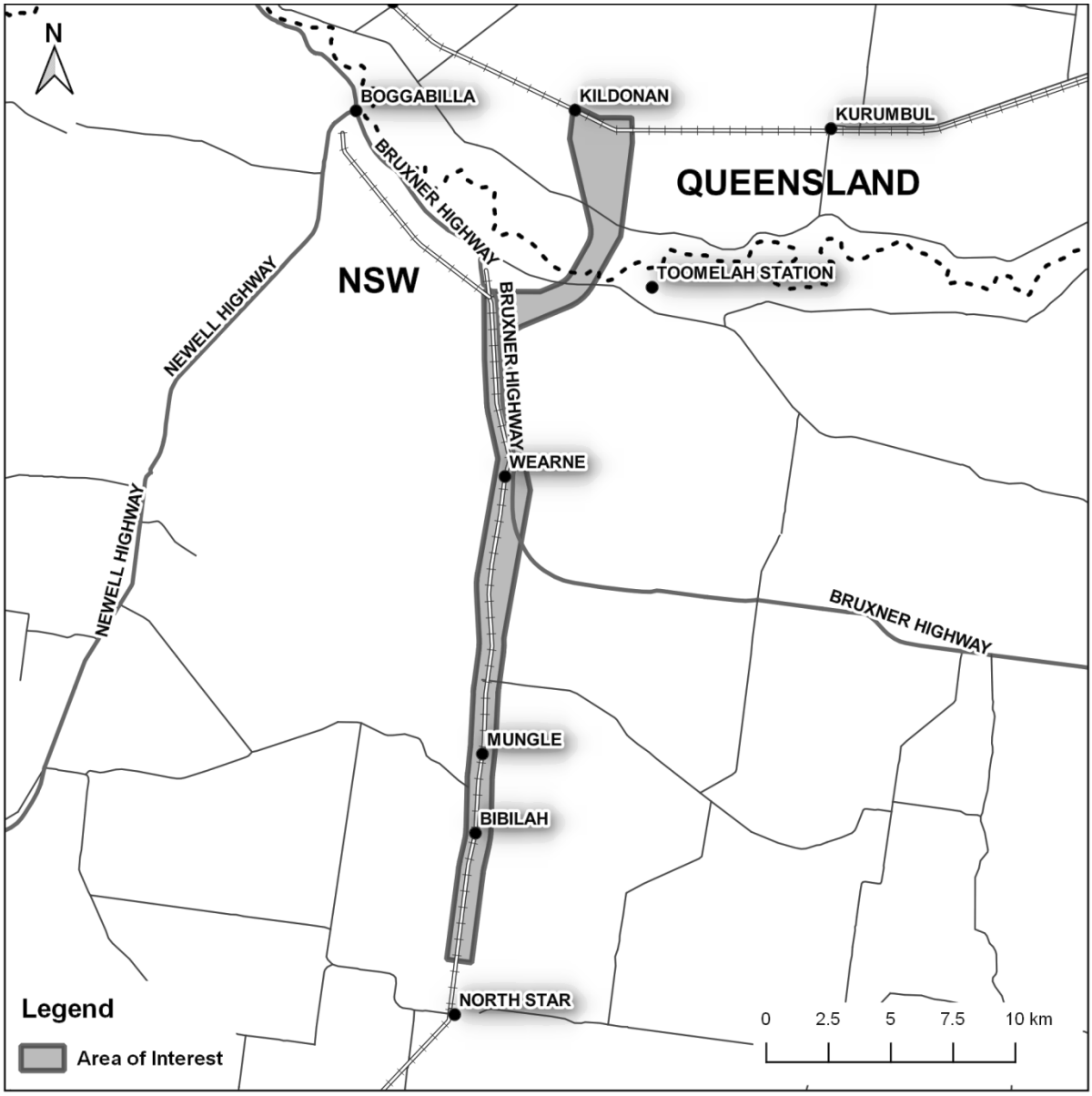

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3 August 2018

Toomelah Aboriginal Land Council
PO Box 261
Boggabilla NSW 2409

To whom it may concern

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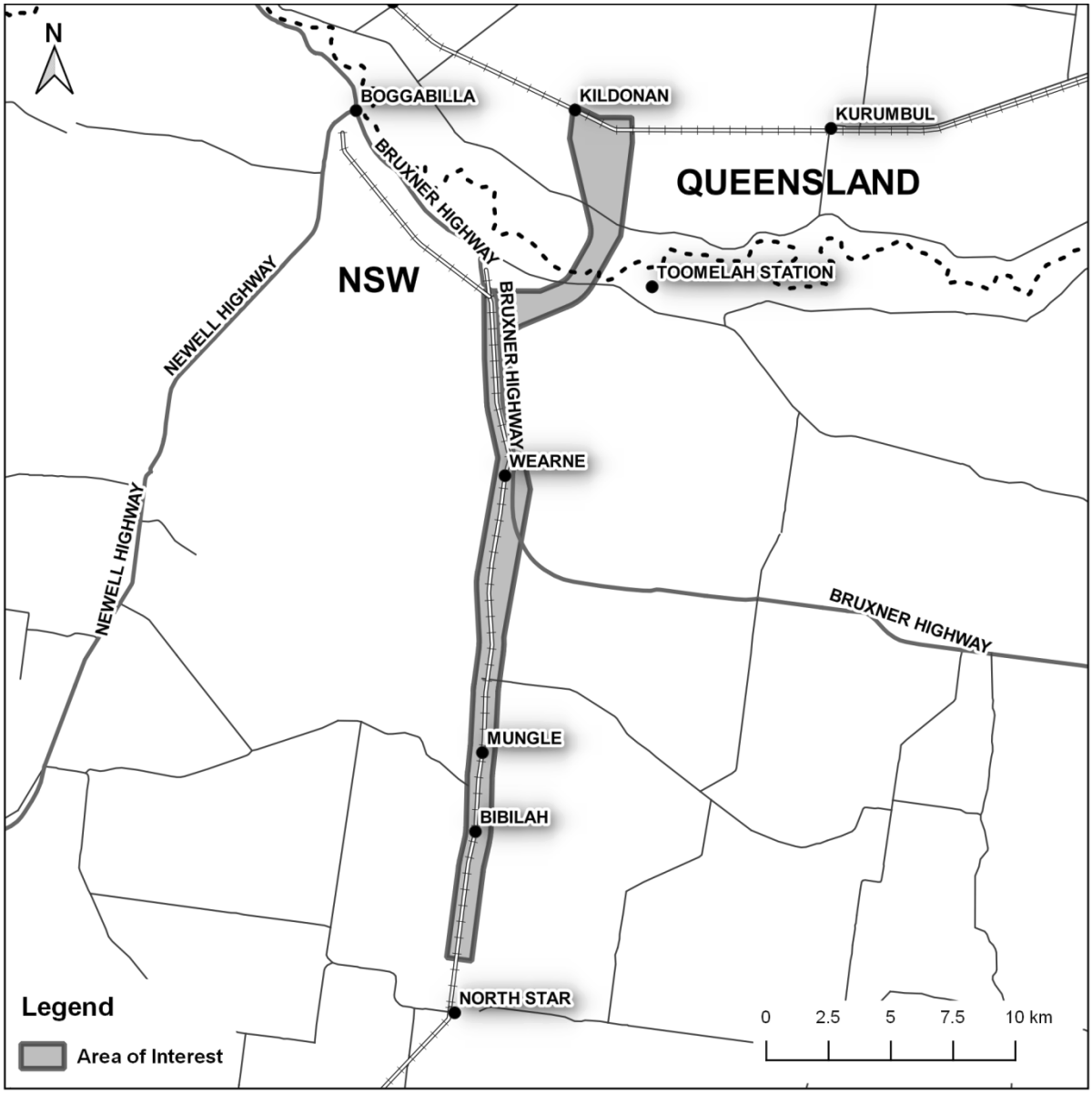

Figure 1 Proposed Study Area

APPENDIX

E

Aboriginal Cultural Heritage and Archaeological Assessment

Appendix C Agency Responses

NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

REQUEST FOR SEARCH OF LAND CLAIM REGISTER

OFFICE OF THE REGISTRAR
ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

Level 3, 2-10 Wentworth Street
Parramatta, 2124
02 8633 1266

PO Box 5068
Parramatta, 2124

Please print all details clearly using block letters

Full name of person requesting search: *(name for correspondence)*

Luke Kirkwood

Name of company: Future Freight Joint Venture

Postal address: PO Box 1307 Fortitude Valley QLD 4006

Email address:

Telephone number: +61 7 3553 3064 Fax number:

Land identifiers:
(lot, DP, reserve number – not crown plan number or vol id)

Parish name: Parish of Merriwa, Whalan, Mobbindry and Mingan

County name: County of Stapylton

To assist the office in assigning priorities, please answer the following:

1) Purpose for which information is required:

Future Freight Joint Venture (FFJV) have been engaged by Australian Rail Track Corporation (ARTC) to undertake an Aboriginal heritage assessment for the proposed Inland Rail Project North Star to Border (NS2B). The assessment will form part of the Environmental Impact Statement (EIS).

2) If urgent consideration is required, reason for urgency:

Signature, position and date:

Luke Kirkwood
Principal Heritage Specialist
2018/06/11

Please note:

1. Searches are completed within 5 working days and returned by ordinary mail.
2. The register covers only crown land.
3. All information is required including a name for correspondence before the search will be completed.
4. The person to whom correspondence is addressed must sign the form.

March 2009

DOC18/625302-1

Mr Luke Kirkwood
Principal Heritage Specialist
Future Freight Joint Venture

luke.kirkwood@aecom.com

Dear Mr Kirkwood

WRITTEN NOTIFICATION AS REQUIRED UNDER OFFICE OF ENVIRONMENT AND HERITAGE (OEH) ABORIGINAL CULTURAL HERITAGE REQUIREMENT FOR PROPONENTS 2010 – INLAND RAIL NORTH STAR TO NSW/QLD BORDER

I refer to your letter dated 15 May 2018 to the Office of Environment and Heritage (OEH) regarding the above matter.

A list of known Aboriginal parties that OEH considers is likely to have an interest in this development is attached as Attachment 1 (overleaf). Please note this list is not necessarily an exhaustive list of all interested Aboriginal parties and receipt of this list does not remove the requirement of a proponent/consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties, in accordance with the requirements of Section 80C of the National Parks and Wildlife Regulation 2009.

Should you require further information regarding issues that are the responsibility of the OEH please contact Ellie Dean, Conservation Planning Officer on (02) 6883 5358.

Yours sincerely

Samantha Wynn

SAMANTHA WYNN
Senior Team Leader Planning - North West
Conservation and Regional Delivery

30 August 2018

Contact officer: ELLIE DEAN
02 6883 5358

PO Box 2111 Dubbo NSW 2830
Level 1, 48-52 Wingewarra Street Dubbo NSW 2830
Tel: (02) 6883 5330 Fax: (02) 6884 8675
ABN 30 841 387 271
www.environment.nsw.gov.au

ATTACHMENT 1

Table 1: List of aboriginal stakeholder groups within the Gwydir Local Government Area and the Moree Local Government Area - that may have an interest in the project; provided as per the "OEH aboriginal cultural heritage requirement for proponents 2010".

Organisation/Affiliation	Name/Title	Address
AT Gomilaroi Cultural Consultancy	Aaron Talbott	13 Hunter Street, Gunnedah NSW 2380
	Brian Draper	7 Sovereign Street, Dubbo NSW 2830
Gomeroi Narrabri Aboriginal Corporation	Chairperson (Craig Trindall)	29 Doyle Street, Narrabri NSW 2390
	Kevin Sampson	1 Martyn Street, Breeza NSW 2381
	Lorraine Towney	32 Dewhurst Street, Quirindi NSW 2343
	Michael Long	17 Albion Street, Gunnedah NSW 2380
Moree LALC	Chairperson	PO Box 924, Moree NSW 2400
	Natasha Rogers	7 Toy Court, Wodonga VIC 3690
Nyakka Aboriginal Corporation	Rhonda Kitckener	265 Rusden Street, Armidale NSW 2350
	Paul Moodie	15 Schwager Street, Gunnedah NSW 2380
	Ray Tighe	PO Box 3074, East Moree NSW 2400
	Ron Smith	Flat 8, 6 Hasting River Drive, Port Macquarie NSW 2444
	Ronald Long	32 High Street, Gunnedah NSW 2380
	Roslyn Smith	Unit 4, 122 Upper Street, Tamworth NSW 2340
	Alison Sampson	36 Hill Street, Caroona NSW 2343
BJC Cultural Management	Ben Cameron	11 Stanley Street, Gunnedah NSW 2380
D F T V Enterprises	Derrick Vale	5 Mountbatten Close, Rutherford NSW 2320
	Donna Moodie	PO Box 356, Darling Heights QLD 4350
Gomeroi Murri Ganuurr Yuuray Wadi Palinka	Greg Griffith	4 Wattle Street, Gunnedah NSW 2380
	Hazel Collins	3 Carroll Street, Gunnedah NSW 2380
	Jason Wilson	23 Clews Street, Dubbo NSW 2830
	Kevin Sampson	1 Martyn Street, Breeza NSW 2381
KL.KG Saunders Trading Service		6 Bowfield Place, Muswellbrook NSW 2333
Luke Cameron Cultural Management		28 Herbert Street, Gunnedah NSW 2380
	Mavonia Welsh	1 Yabsley Avenue, Marrickville NSW 2204
ME Griffiths Cultural Management	Marie- Ellen Griffiths	10 Herbert Street, Gunnedah NSW 2380
	Michelle Saunders	24 Walhallow Village, Walhallow NSW 2340
Mungindi LALC	Chairperson	PO Box 26. Mungindi NSW 2406
	Scott Smith	Unit 4, 122 Upper Street, Tamworth NSW 2340
	Steve Saunders	35 Walhallow Village, Caroona NSW 2343
T&G Culture Consultants	Tony Griffiths	4 Wattle Street, Gunnedah NSW 2380
	Tania Mathews	23 Reid Street, Narrabri 2390
Terry Hie Hie Aboriginal Co-op	Karen Craigie	4 Clarke Avenue, Moree NSW 2400

APPENDIX

E

Aboriginal Cultural Heritage and Archaeological Assessment

Appendix D Newspaper Advertisements

NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

Aboriginal Cultural Heritage Assessment: Call for Registrations

Inland Rail - North Star to NSW/QLD Border (NS2B) project (the Project)

Australian Rail Track Corporation, Inland Rail,
GPO Box 2464, Queen Street, Brisbane QLD 4000

Notice given under cl 80(2)(c) of the National Parks and Wildlife Regulation 2009 and Section 4.1.3 of the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 Future Freight Joint Venture (FFJV), on behalf of Australian Rail Track Corporation (ARTC), is seeking to identify Aboriginal persons or organisations who wish to be consulted in relation to an Aboriginal cultural heritage assessment for the North Star to NSW/QLD Border (NS2B) section, which is one of 13 projects that comprise the Inland Rail Programme.

ARTC proposes to undertake a heritage assessment to inform the concept design, modelling and preparation of the Environmental Impact Statement (EIS) for the NS2B project. The Area of Interest, which is up to 2km wide, follows the existing disused rail corridor from North Star towards Boggabilla and then crosses the Macintyre River before joining the existing Queensland Rail South Western rail line in Queensland. The NS2B project will involve constructing a new rail line in the existing corridor and over the river.

The Aboriginal cultural heritage assessment and consultation with Aboriginal People will form part of the EIS being prepared to support a development application for Development Consent under Part 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act) for the NS2B project. The NS2B project will apply to the Department of Planning and Environment to declare State Significant Infrastructure (SSI).

Interested Aboriginal persons and/or organisations who hold cultural knowledge relevant to determining the cultural significance of Aboriginal object(s) and/or places in the Area if Interest and wish to participate in a process of community consultation with the proponent regarding the proposed activity are requested to register their interest in writing to:

Luke Kirkwood c/- Future Freight Joint Venture
mi67(Mail_Box EM.eps)] PO Box 1307, Fortitude Valley, Brisbane Queensland
☎ Phone: +61 7 3553 3064 Fax: +61 7 3553 2050
✉ Email: luke.kirkwood@aecom.com

Please be advised that if you register an interest in consultation, your details will be forwarded to the Office of Environment and Heritage and the Toomelah Local Aboriginal Land Council, unless you specify that you do not want your details released.

The closing date for registration is 22/11/18.

Aboriginal Cultural Heritage Assessment: Call for Registrations

Inland Rail-North Star to NSW/QLD Border (NS2B) project (the Project)

Australian Rail Track Corporation, Inland Rail, GPO Box 2464, Queen Street, Brisbane QLD 4000

Notice given under cl 80(2)(c) of the National Parks and Wildlife Regulation 2009 and Section 4.1.3 of the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010

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Luke Kirkwood
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PO Box 1307 Fortitude Valley
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Phone: +61 7 3553 3064
Fax: +61 7 3553 2050
Email: luke.kirkwoodaecom.com

Please be advised that if you register an interest in consultation, your details will be forwarded to the Office of Environment and Heritage and the Toomelah Local Aboriginal Land Council, unless you specify that you do not want your details released.

The closing date for registration is XX/XX/18.

APPENDIX

E

Aboriginal Cultural Heritage and Archaeological Assessment

Appendix E Aboriginal Heritage Information Management System Site Cards

NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

Appendix E

Aboriginal Heritage Information Management System Site Cards

The site cards contain culturally sensitive information and have been removed from the public report.

APPENDIX

E

Aboriginal Cultural Heritage and Archaeological Assessment

Appendix F Aboriginal Site Summaries

NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT

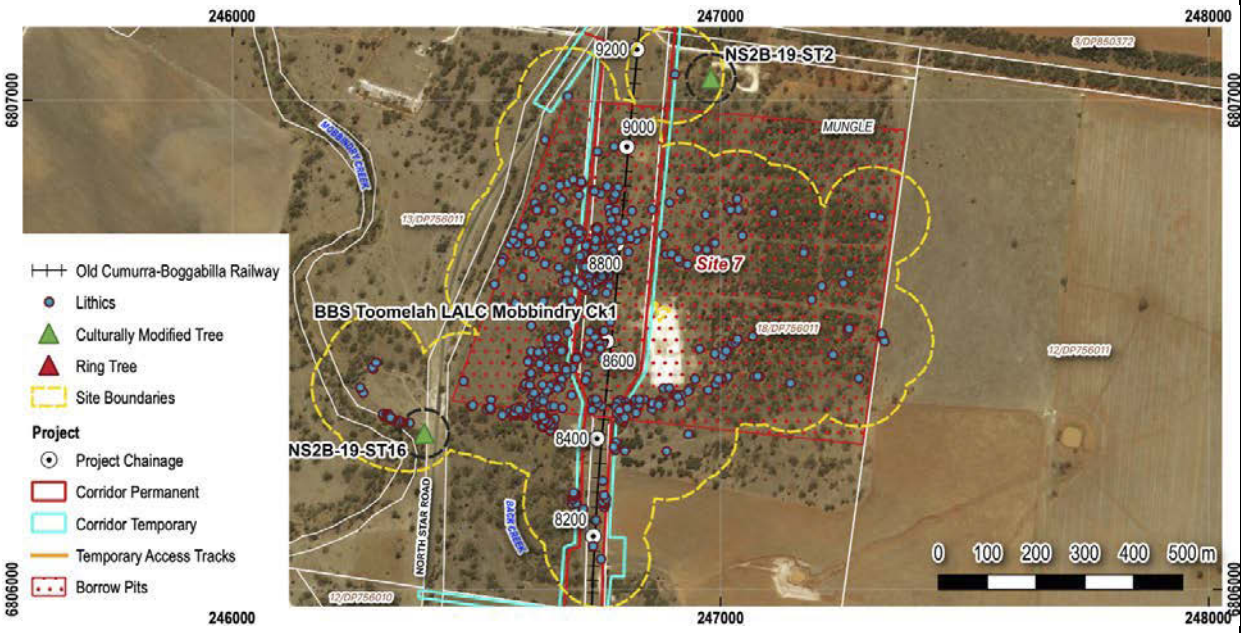
The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

Artefact Scatters

Name: BBS Toomelah LALC Mobbindry Ck1	AHIMS ID: 2-4-0046		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Located on a flat at the confluence of Mobbindry Creek and Back Creek, north of the North Star Road. Location is a reserve managed by Rural Lands Protection Boards - Northern Slopes (Lot 18/DP756011, Lot 4908/FP1236542, Lot 1011/DP1173424, Lot 12/756011, and Lot 13/756011). Extends approximately 400 m east and west of proposed alignment.	8020 - 9250m	246829mE	6806567mN

Description

The site is a very high-density artefact scatter located on the aggrading banks of Mobbindry Creek and Back Creek. Site was originally recorded by as part of the Brigalow Belt South Regional Study (2002). A total of 566 lithic artefacts were identified including 476 flakes (complete, broken, and/or angular shatter), 67 cores (multidirectional, bidirectional, unidirectional), 22 flake tools, and one hatchet head. Raw materials include silcrete, chert, quartz, quartzite, fine grained siliceous, basalt, chalcedony, petrified wood, glass, quartz/silcrete, volcanic, and other unidentified materials. Area shows evidence of recent land clearance with areas adjacent to the rail corridor being heavily aggraded, but subsurface potential still remains. A scarred tree (NS2B-19-ST16) was identified at the south east corner of the reserve boundary along Mobbindry Creek.



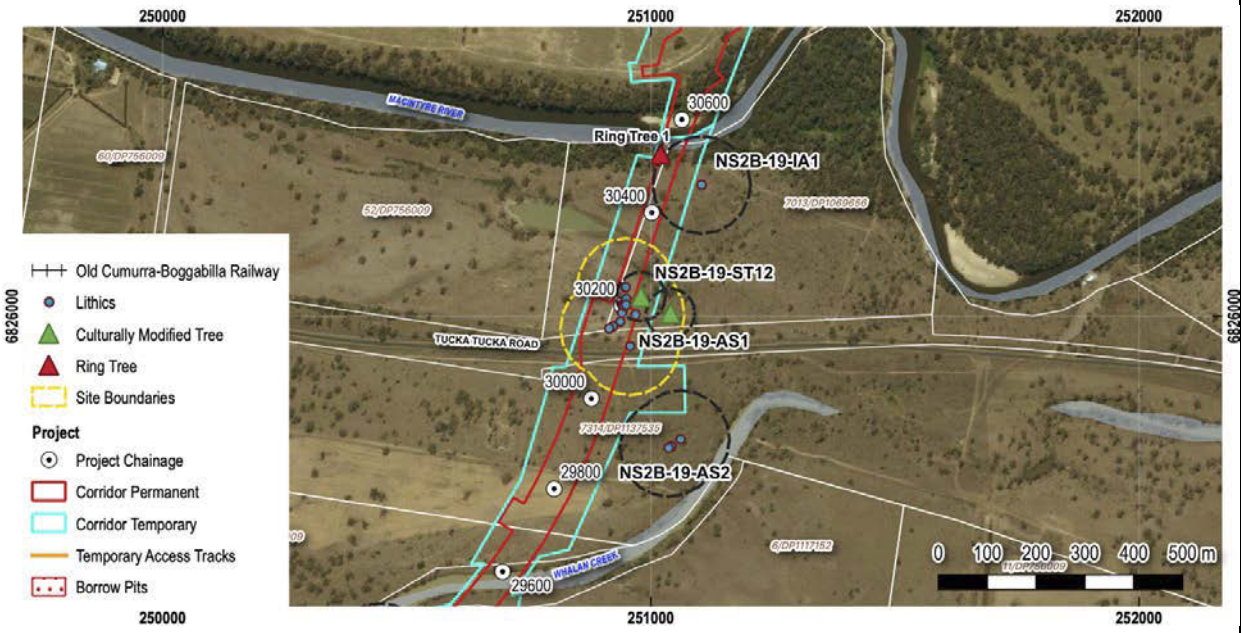
Name: BBS Toomelah LALC Mobbindry Ck1	AHIMS ID: 2-4-0046
Stone artefacts observed at AHIMS 2-4-0046	General aggrading landform where artefacts were observed. Mobbindry Creek in the background

General view of AHIMS# 2-4-0046 facing west (AECOM 2018)

Name: NS2B-19-AS1	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 7013/DP1069656, Lot 6DP1117152, and the Road Reserve of Tucka Tucka Road on a raised river terrace, 330m south of the Macintyre River.	30020-30300m	250947mE	6825996mN

Description

The site is a low-density artefact scatter of at least 11 artefacts. This includes nine flakes (complete, broken, and/or angular fragment), one bifacial artefact, and one multidirectional core. Raw materials include quartz, silcrete and fine grained siliceous. Surface artefacts are exposed following ploughing within paddock with near 100% GSV. Potential for subsurface artefacts to be present but limited to raised river terrace.



NS2B-19-AS1 Quartz bifacial artefact

NS2B-19-AS1 Complete silcrete flake

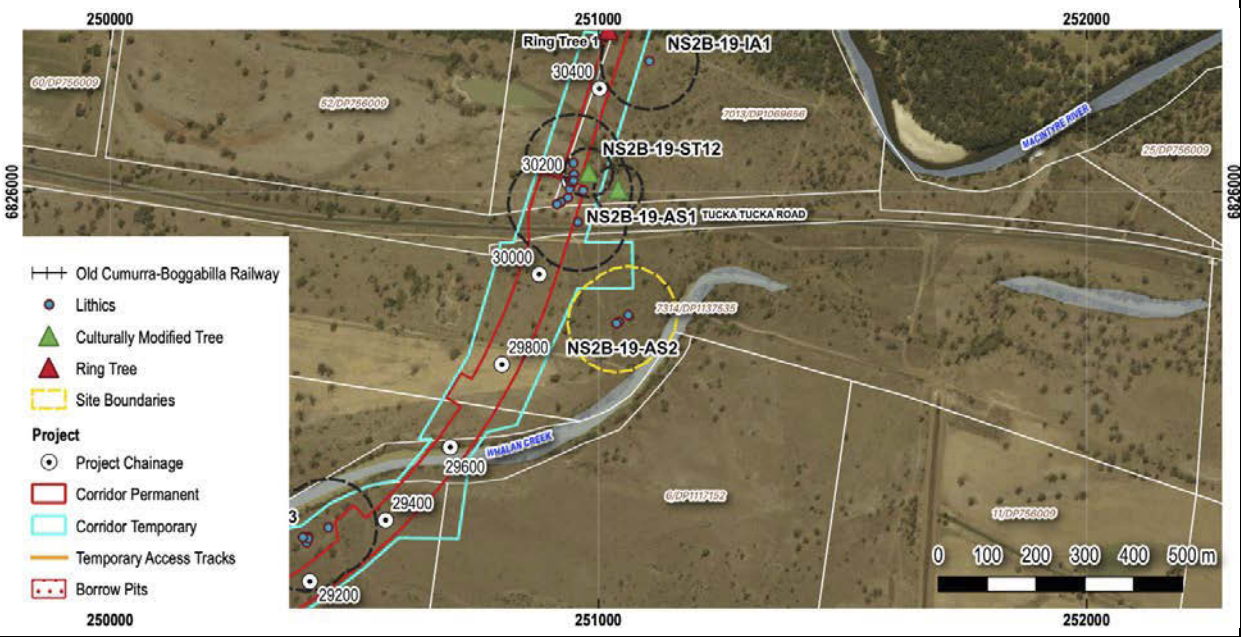
Name: NS2B-19-AS1	AHIMS ID:

Context shot of NS2B-18-AS1 showing ploughed field looking east

Name: NS2B-19-AS2	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 7314/DP1137535 in a paddock 70m northwest of Whalan Creek. Paddock has been historically cleared and is covered in patchy grass and introduced low lying weeds.	30030-29830m	251049mE	6825739mN

Description

The site is a low-density artefact scatter of three artefacts. All three artefacts are complete flakes, all silcrete.



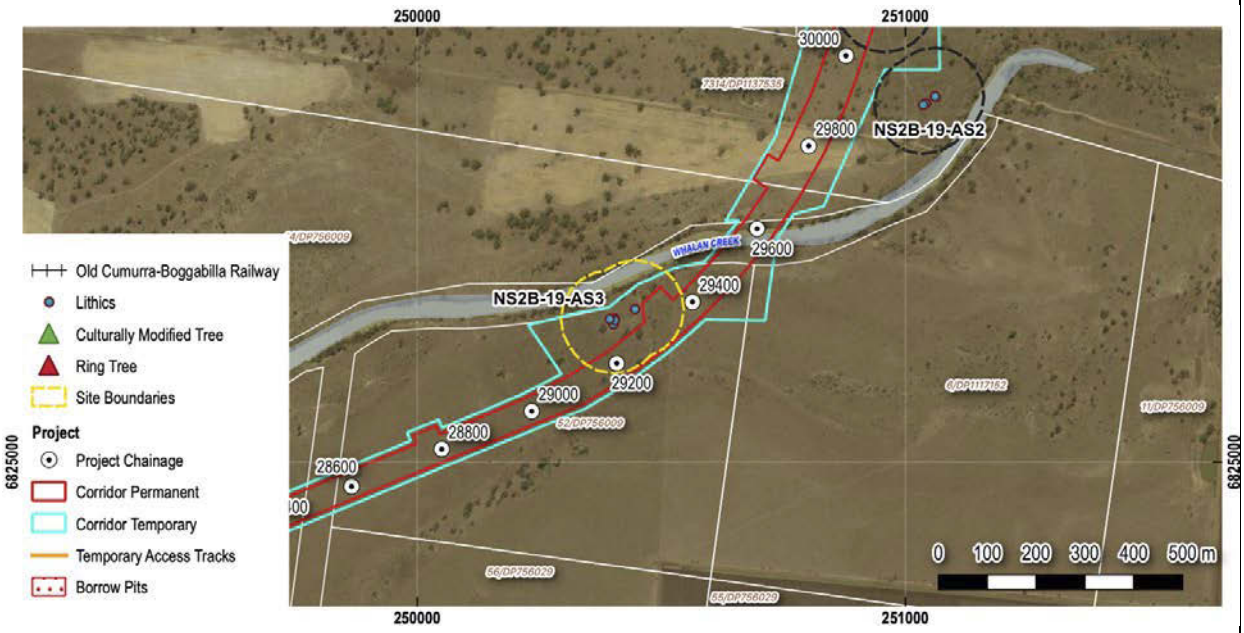
NS2B-19-AS2 Silcrete complete flake

NS2B-19-AS2 Context shot looking south east

Name: NS2B-19-AS3	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 52/DP756009 in a paddock 50m south of Whalan Creek.	29120-29400m	250420mE	6825299mN

Description

The site is a low-density artefact scatter of at least five artefacts. Four are flakes (complete or broken) and the other is a sandstone grindstone likely a muller. The raw materials of the flakes include chert and quartz. The grindstone is characterised by a very smooth ventral surface and dorsal cortex. It has a length of 130mm, width of 110mm, and thickness of 30mm. No suitable millstone was identified despite general good ground surface visibility. This important artefact was relocated to a nearby tree at the request of Aboriginal field representatives for relocation purposes should the site be impacted in the future. Potential for subsurface artefacts to be present, but limited as artefacts found on a small very slightly elevated area surrounded by black soils where potential is expected to be closer to zero.



NS2B-19-AS3 Sandstone grindstone ventral surface

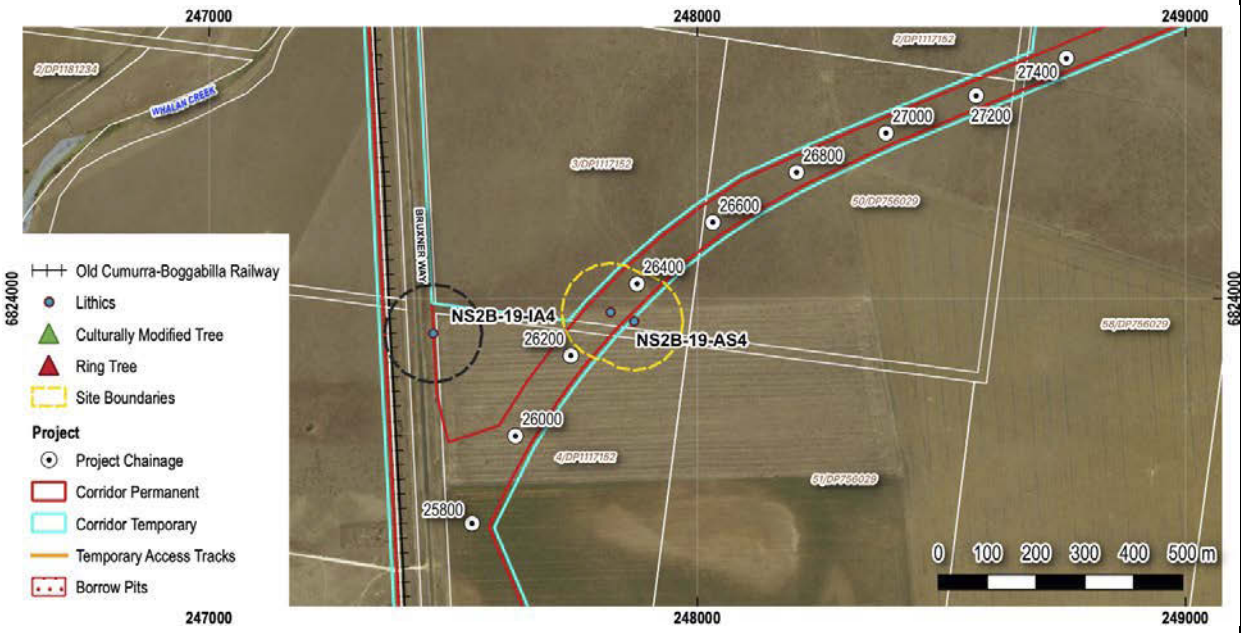
NS2B-19-AS3 Sandstone grindstone dorsal surface

Name: NS2B-19-AS3	AHIMS ID:
NS2B-19-AS2 Sandstone grindstone comparison of surfaces	NS2B-19-AS2 Context shot looking north east

Name: NS2B-19-AS4	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 3/DP1117152 in ploughed paddock, 370m east of Bruxner Way.	26220-26410m	247847mE	6823963mN

Description

The site is a low-density artefact scatter of two artefacts. One artefact is a complete quartzite flake with a plain platform and feather termination. It includes 1-32% cortex and is yellow-brown in colour. The flake is 35mm long, 20mm wide, and 5mm thick. The other artefact is a unidirectional silcrete core. No cortex is present, it has two flake scars, and is dark grey in colour. It is 35mm long, 15mm wide, and 12mm thick. Despite 100% ground surface visibility, no further artefacts were identified.



NS2B-19-AS4 Complete quartzite flake

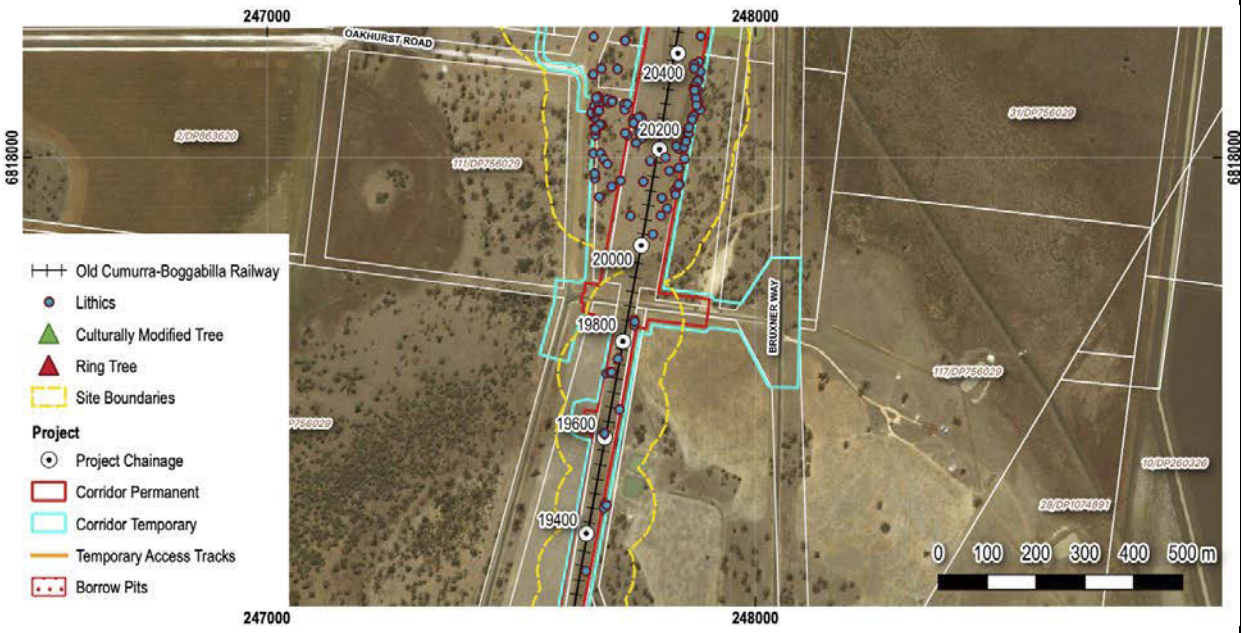
NS2B-19-AS4 Silcrete unidirectional core

Context shots looking south across paddock

Name: NS2B-19-AS5	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 117/DP756029, Lot 100/DP756029, Lot 111/DP756029, Lot 99/DP756029, Lot 100/DP756029, Lot 4909/DP1236540, and a road reserve in an existing rail easement corridor on both the east and west sides of the railway. Many of the artefacts in the north west of the site have been exposed through the creation of drainage contour banks.	18870-20800m	247702mE	6817817mN

Description

The site is a very high-density artefact scatter of at least 568 artefacts. This includes 506 flakes (complete, broken and/or angular fragment), 60 cores (unidirectional, bidirectional, or multidirectional), one grindstone (possible muller), and one bifacial artefact. Raw materials include silcrete, chert, quartz, fine grained siliceous, quartzite, petrified wood, quartz crystal, chalcedony, sandstone, volcanic, and other material artefacts. The grindstone is characterised by a very smooth ventral surface and dorsal cortex. It has a length of 130mm, width of 120mm, and thickness of 30mm. No suitable millstone was identified despite general good ground surface visibility. Superficially the grindstone is typologically similar to the grindstone recorded at NS2B-19-AS3.

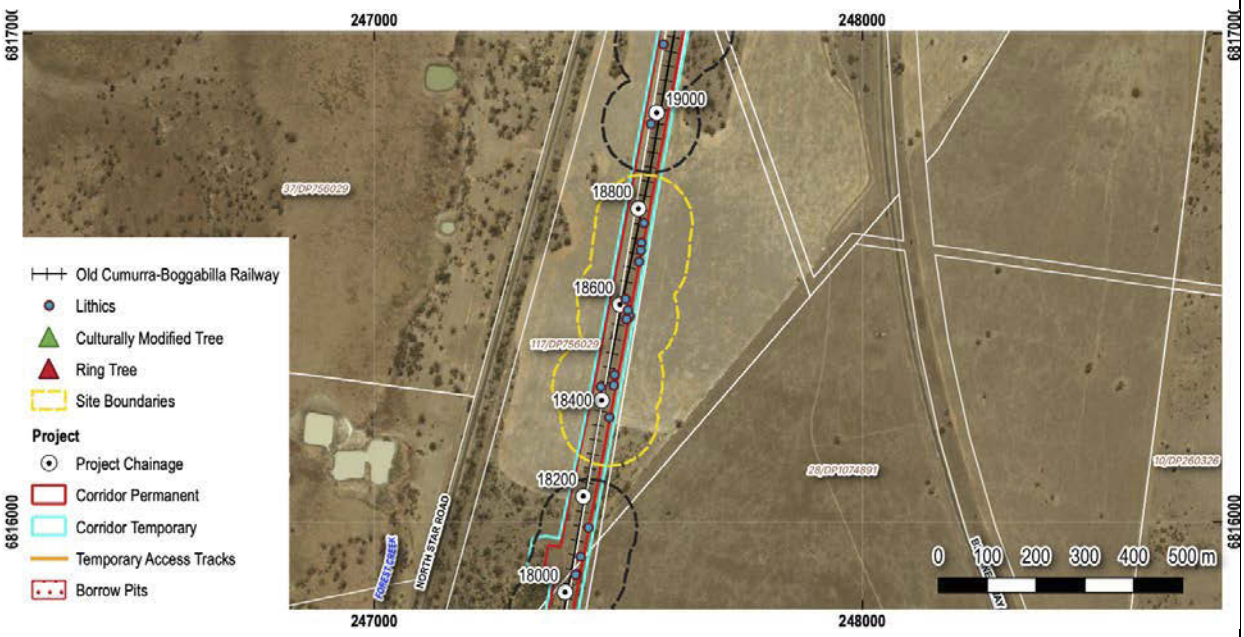


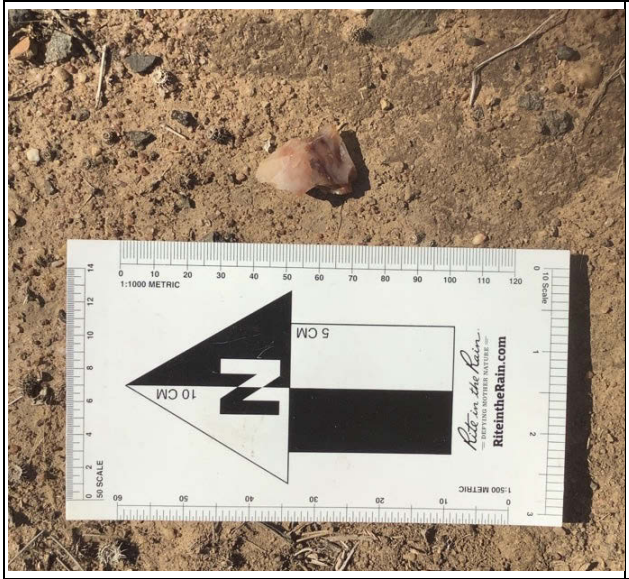
Name: NS2B-19-AS5	AHIMS ID:
NS2B-19-AS5 Sandstone muller	NS2B-19-AS5 Contour bank where many artefacts were located
NS2B-19-AS5 Chert core	NS2B-19-AS5 Chert flake

Name: NS2B-19-AS6	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 117/DP756029 and Lot 4909/DP1236540 in an existing rail easement on both the east and west sides of the railway.	18880-20800m	247513mE	6816411mN

Description

The site is a low-density artefact scatter of 13 artefacts. 10 flakes (complete, broken, and/or angular shatter) and 3 cores (multidirectional or unidirectional). Raw materials include silcrete, chert, chalcedony, quartz, petrified wood, and indurated tuff. Site is likely an extension of NS2B-19-AS5.





NS2B-19-AS6 Chalcedony flake

NS2B-19-AS6 Context shot looking north towards North Star Road level crossing

Name: NS2B-19-AS7	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 117/DP756029, Lot 4909/DP1236540; Lot 28/DP1074891; and Lot 7/756011 on both the east and west sides of the railway and just north of the Forest Creek crossing. Site is located mainly within an existing rail easement.	18220-16790m	247307mE	6815364mN

Description

The site is a moderate-density artefact scatter of 165 artefacts. 43 flakes (complete, broken, and/or angular shatter), three flake tools, and 19 cores (multidirectional or bidirectional). Raw materials include silcrete, chert, quartz, petrified wood, and indurated tuff.

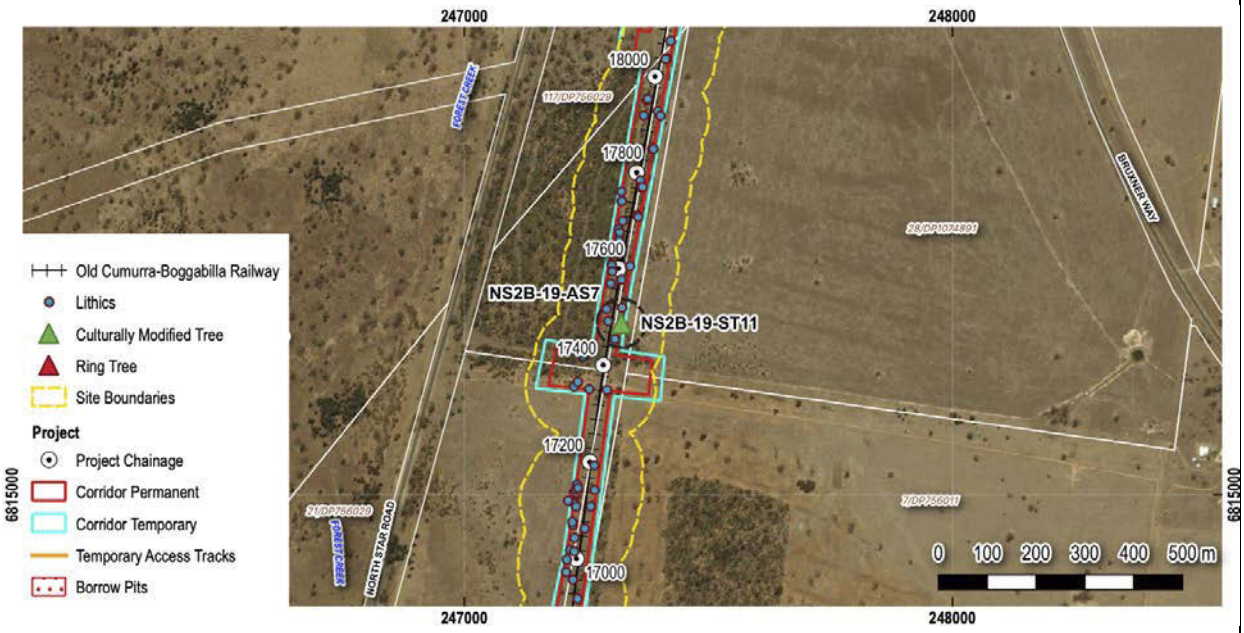
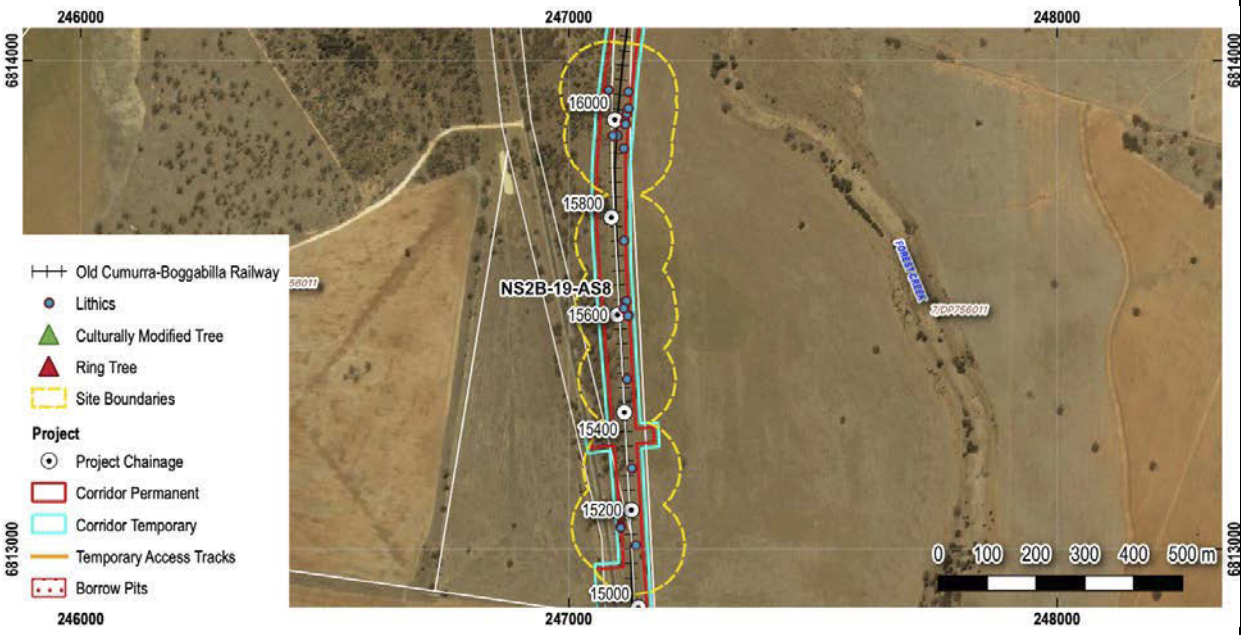


Plate 22 NS2B-19-AS7 Silcrete multidirectional core

Location of artefact facing north

Name: NS2B-19-AS8	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 7/DP756011 and Lot 4909/DP1236540; in an existing rail easement on the east and west sides of the railway, 200m west of Forest Creek	16180-15200m	247116mE	6813485mN
Description			
The site is a low-density artefact scatter of 22 artefacts. 17 flakes (broken, complete, or angular shatter) and 5 cores (bidirectional, multidirectional, or unidirectional). Raw materials include silcrete, petrified wood, and quartz artefacts.			



NS2B-19-AS8 Multiplatform silcrete core

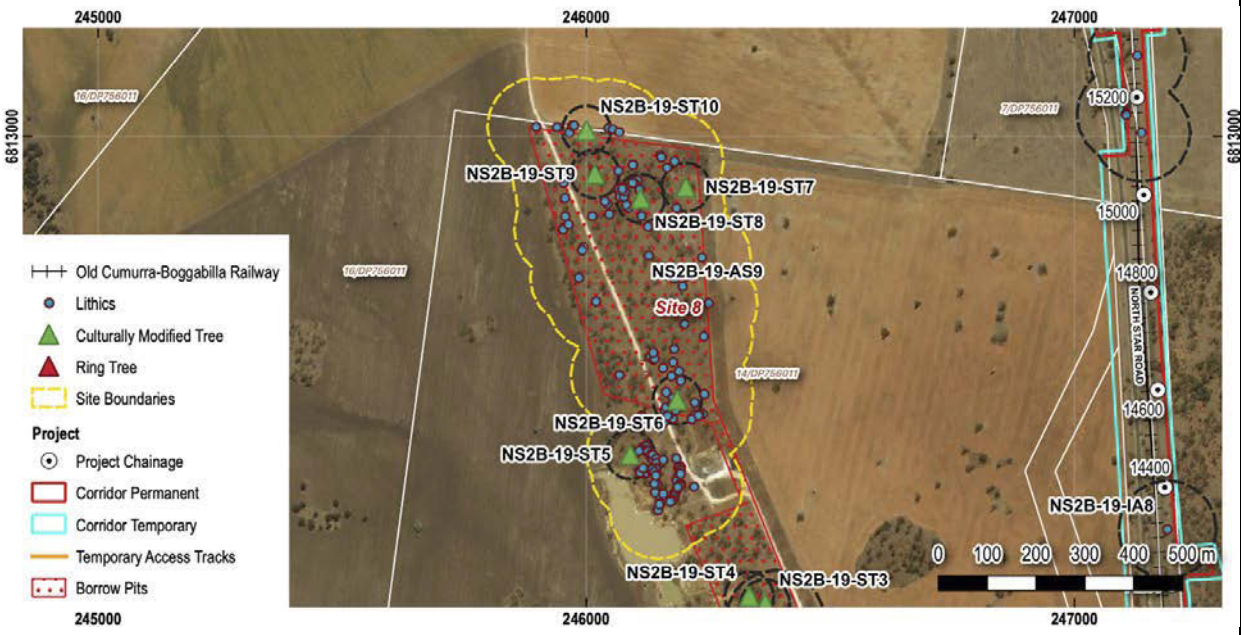
NS2B-19-AS8 Quartzite proximal flake

Name: NS2B-19-AS8	AHIMS ID:
NS2B-19-AS8 Context looking north	NS2B-19-AS8 Context looking south

Name: NS2B-19-AS9	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 14/DP756011 and Lot 16/DP756011 880m west of the railway.	15200-14300m	246106mE	6812675mN

Description

The site is a high-density artefact scatter. This includes 168 artefacts. 127 flakes (complete, broken, and/or angular shatter) and 21 cores (Multidirectional, unidirectional, or bifacial) and 20 flake tools. Raw materials include silcrete, chert, quartzite, chalcedony, fine grained siliceous, and quartz.

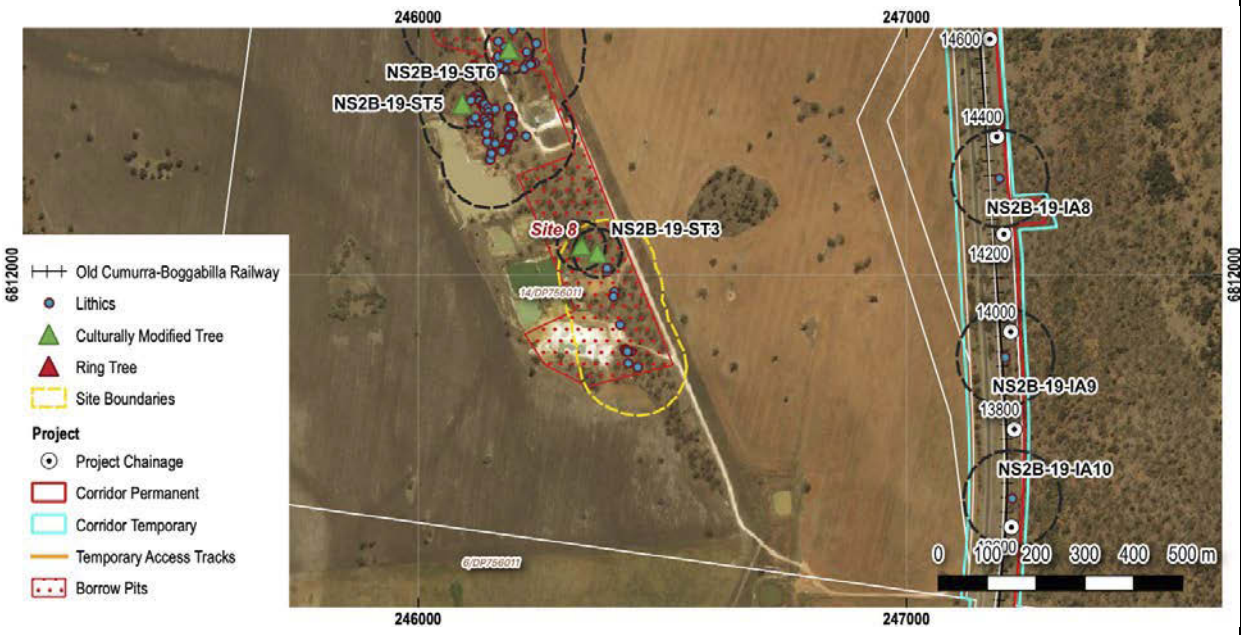


Location of artefacts facing south	Location of artefacts facing south

Name: NS2B-19-AS10	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 14/DP756011 740m west of the railway. The site is adjacent to existing borrow pits.	13800-14200m	246415mE	6811909mN

Description

The site is defined by a low-density artefact scatter of at least 13 artefacts. This includes 11 flakes (complete, broken, and/or angular shatter), 1 core (unidirectional) and 1 flake tool. Raw materials include silcrete, chert, chalcedony, and fine grained siliceous.



NS2B-19-10 Silcrete unidirectional core

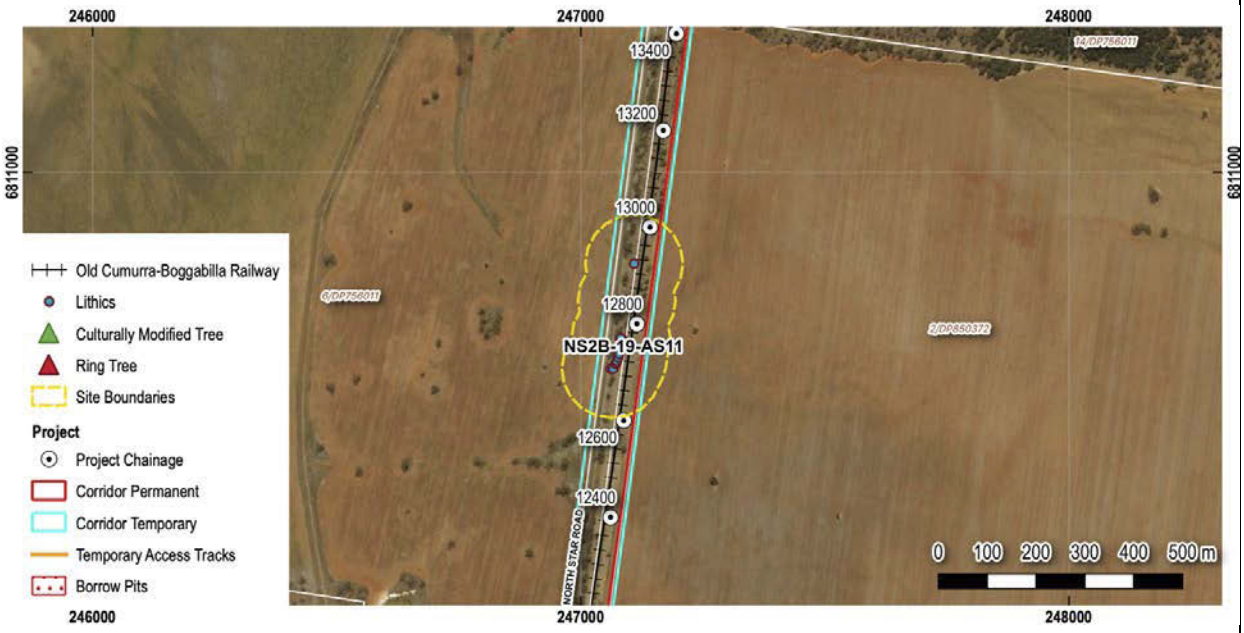
NS2B-19-AS10 Complete chert flake

Name: NS2B-19-AS10	AHIMS ID:
Location of artefacts facing west towards borrow pits	

Name: NS2B-19-AS11	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 4909/DP1236540 and North Star Road reserve on a shallow rise, equidistantly (1.7 km) between Mobbindry Creek and Forest Creek. Site is located on the western edge of the existing rail easement, and east of the North Star Road.	12600-13020m	247088mE	6810703mN

Description

The site is a low density artefact scatter of at least 15 artefacts. Artefacts have likely been exposed through the grading process. The majority of artefacts recorded were grey silcrete with one quartzite and one volcanic flaked piece. One thumbnail scraper was also identified in the assemblage. Thumbnail scrapers are defined as small flakes with a convex scraper edge, shaped like a thumbnail (Holdaway & Stern, 2004, p. 234; Wright, 1970).



NS2B-19-AS11 - Surface Archaeological Concentration 1

NS2B-19-AS11 - Surface Archaeological Concentration 2

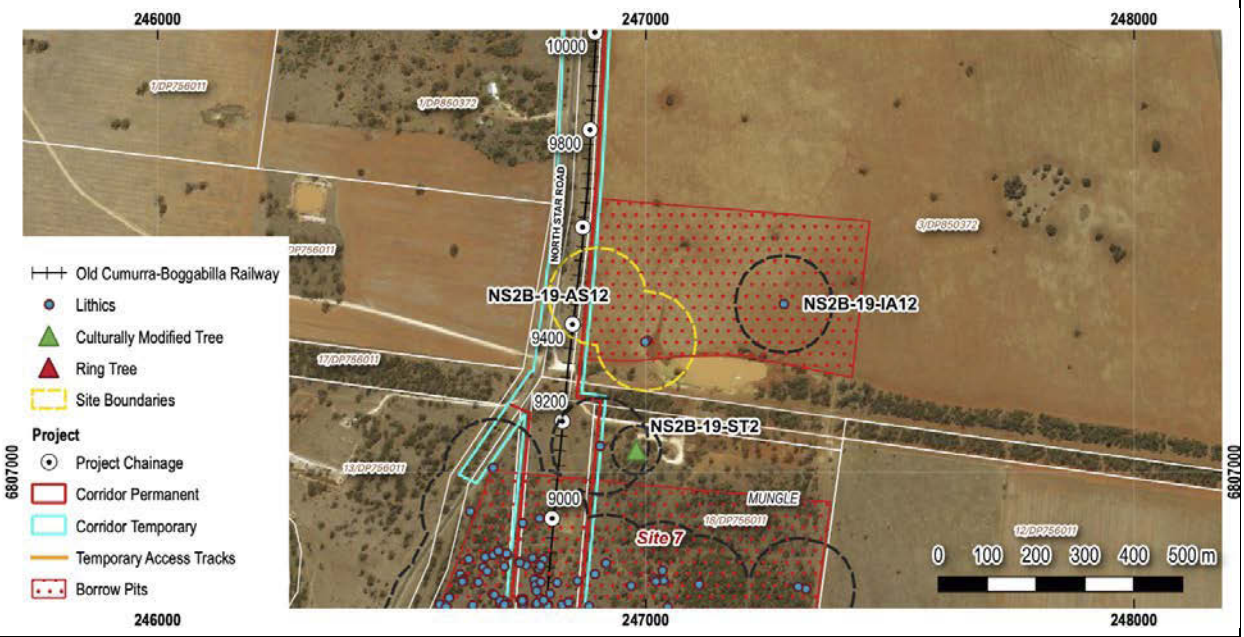
Name: NS2B-19-AS11	AHIMS ID:

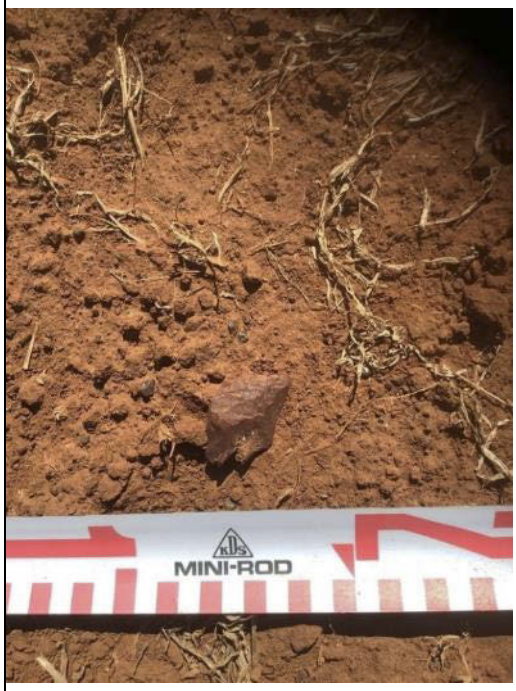
Context shot of NS2B-19-AS11 showing surface clearance by grader looking south

Name: NS2B-19-AS12	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 3/DP850372 in a ploughed field and is located directly east of the railway.	9300-9580m	246952mE	6807313mN

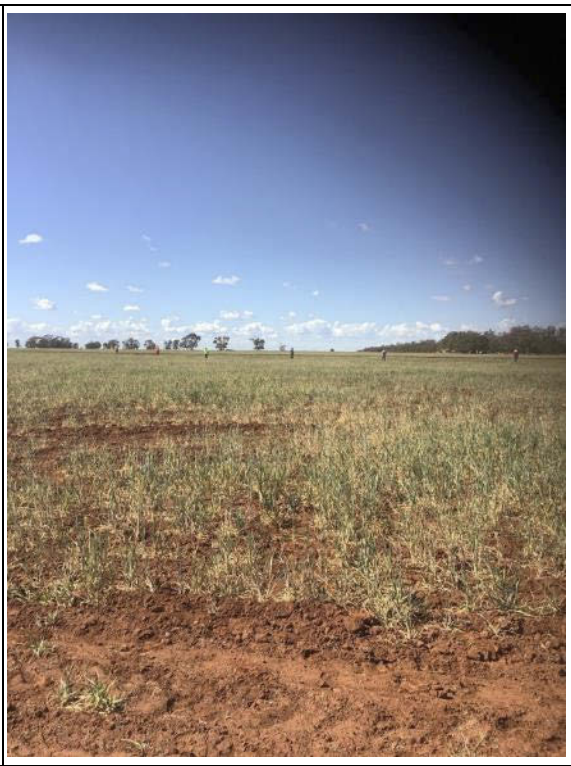
Description

The site is a low-density artefact scatter of at least 3 artefacts. Two flakes (complete and distal), and one multidirectional core. Raw materials include silcrete and chert.





NS2B-19-AS12 Complete silcrete flake



Location of artefact facing east

Name: NS2B-19-AS13	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 243/DP756010, and Lot 4908/DP1236542 and is within an existing rail easement. It is on the east and west sides of the railway.	7450-8050m	246730mE	6805653mN

Description

The site is a low-density artefact scatter of at least 10 artefacts. This includes seven flakes (complete, broken, angular shatter), one flake tool, and two cores (multidirectional, unidirectional). Raw materials include silcrete and chert.

NS2B-19-AS13 Silcrete flake tool

NS2B-19-AS13 Silcrete multidirectional core

Name: NS2B-19-AS13	AHIMS ID:
Context of artefacts in transportation corridor	

Name: NS2B-19-AS14	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 6/DP756010 and Lot 4908/DP1236542 in an existing rail easement. The site is on the east and west sides of the railway, 300m southwest of Back Creek, and is directly north or the North Star Road Rail Crossing.	7130-7390m	246731mE	6805161mN

Description

The site is a low-density artefact scatter of at least six artefacts. This includes five flakes (complete or broken) and 1 multidirectional core. Raw materials include 100% silcrete artefacts.

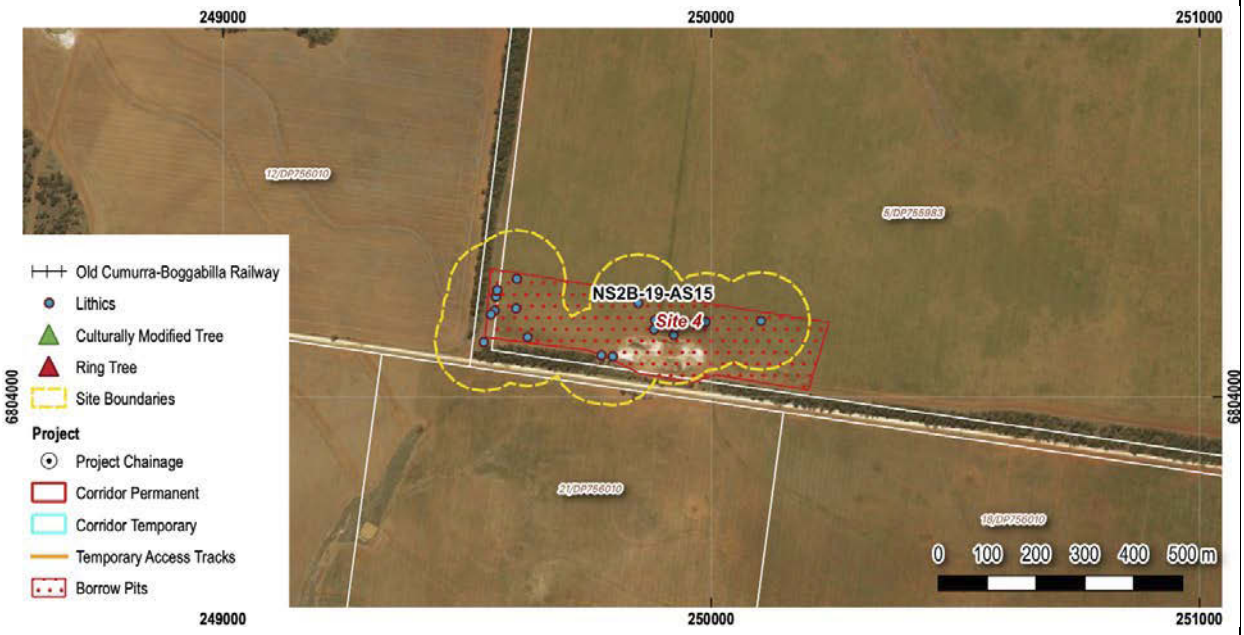
NS2B-19-AS14 Complete silcrete flake

Location of artefacts within transport corridor

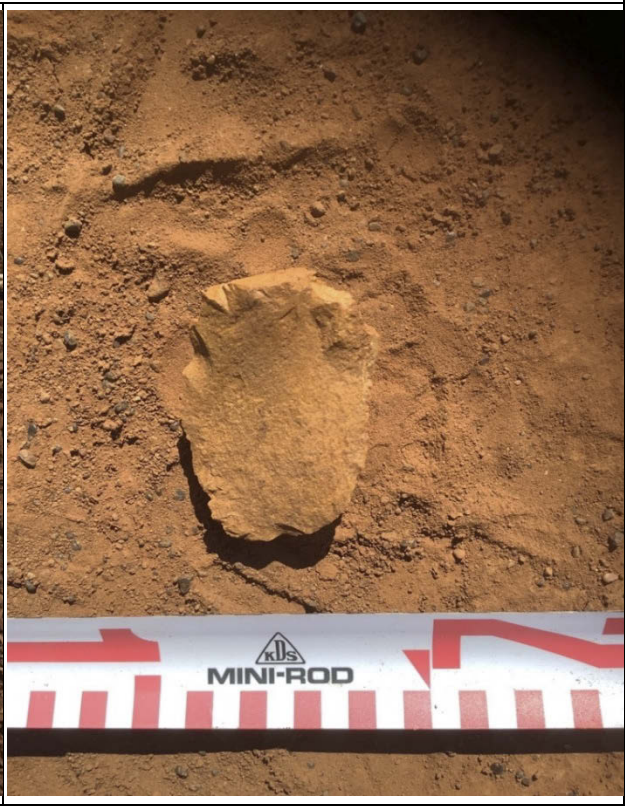
Name: NS2B-19-AS15	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 5/DP755983 and Lot 2/DP1158789 and is within a ploughed paddock 950m north of Back Creek.	N/A	249787mE	6804151mN

Description

The site is a low-density artefact scatter and is defined by 17 artefacts. This includes nine flakes (complete, broken, and/or angular shatter), six cores (multidirectional or unidirectional), one flake tool, and one hammerstone. Raw materials include silcrete and chert. The hammerstone has pitting and circular use wear and markings.



NS2B-19-AS15 hammerstone



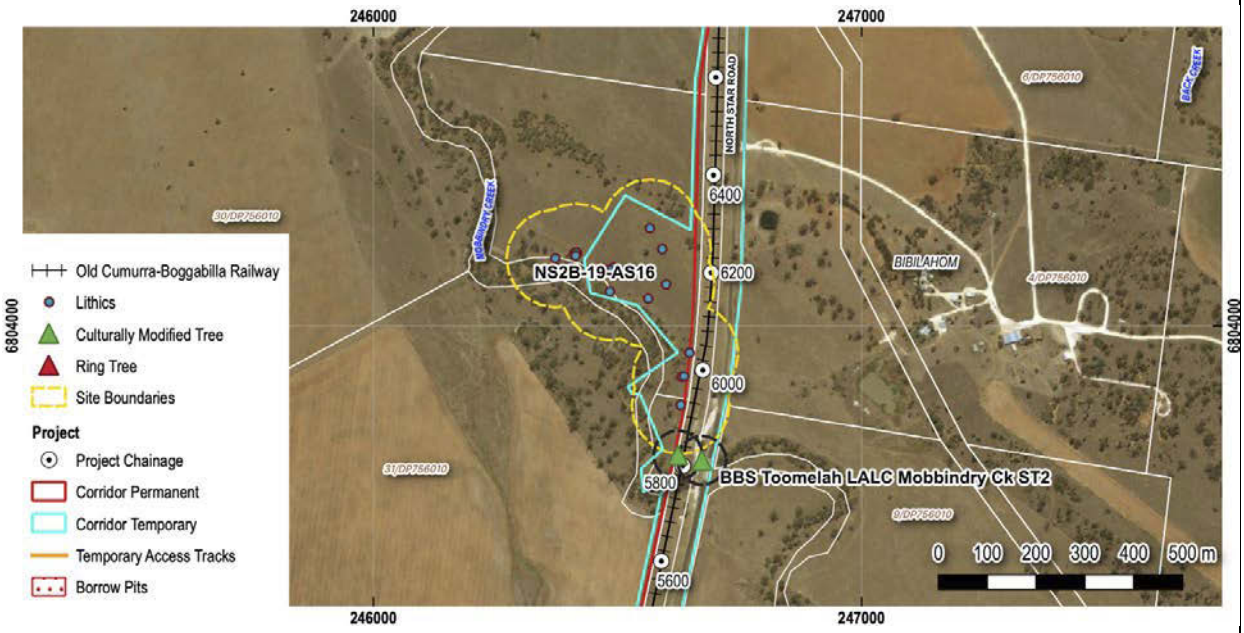
NS2B-19-AS15 Silcrete flake tool

Name: NS2B-19-AS15	AHIMS ID:
NS2B-19-AS15 looking west	NS2B-19-AS15 looking east

Name: NS2B-19-AS16	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 4/DP756010 and Lot 4908/DP1236542 in an existing rail easement and adjacent area. The site is in a paddock directly along Mobbindry creek, is immediately west of the railway, and is 500m west of Bibilahom.	5810-6400m	246546mE	6804049mN

Description

The site is a low-density artefact scatter of at least 17 artefacts. This includes 14 flakes (complete, broken, and/or angular shatter) and three cores (multidirectional or unidirectional). Raw materials include silcrete, chert, quartzite, and quartz.



NS2B-19-AS16 Complete silcrete flake

Location of artefacts near Mobbindry Creek

Name: NS2B-19-AS17	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 3/DP1124486 and is within a ploughed paddock 50m north of North Star Road.	N/A	246077mE	6796790mN
Description			
The site is a low-density artefact scatter of at least 2 lithic artefacts. This includes two flakes (complete or broken). Raw materials include basalt and silcrete.			

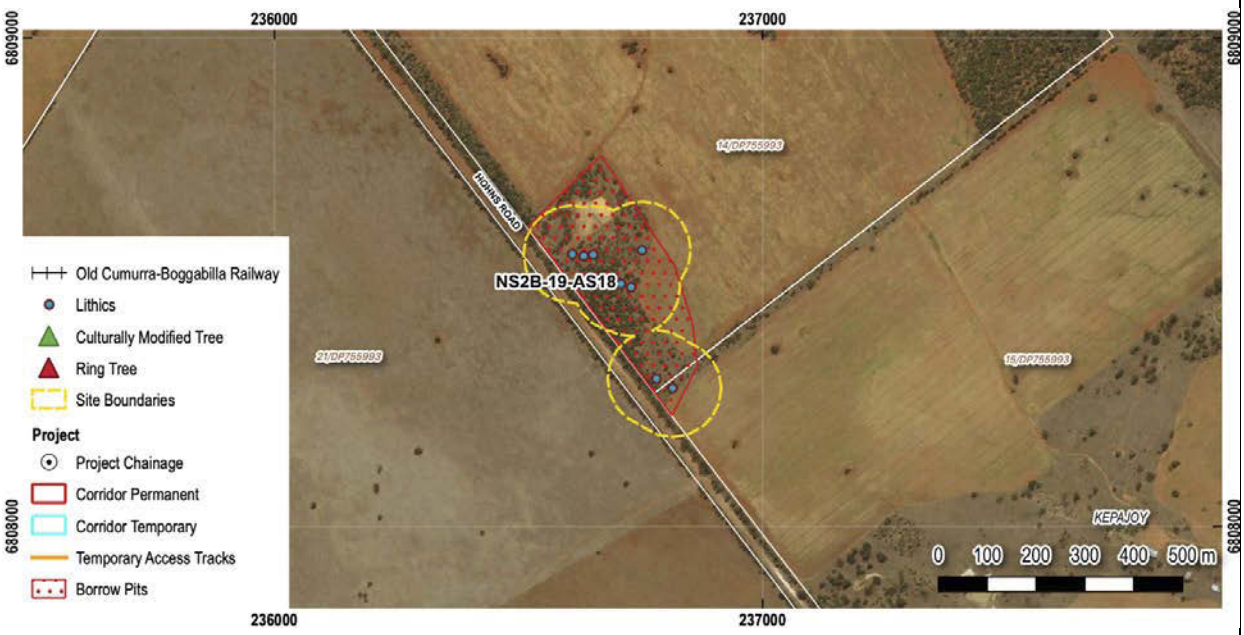
NS2B-19-AS17 complete silcrete flake

NS2B-19-AS17 context facing north

Name: NS2B-19-AS18	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 14/DP755993 and Lot 15/DP755993 on portions of a ploughed paddock, directly adjacent to Hohns Road.	N/A	236729mE	6808452mN

Description

This site is a low-density artefact scatter of at least eight artefacts. These include eight flakes (complete, broken, and/or angular shatter). Raw materials include only silcrete.



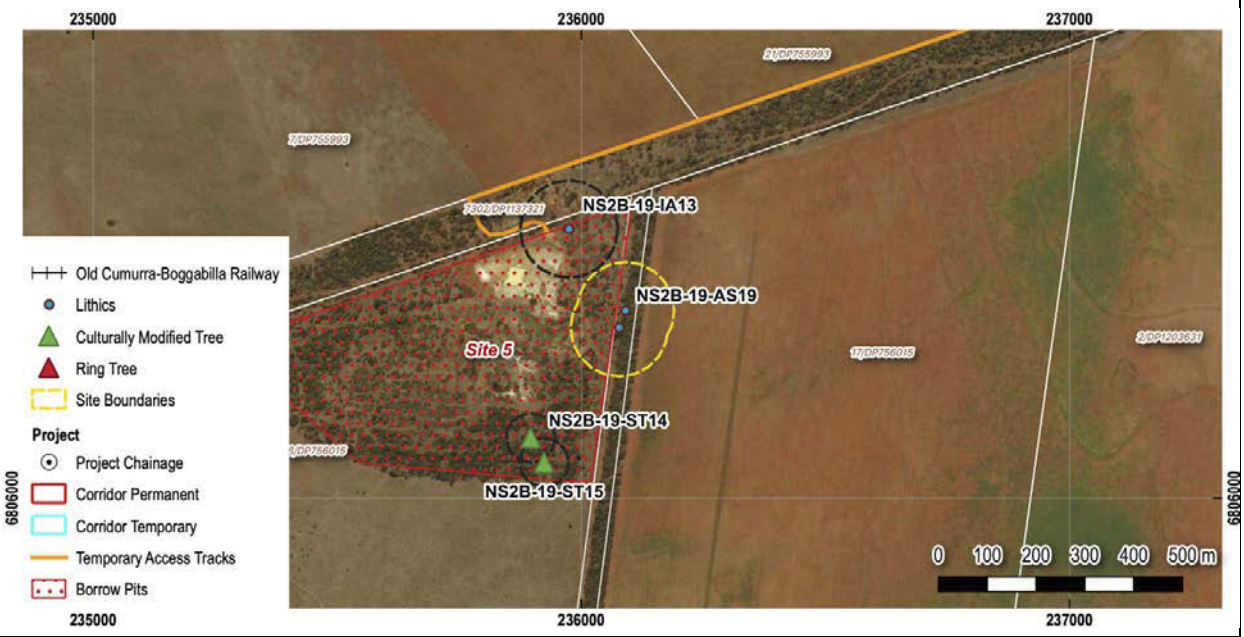
NS2B-19-AS18 Complete silcrete flake

Location of artefacts facing east

Name: NS2B-19-AS19	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within an unnamed road reserve between Lot 17/DP756015 and Lot 16/DP756015.	N/A	236084mE	6806366mN

Description

This site is a low-density artefact scatter of at least two artefacts. Both artefacts are complete flakes. Raw materials include only silcrete.



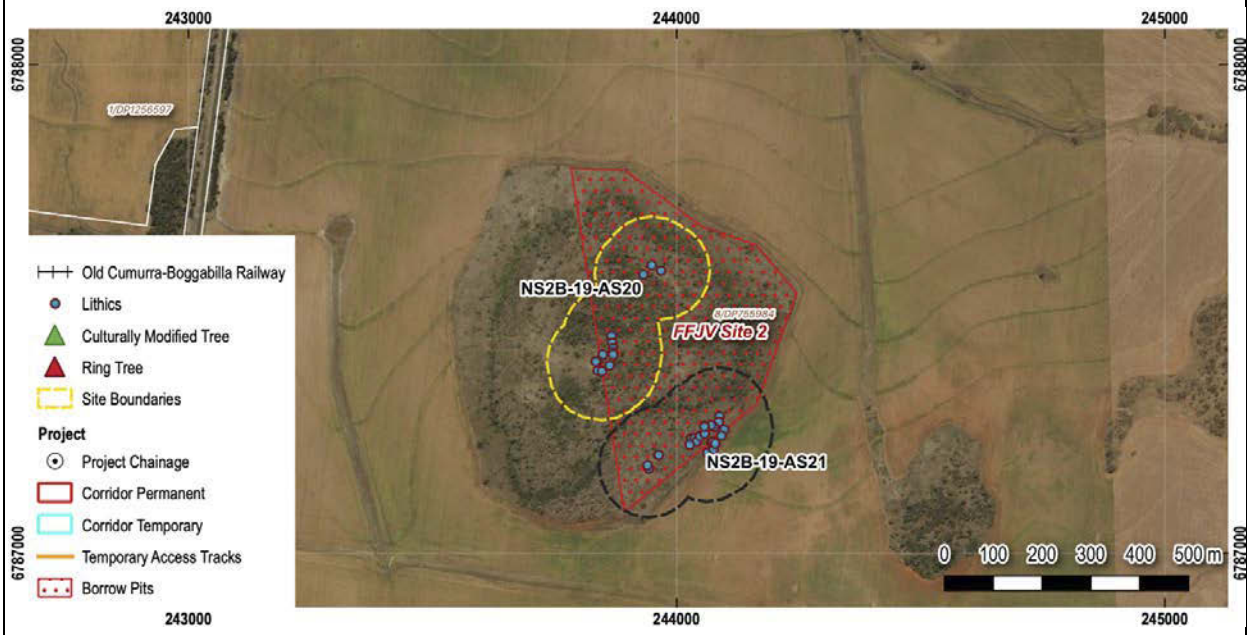
NS2B-19-AS19 Complete silcrete flake

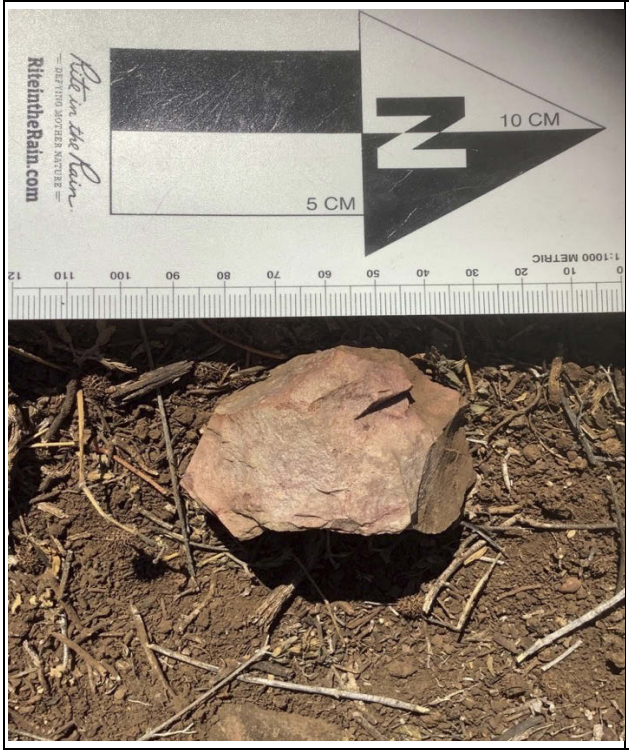
Location of artefacts facing south

Name: NS2B-19-AS20	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located on the Yannarie property within Lot 8/DP755984 and is within a forested area (remnants of a volcano) in the middle of a ploughed field 850m east of Croppa Creek Road.	N/A	243897mE	6787481mN

Description

This site is a low-density artefact scatter of at least 14 artefacts identified in a clearing on top of the volcano adjacent to the volcanic crater. This includes nine flakes (complete or broken), two cores (multidirectional), and three flake tools. Raw materials include only silcrete.





NS2B-19-AS20 Silcrete multidirectional core

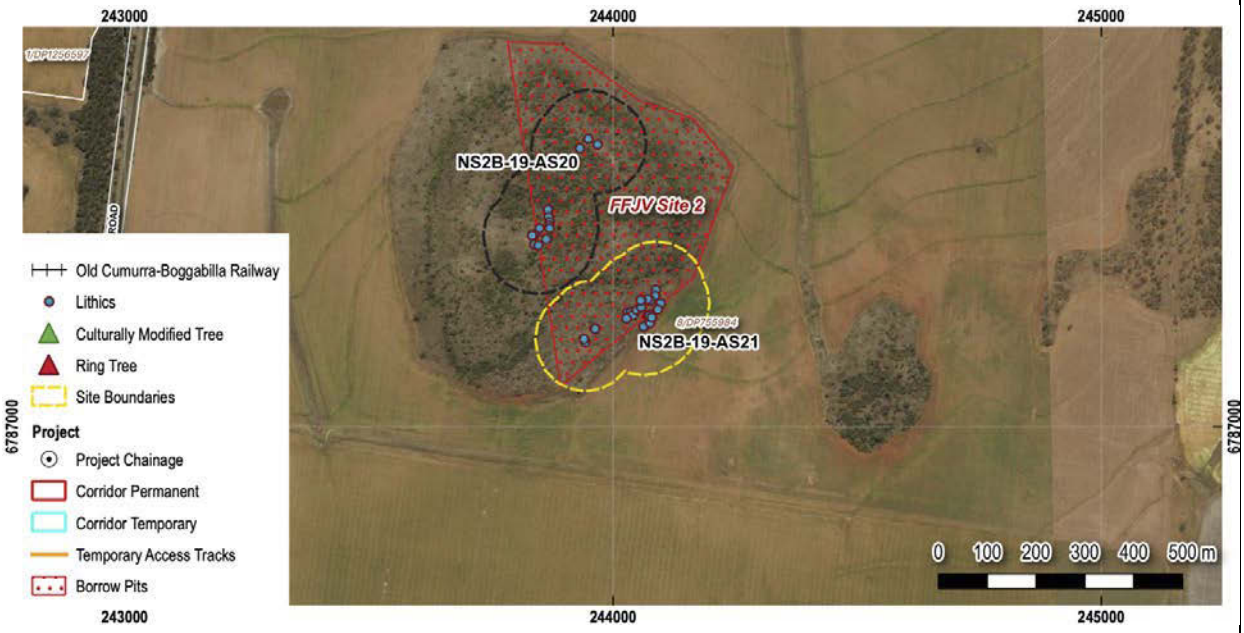
NS2B-19-AS20 Silcrete complete flake

Name: NS2B-19-AS20	AHIMS ID:
NS2B-19-AS20 cleared land looking west	NS2B-19-AS20 cleared land looking east
Panorama view of volcanic cone	

Name: NS2B-19-AS21	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located on the Yannarie property within Lot 8/DP755984 and at the base of a small basaltic cinder cone volcano and adjacent to an extensive debris field of natural silcrete in ploughed paddocks. Site is 900m east of the Croppa Creek Road.	N/A	244025mE	6787221mN

Description

The site is a low-density artefact scatter of at least 28 lithics. This includes 14 flakes (complete, broken, and/or angular shatter), 11 cores (multidirectional or unidirectional), and three flake tools located to the immediate north of a large debris field of silcrete cobbles. Raw materials are predominately silcrete and are likely opportunistic manufacture from readily available natural raw material sources present in adjacent paddocks which have been historically cleared and ploughed.



NS2B-19-AS21 silcrete complete flake

NS2B-19-AS21 artefacts and natural silcrete

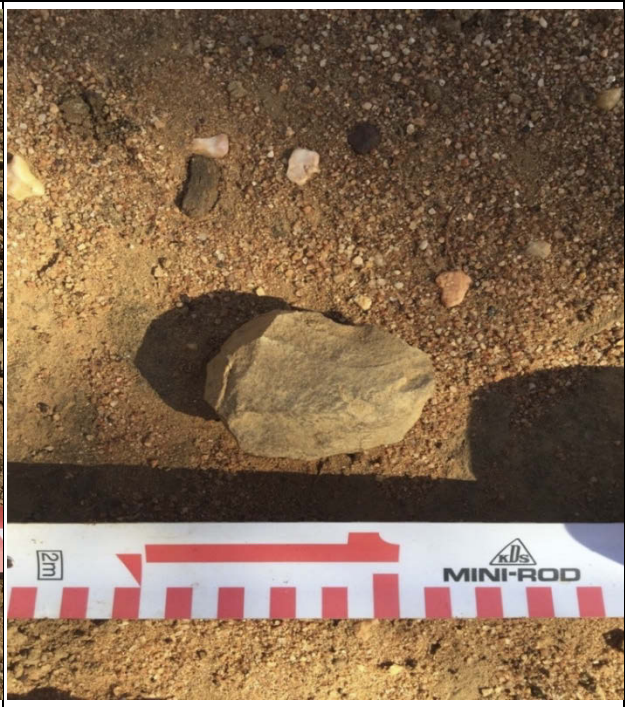
Name: NS2B-19-AS21	AHIMS ID:
Natural silcrete boulder adjacent to NS2B-19-AS21	Natural silcrete cobbles piled up on agricultural land adjacent to NS2B-19-AS21
Natural silcrete debris field adjacent to NS2B-19-AS21	Example silcrete cobble struck by farming equipment

Name: NS2B-19-AS22	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 12/DP755983 20m south of Bruxner Way	N/A	262063mE	6812789mN

Description

The site is a very low-density artefact scatter of at least two artefacts. One complete silcrete flake and one multidirectional silcrete core. The complete flake has a feather termination, no evidence of retouch, and is 0-25% cortex. The multidirectional core is light grey in colour, has four flake scars, 0-25% cortex, and no evidence of retouch.

NS2B-19-AS22 silcrete complete flake

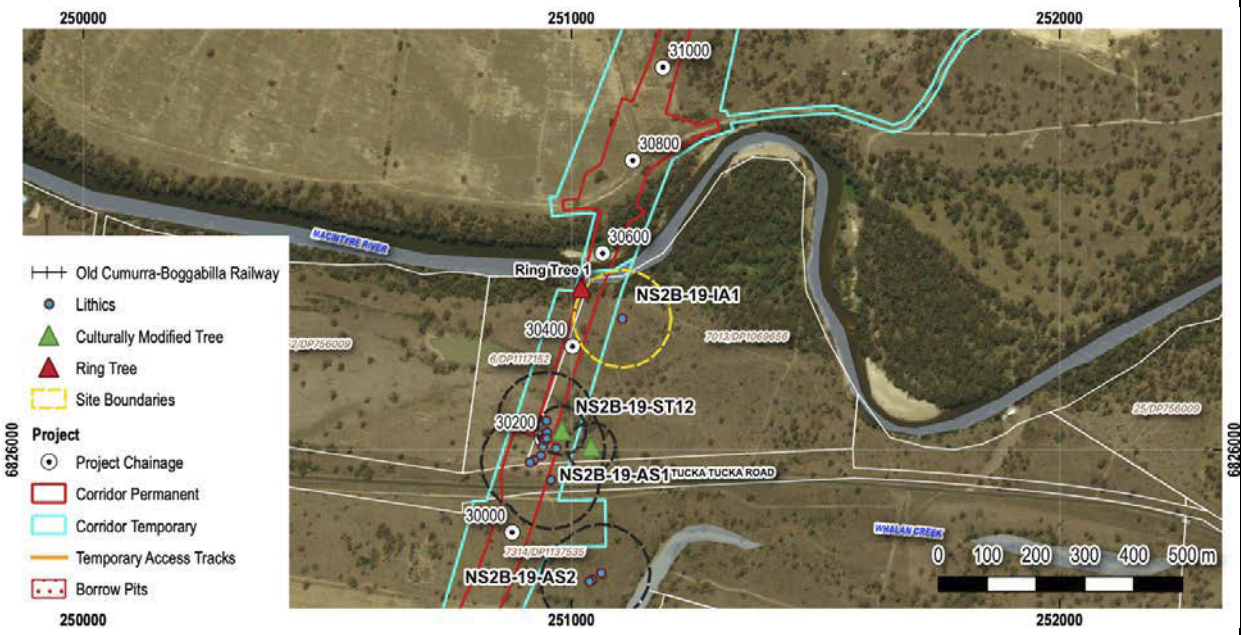


NS2B-19-AS22 silcrete multidirectional core

Name: NS2B-19-AS22	AHIMS ID:
NS2B-19-AS22 context looking south	NS2B-19-AS22 context looking east

ISOLATED ARTEFACTS

Name: NS2B-19-IA1	**AHIMS ID:**		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 7013/DP1069656 in a paddock 65m south of the MacIntyre River.	30490m	251104mE	6826268mN
Description			
NS2B-19-IA1 is a complete silcrete flake. This flake has a plain platform and feather termination. Beige in colour and 1-32% cortex. Length is 35mm, width is 20mm and depth is 5mm.			



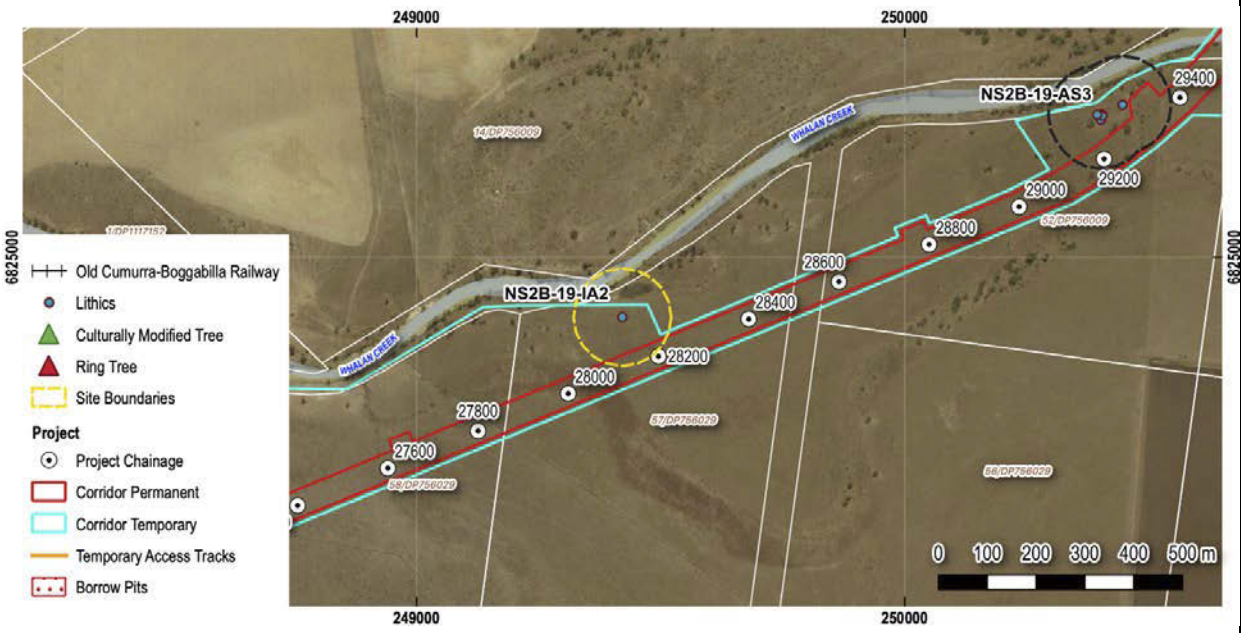
NS2B-19-IA1 silcrete complete flake

NS2B-19-IA1 context shot looking west along fenceline

Name: NS2B-19-IA2	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 57/DP756029 in a paddock 70m south of Whalan Creek within an existing rail easement.	28400m	249422mE	6824877mN

Description

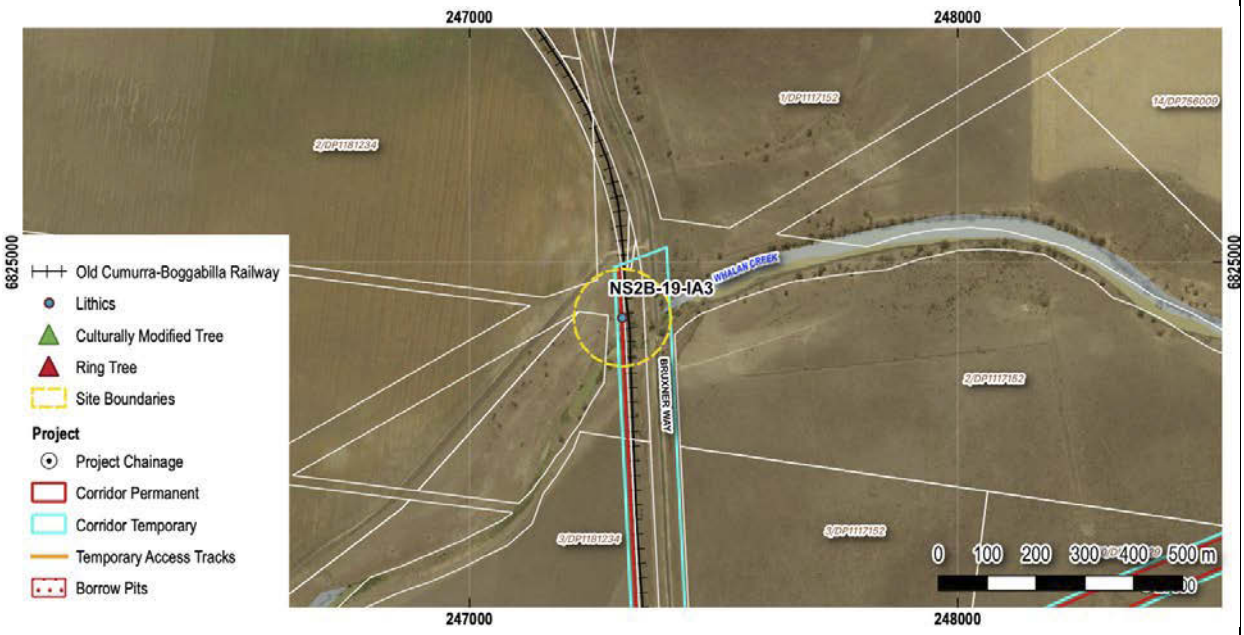
NS2B-19-IA2 is a distal silcrete flake. The flake has a feather termination and no cortex. It is red in colour. Length is 30mm, width is 18mm, depth is 5mm.



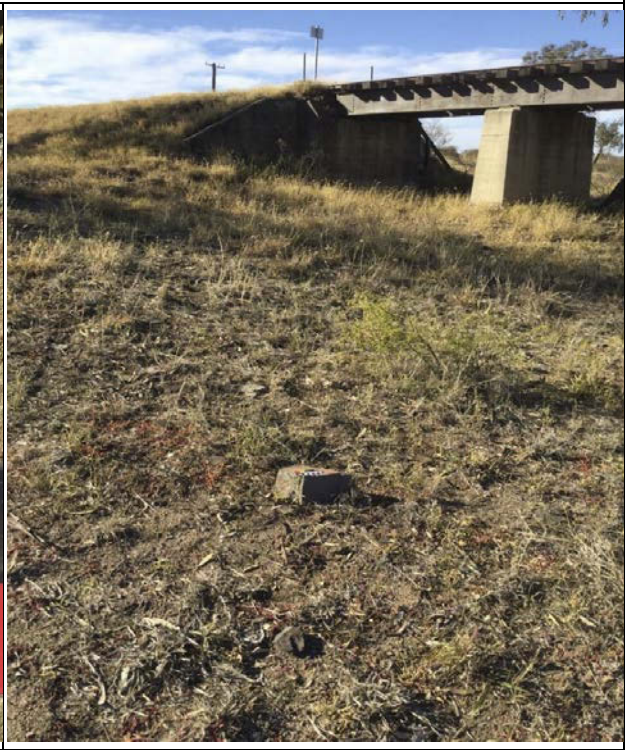
NS2B-19-IA2 silcrete distal flake

NS2B-19-IA2 context looking east

Name: NS2B-19-IA3	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within an unnamed reserve between Lot 3/DP188143, and Lot 3/DP1181234 80m west of Whalan Creek within an existing rail easement.	28600m	247313mE	6824887mN
Description			
NS2B-19-IA3 is a complete silcrete backed artefact. 26-50% retouch. No cortex is present. Length is 25mm, width is 10mm, depth is 2mm.			



NS2B-19-IA3 silcrete backed flake

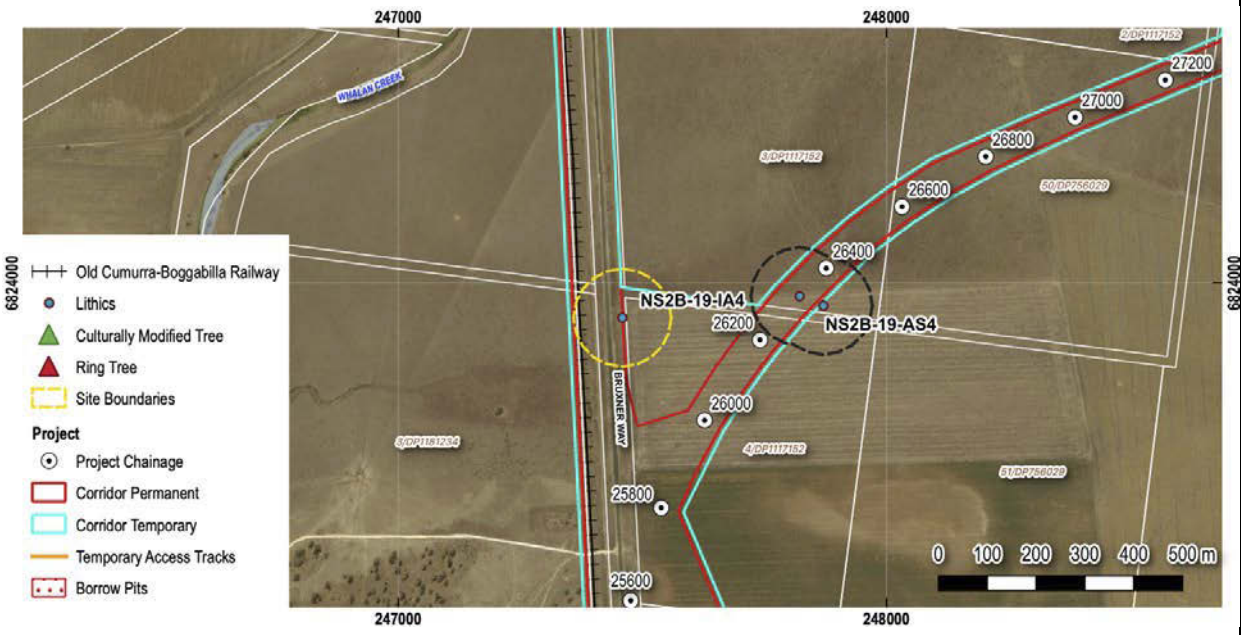


NS2B-19-IA3 context looking south west

Name: NS2B-19-IA4	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located in the road reserve for Bruxner Way on the edge of a ploughed paddock 970m south of Whalan Creek within an existing rail easement.	26200m	247459mE	6823929mN

Description

NS2B-19-IA4 is a complete silcrete flake. The flake has a plain platform and a plunge termination. No cortex is present. Length is 30mm; width 15mm; depth is 5 mm.



NS2B-19-IA4 complete silcrete flake | **NS2B-19-IA4 context shot looking north**

Name: NS2B-19-IA5	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 4909/DP1236540 in the existing rail easement, 10m west of the railway.	22190m	247768mE	6819963mN
Description			
NS2B-19-IA5 is a complete quartzite flake. It has a plain platform and a feather termination. 1-32% cortex and dark red in colour. Length is 30mm, width is 30mm, depth is 5mm			

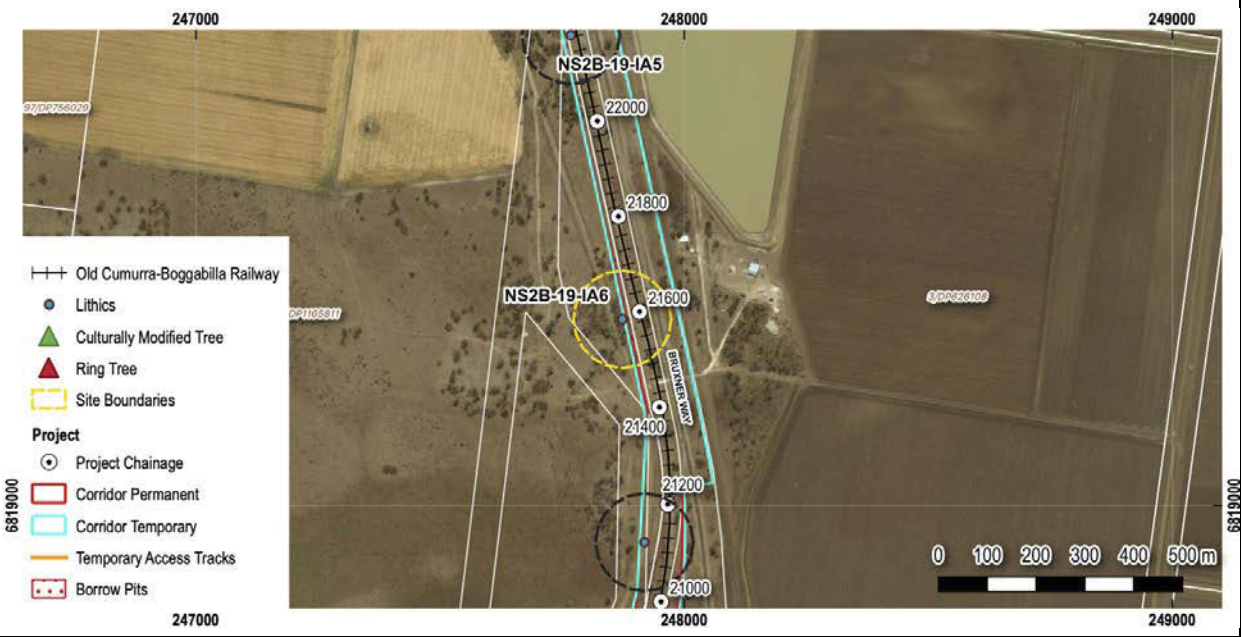
NS2B-19-IA5 quartzite complete flake

NS2B-19-IA5 context looking east towards railway line

Name: NS2B-19-IA6	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within the Road Reserve of Bruxner Way in a cluster of trees 40m west of the railway.	21600m	247874mE	6819381mN

Description

NS2B-19-IA6 is a proximal silcrete flake. It has a plain platform, no cortex present, and is beige in colour. Length is 25mm, width is 35mm, depth is 4mm.



NS2B-19-IA6 quartzite complete flake

NS2B-19-IA6 context looking east towards railway line

Name: NS2B-19-IA7	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 2/DP1165811 in an existing rail easement, 50m west of the railway.	21100m	247919mE	6818924mN

Description

NS2B-19-IA7 is a silcrete multidirectional core. There is no cortex present and it is grey, red, and beige in colour. Length is 90mm, width is 60mm, depth is 20mm.

NS2B-19-IA7 silcrete multidirectional core

NS2B-19-IA7 context looking east towards railway

Name: NS2B-19-IA8	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 4909/DP1236540. immediately east of the railway and 750m south west of Forest Creek	14300m	247191mE	6812196mN

Description

NS2B-19-IA8 is a complete silcrete flake. Length is 35mm, width is 28mm, depth is 8mm.

NS2B-19-IA8 - dorsal

NS2B-19-IA8 - context facing north

Name: NS2B-19-IA9	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 4909/DP1236540 on the midslope of a shallow rise, approximately 1.1 km west of Forest Creek. Site is located on the eastern side of the existing rail easement, and 40m east of the North Star Road.	13955m	247203mE	6811831mN

Description

NS2B-19-IA9 is a complete silcrete flake. Length is 39mm, width is 18mm, depth is 10mm.

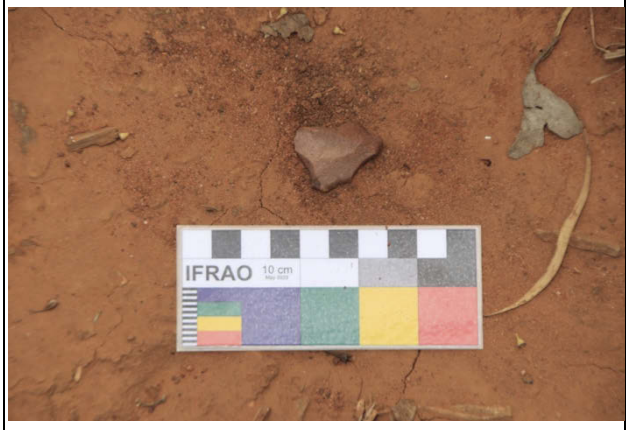
NS2B-19-IA9 - dorsal

NS2B-19-IA9 - context facing north west

Name: NS2B-19-IA10	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 4909/DP1236540 on the midslope of a shallow rise on the eastern side of the existing rail easement, and 40m east of the North Star Road.	13670m	247217mE	6811542mN

Description

NS2B-19-IA10 is a complete silcrete flake. Length is 22mm, width is 30mm, depth is 8mm.

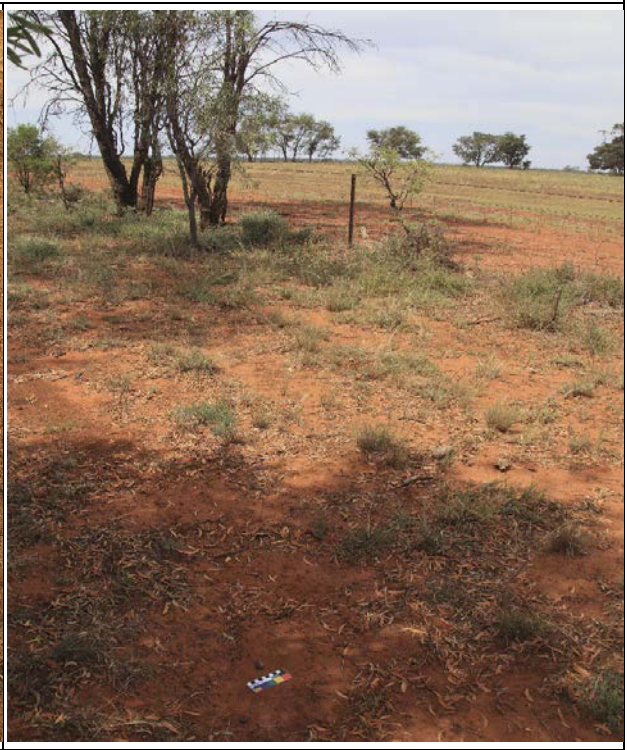


NS2B-19-IA10 - dorsal

NS2B-19-IA10 - context facing east

Name: NS2B-19-IA11	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within 4909/DP1236540 on a shallow rise, approximately 1.6 km east of Mobbindry Creek. Site is located on the eastern side of the existing rail easement, and 50m east of the North Star Road.	11250m	246963mE	6809154mN
Description			
NS2B-19-IA11 is a single chert flake with step termination, crushed platform and eraillure scar. Length is 30mm, width is 22mm, is depth 8mm.			

NS2B-19-IA11 - dorsal



NS2B-19-IA11 – context facing north east

Name: NS2B-19-IA12	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 3/DP850372 in a ploughed field and 420m east of the railway.	9470m	247283mE	6807344mN

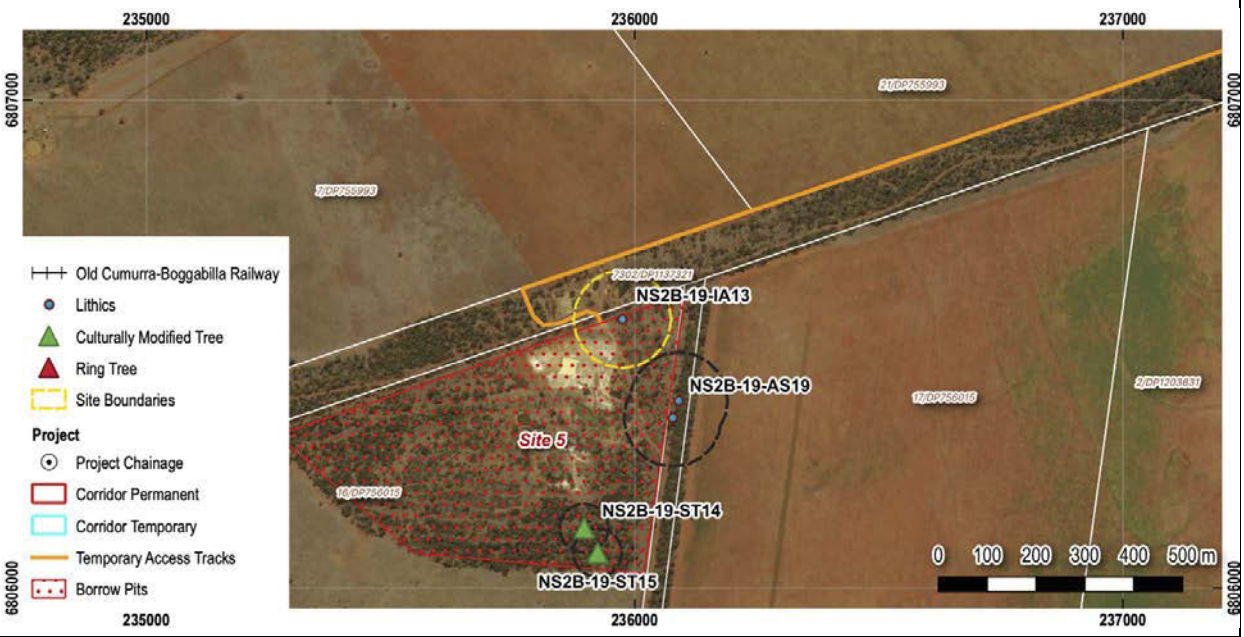
Description

NS2B-19-IA12 is a silcrete unidirectional core.

9-IA12 silcrete unidirectional core

9-IA12 – context facing north

Name: NS2B-1-IA13	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 16/DP756015 1.6km south west of Hohns Road.	N/A	235975mE	6806551mN
Description			
NS2B-19-IA13 is a distal silcrete flake. It has a feather termination and no cortex present. It is beige in colour. Width is 28mm, depth is 4mm.			



NS2B-19-IA13 Silcrete distal flake

Location of artefact facing south

CULTURALLY MODIFIED TREES

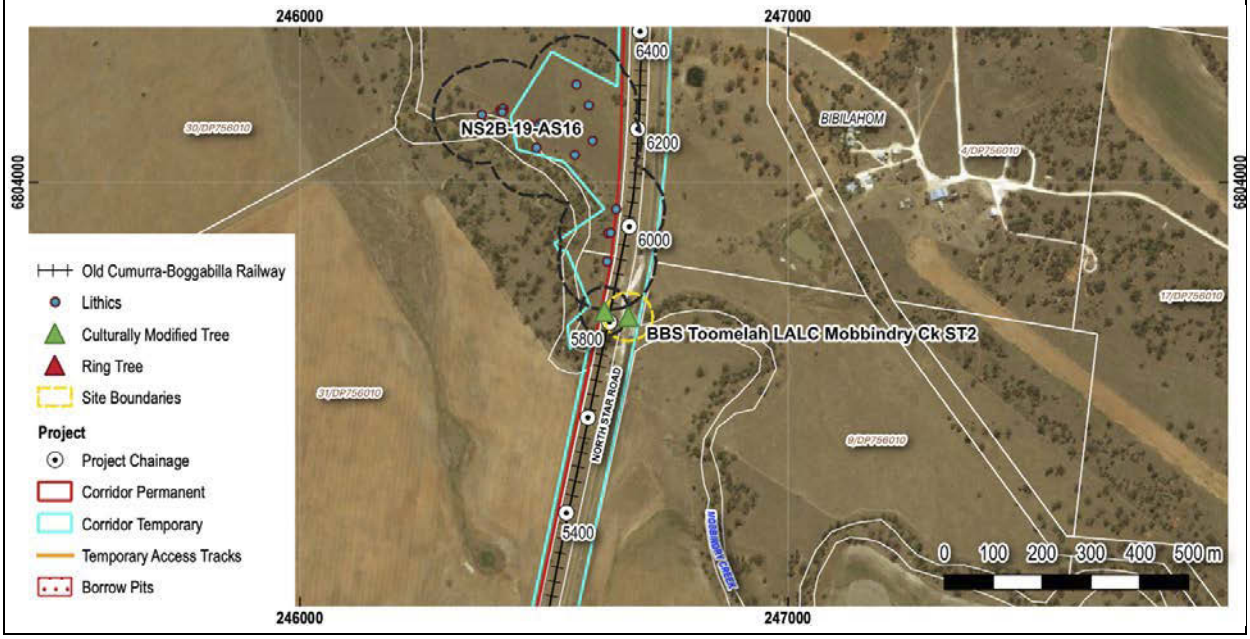
Name: BBS Toomelah LALC Mobbindry Ck ST2	AHIMS ID: 2-4-0047		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within the North Star Road Reserve in the existing rail easement on the northern bank of Mobbindry Creek.	5820m	246673mE	6803725mN

Description

The site is a dual scarred bimble box tree (*Eucalyptus populnea*). The tree was originally recorded as part of the Brigalow Belt South regional study (2002). Inspection as part of the NS2B assessment confirmed the site's location and that two scars were present. The first scar faced SSE towards the creek and measured 1050mm by 450mm. The second scar faced north west and measured 610mm by 200mm.

Curiously it was observed that the first scar had a lizard motif carved into the heartwood. This was not documented in the AHIMS site card. Upon closer inspection, it was noted that the scar was of a different texture to the surrounding scar suggesting it was a later addition. Likewise, modern paint was observed on the scar with the lizard painted with white then red paint and 17 white splotches painted around it. They appear to have been painted with a paint brush. A similar lizard motif has been observed on one of the trees at Toomelah.

The Culturally Modified Tree was also noted as having the remnants of a protective fence surrounding it in the form of four star pickets. This was likely established when the adjacent road bridge was reconstructed. It is hypothesised that this carving is a recent addition to the Culturally Modified Tree sometime after it was identified in 2002. It is possible that the carving occurred at a similar time to the bridge reconstruction to mark the occasion.



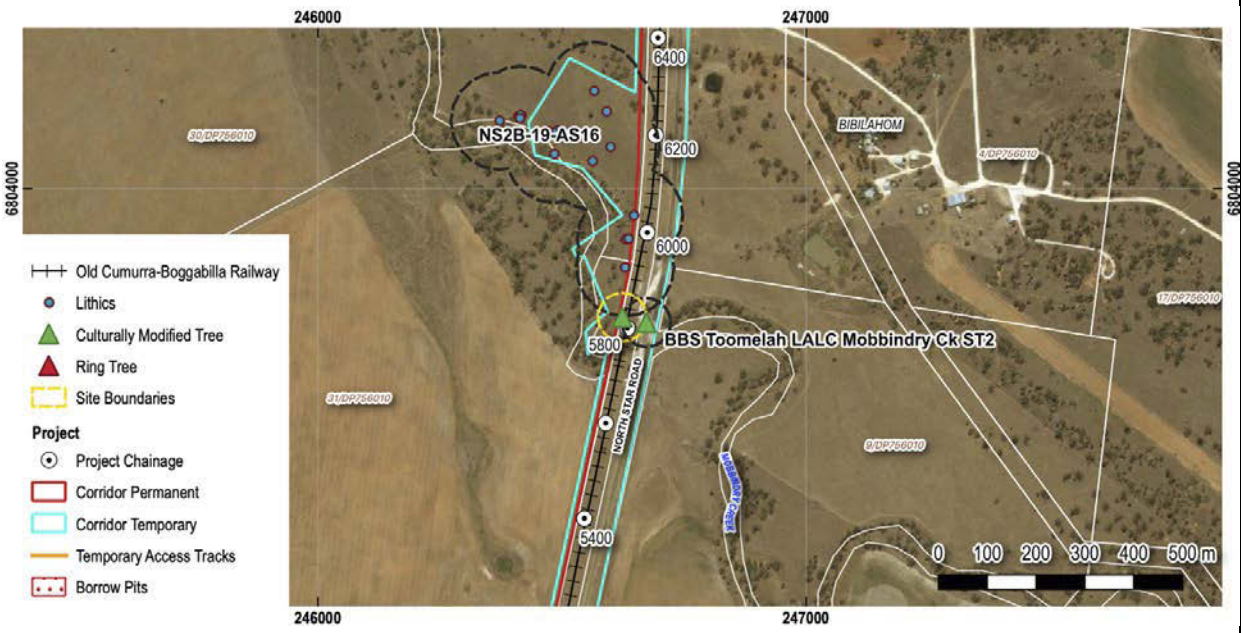
Name: BBS Toomelah LALC Mobbindry Ck ST2	AHIMS ID: 2-4-0047
Scar 1 showing lizard motif (AECOM 2018)	Scar 2 opposite side of Scar 1 (AECOM 2018)

Shot of AHIMS# 2-4-0047 (AECOM 2018)

Name: NS2B-19-ST1	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 4908/DP1236542, approximately 50 m east of Mobbindry River and 60 m west of the North Star Road.	5820m	2426624mE	6803736mN

Description

The site is a single scarred bimble box tree (*Eucalyptus populnea*). Scar is greater than 2000mm with two large epicormic stems on either side of the scar.



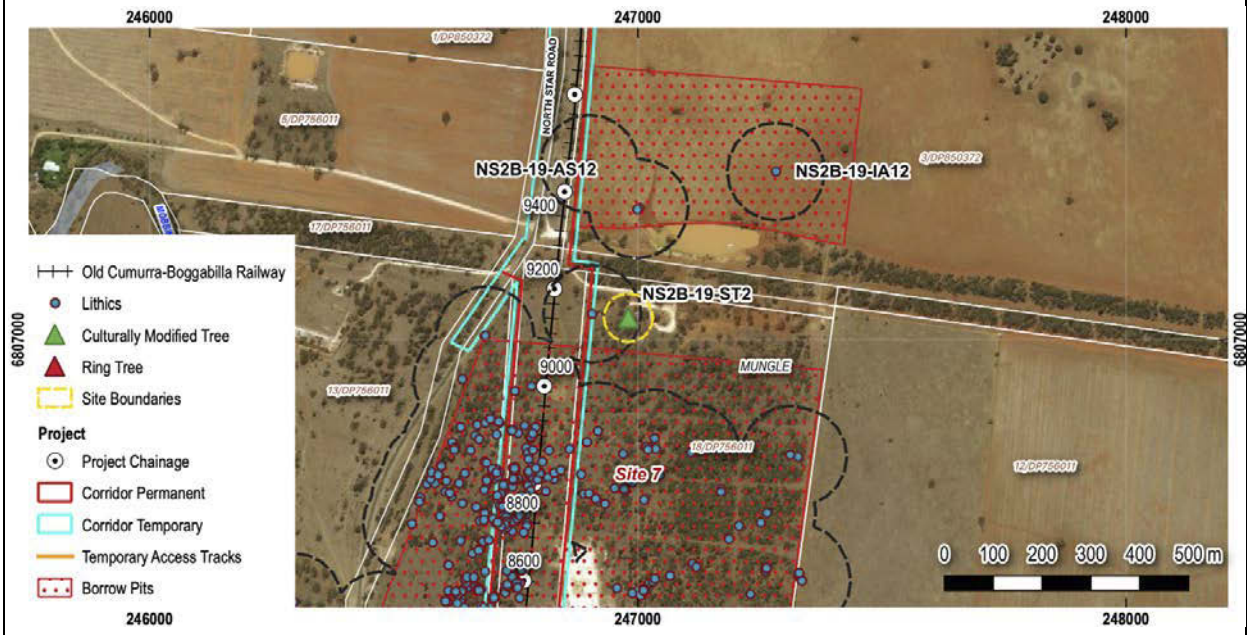
NS2B-19-ST1 - detail

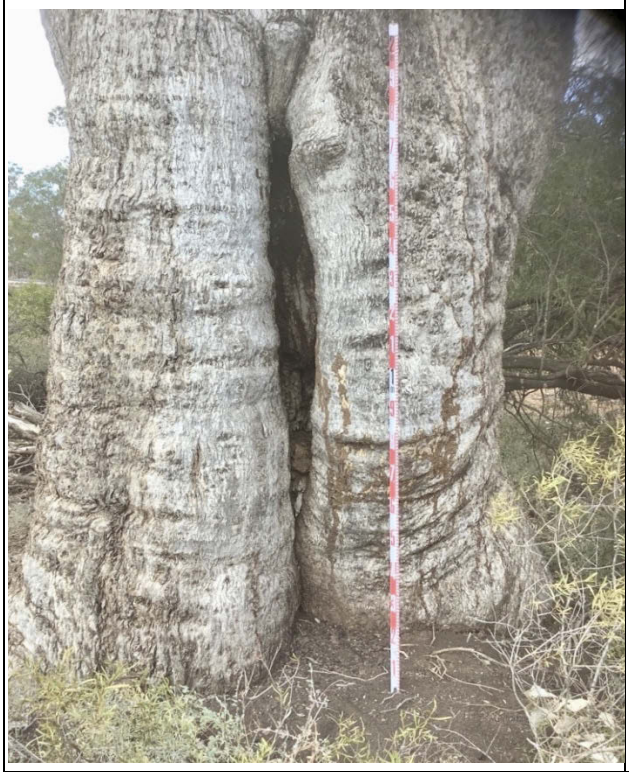
NS2B-19-ST1 - context facing south

Name: NS2B-19-ST2	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 18/DP756011, within a scrub area and is 150m east of the railway	9160m	246981mE	6807044mN

Description

The site is a dual scarred bimble box tree (*Eucalyptus populnea*). The first scar is 1500mm in length,150mm in width, has an overgrowth width of 50mm, and is in poor condition. The second scar is 80mm in length, 20mm in width, has an overgrowth width of 48mm, and is in poor condition.





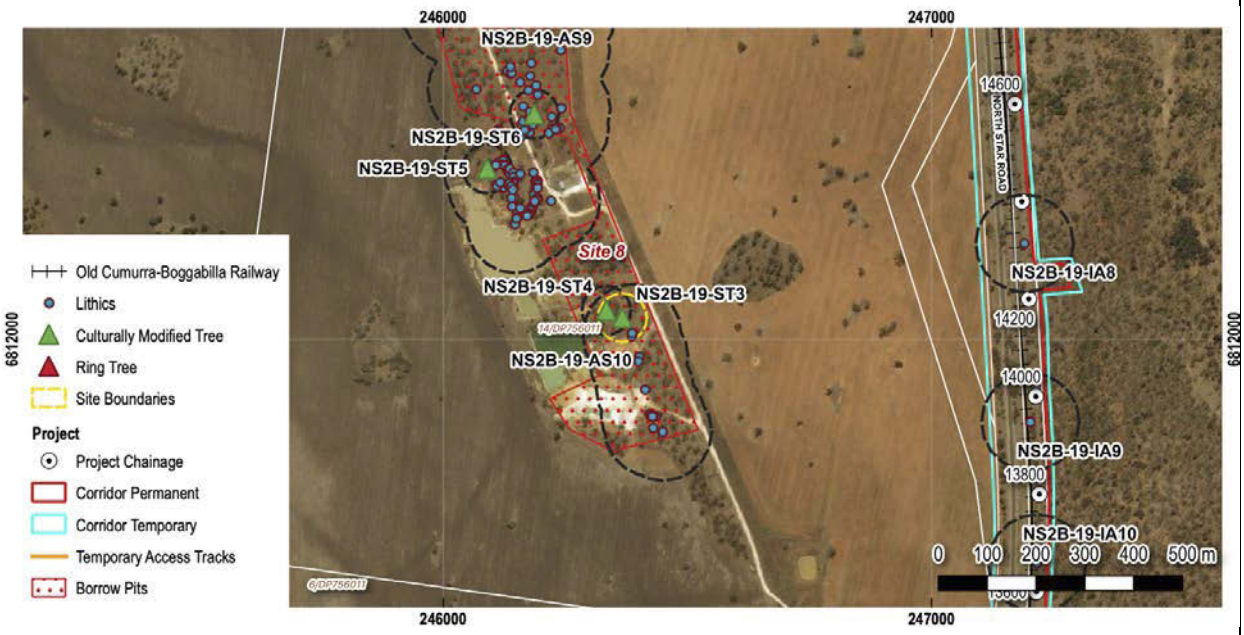
NS2B-19-ST2 scar #1 detail

NS2B-19-ST2 context facing east

Name: NS2B-19-ST3	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 14/DP756011, 70 m east of an access track and 780m west of the North Star Road.	N/A	246367mE	6812044mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*) located within the boundaries of NS2B-19-AS10. The scar is 2900mm in length,300mm in width, has an overgrowth width of 20mm, and is in poor condition. There is an epicormic stem present.



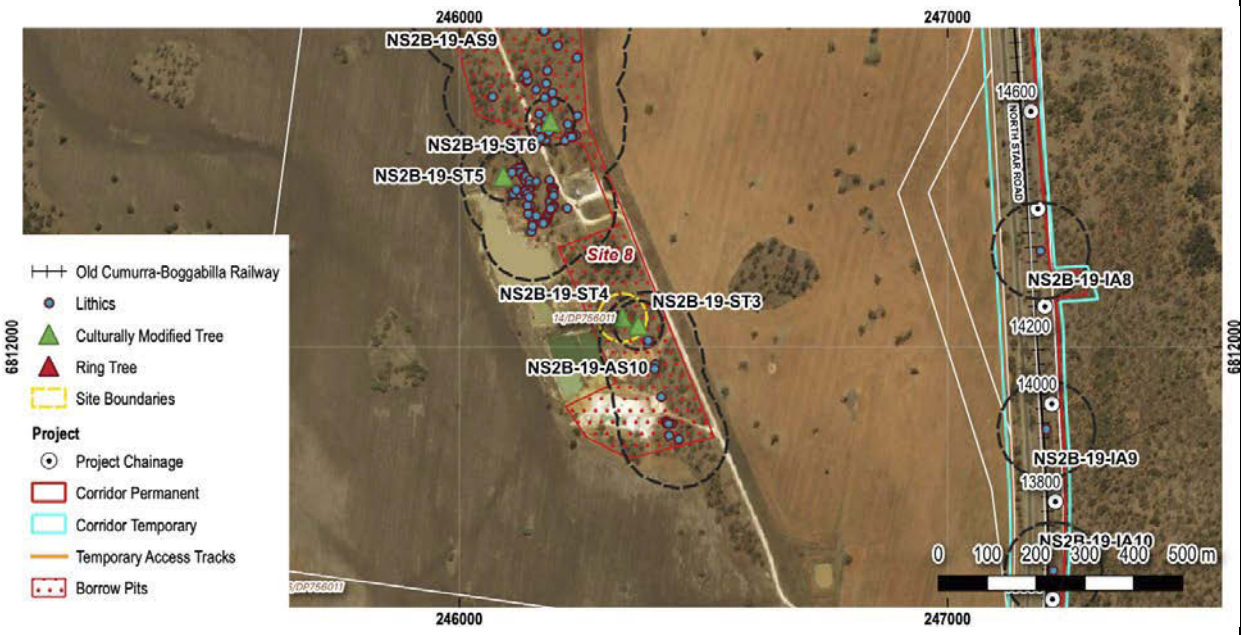
NS2B-19-ST3 detail

NS2B-19-ST3 context facing north

Name: NS2B-19-ST4	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 14/DP756011m 80m west of an access track and 810m west of the North Star Road.	N/A	246334mE	6812060mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*) located within the boundaries of NS2B-19-AS10. The scar is 940mm in length,480mm in width, has an overgrowth width of 100mm, and is in good condition. There are two epicormic stems present.



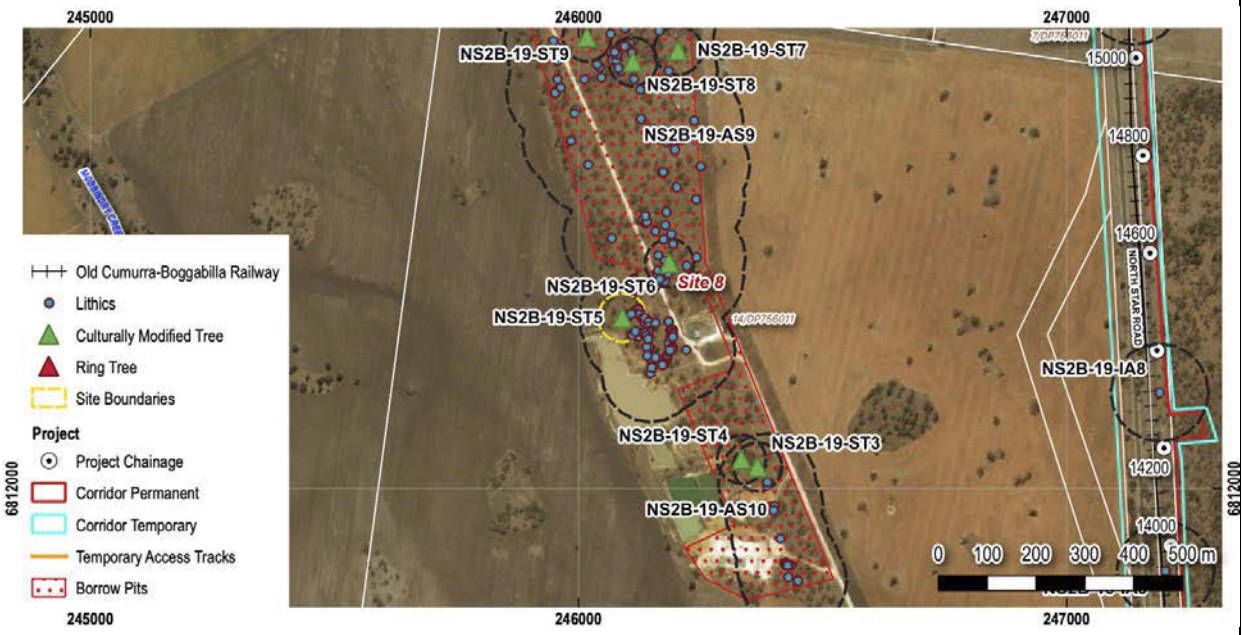
NS2B-19-ST4 detail

NS2B-19-ST4 context facing north

Name: NS2B-19-ST5	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 14/DP756011, 90m west of an access track and 1km west of the North Star Road.	N/A	246090mE	6812349mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*) located within the boundaries of NS2B-19-AS9. The scar is 2000mm in length,300mm in width, has an overgrowth width of 220mm, and is in poor condition with most of the heartwood deteriorated.



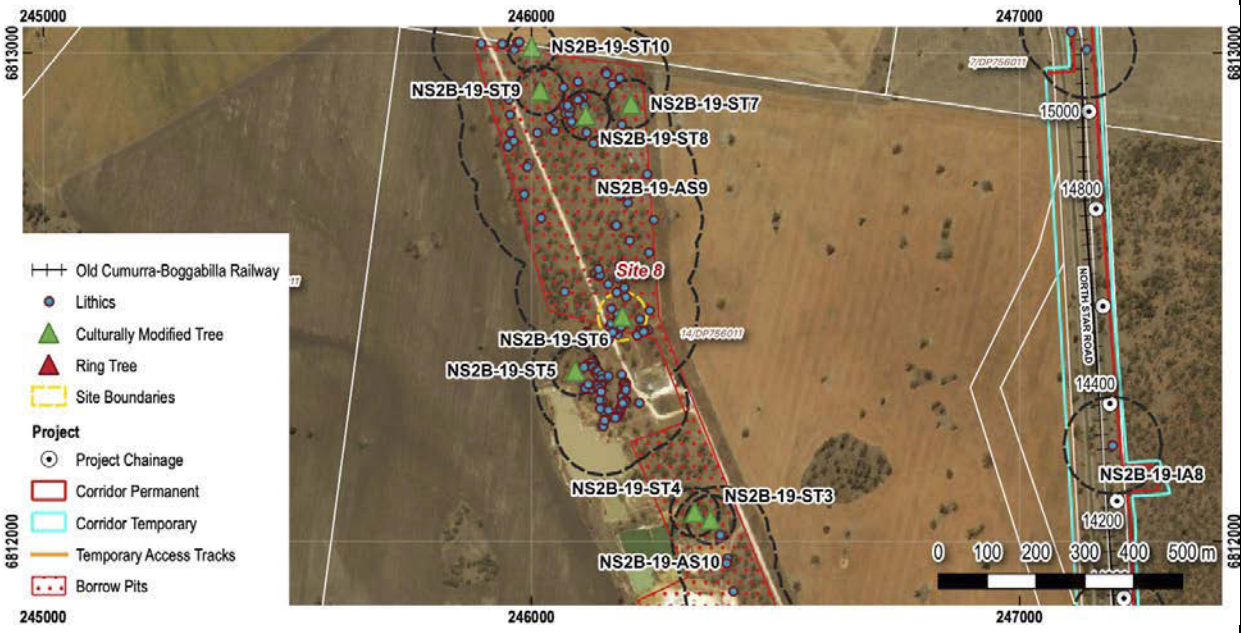
NS2B-19-ST5 detail

NS2B-19-ST5 context facing west

Name: NS2B-19-ST6	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 14/DP756011, 30m east of an existing access track and 935m west of the North Star Road.	N/A	246186mE	6812461mN

Description

The site is a multiple scarred (n=10) bimble box tree (*Eucalyptus populnea*) located within the boundaries of NS2B-19-AS9. Although still living, tree is hollow with a series of irregular scars up the side of the tree. Field representatives interpreted this tree as possibly representing a 'possum tree' where holes are cut into tree either as toe holds to climb up the tree or are access points to obtain resources inside the tree (i.e. animals, eggs, honey).



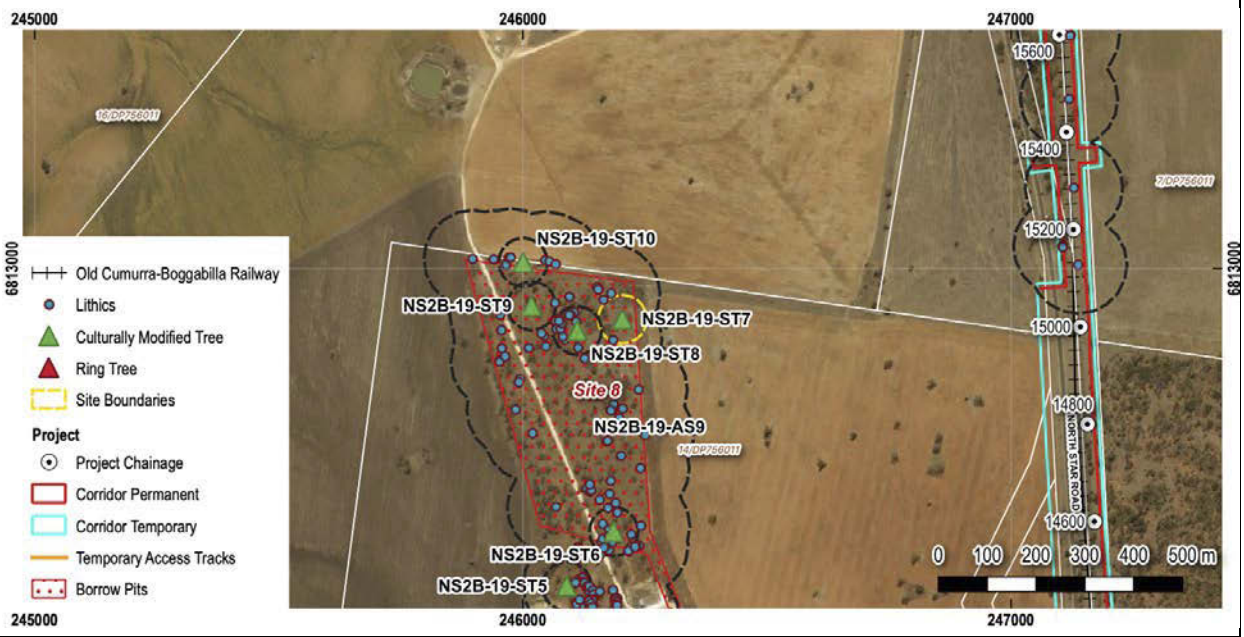
NS2B-19-ST6 detail

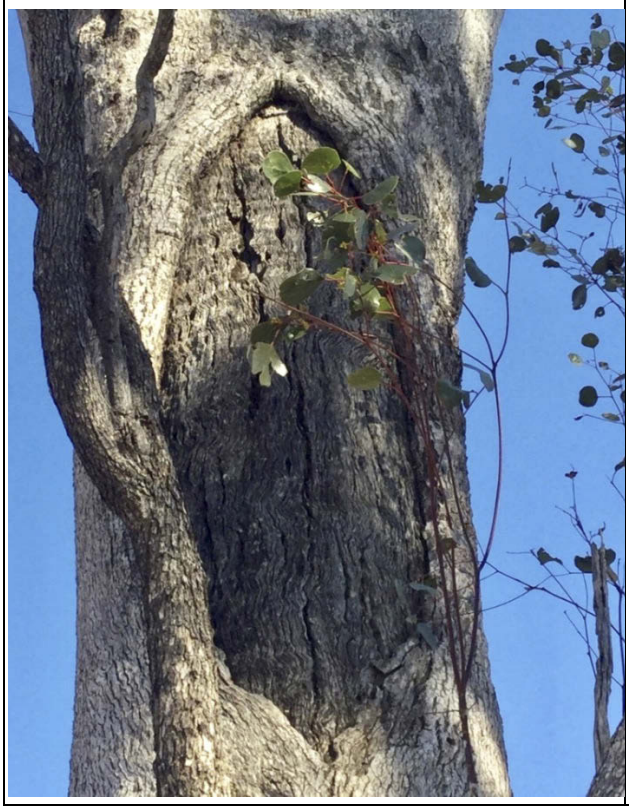
Toe hole scars on "possum tree" north of Warialda
(Sonter & White, 2012, p. 28)

Name: NS2B-19-ST7	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 14/DP756011, 230m east of an access track and 890m west of North Star Road.	N/A	246204mE	6812896mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*) located within the boundaries of NS2B-19-AS9. Scar is 1200mm in length, 4500mm in width and an overgrown width of 150mm. Scar is in good condition.





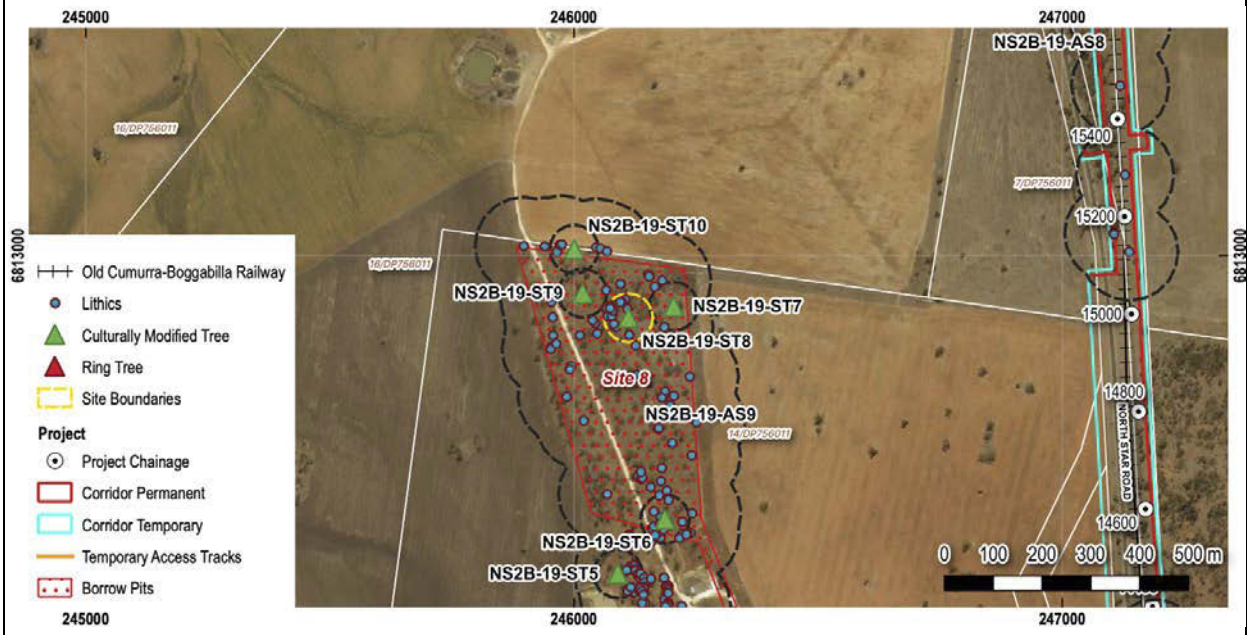
NS2B-19-ST7 Scar detail

NS2B-19-ST7 Context facing west

Name: NS2B-19-ST8	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 14/DP756011, 130m east of an access track and 980m west of North Star Road.	N/A	246112mE	6812873mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*) located within the boundaries of NS2B-19-AS9. Scar is 650mm in length, 1300mm in width, has an overgrowth width of 100mm, and is in moderate condition. An epicormic stem is present.



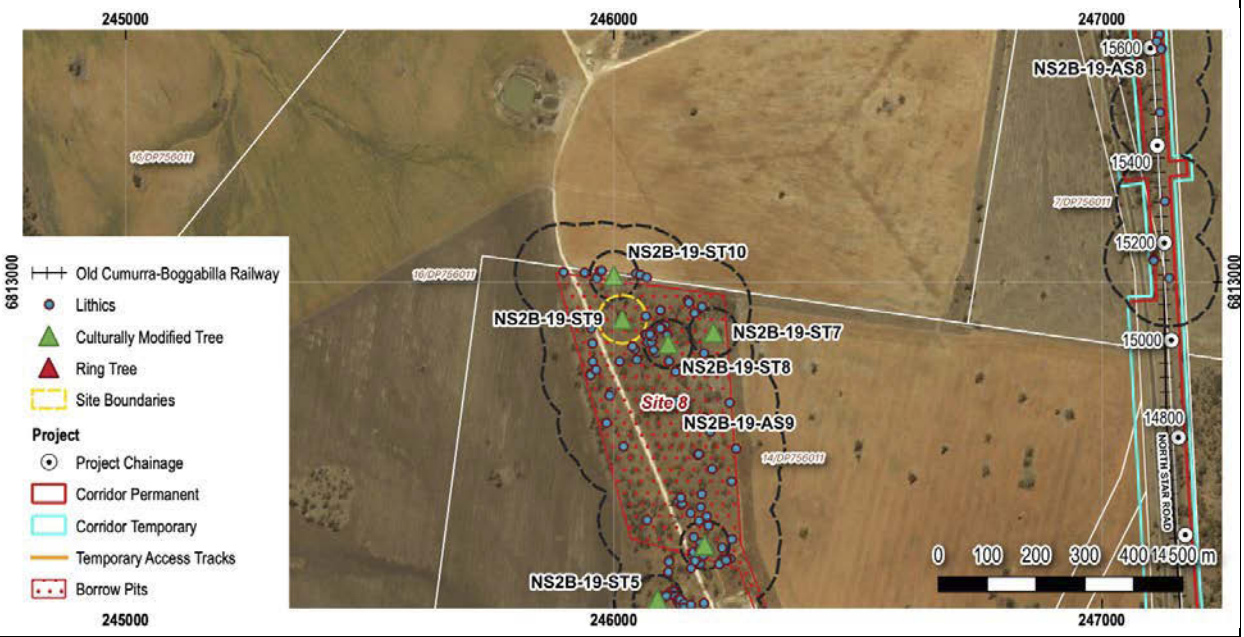
NS2B-19-ST8 Scar detail

NS2B-19-ST8 Context facing east

Name: NS2B-19-ST9	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 14/DP756011, 60m east of an access track and 1km west of North Star Road.	N/A	246018mE	6812924mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*) located within the boundaries of NS2B-19-AS9. Scar is 3200mm in length, 330mm in width, has an overgrowth width of 130mm, and is in good condition.



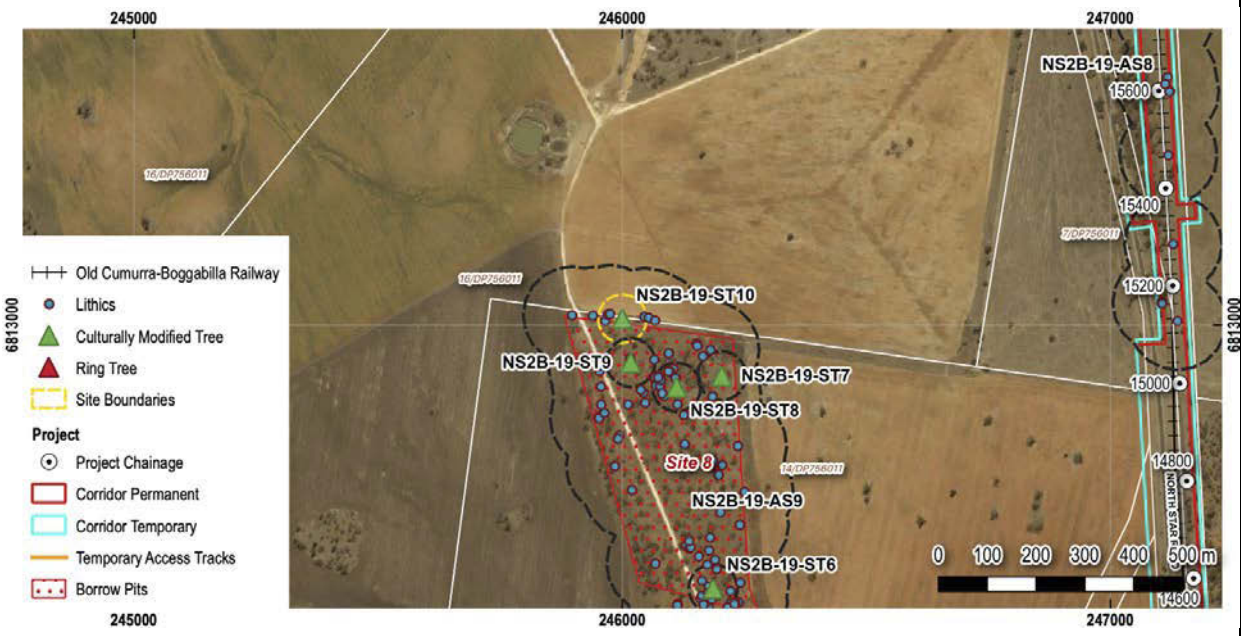
NS2B-19-ST9 Scar detail

NS2B-19-ST9 Context facing south

Name: NS2B-19-ST10	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 14/DP756011, 80m east of an access track and 1km west of North Star Road.	N/A	246001mE	6813013mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*) located within the boundaries of NS2B-19-AS9. Scar is 500mm in length,70mm in width, has an overgrowth width of 230mm, and has almost healed over. Branch tears were noticed in canopy.



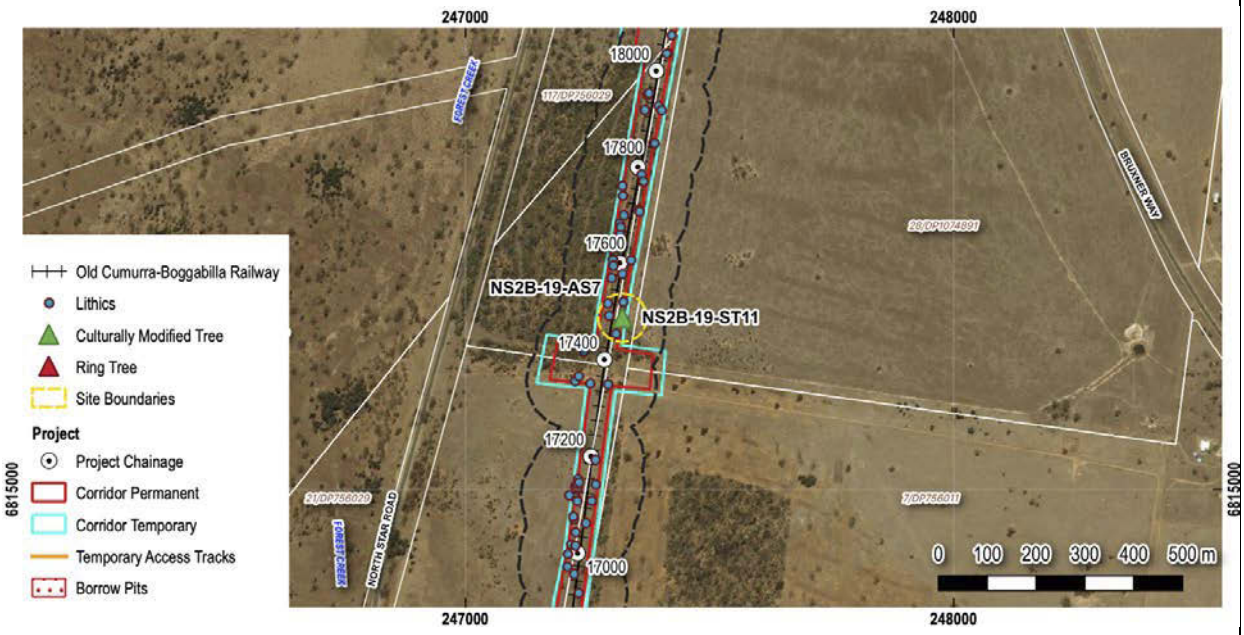
NS2B-19-ST10 Scar detail

NS2B-19-ST10 Context facing north

Name: NS2B-19-ST11	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 4909/DP1236540 in an existing road easement, 340m east of North Star Road.	17480m	247322mE	6815351mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*) located within the boundaries of NS2B-19-AS7. The scar measures 1000mm in length by 350mm in width, and depth is 80mm. The scar is in good condition with axe marks present.



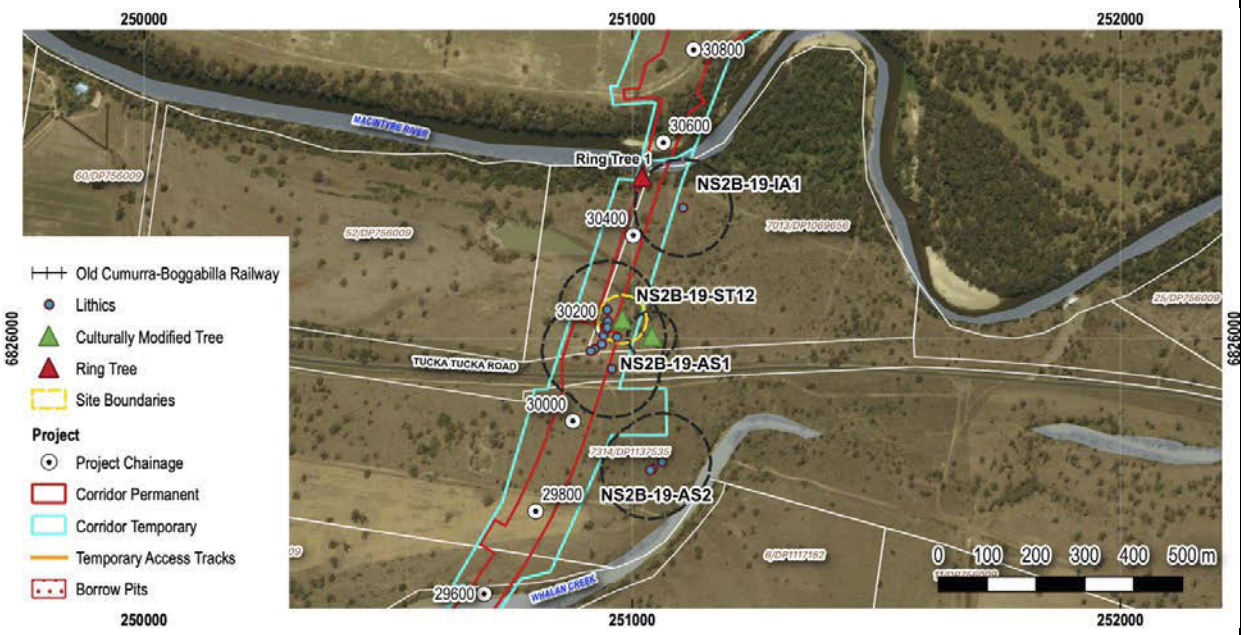
NS2B-19-ST11 Scarred tree detail

NS2B-19-ST11 Context facing east

Name: NS2B-19-ST12	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 7013/DP1069656 in an existing rail easement, 320m south of the MacIntyre River	30220m	250980mE	6826040mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*) located within the boundaries of NS2B-19-AS1. The scar measures 1200mm in length by 130mm in width, and depth is 200mm. The scar is in poor condition.



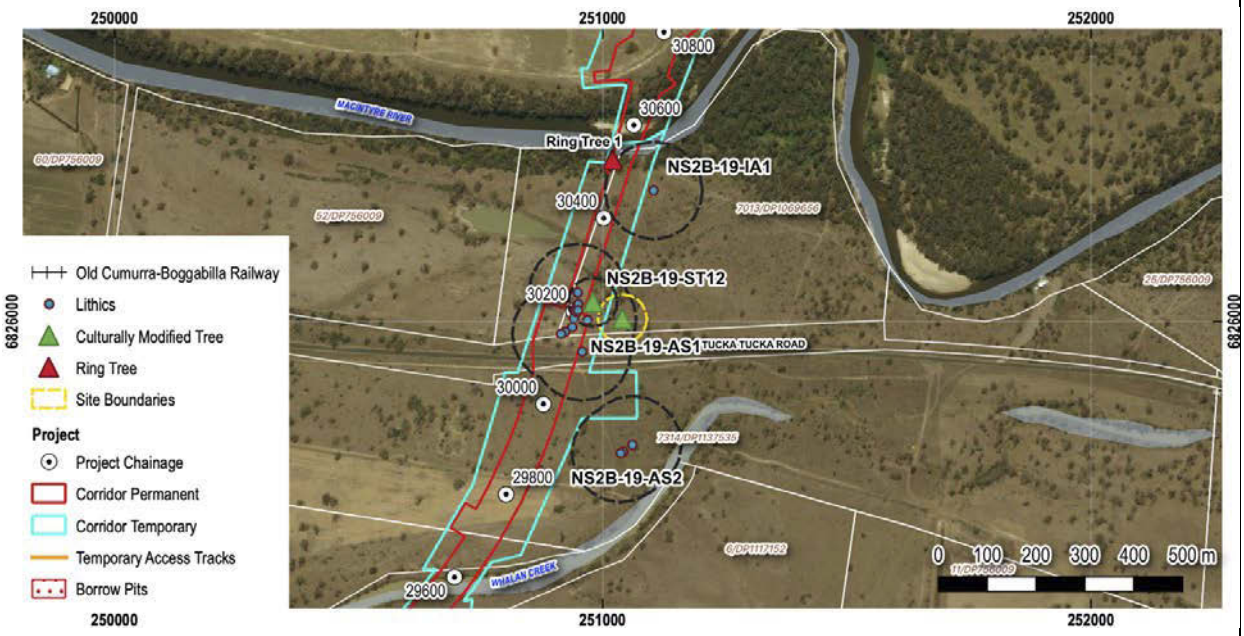
NS2B-19-ST12 Scarred tree detail

NS2B-19-ST12 Context facing north

Name: NS2B-19-ST13	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
Site is located within Lot 7013/DP1069656 in an open paddock, 330m south of the MacIntyre River	30200m	251040mE	6826006mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*). The scar measures 580mm in length by 55mm in width, and depth is 330mm. The outer bark has completely healed over leaving only the join to indicate a scar was present. This typically occurs in healthy but also old specimens that have enough time to fully heal.



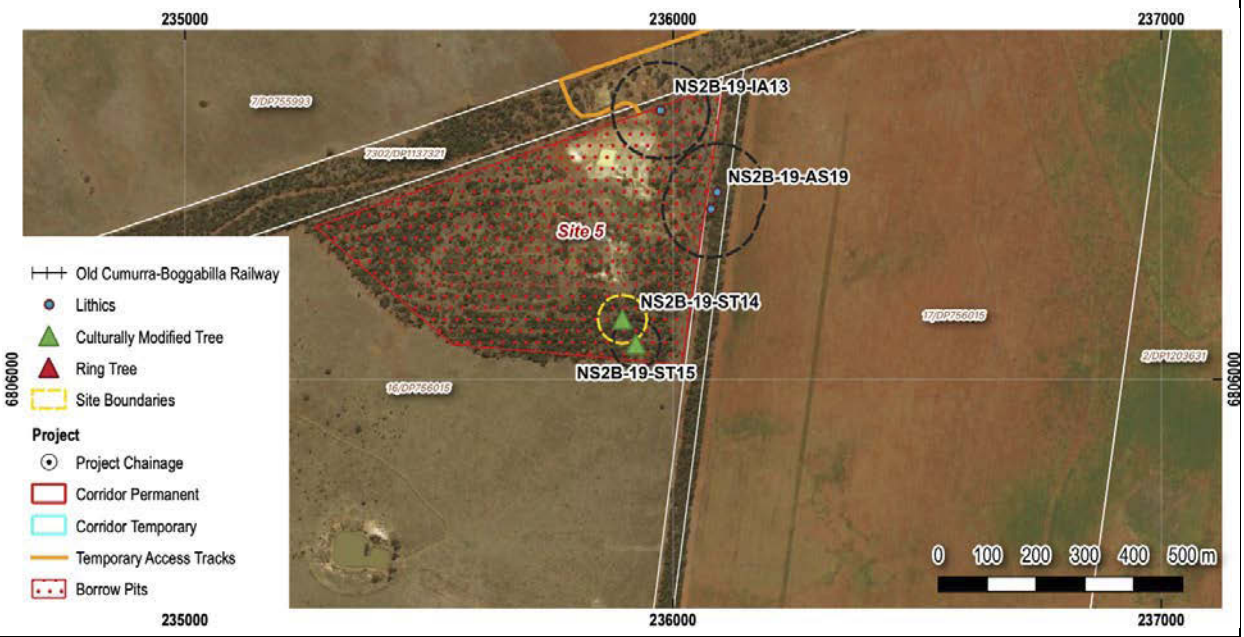
NS2B-19-ST13 Scarred tree detail

Context of scarred tree facing east

Name: NS2B-19-ST14	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 16/DP756015 150m west of an access track.	N/A	235896mE	6806123mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*). The scar is 1400mm in length, 150mm in width, and depth is 100mm. Heartwood is absent presumably impacted by insects.



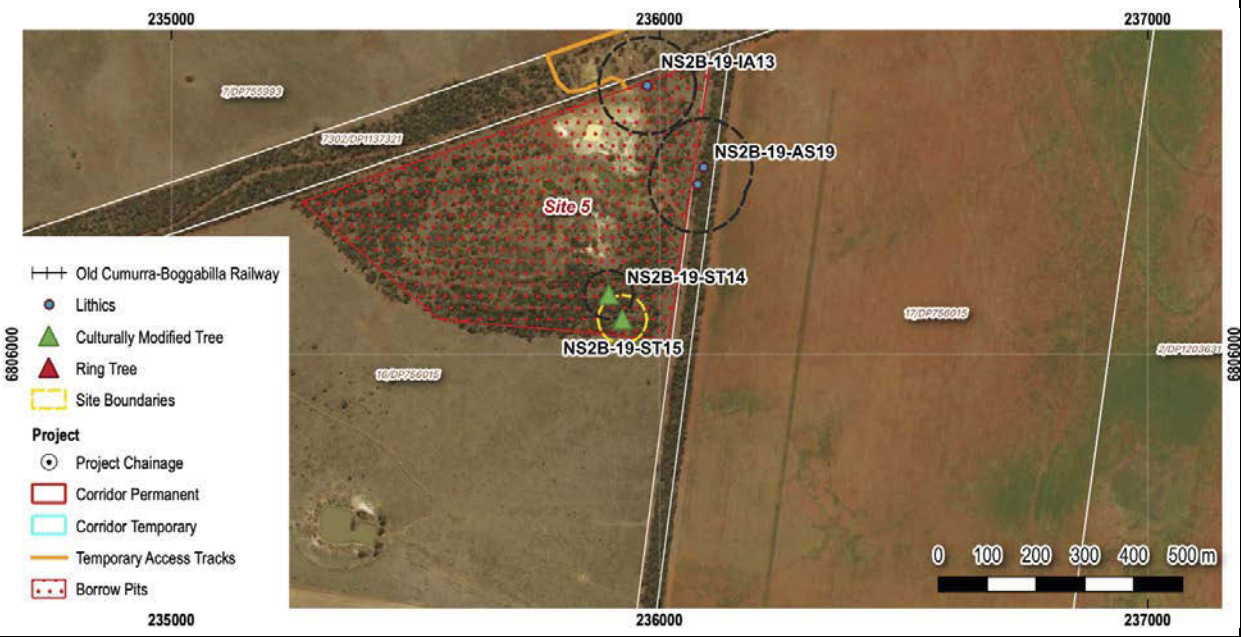
NS2B-19-ST14 Scar detail

Context of scarred tree facing south

Name: NS2B-19-ST15	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 16/DP756015 100m west of an access track.	N/A	235924mE	6806072mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*). The scar measures 400mm in length by 250mm in width, and an overgrowth width of 400mm. The scar is in moderate condition.



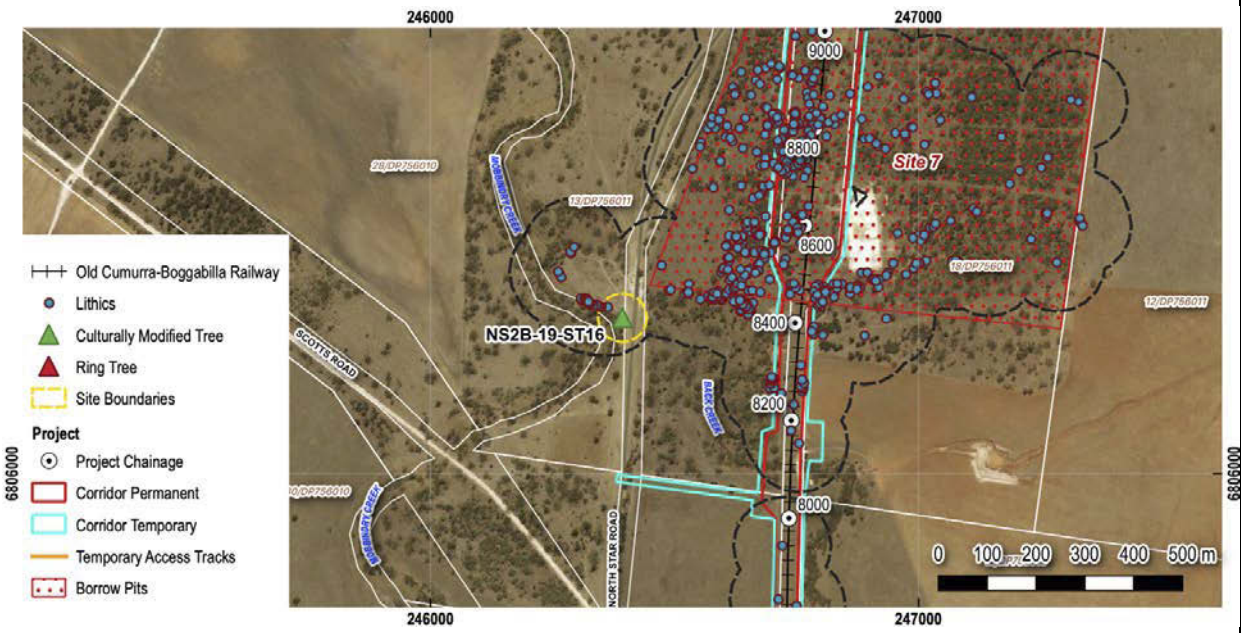
NS2B-19-ST15 Scar detail

Context of scarred tree facing south

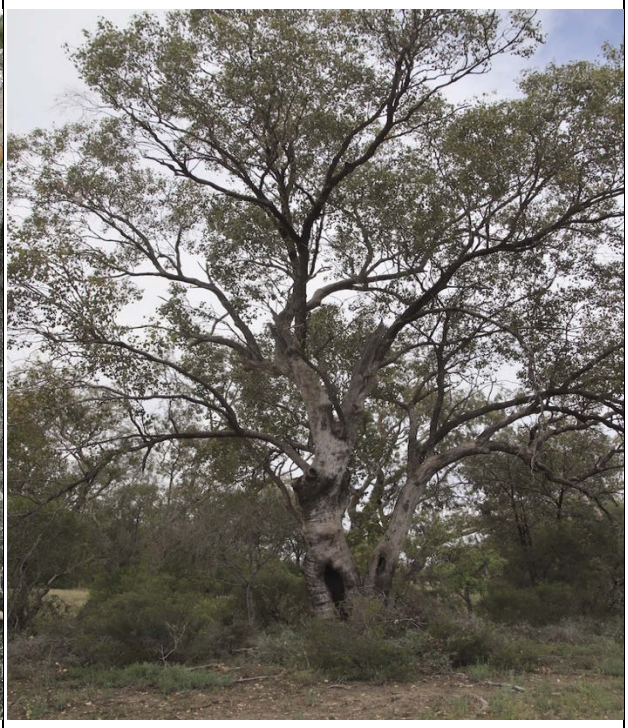
Name: NS2B-19-ST16	AHIMS ID:		
Location	**Chainage**	**Easting** (GDA94 Z56)	**Northing** (GDA94 Z56)
The site is located within Lot 13/DP756011, 30m west of North Star Road, 360m west of the railway and at the confluence of Mobbindry and Back Creek.	8400m	246394mE	6806318mN

Description

Site is a single scarred bimble box tree (*Eucalyptus populnea*) located adjacent to BBS Toomelah LALC Mobbindry Ck1 but was seemingly not recorded. Heartwood is absent with tree having significant epicormic stem hinting at the antiquity of the scar.



NS2B-19-ST16 Scar detail



NS2B-19-ST16 context looking south east towards Back Creek

APPENDIX

E

Aboriginal Cultural Heritage and Archaeological Assessment

Appendix G Traditional Foods and Medicines Identified—North Star to Border

NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

Appendix G

Traditional Foods and Medicines Identified in North Star to Border

(adapted from McKemey and White 2011)

Scientific name	Common name	Language name	Language group	Preferred habitat	Traditional usage
Apophyllum anomalum	Native Grape	Wayaarra; Gubigala	Yuwaalaraay, Yuaalayaay	Widespread in semi-arid areas in the central and western parts of the Border Rivers and Gwydir catchments	▪ Small fruits may have traditionally been eaten. Branches and stems may have also been used for brooms.
Capparis lasiantha	Native Passionfruit	Ngaybaan; Barigan; Guwiibirr	Gamilaraay, Yuwaalaraay, Yuaalayaay	Grows in woodlands in the western half of the Border Rivers and Gwydir catchments.	▪ Fruit can be eaten fresh and the nectar from flowers can be used as a remedy for coughs. ▪ The plant can be soaked and the water applied to swellings, snake bits, insect bites and stings.
Capparis mitchellii	Native Orange, Bumble Tree	Bambul	Gamilaraay, Yuwaalaraay, Yuaalayaay	Grows in woodlands in the western half of the Border Rivers and Gwydir catchments.	▪ Identified “Women’s Tree” by Aboriginal field representatives ▪ Used to treat women’s illnesses ▪ Important tree around Boobera Lagoon ▪ Leaves are boiled and drunk ▪ Fruit is a favourite bush tucker food providing Vitamin C and thiamine
Cymbidium canaliculatum	Native Arrowroot (orchid)	Garrii	Yuwaalaraay, Yuwaalayaay	Woodlands and forests	▪ Substance is rich in starch and can be soothing in the treatment of diarrhoea. ▪ The seedpods can be eaten raw when they are nearly mature (before they split).
Enchylaena tomentosa	Ruby Saltbush	Burra	Yuwaalayaay	Widespread in a variety of habitats throughout the Border Rivers and Gwydir catchments	▪ Common shrub, provides a snack for Aboriginal people. ▪ The fruit has a soft, sweet flesh around a small hard seed and can be eaten raw. You should not eat too many at one time as you could get sick. ▪ In some areas of Australia, the fruits are soaked in water and the liquid drunk like a sweet tea. The dried fruit can also be soaked and eaten. ▪ The young plant were boiled and eaten like vegetables. ▪ The colourful fruits have been used as a dye.

Scientific name	Common name	Language name	Language group	Preferred habitat	Traditional usage
Eremophila bignoniiflora	Eurah, Euraba	Yuuraa	Gamilaraay	Grows on periodically flooded heavy clay soils near rivers and drainage lines	▪ Smoke is used to treat coughs and general aches and pain. ▪ Leaves can be crushed and aid in digestion and constipation. ▪ Used for treating skin disease. ▪ Flowers can be sucked as a sweet.
Eremophila debilis	Winter Apple			Grows in clay rich soils in woodland grass communities in western area of the Border Rivers and Gwydir catchments	▪ Prostrate ground cover, observed growing in disturbed land including on the existing railway line ▪ White to reddish purple small fruit with large inedible seed ▪ Fruit tastes like a cross between a sultana and an apple
Eremophila longifolia	Emu Bush	Ngawil	Yuwaalaraay	Grows in woodland and shrubland communities in the western area of the Border Rivers and Gwydir catchments	▪ A decoction lotion made from the bush is used to wash sores and is also used internally to treat colds. ▪ It has also been used to treat skin problems and stomach ulcers. ▪ The nectar can be sucked from the flowers, while the fruit is also eaten fresh. ▪ The bruised leaves have been used to tan wallaby skin.
Geijera parviflora	Wilga	Dhiil	Yuwaalaraay, Yuwaalayaay	Grows in mixed woodland communities in the central and western areas of the Border Rivers and Gwydir catchments	▪ It is an important plant for burials and ceremonies. ▪ The leaves are used for burials, and for ceremonies are baked, powdered and smoked in sequence with other narcotic plants, which makes people feel drunk and drowsy. ▪ The pant can also be used a medicine. ▪ The leaves can be used internally and externally to relieve pain, whilst placing chewed leaves in tooth cavities helps relieve toothaches. ▪ The leaves are used to make medicine for sores eyes. ▪ If someone breaks a bone the roots and branches can be used to make splint to stabilise and immobilise the bone. ▪ The plant can provide shelter - people would camp under a warm canopy. ▪ Boomerangs were made from the wood. ▪ It was also a good place to find honey from native bees.

Scientific name	Common name	Language name	Language group	Preferred habitat	Traditional usage
Hakea leucoptera	Needlewood	Bin.gawin.gal	Yuwaalaraay, Yuwaalayaay	Grows in woodland and shrubland communities in the western area of the Border Rivers and Gwydir catchments	▪ Roots of the shrub were used to make pipes for smoking. ▪ One end of the roots of the shrub is placed in a slow fire to extract moisture which provide an important water source. ▪ The end of the root could be plugged with clay and carried around. ▪ The nectar of the plant is used as a sweet when the flower is sucked. It can be used to make cordial by soaking the flowers in water. ▪ The plant has healing properties - the bark can be burnt and used as powder to heal sores, wounds and burns. ▪ It can also be mixed with animal fat and used as an ointment for the same purpose.
Marsilea drummondii	Nardoo	Bal; Nhaadhuu; Nhaaduu	Gamilaraay, Yuwaalaraay, Yuaalayaay	Found in the margins of permanent water and in moist depressions in most floodplain vegetation communities. It is often the dominant plan on the floodplain during and after flooding	▪ Spores are collected when waterhole dries up. ▪ The cases are broken up using grindstones and spores taken out. ▪ The black husks are separated from the yellow powder which can be mixed with water to make damper.
Muehlenbeckia florulenta	Native Lime, Desert Lime, Desert Lemon	Gayn.gayn	Yuwaalaraay, Yuaalayaay	Widespread in the western area of the Border Rivers and Gwydir catchments	▪ Can eat raw and chewed whole. ▪ Fruit can be used in marmalade and drinks similar to lemonade. ▪ This shrub is renowned for bearing a heavy crop fruit in summer.
Myroporum montanum	Boobialla, Water Bush	Buubiyala, Gii	Yuwaalaraay, Yuaalayaay	Grows in woodland and shrubland communities in the western area of the Border Rivers and Gwydir catchments	▪ Fruit are eaten when completely ripe ▪ Leaves are boiled and head scrubbed with liquid ▪ Important wildlife plant
Portulaca oleracea	Pigweed	Dhamu; Ganhan	Yuwaalaraay, Yuaalayaay	Widespread throughout the Border Rivers and Gwdir catchments. Grows in a week in disturbed areas and is common on cultivated land	▪ Roots are eaten raw or baked in ashes. ▪ Seeds are ground into a flour-like paste that can be baked into small cakes. ▪ These seeds are a good source of protein, fat, water, dietary fibre and trace elements. ▪ Seeds can also be stored for long periods of time making them a staple reliable food source especially in times of drought. ▪ The fruit, leaves and stems can be eaten fresh, while the stems can be sucked for water.

Scientific name	Common name	Language name	Language group	Preferred habitat	Traditional usage
Solanum sp.	Bush Tomato	Gumi; Bulumburr	Gamilaraay, Yuwaalaraay, Yuaalayaay	Often grow in areas where water lies, such as claypans	▪ Important part of the diet for Aboriginal people. ▪ The fruit can be eaten fresh dry or baked. ▪ The fruit can be eaten raw when the juice and the seeds are squeezed out.
Tetragonia tetragonioides	Warrigal Greens or Native Spinach	Galan.galaan	Yuwaalaraay, Yuwaalayaay	Grows in western and central areas of the Border Rivers and Gwydir catchments. It usually grows on sandy or loam soils	▪ Can be eaten like spinach. ▪ Young stems can be snapped off the plant and eaten raw or cooked.